

Introduction

...We have discussed the matter [the fortifications of Negapatnam] with those who well understand fortification and sent there the junior merchant Dombaer, a reasonably experienced theorist in the art, and lieutenant David Butler, a good practitioner...¹

Rijckloff Volckertsz. van Goens to Batavia, 1673.

Rijckloff Volckertsz. van Goens, formerly the Dutch East India Company's (VOC) governor of Ceylon had, by the fall of 1672 been appointed Superintendent and commander-in-chief of the VOC's establishments and forces in South Asia. A French fleet had anchored in Trincomalee on Ceylon and in July of that same year had sailed to São Tomé de Meliapur on the Coromandel Coast and taken the town. News had just arrived from Europe that the Dutch Republic and France were at war, spurring Van Goens to take another critical look at the disposition of the VOC's forces in the region. Negapatnam on the Coromandel Coast, taken from Portugal in 1659, was seen as a weak point and in need of new fortifications. Dombaer and Butler, together representing the commercial and military sides of the Company, were dispatched to Negapatnam to inspect the existing works and suggest improvements. Van Goens remarked to the Company's leadership in Batavia that he himself had drawn a possible new trace for the fortifications in their plan "in dotted lines."² Negapatnam would ultimately be refortified, but only in the 1680s, at the instigation of another fortification enthusiast, Hendrik Adriaan van Reede tot Drakenstein, empowered as the direct representative of the Company's Dutch leadership to inspect the VOC establishments west of Malacca. This episode draws our attention to the processes by which the Company decided to build fortifications, the process of designing

¹ NL-HaNA, 1.04.02, VOC, inv.no. 1288, fo. 365-366, missive from Van Goens to Batavia "wij hebben met die hen de fortificatie verstaan, alles overwogen en door heen derwaerts gecommiteert den ondercoopman Dombaer een redelijk ervaren theorist inde Cunste ende den luyttenant David Butler een goet practisijn"

² Ibid., "...ook met stippeltjes geteeckent hebben..."

these fortifications and their actual construction. As this example suggests, many of the individuals engaged in the design of fortifications were not, in fact, specialized military engineers, but rather amateurs, “experienced theorists or practitioners.” This is an interesting point, since much importance is attached to the role European artillery fortifications played in Early Modern European expansion.

The VOC plays a special role in this debate, since it built more fortifications over a much wider geographic scope than any of its rivals. The East India Company (EIC), focused in its territorial possessions on India since the 1680s, built fewer forts and would later focus its military energies on constructing a potent field force. The Dutch company would build fortifications stretching from the Cape of southern Africa to present-day Taiwan and from the island of Kharg in the Persian Gulf to the east of the Indonesian archipelago. All the same, the processes whereby the Company decided to build fortifications and the design process are poorly understood.³ The design of fortifications and the designers themselves are important, because the Company’s armed forces are at times taken as a proxy for “European” military capabilities to study the relative strengths and weaknesses of European and non-European military powers.⁴ It is then assumed that since the VOC’s fortifications seem to display the characteristics of European military engineering, they are truly representative and were built according to European designs.⁵

But did the VOC actually design its fortifications according to European standards? This question encompasses three sets of underlying questions. In the first place, could the Company actually acquire the know-how and technical experience to design complete European-style artillery fortifications to the same level of complexity as was customary in Europe? Secondly, did the Company consider this to be necessary, considering the different threat environment it faced? And thirdly, even if the expertise was

³ C. Duffy, *Siege Warfare: The Fortress in the Early Modern World, 1494-1660* (London: Routledge & Kegan Paul, 1979), 222-223, mentions only Batavia (very defectively fortified) and Ambon, but nothing on the design of the Company’s forts. C. Duffy, *The Fortress in the Age of Vauban and Frederick the Great: Siege Warfare Volume II* (London: Routledge & Kegan Paul, 1985), 253-257, does not even mention the VOC in his discussion of the European fortifications in India.

⁴ This is a basic premise for Tonio Andrade who sees the VOC’s conflict with Ming loyalists in the 1660s as a “Sino-Dutch war”. T. Andrade, *Lost Colony: The Untold Story of China’s First Victory over the West* (Princeton, NJ and Oxford: Princeton University Press, 2011), 12-13.

