

# Small in size, yet a key player in military and societal development

The Swedish Military Survey Corps 1805–1831

by Maria Gussarsson

EARLY 19TH CENTURY Sweden was in many respects a country on the verge of profound changes in societal and military developments. These changes can be explained by a number of factors: for example, as a product of Enlightenment ideas and technological progress, or as a consequence of changing economic structures. They can also be interpreted as a result of the many wars that Sweden waged from the end of the 18th century, or an explanatory focus can lie in international influences. I would argue that specific individuals or groups of individuals, historical *key players*, too, can sometimes play an essential role in historical developments. Not necessarily because they tried to be just that, but perhaps simply because of their efforts. The Swedish Military Survey Corps (*Fältmätningsskåren*), established in 1805, is just such an example. In this article, I would like to put forward how the Corps and its officers came to play a significant role in the country's military and societal development.

## Previous research and theoretical starting point

In order to fully comprehend the impact of the Military Survey Corps, the Corps itself and its efforts must be situated within the broader context of Swedish military

cartographic history. This aspect of history has previously been dealt with mainly by several authors, including Ulla Ehrensvärd, Bo Lundström, Björn Gäfvert and myself, albeit from differing starting points, whether from an artistic perspective or focusing on the mapping work itself. In some cases, the focus is on the maps as such, in others on the cartographers. In *Med kartan i fokus*, a book which I co-wrote with Bo Lundström and Mats Höglund, the subject is considered from the basis of mapping activities and how these were organized. Sven Widmalm, a historian of ideas and science, has made a further contribution through his work on the development of geodesy in Sweden.<sup>1</sup>

However, these aforementioned studies have been rather limited in terms of essential aspects of the Military Survey Corps and its activities. One would be to gain a deeper understanding of the organization. What did the organization mean in terms of what its officers actually came to achieve? How could it be seen as both a prerequisite for and a result of these officers' work and commitment. Another aspect would consider the survey officers themselves and what they accomplished. Who were they? What skills and driving forces did they have? What was the significance of their work? It was these aspects that inspired my book *Kartans makt i krig och fred. Fältmätarna, det nya kriget*

*och samhällelig utveckling 1805–31* (2022), which is the main basis of this article.

At first glance, the subject may seem limited. But in fact, it touches on a number of different aspects of historical development, including technological and scientific developments. Somewhat simplified, it can be said that improved instruments and methods allowed for the production of ever better maps, and the better the maps were, the greater was their potential for use. The more advanced cartographic activity became, the greater the demands it placed on the personnel who carried it out. For military cartographers, this meant that specialized competence, not social class, became crucial for an officer's career. The same requirement arose within the artillery, fortification, and navy. But as this article shows, the survey officers of the early 1800s came to the fore thanks to the establishment of the institution, the Military Survey Corps, their special competence requirements and their efforts. They were, thus, part of the professionalization that began to take shape at the beginning of the century, and which can be seen as an essential part of – but also *for* – social development. Finally, the link between professionalism and organizational development must be emphasized. How could the former occur without it taking place within some kind of organizational framework, however rudimentary? Similarly, organizational development could reasonably be seen a consequence of the fact that professionalization places new demands on such frameworks.

In *Engineering the Revolution. Arms & Enlightenment in France, 1763–1815*,<sup>2</sup> historian Ken Alder discusses the important role played by French artillery during that period, also in societal development. The specific theoretical knowledge and high technical competence possessed by the artillerymen was a result of scientific develop-

ment and also the needs of society and the armed forces. According to Alder, the link between these factors can be interpreted in various ways. Either technology can be equated with scientific knowledge or seen as applied science, and it is either the result of social demands or the result of societal development. But regardless, one has to ask why "particular technologies [are] designed and used in particular ways at particular times?" To answer this, he says, one must emphasize the importance of certain actors, those who create technology, being able to play an active role.<sup>3</sup>

Artillery schools in France were at the forefront of scientifically based military training, and thereby contributed to the professionalization of the corps. These officers' ability and drive to take on tasks and problems systematically and by using methods based on theory could be used not only in engineering, but also in a much broader societal context. And indeed it was, and with considerable success. The regime that followed the Revolution of 1789 was shaped by the Enlightenment's ideas about reason and science, and in this context the artillerymen fit in well. Alder notes that during the 1763–1815 period, this corps did not achieve any great success in terms of technical development, and its implementation. Nevertheless, they gained a significantly higher social position, thanks to their competence:

They were among those groups who pioneered the new hierarchical and meritocratic social organization by which the French state was regenerated, and they saw their values enshrined in institutions (the Ecole Polytechnique), which sealed their pre-eminence among the new notability. All this was done in recognition of the engineers' presumed ability to serve the state, an ability grounded in their professional ethic and its epistemological correlate. The engineers

claimed this program combined theoretical knowledge and practical know-how in such a way as to address the material (military) needs of the nation.<sup>4</sup>

Drawing parallels between French artillerymen and Swedish survey officers may seem problematic. The work of the French artillerymen did not consist solely in their role within the Army, they also took part in the development of weapons technology and manufacture. The production of guns and ammunition was quite extensive and involved a number of different actors – both military and civilian. The officers of the French artillery constituted a relatively large corps of professionals, who not only worked within the framework of a specific corps, but also in a number of regiments and units. Furthermore, the period Alder deals with is a time not only of Enlightenment ideas about science and reason, but also of revolutionary ideology and politics. The Swedish survey officers, in contrast, all belonged to a small, cohesive corps. They did not engage in any technical development and although external actors could be hired to engrave and print the corps' maps, such contacts were rather limited. At the time in question, there were also significant influences from the Enlightenment in Sweden and the country was repeatedly at war. Even though one of these wars – that between Sweden and Russia in 1808–1809 – resulted in the dethroning of King Gustaf IV Adolf, it was characterized by comparative political calm and stability.

