

CHAPTER 1

Military Reforms and Upscaling: the Case of the Dutch State Army and Navy 1585-1621

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Abstract This chapter addresses how the reforms in the Dutch state army and fleet of the admiralties in the years 1585–1621 formed important incentives for an impressive process of scaling up, improved organisation and tactics, expanding their operations and regaining the strategic initiative against the Spanish Habsburg Empire. Its focus is on the supply side: logistics, finances and arms industry (trade and production). Thus, this chapter focuses on the material incentives and initiatives of the Dutch state authorities and merchant-entrepreneurs for executing these reforms and expanding the armed forces and its operations. The main conclusion is that in order to execute these developments, the influence of the Dutch state authorities on the supply side of the army and fleet was large. The Dutch state authorities took away bottlenecks for merchant-entrepreneurs in the arms industry, so that it could meet the challenges of the organisation, standardisation and increasing scales of supply. The impact on the Dutch economy was even larger: the Dutch state, their reforms and standardisation not only increased the firepower on land or at sea, but also provided continuity for merchants in overseas trade and shipping and accelerated their overseas activities.

Keywords: Upscaling · Military reforms · Standardisation · Arms industry · State · Eighty Years War · The Netherlands

Introduction

With the sudden emphasis on Great Power Competition and the associated threat of a large-scale near-peer conflict, one could almost forget that the period of relative peace in Europe after 1945 is quite unique in the history of the continent. Although historical examples and analogies cannot simply be translated into policy, the study of historical experiences and historical dynamics can provide insights that may help to address contemporary issues. This philosophy not only formed the basis of the discipline of International Relations, which bases theory formation on the study of primarily historical casuistry. In recent years, it has also become more popular in the discipline of history, while it has always played a role within the

armed forces. Do they not study their own and other people's experiences with the aim of drawing useful lessons from them? It would seem obvious then to look at recent experiences, and therefore at recent history. Nevertheless, the Pentagon's Office of Net Assessment commissioned a study of the Great Game decades prior to World War I, a period that seems to have some parallels with the challenges facing the United States today.¹ Despite the obvious differences between that period and today's, this study should provide tools for understanding the strategies the United States should adopt to hold its own against rivals such as China and Russia.

The dynamics of interstate rivalry are not limited to the present or to the period prior to World War I, however. They are perhaps one of the most characteristic aspects of human history, even though we have only been able to speak of states in the modern sense since the 19th century, just as the concept of strategy only became commonplace in that same century, although for a long time it was understood differently than it is today. With these caveats, it is also possible to look at even earlier periods. An additional problem is that for those periods the source material is often incomplete and a good understanding of them requires skills that the average policymaker or politician does not have. The past is not a can full of instant lessons. That said, it is nevertheless useful to look at the way in which the Dutch Republic in the 16th and 17th centuries held its ground in the international arena. It was never the dominant power, but managed, especially by cleverly using its own capabilities, to keep the great powers Spain, and later France and England at bay.

Sparked by several factors, various provinces in the Netherlands revolted in 1568 and fought a war of survival on land and in the coastal waters against the Spanish Habsburg forces. During a temporary treaty, the Pacification of Ghent in 1576, the Spanish troops retreated to the Southeast of the Netherlands, but led by the Duke of Parma started an offensive campaign in order to quell the rebellion. His campaign led to the return of the Eastern and Northern Netherlands to Spain in 1584 and the conquest of Flanders, Brabant and the important port city of Antwerp between 1576 and 1585. After the loss of Antwerp in 1585 and the wealthy provinces of Flanders and Brabant, the army and navy of the United Provinces faced a major challenge. How to regain the strategic initiative from Spain in order to develop a well-defensible 'garden' around Holland and Zeeland, the remaining economic core of the Dutch rebellion? This 'garden' comprised the Northern Netherlands bordering on the major rivers, including control of the Scheldt to the South, and including territories in the East up to the passages between the peat bogs. This would protect the start of a flourishing economy of these two provinces and the Republic would be better able to repel Spanish attacks.