⁵ The example of the citadel of Negapatnam as built in the 1680s and 1690s is often invoked to make this claim. See, for example, K. Zandvliet, *Mapping for Money: Maps, plans and topographic paintings and their role in Dutch overseas expansion during the 16th and 17th Centuries* (Amsterdam: Batavian Lion International, 2002), 150-151; G. Knaap, H. den Heijer, and M. de Jong, *Oorlogen overzee: Militair optreden door compagnie en staat buiten Europa, 1595-1814* (Amsterdam: Boom, 2015), 229.

available and full European-style fortification deemed preferable, could the Company access the military manpower required, both quantitatively as well as qualitatively, to make this a sensible approach? This book will tackle these questions by focusing on a well-defined network of fortifications that the Company built, maintained, modified, and ultimately sold off or lost in South Asia, the VOC Governments of Ceylon and Coromandel, the Malabar Command and the Bengal Directorate. Over the course of the seventeenth and eighteenth centuries, the VOC would build permanent fortifications (as opposed to field works) on at least forty sites. Given the strategic rationale behind at least a large part of this program, it is justifiable to speak of a system or “network” of fortifications. This point will be elaborated in chapter four, but let it suffice here to say that the forts and fortresses built by the Company were envisioned as mutually supporting, with fortification in South India forming the strategic flanks of Ceylon (as Sri Lanka was known then).

The fortifications of the VOC are a topic of considerable interest to scholars of several disciplines. Historians of architecture, urban design, military history, cartography, European expansion, and Early Modern Globalization all have had reason to study fortifications in the past.⁶ Despite this considerable interest, there is still room for an in-depth monograph on the VOC’s permanent fortifications in South Asia. The various perspectives used to study fortifications often work at cross-purposes to one another. Military historians tend not to look too closely at the actual designs, while architects and urban designers are more interested in architectural style and ornamentation than functionality. Monument surveys suffer from the inescapable problem that they only take account of what remains, placing perhaps undue importance upon structures which only survived into the modern age due to luck while more important structures were lost. In all cases, attention rests primarily on the fortification itself, rather than the designers.⁷ As such, the engineers’ reports are

⁶ The classic text for the military history perspective is of course G. Parker, *The Military Revolution: Military Innovation and the Rise of the West 1500–1800* (second edition, Cambridge: Cambridge University Press, 1996), 6–44, 115–125. A more recent development of the “Parker thesis” is provided by two recent books by Tonio Andrade: Andrade, *Lost Colony*; T. Andrade, *The Gunpowder Age China, Military Innovation, and the Rise of the West in World History* (Princeton, NJ: Princeton University Press, 2016). A recent monument survey that pays attention to fortifications is C.L. Temmink Groll, *The Dutch Overseas, Architectural Survey: Mutual Heritage of four Centuries in three Continents* (Zwolle: Waanders, 2004); an urban design perspective is provided by: R. van Oers, *Dutch Town Planning Overseas during VOC and WIC Rule (1600–1800)* (Zutphen: Walburg Pers, 2000); a survey of existing structures on Sri Lanka as they appeared in the 1930s was written by: W.A. Nelson, *The Dutch Forts of Sri Lanka: The Military Monuments of Ceylon* (Edinburgh: Cannongate, 1984).

⁷ In some cases, publications focus solely on the imagery, showing present-day photographs, often taken during trips to the region, next to period maps and plans, see for example:

frequently overlooked. Yet these are often the best sources for understanding not only designs actually implemented, but also contemporary evaluations of previously built works.