However, two essential parallels make it relevant to discuss the survey officers based on Alder's reasoning. One concerns the officers who belonged to the two corps: both groups of officers were highly competent specialists, training was a must for them to be able to conduct their business. In addition, a striking number of them seem to have had

considerable drive and commitment. The second parallel concerns the role of the two corps: both had a central function, albeit in different ways, in the warfare that came to be waged from the end of the 18th century. Mobile artillery became a fundamental part of the war apparatus itself, and maps were required for military planning. Military historian Martin van Creveld has highlighted how a lack of good maps affected warfare until the second half of the 18th century. As the commanders were unable to get an overview of the war theater, they chose to keep their forces together, which in turn meant that force numbers had to be limited. In the middle of the century, one of the great generals, Frederick II of Prussia, clearly expressed his scepticism toward maps.<sup>5</sup> Just a few decades later, that situation had changed considerably thanks to better map production and the break-through of operational warfare.

## Military and Civilian Needs

The Swedish Military Survey Corps was established by King Gustav IV Adolf on April 16, 1805. During peacetime its task was to map the kingdom, producing both physical maps and military descriptions of geography (the latter including information on terrain, vegetation, population, production etc), whilst wartime duties involved reconnaissance and assisting the commanders of the various staffs with advice, and recording information about the war to enable the writing of its history afterwards. A few years after its establishment, in 1812, another task was formally added, which had actually been carried out from the beginning but which was not initially included in the instructions – to conduct teaching within the Corps, primarily for its own, junior staff, but also for other Army officers. The Corps also had its

own archive, which collected and preserved maps, along with literature and other items of relevance to the organization.<sup>6</sup>

There were many reasons for creating a military survey corps. Although Sweden remained largely untouched by the Napoleonic Wars, French military thinking did influence the Swedish approach to warfare. As on the continent, the practice of warfare was largely a matter of mobile warfare, independent units and the art of operations, which meant that the military leadership needed maps. (Neither the geography of the Nordic countries, nor the comparatively small sizes of their populations, were conducive to warfare based on mass armies.)

One Swedish officer who came to be particularly influenced by the French art of war, its organization, etc., was Gustaf Wilhelm af Tibell, who served in the French and Italian armies with considerable success for five years from 1798. He took part in several battles under Napoleon, including at Marengo, ending his career there at the rank of brigadier general, after which he was appointed commander of the topographical corps established in the Italian Republic. He was called back to Sweden in 1803, and began to plead for the creation of a corps similar to the one he had led in Milan. Others had already suggested the idea in a slightly different form: Chief Adjutant S. J. Cronstedt and Colonel Johan Henrik Tawast had both proposed the establishment of a Swedish war archive for maps and mapping, to which cartographic work should also be linked. It was Tibell's proposal that attracted the King's attention, however.

It wasn't just the armed forces that needed new and improved maps. The expanding domestic economy was generating a need for more roads and canals, and their construction required the type of reconnaissance in which military personnel were well

skilled. The agrarian reforms initiated from the mid-18th century would not have been possible without maps, and the same was true of early industrialization and urbanization. Finally, the consolidation of the nation-state and the rise of nationalism led to an increased demand for maps of the kingdom; few national attributes were as symbolic as a national map.

The maps to be produced by the survey officers were to be prepared in a systematic and scientific manner. Since the late 18th century, the Royal Swedish Academy of Sciences had been conducting geodetic surveys in line with similar work abroad, albeit France had long been the leading pioneer in this area. Professor Jöns Svanberg from Uppsala University carried out measurements in northern Sweden, which attracted international attention. But this type of work was resource-intensive, not least in terms of staff, and hence difficult for the Academy of Sciences or the University to muster. But there was a practical and pragmatic solution to this problem in that geodetic work was a prerequisite for the production of accurate maps. Following the establishment of the Military Survey Corps, officers with expertise in subjects such as mathematics, astronomy, reconnaissance, etc., could be set to this kind of work. Sven Widmalm argues that the Corps was formed in response to the needs of the Academy of Sciences for "scientific craftsmen".<sup>7</sup> Under the guidance of an academician, the Corps' officers would be able to carry out advanced measurements of the kingdom.

The Military Survey Corps initially consisted of 14 officers, and its permanent cadre never grew much larger than that. Tibell was appointed as its first Director. Under him, there were two majors, each of whom was in charge of a brigade within the corps. Below them, in turn, were two captains, six

lieutenants and three second lieutenants. In addition to the officers, a professor – in the early years Jöns Svanberg – and a secretary were also included. When too many of the staff were unavailable, not least during war-time, other army officers or land surveyors could also be commandeered as survey officers. In addition, army officers could opt to serve in the corps as a form of internship for a few years; this practice became formalized in the 1820s.

Half of the original personnel came from Finland. These officers had relevant knowledge of Finland's geography and terrain, and, in several cases, also had long and solid experience of mapping activities in this strategically important part of the kingdom. During the 18th century alone, Finland three times served as the main battlefield between Sweden and Russia (1700–1721, 1741–1743 and 1788–1790), making it for a long time the site of the most extensive military mapping. Following Sweden's loss of Finland to Russia in 1809, the Corps' brigade division quite naturally was disbanded. However, the Swedish-Russian peace agreement gave Finnish officers the right to choose whether they wanted to move west and continue their service in the Swedish army or remain under Russian sovereignty, and many chose the former. To mention the Corps officers that will occur in this article, Odert Albrekt Gripenberg, Ulrik Thersner, Wilhelm Maximilian Carpelan, Johan Henrik Lemke, Odert Henric Gripenberg, and Ulric von Konow were just some of the Corps' officers who came from the eastern part of the kingdom, whereas Georg Henric Melin, Johan Peter Lefrén, Carl Akrell, Carl Gustaf Forsell, Johan Georg Nisbeth, Carl Gustaf Blidberg, Israel Ekenstam, Per Adolph Blom and Johan August Hazelius all came from what is today's Sweden.

A significant amount of expertise was necessary to be part of the Military Survey Corps. In its early years, all of its officers came from a military background. Gradually, however, personnel with solely academic qualifications, could also be engaged. Prior to admission to the Corps, these individuals had to receive an officer's commission in one of the regular army regiments. A combination of high competence and drive meant that several of the survey officers achieved great success in their careers. High-ranking positions and opportunities for promotion within the Corps were few, not least because many of its officers stayed in it for a long time – sometimes their entire careers. In contrast, the picture was completely different when it came to the possibility of reaching higher service grades. No less than five of the officers who joined the Military Survey Corps' first cadre attained the rank of general and four became colonels.