The army and navy had to be scaled up and improve their capabilities in order to be able to take offensive action, i.e., sieges to reconquer lost cities beyond Frisia,

Utrecht and Guelders and blockades of the Flemish coast and Antwerp in order to deteriorate the trade and shipping of the Spanish Southern Netherlands. To this end, tactical and organisational reforms were implemented. Starting from a crisis, the United Provinces, since 1588 called the Republic of the United Netherlands or Dutch Republic, managed to gain all strategic and tactical goals until 1598, in which fortune of war also played a role. In 1589, the Spanish army in Flanders (*Armada de Flandes*) commanded by the Duke of Parma was ordered by the Spanish king Philip II to divert its attention away from the Dutch rebels and mount a major offensive against France.² Meanwhile, the Dutch offensive against Flanders and Brabant led to several victories (Nieuwpoort, Grave, Sluis), but Spanish counteroffensives conquered Ostend and reconquered several forts and cities in the Eastern part of the Netherlands. In parallel, the Dutch navy launched several expeditions together with the English navy and the United East India Company breached the Portuguese Empire in Asia. As the Twelve Years Truce intermitted in 1609, the Dutch Republic was consolidated and *de facto* recognised by its Spanish foe.³

Main question and framework

This chapter addresses the key role that the Dutch arms industry played during the Eighty Years War in order to expand the Dutch army and navy and build up their capabilities in the period 1585–1621. Its development was nothing short of remarkable. When the Netherlands erupted in revolt in 1568, there was hardly an arms industry in the Northern Netherlands. Eighty years later when the United Provinces gained their independence from Spain, they possessed a burgeoning arms industry and trade that supplied foreign and domestic demand, and comprised one of the largest markets for mass-produced goods in the Republic.⁴ The central question is how Dutch merchant-entrepreneurs built up such an extensive sector of industry in such a short period of time, between 1585–1621.

It is only possible to understand the development of the arms industry in the Dutch Republic within the context of the Republic's development and evolution as a state. The years 1585–1621 witnessed an economic expansion and boom in trade, military reforms under prince Maurice, the state's bureaucratic and military institutions were constituted, and the young Republic consolidated itself. Therefore, during the period under discussion entrepreneurial conditions for the arms trade and arms production were influenced to a large degree by three important, interrelated processes of state formation: economic growth, state administration and war finances, and military reforms.⁵

Economic growth

Within the process of accelerated economic growth, the rapid expansion of long-distance trade and fishing constituted a phenomenon of particular note. Shipping to Guinea, the Mediterranean, the East and West Indies, whaling in the Arctic Ocean and cod fishing off Newfoundland were among the most flourishing sectors in the years 1590–1621. Dutch merchant-entrepreneurs successfully managed to tap into all kinds of new overseas markets. Privateering and trade not infrequently went hand in hand. Soaring prices for colonial products were a powerful driving force. They were caused by Spanish confiscations in 1585 and 1595, a trade embargo by the Spanish king and increased protection and transaction costs for trade on the Iberian Peninsula and Italy.

The entire process of expansion took place in a short period of time, with opportunities for entrepreneurs to operate in new markets occurring in rapid succession. To be able to respond to these new developments, it was necessary to be able to deploy ships relatively quickly and efficiently. This also applied to entrepreneurs in the arms business. They had to deliver weapons and ammunition regularly and within a short time frame. That was rather important. Lane and Glete already pointed out that protection costs played a major role. Therefore, armament costs made up a substantial portion of total equipment costs. Even more than with the existing trade in Northern and Northwestern Europe, long-distance trade required not only larger numbers but also large and well-armed ships.

Extremely important, the five Admiralties, who were tasked with supervising the creation and staffing of a fleet, although not generally pursuing a broad policy of support, vigorously subsidized the particularly risky long-distance trade especially in new operations. They did so both through direct deliveries of artillery and ammunition and financial support for their purchase as well as through the convoying and protection of merchant and fishing vessels. Squadrons crossed in all kinds of sea areas for this purpose. The equipage costs in equipping ships could be reduced by all this. By actively supporting trade and shipping, the Dutch state kept its finger on the pulse and played a strong innovative role.⁶

State administration and war finances

In the Dutch Republic a decentralised system developed for financing and sustaining the war against the Spanish Habsburg Empire. Two considerations are important. First, 80% of all state expenditures were war expenditures, and thus state administration, organised on three tiers, on a general 'national' level, and provincial and regional/city levels were concentrated on collecting revenues for

financing war and paying war-related debts. Second, there existed no separate roles between the public and a private sector. Narrow ties existed between the state authorities and entrepreneurs in trade, shipping and industry. The decentralised system for pay and supply of the army and navy formed the Republic's backbone. Together with members of the provinces, the Council of State regulated military and financial affairs in the Republic: an annual budget of war expenditures (*State of War*) accompanied by a general request in the assembly of the States-General for a contribution to the provinces (*General Petition*). Each province had a set share (*quota*) in this annual budgeted war expenditure, depending on wealth and income for the next campaign season. The Provincial States and their deputies, who took care of the more day-to-day military and financial affairs, issued orders to the Receiver General and Receivers to pay the ordinary, specified war expenditures of companies of infantry and cavalry, officers' wages, ammunition and artillery, as well as expenditures on behalf of agents and ambassadors abroad and services of secret agents. Unexpected expenses, *extra-ordinary* war charges, were not immediately allocated to the provinces. In these cases, the States General had to consult the provinces on the allocation and distribution. The war fleet, decentralised in five admiralties (Amsterdam, Rotterdam, Zeeland, Noorderkwartier, Frisia), paid the majority of its expenses by the revenues of incoming and outgoing trade in their admiralty districts.