This book is based on two main premises: that to understand the fortification designs and the decision-making process of the VOC it is necessary to (re)combine the written reports of the Company's engineers with the images that originally accompanied those reports. Too often, the images are taken at face value and simply used as a nice illustration, in the process of which its intended purpose is often lost. It is in their written reports that the engineers reflected on the purpose of their design and their sources of inspiration. This logically leads to the second basis for the argument this book will make: that in order to understand the VOC's fortification designs it is necessary to compare them with contemporary European designs. This comparison is often made implicit when it is argued that VOC fortifications, or European fortifications overseas in general, represented the most up-to-date European ideas on fortification. Often this argument is based simply on the presence of one characteristic, such as bastions, in the fortification design, without paying due heed to the dynamic development of fortification design in Europe itself, nor to the question whether European designs were a best fit for purpose for the needs of a chartered company like the VOC. The need for a better understanding of the fortifications of the Dutch Company is well illustrated by the fact that even Om Prakash, in a book devoted to the Dutch in India, could remark: "The Dutch were not great builders of castles, forts and mansions. They preferred to take over existing structures and modify them. Their factories on the Coromandel Coast were fortified by erecting a thick wall around their property, which was usually surrounded by a ditch, the earth being used to construct the wall. The garrison consisted of men taken off their ships, one or two of which would remain anchored in the harbor."⁸ This sentiment was also voiced by M.S. Naravane in his study on the maritime and coastal forts of India when he argued that the VOC preferred to trade under the protection of local rulers.⁹

This book argues that the VOC was indeed a prodigious builder of castles and forts, not always to its benefit, however. This introduction will first discuss the historiography of fortification and European urban design overseas, arguing that this topic, despite the interest which it has garnered, is understood only poorly. I will then discuss the role of European artillery fortification in the military revolution

A.W. van der Kuijp, *V.O.C. Monumenten op Sri Lanka: Dutch East India Company Monuments in Sri Lanka* (Rotterdam: the author, 2005).

⁸ O. Prakash, *Dutch in India* (New Delhi: Amol Publications, 2002), 245.

⁹ M.S. Naravane, *The Maritime and Coastal Forts of India* (New Delhi: APH Publishing, 1998), 153.

debate. I will argue that both sides of the debate cover actual fortification design only scantily and that both sides will stand to profit from a closer look at the designs themselves and the process of design and decision-making. After laying down this essential historiographical context, I will introduce my methods and sources. I will then discuss some more technical issues, the structure of the book, and my approach to integrating image and text, and finally some issues of terminology.

Fortification and Urban Design

Military engineering and architecture were closely linked. Before the creation of regimented national engineering corps, engineers were frequently also (or predominantly) architects. Renaissance Italy saw new ideas on urban design tried out, often in new towns laid out as model fortresses. The modern distinction between “art” and “science,” between architecture and engineering, did not apply.¹⁰ In the setting of European overseas expansion, there was even greater opportunity to design new towns and their defenses. Since those responsible for designing urban plans were often the same individuals, the debate on urban design in the service of the Companies is relevant for this study. The existing historiography on the topic also happens to illustrate quite well the risk of studying the topic with tunnel vision. This is best illustrated by the book on Company urban design by Ron van Oers.¹¹

Van Oers argued that important decisions relating to both urban as well as fortification design were actually made in Europe. According to him, local commanders received instructions or even outright plans to execute on location.¹² This study will argue that more often decisions on fortification projects and even entire urban schemes were taken on the spot by local commanders and their staff. This raises the question of who was actually in charge of design. Van Oers used broad categorizations like “the Dutch,” arguing that VOC urban ensembles represented typically Dutch solutions to urban design.¹³ But this is a point that can only legitimately be made after comparison with urban designs of other European colonial powers. A comparison with French, British, Portuguese and Spanish urban design in Asia and

¹⁰ H. de la Croix, “Military Architecture and the Radial City Plan in Sixteenth Century Italy,” *The Art Bulletin* 42:4 (1960), 264.

¹¹ R. van Oers, “Stadsplanning en het behoud van VOC-structuren,” in L. Blussé and I. Ooms (eds), *Kennis en Compagnie: De Verenigde Oost-Indische Compagnie en de moderne wetenschap* (Amsterdam: Balans, 2002), 21–33.

¹² He refers to the example of Van Riebeeck and Cape Town: R. van Oers, “Stadsplanning,” 22.