1811 saw a major reorganization of the Military Survey Corps as it was merged with the Fortification to form the Engineer Corps (*Ingenjörskåren*). One reason for this was that the Fortification was outdated and inefficient, and therefore needed to be reformed; another reason was that the country had to make severe budget cuts as a result of the expenses incurred in recent wars. Merging the two corps would also create a more efficient organization, enabling both specialist competencies to operate in each other's field if necessary. The Engineer Corps borrowed the Military Survey Corps' model, which had proven to work well. From the start, however, some dissatisfaction with the new arrangement arose, especially as some of the survey officers acted forcefully on the establishment of the new Corps. The requirement that its officers – and not least its commander – had to cover such a large area of expertise risked a decline in quality

of specialist knowledge and work quality. In other words, both specialist competencies risked becoming diluted. Twenty years later, this issue resurfaced as a reason to divide the Engineer Corps into two separate corps. Another reason for such reorganization came from a completely different direction. The Command of the Armed Forces wanted to draw the survey officers closer in, given their importance in military planning. A reorganization was thus implemented in 1831, as the survey officers left the Engineer Corps for the then established Topographical Corps. (In 1873, another step was taken towards linking these officers to the military command, when the Topographical Corps became part of the then newly established General Staff.)

## Operations in war

Gustaf IV Adolf managed, for a long time, to keep Sweden out of the major European conflicts that raged from the end of the 1700s. On the one hand, there was revolutionary France, which he deeply detested. On the other, there was Great Britain, with its aggressive behavior towards international shipping, including against Swedish ships. This led to the signing of an alliance of neutrality between Sweden and Russia in 1800 to secure the shipping of these countries, and Denmark and Prussia soon joined in. However, five years later, alarmed by Napoleon's actions in the German states, the king broke the alliance and joined the British-led coalition against France. In October 1805, he declared war on France, and Swedish troops were transferred to Pomerania – at the time subject to the Swedish crown.

No sooner had the Military Survey Corps been formed than Tibell himself and several of its officers were ordered into the field. The war in Germany took place partly on

Swedish soil, in Pomerania, and the terrain was thus well known to the armed forces. This meant that the survey officers did not have to spend as much time and effort on producing maps of the area. They were deployed to the staffs in order to assist the commanders with intelligence and advice, and some of them were also placed in Head Quarters. Tibell himself was appointed Adjutant General and Quartermaster General of King Gustaf IV Adolf, and after the King returned home, one of Tibell's brigade commanders, Henric Georg Melin, became Chief Adjutant to the remaining Swedish Governor General.

The war in Pomerania, which ended in 1807 in Swedish defeat,<sup>8</sup> was the first of five that Sweden was involved in at the beginning of the 19<sup>th</sup> century. Almost at the same time as hostilities ended in Pomerania, Russia and France also signed a peace treaty (Tilsit 1807). In it, Russia undertook to force Sweden into the continental blockade against Great Britain, and shortly thereafter the Danes, too, made the same promise to Napoleon. During the winter of 1807-08, Sweden faced an ultimatum – accept Danish and Russian demands or be forced into war. However, the Swedish king remained reluctant to accept a rapprochement with France. In February 1808, Russia attacked, and a month later Denmark/Norway did the same. For almost two years, the Swedes were forced to fight two wars, on two, potentially even three, fronts, the most serious being in the East. In September 1809, as already mentioned, Sweden was forced to surrender to Russian superiority. In the peace that followed, the entire eastern half of the empire – Finland – was ceded. It was a third of the kingdom's territory and a quarter of its population.

At the beginning of 1808, as Russian troops massed on the Finnish border, four survey officers were ordered to go to Finland to par-

ticipate in the defense preparations for the war that now seemed inevitable. The officers were the commander of the Corps' eastern brigade, Odert Albert Gripenberg, who was accompanied by Lieutenant Johan Henrik Lemke, and two sub-lieutenants Odert Henric Gripenberg and Ulric von Konow. When war broke out in February, a number of additional Corps officers were sent, supplemented by specially commanded army officers. One of these was Wilhem Maximilan Carpelan, a lieutenant in the Björneborg Regiment who had briefly served in the Corps before the war. Another was Johan Jacob Burman, who lacked this background but, as he belonged to the Savolax Brigade, he had good knowledge of the part of Finland most vulnerable to a Russian attack. The Savolax Brigade was an elite unit and Burman was in many ways a competent officer. He also spoke not only Swedish and Finnish, but Russian too. Further to these Finnish units, additional reinforcements also came from a completely different direction – the civilian Land Survey. In the summer of 1808, for example, the Åland surveyor Granell assisted the Coastal Army with reconnaissance and mapping for military operations.

The war in Pomerania had taken the form of a continental war typical of the time, i.e. with large forces operating over extensive, usually flat and fairly open areas. But the possibilities for movement, combat, logistics, and more, could look completely different depending on the precise theater of war. There were very significant differences between the northern parts of Germany and the largely desolate, forested, road-less, sparsely populated North. It was in this environment that the survey officers now had to reconnoiter and supply the Head Quarter with maps and advice.

Survey officers were also sent to the Norwegian border and to the province of

Skåne in the south, and their duties were of course the same as those of their colleagues in the eastern half of the kingdom. But for them, the preconditions for their work was in parts quite different from on the eastern front. The war against Denmark/Norway only took place in the west, mainly on the Norwegian side of the border. Naturally, there were not as many maps of Norway in the Swedish Armed Forces as there were of Finland and Skåne, and a group of survey officers was therefore given the task of compiling a new one on the basis of older maps and information collected through reconnaissance. The latter was, of course, a difficult task given that they were now in enemy territory. Not only was the mission downright dangerous, the officers could not count on help from the local population for information gathering.