The Republic formed a voluntary alliance. In practice, therefore, the provinces were by no means eager to pay all expenses. In some cases, Friesland and Zeeland being examples, they refused to pay their full share of ordinary and extra-ordinary war expenses. As a result, the provinces were always running up larger or smaller arrears in their contributions. It constituted a structural problem. Funding basically constituted the Achilles' heel of the Republic. Fortunately, on the one hand, the wealthiest province of Holland contributed 58% of the war expenditures and via a stepped system of the Receiver-General of the States-General and Receiver-General of the State of Holland also the arrears and extraordinary payments were often covered by Holland. Consequently, the debts of Holland were far more than those of the generality or the other provinces combined. On the other hand, specialised merchant-entrepreneurs, the *solliciteurs-militair* and *solliciteurs* offered vast amounts of money in advance of later state payments to the captains and colonels of infantry companies, cavalry squadrons and regiments of the Dutch state army and captains of the Dutch navy. Furthermore, the Receiver-general of the States-General was fortunate to receive subsidies of tens of millions of guilders from England and France in the years 1585–1609 in accordance with alliances that paid for various expenses of the army and navy. Remarkably, these large flows of subsidies were taken care of by big merchant-entrepreneurs/financers that also operated in niches of the Dutch arms industry and trade.⁷

Military revolution

The broader context of the Dutch military reforms provides the link with increasing scales in army and navy and organisational innovations: the military revolution on land and at sea. First, there is the military revolution in land warfare as studied by Michael Roberts and Geoffrey Parker and many others: the rise of artillery and the *trace italienne* and the accelerated development of West-European armies in scale, firepower, tactical organisation and strategy in the 16th and 17th centuries.⁸ How did this development occur and why along these lines? What incentives do authors point to for this development? Tactical and organisational innovations led to greater discipline and firepower of the Dutch state army. Instruction books such as De Gheyn's *Wapenhandelinge* (1609) and officers spread the message of the exercise of arms across Europe, in particular in Sweden. The Dutch Republic and Sweden for a time became pioneers of these reforms in Europe.

Second, between 1450 and 1650, a revolution in maritime warfare took place. Jan Glete, John F. Guilmartin Jr., Carlo Cipolla and Nicolas Rodger wrote extensive studies about this process.⁹ It was characterised by fundamental changes in types of shipping and naval equipment, armament, and applied tactics. Around 1500 ships of two types dominated trade and warfare at sea, the bullet ship and the square-sailed caravel, suitable for navigation on the Atlantic Ocean, and the galley with oars and Latin or triangular sails that could sail with extreme agility on the Mediterranean. From the intersection of the best sailing and navigational characteristics of the caravel and the galley, the galleon was born in Portugal and Spain in the mid-16th century. The galleon became the archetype for all long-range expeditions: it could master the Atlantic and Mediterranean seas, contained enough lasts to carry vast stores of water and food, had an efficient rigging and combination of masts, latin and square sails, and was armed with guns at the bow and aft, and many on both boards. It not only formed the basic platform for armed merchantmen as war ships but continued to develop further. At the end of the process, naval warfare was dominated in the second half of the 17th century by the so-called ship-of-the-line and the application of line-ahead tactics in long-range engagements. Both Parker and Guilmartin argue that the Dutch war fleet played an important role in this transformation process through its introduction of new ship types (frigate 1627) and the first application of these new line-ahead tactics (Battle of Duins 1639).¹⁰ In order to apply the tactical implications of these reforms, the soldiers gained distinctive expertise and means of education, for instance the drill instructions book of Jacob de Gheyn, and efficiency in execution of expertise, for instance trained guncrews on board of ships, and permanence, for instance the Dutch admiralties and their tasks. However, especially during a phase of expansion of the state army and fleet between 1588 and 1621, these tactics could not be applied,

and organisational improvements could not take-off if material conditions were not met by the supply side of the Dutch Republic.