¹³ *Ibid.*, 23, referring to the reconstruction of Cochin after 1663, Van Oers argues that “the Dutch” redesigned the city, while this was very much the initiative of Van Goens.

the Americas would show that many of the “typically Dutch elements” identified by Van Oers are in fact shared amongst the Early Modern European powers.¹⁴ Van Oers’ insistence that VOC-designed towns are representative of renaissance urban design in general and examples of the influence of Simon Stevin’s ideas specifically ignores two important aspects: the shared European heritage of medieval urban design and local design traditions in Asia itself. Much literature on Renaissance urban design argued that the new regular schemes utilized from the fifteenth century onwards represented a clear break from a medieval tradition which left cities growing organically and without regular street patterns. But this point was made without making an explicit comparison between various urban schemes. This stereotypical view has been challenged in several publications by Reinout Rutte and Wim Boerefijn. They argued that in fact medieval urban design favored regular street patterns and rectangular blocks when this was feasible. Especially interesting from a perspective on VOC urban design are the “new towns” constructed from the thirteenth to the fifteenth centuries by noble lords with an eye to anchoring their claim to rule by a commercially vibrant fortified town. Examples of such towns within the Netherlands are Elburg, Naarden, Buren, Schoonhoven, Vianen, and IJsselstein, but examples are to be found all over Europe.¹⁵ The VOC would do much the same thing in Asia, as did the Portuguese before it.¹⁶ European colonial towns in Asia can thus be best understood as originating from a shared medieval European heritage.¹⁷ If there truly were typically and uniquely Dutch characteristics in VOC-built towns, it would have been impossible for French scholars to claim for such a long time that Pondicherry represented typically French design when in fact it was designed during the VOC’s occupation of the town in the 1680s and 1690s.¹⁸

While a shared European background in urban design may thus be presupposed, there were regionally distinct schools of fortification design from at least the seventeenth century onwards. These distinctions were reinforced as Early Modern

¹⁴ Van Oers, *Dutch Town Planning Overseas*, 79–88.

¹⁵ R. Rutte, “Middeleeuwse nieuwe steden in Nederland: Aanzet tot een onderzoek naar oorsprong, verspreiding en betekenis,” *Bulletin KNOB* 96:6 (1996), 189–202.

¹⁶ Manuel Teixeira argues that when the Portuguese built cities in Asia from scratch they used renaissance urban design ideas. More often, however, there was a slow development over time from *feitoria* or fort to city, leading to a more “organic” design: “Portuguese Traditional Settlements: A Result of Cultural Miscegenation,” *TDSR* 1 (1990), 28.

¹⁷ Implicitly, C.M. Weebers and Y. Ahmad criticize Van Oers’ idea in their brief study of the planning of the town of Malacca: C.M. Weebers and Y. Ahmad, “Interpretation of Simon Stevin’s ideas on the Verenigde Oostindische Compagnie (United East Indies Company) Settlement of Malacca,” *Planning Perspectives* 29:4 (2014), 553.

¹⁸ J. Deloche, *Origins of the Urban Development of Pondicherry According to Seventeenth Century Dutch Plans* (Pondichéry: Institut Francais de Pondichéry, 2004).

states founded engineering schools and military academies and selected canonical fortification designs to be taught to prospective engineers. When it is argued that VOC fortifications were built to European standards, it is thus a fair question to ask: “whose standards?”¹⁹ This is especially poignant since we know that many of the soldier-engineers who served the VOC in Asia did not, in fact, have a Dutch engineering background. Many of them originated from the German states, but there were French and British engineers active for the VOC as well. In an earlier study I argued that this same question caused problems for the West India Company on the Gold Coast of Africa (present-day Ghana) in the 1770s. The German engineer responsible for designing a new fort in Takoradi, Johan Frederik Trenks, was no trained engineer and had to rely on older manuals and books for instruction. His design of 1774 was based on *Architectura Militaris Nova et Aucta*, published by Adam Freitag (1608-1650) a Polish engineer in Dutch service in Leiden in 1631.²⁰ This design was sharply criticized by Company directors in the Netherlands for being out of date. The ensuing debate meant that no substantial work could be completed before the outbreak of the Fourth Anglo-Dutch naval War in 1780. The backgrounds of engineers in company service and their technical proficiency were thus important issues and adherence to a “national” style was by no means as straightforward as Van Oers supposed. The specifics of fortification design do, however, have an important impact on another debate: that on the military revolution.

The Military Revolution and its Effects on European Expansion: Fact or Fiction?