When the two wars broke out in the winter of 1808, they seemed equally serious for Sweden. Russia was undeniably a stronger enemy than Denmark/Norway. In a move that may seem ironic with hindsight, a French force under Field Marshal Jean Baptiste Bernadotte was dispatched towards Denmark with the goal of entering Sweden from the south, in Skåne. The French force was never deployed, and it soon became clear that the war in the east comprised the gravest danger for Sweden. Conducted entirely on Swedish territory, it was costly in terms of both human lives and resources. Indeed, this war came to be about the kingdom's very existence. In the spring of 1809, Russian troops even landed in Grisslehamn, not far from Stockholm. However, it was in Västerbotten, in the north of Sweden, that the last, crucial battles occurred some months later. This gives us a reason to take a closer look at the role and contribution of the survey officers in the Finnish War. Another reason is that there is simply far more source

material from this war than from any war that Sweden has ever fought. The survey officers left reports, letters, journals, reconnaissance maps and war plans, and, in some cases, more personal writings such as memoirs and commemorative pamphlets.

To plan the conduct of operations, commanders on the various staffs must have access to different types of information and here the survey officers played an important role. Maps and other information about terrain, topography, settlements, roads and water, etc., were simply a necessity when planning logistics, transport, marching routes, camps, medical care – and of course combat. Information about altitude conditions was, furthermore, of fundamental importance to mobile artillery, a central element of the new warfare, but equally for the Army's movement in general. This can be exemplified by the following quotation from Carl Fredrik Akrell's book *Om Reconoseringar* (1813):

An inclination of one foot in 12 can be possible to pass without difficulty with ordinary loads; But it is difficult to make a violent cavalry shock without the death of several horses.

One foot in 5 can be manageable with much difficulty with an ordinary cannon drawn by horses. A cavalry shock downhill is impossible.

[...]

One foot in 2 cannot be manageable by artillery or cavalry; the infantry may possibly hold ranks and straights...<sup>9</sup>

The survey officers brought maps with them, when they existed. But sometimes there was a lack of useful maps of relevant areas. Sometimes a certain type of information was missing from them. In addition, commanders needed access to current situation reports. For example, transport and cruising

opportunities were affected by the weather, and food supply depended on what could be stored from previous harvests. In addition, of course, the military command required information about the enemy's whereabouts, and that too was part of the reconnaissance. Of course, this part of the survey officers' tasks involved particular risks. For example, in July 1808, Carpelan came very close to being taken prisoner by Russian Cossacks. A Russian engineer captain had not been so lucky a few months earlier. In May 1808, the Commander-in-chief in Finland, Mauritz Klingspor, reported to the king that a Russian had been captured by the Swedes in the act of reconnaissance, and was now being sent under guard to Stockholm. In other words, this was not just any prisoner of war.

In order to assist the military command with advice, reconnaissance was not only required for measuring and reading the landscape. It also required an analytical capability based not least on tactical and operational competence. This applied to the reports and journals written by the survey officers, as exemplified by the journal of Odert Albert Gripenberg, who was stationed at the Head Quarters of the First Brigade. There he puts emphasis on the importance of the supply. During the retreat from the initial Russian attack, the brigade had to take a

Winding road along the old country road; partly to make room for the night quarters [...], partly also to be able to march speedily with an amount of supply that grew in size every day.<sup>10</sup>

In other words, heavy – but indispensable – carriages slowed down the retreat, the brigade could not take the fastest route on the map.

In addition to the task of assisting the military command, the survey officers also collected information about the war for later use in writing the history of the war.



role. As Bernadotte accepted this, he in fact became the country's actual regent.

In 1812 Karl Johan, which became Bernadottes new Swedish name, initiated a new foreign policy line in the form of improved Swedish-Russian relations with the goal of taking over Norway from Denmark. This led to two more wars. At the beginning of 1813, Karl Johan brought Sweden into the sixth coalition against France, his allies having promised him in return that they would thereby support the Swedish claims to Norway. Later that year, he himself came to lead the Northern Army's efforts in the war on the continent. Even before it was over and France was finally defeated, he turned north again and, in the peace treaty of Kiel on January 14, 1814, forced the French-allied Denmark to cede Norway to Sweden. As the Norwegians instead declared their independence, Sweden attacked in the summer of 1814. After only a couple of weeks of fighting, Norway was defeated and forced into a personal union.

When Karl Johan began his preparations for a war against Denmark/Norway, Johan Petter Lefrén was appointed staff adjutant in the army that was being drawn together in southern and western Sweden. However, a Swedish attack did not take place on that occasion. Later on, as the French emperor again attacked Swedish Pomerania, several of the survey officers were commandeered to the Army, now gathered in the province of Blekinge. One of them was Johan Georg Nisbeth. In April 1813 he was ordered to collect from the Military Archives the instruments and maps relevant to the coming campaign. The Corps thus prepared for war, and its personnel was now almost in its entirety placed in the various staffs. Nevertheless, the Chief of Staff in Stralsund, General Carl Johan Adlercreutz, warned that there were too few survey officers whilst their army col-

leagues, temporarily appointed during the war, were not competent enough. This, he said, could have very serious consequences. Another danger, he argued, was that the Corps' officers would now not be solely devoted to reconnaissance and surveying tasks. Following the 1811 reorganization of the Corps of Engineers, its two specialist corps were, as mentioned, expected to cover each other's tasks if necessary. This was also the case to some extent during the war in Germany. Carl Akrell, for example, also took on fortification work. However, there is no empirical evidence that the lack of survey officers in the Swedish army did indeed become problematic. Regardless, the war ended in an Allied victory over the French.

After the Norwegian declaration of independence in 1814, the Swedish armed forces again gathered for war. As before, survey officers were now included in all army staffs to assist with their usual duties. Indeed, one of them, Lefrén, drew up the plan for the entire army operation.

## Major mapping projects, special assignments and individual initiatives

In peacetime, most of the survey officers were assigned to map the kingdom. This work could take the form of larger, multi-year projects, or smaller, more limited ones. Likewise, the end product could vary. In some cases, it was a matter of ready-made maps, in others of a basis for different types of work.