Tactical and organisational reforms, standardisation, increasing scales

In the war against the Spanish-Habsburg forces, the military reforms of the Dutch army and war fleet between 1590 and 1621 were of crucial importance. Tactical and organisational innovation resulted in the transformation of the state army into a disciplined and regularly paid force, through increased firepower and better logistical support. These reforms ensured that the state army was well equipped for the attack and defence in three forms of engagements in land warfare: sieges, skirmishes, and battles. The main focus of this military transformation was the development (or rather rediscovery) of new infantry organisation and tactics that manifested itself in conversion and volley fire.¹¹ The battle orders featured a block of pikemen. The musketeers and arquebusiers would fire and turn right by ranks of five to six men and march in succession to the end of formation through gaps six feet wide between formations. The succeeding rank of five to six men could step forward and then fire a salvo and repeated the movement to the rear. Thus, a unit of infantrymen in ranks on line could deliver rapid fire.¹² At the same time, the soldier's weapons changed or were modified. For the foot soldier, the arquebus was replaced by the more efficient musket, though pikemen still comprised as many as one-third of most infantry formations.¹³ Standardisation of firearms, ammunition and siege-equipment and fortification materiel proved to be another important development. By distributing models of firearms, pikes, and the like, and molds and standard pliers for casting bullets from the central warehouse in Delft to the regional warehouses, and the prescribed use of standard sizes in arms, the Deputies of the State colleges were able to purchase standardised sets of arms and ammunition. Similarly, models of pickaxes, spades, axes, buckets, barrages, baskets for field fortifications, bridge parts, standard palisades and the like for sieges and fortifications were produced for the central warehouse of the generality and other warehouses in the provinces.¹⁴

However, of more importance was the increasing scale. The logistical organisation of the provinces and generality provided for the growing need of siege, bridging and fortification materiel for the fast growing state army. In order to meet the growing demand of the army, the authorities affected the arms industry through distributing regulations (repartition system), by sending standardised units of arms and equipment (models), and by prescribing regulations for guilds to make the logistical system more efficient, but also fostered the integration of new companies into the state army. They were equipped with the same weapons as the older companies. It gave them the possibility to train them

quickly on new drills and tactics. It gave the units the same firepower, fighting power and made the formation of reserves possible and made it easier to build and train companies in larger formations. Standardised equipment also allowed trench systems, field fortifications, fortifications and army camps to be planned and set up more quickly and efficiently. Besides saving campaign time and logistical facilities, these innovations made siege campaigns more effective and increased the State army's chances of capturing even several towns or forts in a campaign.¹⁵

The Dutch Republic was confronted between 1585 and 1621 with a maritime challenge, as well. The growing number of Dutch trading vessels required additional naval escorts and the blockade of the Flemish coast required more provisions and more sail-ors. Increased naval assets were needed to attack enemy shipping, bases and islands in Spanish and Portuguese waters. Changes in weapons and tactics also presented the navy with challenges. A combination of short- and long-range weapons was considered essential. The increasing importance of cannon required heavier armament and another type of war ship. In particular, the number of heavier, long-range types per ship rose; these were more able to sink ships compared to the lighter anti-personnel, short-range cannon. Moreover, shipboard gun types became more standardised, while the number of medium and heavy ships of the Dutch admiralties increased. Within the shipbuilding sector, a process of standardisation came into being, in which the *jacht/yacht* and a new larger type of *spiegelschip/galleon*, acted as standard models for the new war fleet.¹⁶ These developments changed the Dutch war fleet into a better and more heavily armed force with greater firepower and enhanced logistical support.

Consequently, the new war fleet was just as capable of fighting at a distance as it was at close range. This fleet was equally equipped to conduct long-distance operations in the Atlantic as it was able to blockade the Flemish coast. Through the combination of increased firepower and new shipping types along the lines of the galleon, the Dutch took an important and decisive step in the gradual process of tactical transformation within Europe in the period 1450–1650, from ramming and boarding attacks to long-distance gunnery duels leading to boarding attacks. The beginnings of preliminary artillery duels with large artillery, antipersonnel artillery and then boarding are evident from Jacob van Heemskerck's Battle of Gibraltar in 1607, and the first line formations on successively firing from bow, port/starboard and stern in the 1620s with Piet Hein's tactics and Trump's line tactics at the Battle of Duins in 1639.¹⁷ In this, the Dutch played a leading role in Europe. The Dutch war fleet became a core force of specialised war ships, supplemented by hired and bought ships.¹⁸