From the middle of the fifteenth century onwards, the more widespread introduction of heavy gunpowder weapons in the arsenals of European states made changes to fortification design necessary. This change took place over the course of the following century. The story of the changes to “medieval” fortification in order to withstand the new black powder artillery has been told many times.²¹ High walls were reduced in height and gained an earth backing to better withstand shot. Hollow towers were filled with earth

¹⁹ Zandvliet, *Mapping for Money*, 150, argues of the Negapatnam citadel: “The citadel was built in the most current fashion and was able to give shelter to both Dutch personnel and products.” As with the Cape, the VOC decided on the construction of a European-style fortress, able to withstand attack from European powers. This of course raises the question what “most current fashion” meant for the VOC’s designers.

²⁰ E. Odegard, “Designing a New Fort on the Gold Coast: Johan Fredrik Trenks, the WIC, and the New Fort at Takoradi, 1774–1791,” *Itinerario* 40:3 (2016), 533.

²¹ The classic study for the development of the bastion is J.R. Hale, “The Early Development of the Bastion: An Italian Chronology, c. 1450–1534,” in J.R. Hale (ed.), *Renaissance War Studies* (London: Hambledon Press, 1983), 1–30. A specific case study is presented by S.

for the same reasons, and in new fortifications better alignment of works was sought to reduce dangerous “dead ground” at the foot of towers. This development gave rise to the bastion in late fifteenth-century Italy. John Hale famously called the bastion “the most significant of all architectural forms evolved during the Renaissance.”²²

The changes in permanent fortification are seen by scholars as one of the key elements of the perceived “military revolution” that swept through Europe in this period. Improvements in fortification, making towns harder to take, required larger garrisons as well as larger field forces to besiege them, both developments driving up army size.²³ To this were added the costs of acquiring an arsenal of the new artillery as well as the construction of new fortifications. European states needed to tap new resources to fund these activities or risk being overtaken by their neighbors and rivals. New revenues meant new taxes and required a bureaucracy to enforce payment and oversee expenditure. Changes in warfare, according to the proponents of the military revolution thesis, sparked a new process of state-formation in Europe that proved self-sustaining. States which were successful in raising revenue subsequently had the brute force available to conquer less successful neighbors, so increasing their revenue base and making an increase in military strength possible.²⁴ The need to maintain an independent polity meant that military innovations were quickly adopted, from black-powder-firing muzzle-loading artillery in the fifteenth century, to bastioned fortifications and new methods of infantry drill in the sixteenth, through the introduction of the mortar and the bayonet in the seventeenth, to name but a few examples.²⁵ One recent author has argued for a rather mechanistic “tournament-model” of this process.²⁶

Of course, the idea of the military revolution has been criticized as well, with critics arguing that this process was neither exclusively European nor revolutionary.²⁷ Mahinder Kingra debated the perceived link between the bastion and the

Pepper and N. Adams, *Firearms and Fortifications: Military Architecture and Siege Warfare in Sixteenth-Century Siena* (Chicago, IL: University of Chicago Press, 1989).

²² Hale, “The Early Development of the Bastion”, 1.

²³ Parker, *The Military Revolution*, 12–16, 39–46, 163–172.

²⁴ This is summed up in the famous aphorism “states make war and war makes states,” often attributed to Charles Tilly.

²⁵ The original iteration of the idea, proposed by Michael Roberts in his inaugural lecture in Queen’s College Belfast, focused on drill see: M. Roberts, “The Military Revolution, 1560–1660”, in C. Rogers (ed.), *The Military Revolution Debate: Readings on the Military Transformation of Early Modern Europe* (Boulder, CO: Westview Press, 1995), 13–36.

²⁶ P.T. Hoffman, *Why did Europe Conquer the World?* (Princeton, NJ: Princeton University Press, 2015), 19–66.