Drawing up maps consisted of a number of different steps, depending on the intended end product. Maps of various kinds (not least geometric ones from the Swedish Land Survey), statistics, and other materials were collected as a basis for new maps and a written description of military geogra-

phy. Existing maps were copied and adapted to specific, defined scales. Following initial reconnaissance, signal points were designated, i.e. places out in the landscape that were clearly visible from a distance and from which the survey officers could then triangulate. Astronomical measurements, led by the Corps' professor, pinpointed particular locations with precision. In order to fill a map with content, more accurate reconnaissance was made, which was rendered in so-called reconnaissance maps. The field work was carried out primarily during the summer months. In winter, in what must have been rather dim light, reconnaissance maps, concept maps, etc. were compiled into comprehensive, finished maps. From 1826 map engraving was also carried out within the Corps.

When the work of mapping the kingdom began, efforts were made mainly in its western half. (Systematic mapping projects had already been carried out in the eastern part by the so-called Finnish Reconnaissance Agency, *Finska rekognosceringsverket*, an institution, which was closed down in connection with the establishment of the Military Survey Corps.) The work had to be done according to the latest scientific methods, entailing a completely new element of thoroughness. To produce an accurate national map, systematic, trigonometric observations were required, and the Stockholm Observatory was taken as a starting point – the only geodetically precisely located position in the kingdom, and also centrally located in it. From this point, a first triangular chain was to be measured between Stockholm and Uppsala, a second between Stockholm and Turku and then on to the Russian border, and a third between Stockholm and down to the Skåne coast from where Denmark could be seen. Chains two and three could then be linked to Russian and Danish correspond-

ing measurements, respectively. The work was led by the Corps professor and the advanced (and often expensive) instruments needed were borrowed from the Academy of Sciences. In other words, this was scientifically-based work.

Besides these triangular chains, the mapping activities of the Military Survey Corps during its first years was largely affected by military needs. This was particularly true of the two major mapping projects that were carried out in the north and the south. One was motivated by the loss of Finland, the other by the new political agenda driven by Karl Johan. The war against Russia in 1808–1809 resulted in a new border between Sweden and Russia, now along the Torne River which, even after the peace settlement, the Swedes still saw as a threat. This meant that the northern province of Västerbotten, which had been relatively secure against aggression before the war, now gained fundamental strategic importance. An extensive mapping project of this part of the country therefore started in 1810. In a letter to the king, Acting Corps Commander Georg Henric Melin suggested where and why this work should begin.

As the Umeå River is the first location the Swedish Army can hold in the event of an enemy incursion, and the area around Umeå should draw its attention, with regard to operations from land and sea, I dare humbly to suggest Umeå as the starting point from which the reconnaissance carried out this year should begin and continue to the north or to Piteå.<sup>11</sup>

As a result of Karl Johan's new foreign policy, work in the north was brought to a stop. Improved relations with Russia and the goal of taking Norway from Denmark meant that Skåne instead came into focus. In 1812, what was to become the most extensive of

all the survey officers' projects began: work on the Skåne reconnaissance map. It lasted for eight years, during which time a large part of the landscape was covered. The result was a detailed, high-quality map and a thorough description of military geography.

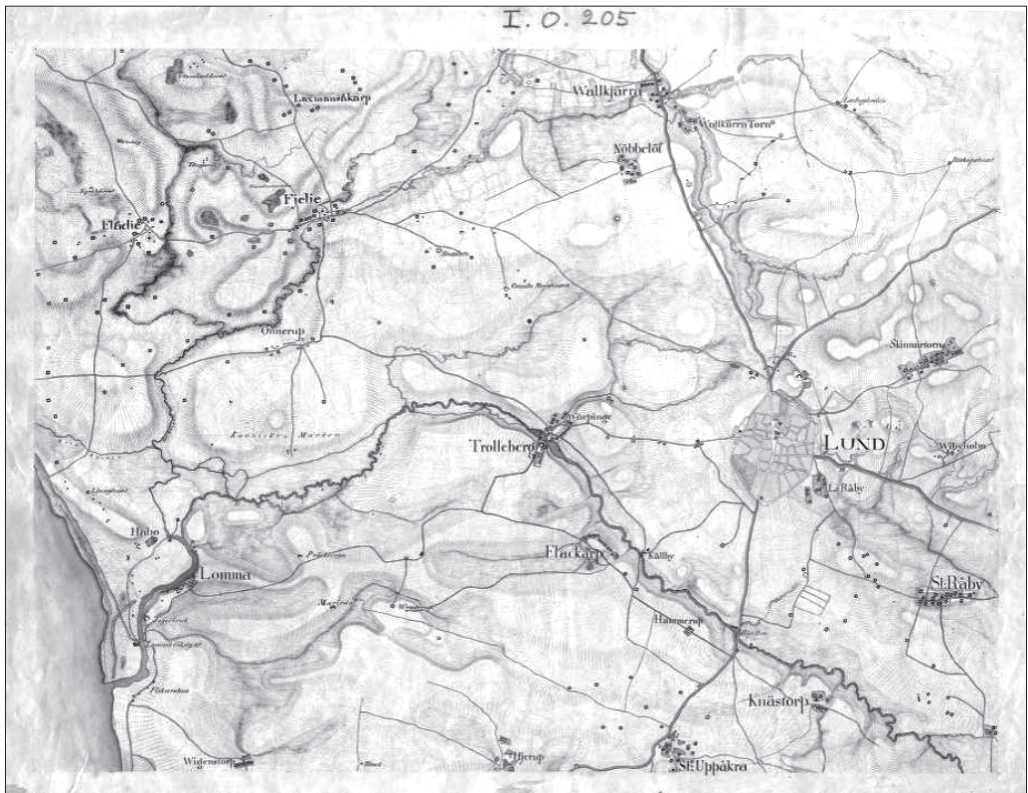
The instructions issued prior to the reconnaissance in Skåne emphasized the importance of the overall forms of the landscape being reproduced as accurately as possible. In addition, a number of specified items had to be included. Phenomena such as peaks, hills, valleys, lakes, streams were to be reproduced, and their names inscribed. But in addition, the maps had to contain information about this from aspects such as transport, supply and defense possibilities. A watercourse, for

example, was not just to be drawn to display its shape. There must also be information about the nature of the beaches, water height during different seasons, wading depths the strength and nature of existing bridges, water depth in relation to...