The net-result of all of this was an enormous increase in the scale of war. Warfare changed as the number of sieges and long-distance operations at sea increased. Initially the growth of private enterprise also served the Republic's war aims. But the period shows that the State army and the State fleet both witnessed a marked increase in activity and radius. The army was involved in more sieges which in

turn required additional manpower, mostly garrison troops to hold captured towns and territories, a challenge which was solved in part through the use of militia in the rear to save professional soldiers. Likewise, the increase in the number of expeditions and the protection of the merchant fleet required greater numbers of sailors that could operate in European waters up to and including the Levant, Portugal, Spain, Baltic, etc. Beyond that, warfare in the Indian Ocean and Asia was outsourced to the East India trading company, whereas operations in the Atlantic were the remit of the West India Company, that also took to privateering. Naturally, the demand for war material grew with the increase in the number of troops and ships.¹⁹ Consequently, it became attractive for the Dutch Republic to found its own domestic production of war material. Both the standardisation of armaments, and the regular payment of wages and of war material created additional incentives for the growth of the arms industry.

Entrepreneurs and state authorities

As a link between demand and supply, the entrepreneurs were crucial. The multi-staged system of payments that the admiralties, the States-General and the States of Holland operated proved a vital link with the entrepreneurs. The increased demand stimulated trade and the production of war materials. It is clear that between politics and a small group of entrepreneurs a narrow cooperation developed, that proved to be profitable for both sides. The Dutch state authorities at local levels (provinces, towns, admiralties) removed several important bottlenecks for entrepreneurs: scarce and expensive raw materials, limited production capacity, scarce supply of skilled labour, endangered lines of supply by the enemy.²⁰ The measures they took entailed a regular supply of raw materials, diversification in the supply of raw materials, intensifying Dutch-Swedish relations that led to Dutch entrepreneurs producing arms in Sweden with immigrant craftsmen for export to the Dutch army and navy, offering a stable salesmarket by regular payments and by local merchants-officials-networks, and fostering an assembly industry.²¹ One of the most important activities was that the Dutch admiralties and provincial states supported the merchant-entrepreneurs by way of a regular supply of raw materials. They had enough fiscal revenues to create huge stocks of raw materials. This system of financing raw materials offered both parties major advantages. The manufacturers were no longer compelled to purchase raw materials on the market. This reduced entrepreneurial risks and lowered the costs of production and made the build-up of an arms industry possible. Maximum profits in the short term were exchanged for the build-up of more reliable relations with the government in the long term in order to optimise profits.

However, it was also very advantageous to the government. By stockpiling large quantities of saltpetre for gunpowder, for example, the Dutch government, army and admiralties were less affected by fluctuating market conditions, so in the end it was cheaper.²²

The sound supply of the state army and admiralties created a big store of standardised ordnance, equipment and warships. That store was deliberately used by the States-General and admiralties during the Twelve Years Truce to boost the Dutch expansion overseas. Subsidies in the form of warships, ordnance and equipment to the Dutch East India Company mounted up to 30% of the company costs of equipment. This grand scheme of support was repeated after the foundation of the Dutch West India Company in 1621.²³ Again, during three decades numerous warships and large quantities of armament and equipment heavily reduced the equipment costs of the company and their costs for maintaining troops overseas. The merchant marine involved in long distance trade was supported as well: every fourth man on an armed merchantman in the Mediterranean trade was subsidised and the admiralties loaned hundreds of guns and substantial quantities of ammunition and equipment.²⁴ The result was an increased continuity of the Dutch war effort and maritime expansion overseas. Moreover, this support, helped by standardisation, accelerated the arming and equipment of ships and made it possible for entrepreneurs to react quickly to changing market conditions, which, in turn, helped the Republic to hold its own against its rivals.

Conclusion

The Dutch state authorities took away bottlenecks for, and provided regular payment to, merchant-entrepreneurs in building up a Dutch arms industry that could meet the challenges of changes, standardisation and increasing scale of the supply of war materiel. In this way, the arms industry and military reforms on land and at sea created advantageous materiel conditions for an expanding army and navy and its increasing scales of operations and organisational innovations in the Dutch Republic during the Eighty Years War. The impact on the Dutch economy was even larger: the Dutch state, their reforms and standardisation not only increased the firepower on land or at sea, but also provided continuity, and possibilities for merchants to react quickly, in overseas trade and shipping.

Of course, conditions from the 17th century cannot easily be translated into policy advice of desirable courses of action. Nonetheless, it can be argued that the deep involvement of the developing state apparatus created the conditions both