²⁷ J. Black, *A Military Revolution? Military Change and European Society 1550–1800* (Basingstoke and London: Macmillan Press, 1991), 93, argues that the notion of a Revolution is inappropriate.

increasing size of European armies, arguing that the bastion was not an independent variable, but was made to serve the strategies of the rival states. Its employment was therefore as much an outcome of these strategic decisions as was the choice to increase (or decrease) army size.²⁸ John Lynn, too, argued that in the French case the rapid growth of army size was mainly due to the fact that the armies of the Sun King had to face enemies on a number of fronts simultaneously. The presence in the same area of large, elaborate new fortifications and increasingly large armies stemmed from the same cause: French diplomatic isolation, rather than the one causing the other.²⁹ David Parrott has argued that the presence of bastion-trace fortifications has blinded historians to the fact that they could only serve their purpose in combination with mobile field forces. Second-rate states in Italy which devoted resources to fortification-building programs often found their independence threatened, since their strategically-placed citadels became tempting targets for preemption by the larger powers, leading to a loss of independence.³⁰ Dutch historian Olaf van Nimwegen has argued that there were in fact two distinct processes that together constituted a military revolution: a process of technological change in the sixteenth century, and an organizational revolution in the second half of the seventeenth, when state bureaucracies became directly responsible for recruiting, paying and supplying the troops under their command.³¹

In the sphere of the military interactions between Europeans and non-Europeans, Jeremy Black has argued that the latter could in fact often take European artillery fortifications quite easily.³² This led Tonio Andrade to mount a rebuttal, arguing that the Chinese siege of the Dutch fort Zeelandia on Formosa shows the great importance of the artillery fort for European expansion. In Andrade's words: "the artillery fortress was an engine of expansion."³³ Recently, Jason Sharman has argued that the argument that European tactics and technology were important in Early Modern European expansion is faulty for a number of reasons. Importantly, he

²⁸ M.S. Kingra, "The Trace Italienne and Military Revolution During the Eighty Years' War, 1567-1648," *The Journal of Military History* 57:3 (1993), 445-446.

²⁹ J.A. Lynn, "The Trace Italienne and the Growth of Armies: The French Case," *The Journal of Military History* 55:3 (1991), 320-323. Parker, *The Military Revolution*, 170-171, would criticize Lynn's methodology of counting troops.

³⁰ D. Parrott, "The Utility of Fortifications in Early Modern Europe: Italian Princes and their Citadels, 1540-1640," *War in History* 7:2 (2000), 127-153.

³¹ O. van Nimwegen, 'Deser landen chrijchsvolck': *Het Staatse leger en de militaire revoluties 1588-1688* (Amsterdam: Uitgeverij Bert Bakker, 2006), 29, 418-428.

³² J. Black, "The Western Encounter with Islam," *Orbis* (2004), 23.

³³ T. Andrade, "The Artillery Fortress was an Engine of Expansion," in T. Andrade and W. Reger (eds), *The Limits of Empire: European Imperial Formations in Early Modern World History: Essays in Honor of Geoffrey Parker* (Farnham: Ashgate, 2012), 155-174.

argues that the posited link between bastion fortifications and larger army sizes did not seem to have functioned overseas, since European armed forces (he cites the VOC and the EIC as examples) remained quite small.³⁴ But he fails to mention the fact that both these two companies, as well as their French counterparts, relied heavily on recruiting troops in Asia and arming and drilling them to European standards. Likewise, the late introduction of volley-fire that Sharman signals is simply less important if European warfare was dominated by siege warfare instead of battles between field armies.³⁵ In a later book, Sharman adds to his analysis, arguing that in many cases European warfare outside Europe simply does not show the characteristics argued for as being typical of the revolution.³⁶ Douglas Peers has argued that we should take European figures on army size with a grain of salt, as they overreported enemy numbers, while ignoring their own local allies, thus making the disparities seem greater than they were.³⁷ Most drastically perhaps, Frank Jacob and Gilmar Visoni-Alonzo have argued that the concept of a military revolution is Eurocentric, deeply problematic and best discarded.³⁸

But not all scholars of warfare in Early Modern Asia are as radical as that.³⁹ A number of scholars have argued that military change was prevalent in Early Modern Asia, leading to the adoption of new types of gunpowder weaponry, as well as fortifications, ships, tactics, and methods of raising armies. Kaushik Roy, arguing that Western dominance was not inevitable and that many military developments in Europe had little applicability outside it, preferred to talk of a "military transition" taking place in Early Modern Asia. Roy emphasized the massiveness of Mughal and Deccan fortifications, arguing that the bureaucracy of European states would not have supported the construction of similarly massive fortifications. Even if this claim were true, and it is not backed by a calculation of costs of construction, this raises the question whether building a few massive fortifications provided the best

³⁴ J.C. Sharman, "Myths of Military Revolution: European Expansion and Eurocentrism," *European Journal of International Relations* (2017), 9–10.