"boating, or floating, etc., which may be of some influence from an economic and especially military point of view."<sup>12</sup>

Although the mapping of Skåne was initially motivated by Karl Johan's military plans, the information was not solely useful in military planning. It was also important for trade, economic and social development.

In addition to these projects, which ultimately aimed at mapping the entire country as a whole, some of the survey officers



*Illustration from the Scania Reconnaissance Map. Image source: The Swedish National Archives, the Military Archives: Topografiska kåren, Skånska rekognosceringskartan, C 14 a. IÖ 205.*

were also given more specific assignments. One was the new demarcation of borders resulting from the peace treaty with Russia in 1809. In 1810, Ulrik Thersner was appointed to the boundary commission comprising participants from both countries. During this summer, they measured and drew the new route in detail. The work began at the Norwegian border, and continued in a thorough and systematic way down the Torne River towards the Baltic sea.

A second, more limited assignment concerned the construction of a new canal, the Göta Canal. King Gustaf IV Adolf decided this work to connect the east and west coasts of what was then the western half of the country should begin in 1807. The aim was to create a good transport link for civilian and military traffic. Prior to the start of construction, extensive investigations were required into terrain, ownership and so on. Carl Gustaf af Forseel was part of the investigating group and from the beginning of 1808 he carried out measurements of the proposed canal area. He and his brother Jacob also compiled a map of the entire planned canal in the winter of 1808-09. Following its presentation to the Parliamentary Estates, it was decided that construction should start. When it began in 1810, another two survey officers, Carpelan and Carl Gustaf Blidberg, also came to participate in the work. The completed canal was eventually run by a limited company, of which Carl Gustaf af Forsell was a member.

The Corps was also engaged in road construction. Canals were seen as the great future potential in terms of transport routes, and for economic reasons, road construction in general came to a halt in Sweden during this time. But in some places, mainly in the northern parts of the country, where roads were few and had become of great strategic importance after 1809, new roads were des-

perately needed. Some similar cases arose further south as well. In 1811, Israel Ekenstam was commissioned to draw up the course of a new road in the provinces of Värmland and Jämtland, bordering the part of Norway Karl Johan hoped to gain. The lack of road network there had also proved very problematic during the war against Russia, when the Swedish army struggled to get reinforcements from the western front up to Västerbotten. Some years after the establishment of the Swedish-Norwegian Union, Carpelan, too, came to work on preparations for road construction. In 1825 he and a Norwegian survey officer were ordered to reconnoiter ahead of the construction of a road between the two halves of the Union. Since Sweden and Norway had completely separate armed forces – only the Commander-in-chief was mutual – Carpelan handled the Swedish side, and his colleague the Norwegian side.

Another special assignment concerned a completely different part of the country's communications network. At the end of the 18th century, the French innovation of optical telegraphy, designed by Claude Chappe, was introduced in Sweden. In 1795 it was decided that a telegraph line stretching from Finland to Stockholm would be built. This was mainly motivated by military needs. In the event of war with Russia, news had to travel fast to Stockholm. However, the new communication line did not work as well as was hoped for and expected, not least due to lack of maintenance. When the Russians attacked in February 1808, for example, it took a full 13 days for the news to reach Grisslehamn. This prompted the king to make new investments in telegraphy, now also along the Swedish east coast. When the war ended the following year, this work was stopped. But in 1811 further new initiatives were implemented, this time by Karl Johan. Prior to his planned war against Denmark,

he decided that a new line should be built along the southern coast, and survey officer Per Adolph Blom was ordered to determine where the telegraphy stations should be built. Already in the same year, this project also came to a halt. (Although developments in Swedish telegraphy did not stop completely they did not have a major impact until another couple of decades later.)

Survey officers were employed to work on the Boundary Commission as well as reconnaissance and measurements for the construction of the Göta Canal, new roads and a telegraphy network. Further, some of them also took individual, private initiatives to produce maps and similar work. In 1811, for example, Carl Akrell compiled a road map of the kingdom, *Karta öfver landsvägarna i Sverige*. The work was approved by the Corps commander, but it was carried out under completely private management. Akrell compiled, drew, engraved and had the map printed for sale. It not only showed every highway in the country, but also provided written information about distances and tariffs for transportation costs. In addition to this project, he also engraved the work of others, not least of some of his Corps colleagues.

Two other individual initiatives were taken by Carpelan and Thersner, both of whom were highly skilled draftsmen. After war with Norway ended in 1814, Carpelan became aide-de-camp to the Swedish governor who was stationed in Kristiania (today's Oslo). During his command there, he took the opportunity to draw its various landscapes – this was done completely outside the scope of his official service. The result was collected in a beautiful pictorial compilation *Voyages pittoresques des Alpes Norvégiennes* (1821-23), which was published in the early 1820s. Similar work was done by Ulrik Thersner, who designed and published *Fordna och*

*närvarande Sverige* (1817-67), a kind of late equivalent of Erik Dahlbergh's illustrious *Suecia Antiqua et Hodierna*. Carpelan, too, came to participate in this work, and Akrell was hired to engrave it.

## Teaching and nationalism

During the 1800s, developments occurred in Sweden towards increased professionalism of a number of occupations, such as doctors, architects, lawyers and engineers. Sociologists Kerstin Svensson and Lennart G Svensson call this historical period *classic professionalism*. It was characterised by the fact that many of the occupations in question had long required extensive academic education, and this, in its turn, brought high status to its practitioners. Within these occupations, there were common norms and uniform methods, but also increasing specialization.<sup>13</sup>

As for the Swedish officer corps in general, it was not until the mid-1800s that formalized education was a prerequisite for all positions. Until then, nobility and financial resources were often more important. However, four groups within the Army corps stood out from this pattern. They were the fortifications men the artillerymen, the officers of the navy, and – from 1805 – the survey officers. In these branches, the need for expertise had long been important. But until the beginning of the 1800s, there were no guidelines for what this education should look like. In other words, it was not offered in a systematic, standardized way in established educational institutions.

In order to be admitted to the Military Survey Corps, an applicant was required to present some form of degree. For many, this meant an officer's degree from Karlberg War Academy with excellent grades. Others had academic degrees from elsewhere. Regardless,

the newly admitted staff also had to attend courses given within the Corps in subjects relevant to cartographic work, such as mathematics, geometry, landscape and perspective drawing and map drawing, as well as war studies subjects such as strategy, tactics, fortification, artillery. The teachers were the professor of the Corps and some of the senior officers. These courses were not only attended by junior staff, other Army officers could also attend.

In 1812 an institutionalized high school was established within the Engineer Corps. Lefrén, who for several years also served as a teacher at Karlberg, was appointed its Director. His instructions stated that his first duty was to "instil in the students the industriousness, the love of the sciences, and the conviction and their exclusive necessity for engineers of all branches of the Corps."<sup>14</sup> In other words, scientific competence were requirements for the professional position. It was also emphasized that the teachers' work must be based on their love of the motherland, their respect for the sciences, and respect for the young men who could become staff officers through this training. The curriculum offered at the Engineer Corps High School comprised specific content taught according to certain methods. The subjects were broadly similar to the teaching conducted within the Military Survey Corps, although greater focus was now placed on the fact that all personnel in the merged corps would now be able to work as both survey officers and fortifications men. Again, other Army officers, too, could attend the courses offered at the school. In other words, it began to contribute to the professionalization of the Army in a broader perspective as well. A few years later, in 1818, another important step was taken in this direction, but not under the auspices of the Engineer Corps. The establishment of the Artillery High School

in 1818 codified that all future staff officers must undergo higher military training, and more precisely the one provided at this school.

Lefrén later became the Director of Karlberg War Academy. He also became involved in school issues at a more general level – not just those relevant to military training. Public education was close to his heart. In the mid-1820s, he was appointed one of the members of a large teaching committee, which was appointed to investigate modern pedagogical methods and school forms. He wanted to modernise education and was a strong advocate of mutual instruction and the primacy of modern languages over classical. He sought a more humane approach to educational work and wanted to reduce the elements of coercion and punishment. He was one of the originators behind the establishment of a new school in Stockholm, *Nya Elementar*, where these new, modern ideas were to be tested. Lefrén also wrote extensively, and made a name for himself as the author of *Föreläsningar i fortification vid kongl. Ingeniör corpsen* (1817–1817) – a three-volume work on war studies.

Lefrén was not alone in teaching or conducting pedagogical work outside the Corps' own framework. Several of the survey officers had such assignments and, like him, taught at the Karlberg War Academy. Others, such as Carl Akrell, served at the Artillery High School. Akrell also published several textbooks: *Principer i landskaps teknik* (1803), *Föreläsningar i Fortifikation. För kadetterne vid kongl. krigsakademien* (1811; not to be confused with Lefrén's work with a similar title), and *Om Recognoseringar* (1813). Lefrén and Forsell both served as private tutors to Crown Prince Karl Johan's son, Prince Oskar. Odert Henric Gripenberg, after completing his service in the Corps after the end of the war in Finland in 1809, established his own school, and around the same time a similar

initiative was also taken by Ulrik Thersner. The somewhat later Johan August Hazelius should also be mentioned here. Hazelius was strongly influenced by Lefrén, not least in terms of school and pedagogical issues. In the article "Om blivande officerares utbildning" (1824), he pleaded for the establishment of a Military Academy and that part of the officers' training should be undertaken at universities. He served as a teacher at both the Engineer Corps High School and the Artillery High School, and from 1831 ran his own school for line officers.

Finally, something should be said about the connection between the survey officer's pedagogical work and the growth in Swedish nationalism. Several of these officers were involved in various national movements, most notably the *Götiska förbundet*, which was founded at Uppsala University in 1815. For a long time after the peace-settlement with Russia in 1809, there was a strong desire in these movements to try to regain the eastern half of the kingdom. However, these claims were not supported by the survey officers, which can probably partly be explained by Crown Prince Karl Johan's new foreign policy line from 1812. Serving in the Army, it would hardly be a wise approach to talk about Swedish revenge and war against Russia at a time when the country's Commander-in-chief and actual ruler had adopted a more amicable attitude towards the former enemy.

Instead, their patriotic commitment took other forms. Efforts within the field of education and training was one of them, aimed at forming new generations not only of competent officers, but also of subjects loyal to the motherland. Love for the nation could also be spread through art and maps, and this was a driving force for Carpelan and Thersner, among others. Finally, articles were also written on the subject. In 1820, Lefrén published "En krigisk nationalanda",<sup>15</sup> in

which he combined nationalism with the need for strong armed forces. In order to ensure the self-preservation and happiness of a people, one must, he argued, connect with the kingdom's Gothic heritage, that is, the warm love for honour and the motherland, loyalty to its rulers, "manly" honesty to friend and foe, and a loathing for a weak way of life. But, he continued, one must also include "European refinement" in the equation, i.e. scientific enlightenment. A good, theoretical, and practical officer's training program was thus necessary, and not only that. Subjects of war studies should also be taught in all high schools, i.e. not only at military institutions. This knowledge, he argued, was also important for civilian offices.

## Conclusion

The establishment of the Military Survey Corps in 1805 occurred at a time when maps were becoming increasingly important in a variety of ways. Organized mapping activities and the explicit requirements for competence that the Corps' officers had to live up to were thus a response to the needs – both civilian and military – that existed. But at the same time the Corps cannot be considered within a vacuum. France and the newly established Italian republic offered good examples of how mapping could be organized and carried out methodically, and this was taken as a model for a similar Swedish solution. Knowledge of what was happening in the armed forces of other countries could be acquired through literature or a period of service abroad. Gustaf Wilhelm af Tibell's experience as Director of the Italian topographical corps naturally played a major role in this. Both he and others had already advocated a similar corps or a military archive even before his time abroad. In other words, the activities of the Swedish survey

officers were organized on the basis of a variety of needs and the French/Italian example.

But what did this organization imply? And what did the Corps and its personnel actually achieve?

In war, their main tasks were acting as topographers, supplying intelligence, and advising. Their maps and reconnaissance skills linked to tactics, operational skills and so on made them indispensable to the commanders, which is why survey officers were present in all staffs. In the war against Norway, it was even one of these officers who set up the actual plan of attack. In peacetime, the systematic mapping of terrain, topography, infrastructure, but also of population, livelihoods and production was of fundamental importance for military and societal planning. Efforts to develop infrastructure benefited both the armed forces and civil society. The survey officers' maps of the kingdom made an important contribution to Swedish nation-building.

The task of collecting information and compiling the history of war was intended to help future officers learn from historical experiences. In other words, this was a kind of pedagogical task. And it wasn't the only one. The educational program conducted within the Corps was ambitious. Several different subjects were taught, also at an advanced level, and classes were attended by junior staff as well as other Army officers. This education – both within the Military Survey Corps and the Engineer Corps High School – can thus be seen as a contribution to the professionalization of the Army at a time when a thorough education was not yet compulsory for the officer corps as a whole. The educational assignments, the establishment of their own schools, school political and pedagogical commitments, and the writing of teaching materials were important, too, in this regard.

In summary, it can be stated that the survey officers played an essential role in Swedish military and societal development in the early 1800s. They met a number of important needs. Their specialized and high level of competence was a prerequisite for the activities they undertook, but many of them also exemplified considerable commitment and initiative. The fact that so many of them reached very high ranks within the Army can be seen as a proof of this. But not only these officers – a number of individuals – but also the importance of the organization of their work must be emphasized. The design of the Corps ensured a significant degree of specialization and continuity, but also flexibility. Its established requirements for education meant that these officers came to be known for their competence. The fact that a professor was included in it clearly shows its emphasis on scientific excellence and it was even possible to join the Corps with quite limited military experience, given that the applicant had an academic degree.

Due to the specialized skills and the status it entailed, many survey officers choose to stay in the Corps – despite relatively low salaries and the poor chance of promotion within it. The size of the Corps was quite limited. However, when needed, personnel from other branches of the Army could also be employed. In the 1820s, this practice was systematized, so that Army officers might be sent to the Corps for a number of years to develop their skills. As the Corps officers served on staffs in wartime, often at the highest level, this meant that some of them played important roles in military planning.

As noted in the article's introduction, there are significant parallels between French artillery engineers and Swedish survey officers in the early 1800s. Both corps had a high level of scientifically-based expertise; extensive qualifications was required for the per-

sonnel; many of the officers exhibited a substantial and broad commitment; both corps played a fundamental role in the warfare of the time. Ken Alder's work on French artillerymen shows that these French officers came to have a considerable importance – not only for the armed forces, but also for society. In a similar vein, I would argue that the Swedish Military Survey Corps and its officers, despite the fact that they were few in number, played a considerable role in their Swedish context.

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## Notes

1. The following works deal with survey officers specifically: Gussarsson, Maria: *Kartans makt i krig och fred. Fältmätarna, det nya kriget och samhällslig utveckling 1805–1831*, Nordic Academic Press, Lund 2022; Gussarsson, Maria: “I Napoleonkrigens periferi. Den svenska fältmätningsskåren och kriget med Ryssland och Danmark/Norge 1808–1809”, *Militärhistorisk tidskrift*, 2020; Gussarsson Wijk, Maria: “En fältmätningsskår i tidens anda” in Gussarsson Wijk, Maria; Höglund, Mats and Lundström, Bo: *Med kartan i fokus. En vägledning till de civila och militära kartorna i Riksarkivet*, Riksarkivet, Stockholm 2013; Lundström, Bo: *Officeren som arkitekt och konstnär i det svenska 1800-talet*, (Diss.), Uppsala University, Uppsala 1999; Widmalm, Sven: *Mellan kartan och verkligheten. Geodesi och kartläggning, 1695–1860*, (Diss.), Uppsala University, Uppsala 1990; Ehrensvärd, Ulla: “Fortifikationsofficeren som kartograf” in Runnberg, Bertil (ed.): *Fortifikationen 350 år, 1635–1985*, Fortifikationskåren, Stockholm 1986.
2. Alder, Ken: *Engineering the Revolution. Arms & Enlightenment in France, 1763–1815*, Chicago University Press, Chicago/London 2010 (first edition 1997).
3. *Ibid.*, p. 87.
4. *Ibid.*, p. 344.
5. van Creveld, Martin: “Napoleon and the Dawn of Operational Warfare” in van Creveld, Martin and Olsen, John Andreas (eds.): *The Evolution of Operational Art: From Napoleon to the Present*, Oxford University Press, Oxford 2010, p. 14.
6. This archive is today the Swedish Military Archives, which is now part of the National Archives.
7. *Op. cit.*, Widmalm, Sven, see note 1, p. 395.
8. A cease-fire was drawn in 1807. Formally, however, the war did not end until 1810. Sweden then regained control over Swedish Pomerania in exchange for joining the Continental System against Great Britain.
9. Akrell, Carl: *Om recognosceringar*, Stockholm 1813, p. 139–140. The quotation has been translated and slightly modernised by me.
10. The Swedish Military Archives (The National Archives): *Krigshandlingar 1808–1809*, vol. 256. Journal of O. A. Gripenberg, 18 March 1808. The quotation has been translated and slightly modernised by me.
11. The Swedish Military Archives (The National Archives): *Fältmätningsskårens arkiv, A.A.1.1*, Document no. 30, from Melin to the King, 19 May 1810. The quotation has been translated and slightly modernised by me.
12. The Swedish Military Archives (The National Archives): *Fältmätningsskårens arkiv, A.A.1.4*, Document no. 1, Instructions for Nisbeth, 25 April 1812. The quotation has been translated and slightly modernised by me.
13. Svensson, Kerstin and Svensson, Lennart G.: “Kontextuell professionalisering. Att studera professioner i historiska samhällskontexter”, *Tidskrift för professionsstudier*, vol. 16, no. 31, 2020, p. 85.
14. The Swedish Military Archives (The National Archives): *Fältmätningsskårens arkiv, A.A.3.3*, Instruction for Lefrén, 7 February 1813. The quotation has been translated and slightly modernised by me.
15. In *Kungl Krigsvetenskapsakademiens Handlingar och Tidskrift*, 1823.