³⁵ *Ibid.*, 11.

³⁶ J.C. Sharman, *Empires of the Weak: The Real Story of European Expansion and the Creation of the New World Order* (Princeton, NJ: Princeton University Press, 2018), 73–74, for example describes how the VOC's forces did not follow to the precepts of the revolution.

³⁷ D.M. Peers, "Revolution, Evolution, or Devolution: The Military and the Making of Colonial India," in W. Lee (ed), *Empires and Indigenes: Intercultural Alliance, Imperial Expansion, and Warfare in the Early Modern World* (New York: New York University Press, 2011), 83.

³⁸ F. Jacob and G. Visoni-Alonzo, *The Military Revolution in Early Modern Europe: A Revision* (London: Palgrave Macmillan, 2006), 18.

³⁹ I will use the term "Early Modern" throughout the book, well aware of the problems concerning its use in a non-European (or indeed a European) setting, since there does not seem to be a workable alternative.

return on investment.⁴⁰ Roy's use of "military transition" echoes an earlier argument by Richard Eaton and Philip Wagoner that the Deccan sultanates perhaps did not undergo a revolution as Parker used the term, but they certainly underwent a process of "military adaptation" to new gunpowder weapons.⁴¹

Studying a rather different kind of state, Johan Talens has argued that the Sultanate of Banten, despite acquiring firearms on a broad scale, did not go through a process of "military revolution." Firearms did not lead to different styles of fortification and did not have effects on revenue-raising or wider state-formation.⁴² But, crucially, he also noted that it is too simplistic to see the interests of the sultanate and the VOC as inherently adversarial. On the contrary, the Company proved to be a great support for the court of Banten, both economically as well as militarily.⁴³ Technological change and adaptation do not seem to have had the deep impact on state-formation processes that the proponents of the military revolution thesis claim for Europe. But did the "transition" or "adaptation" that took place in Asian polities prepare them to face European arms, tactics, and organization? Understanding the military development of Asian states will require the study of cases where European and Asian forces faced off against one another.

What is striking in this debate is that both sides refer to European artillery fortification in quite generic terms. Jeremy Black mentions the Persian siege of Hormuz in 1622 (without, it must be said, mentioning the English assistance) as an example of a non-European power successfully overrunning a European artillery fort, but he does not mention that the Portuguese fortress had last been updated in the 1560s and was by no means representative of the more "modern" European designs of artillery fortification.⁴⁴ Tonio Andrade, waxing lyrical about Fort Zeelandia, mentions its "huge bastions" and the firepower of the artillery on the bastions.⁴⁵ The weaknesses of the fort are ignored, especially the lower level of ramparts surrounding the quadrilateral fort. The ground plan of this lower level, constructed somewhere between the 1630s and the 1660s, meant artillery on the ramparts of the upper fort could not adequately cover the base of the lower fort's

⁴⁰ K. Roy, *Military Transition in Early Modern Asia, 1400-1750: Cavalry, Guns, Government and Ships* (London and New York: Bloomsbury Academic, 2014), 116-117, 200-201.

⁴¹ R. Eaton and P. Wagoner, "Warfare on the Deccan Plateau, 1450-1600: A Military Revolution in Early Modern India?," *Journal of World History* 25:1 (2014), 48.

⁴² J. Talens, *Een feodale samenleving in koloniaal vaarwater: Staatsvorming, koloniale expansie en economische ontwikkeling in Banten, West-Java (1600-1750)* (Hilversum: Verloren, 1999), 120.

⁴³ *Ibid.*, 121.

⁴⁴ Black, "The Western Encounter with Islam," 23; J. dos Santos de Sousa Campos, *Arquitetura Militar Portuguesa no Golfo Persico – Ormuz, Keshm e Larak* (Coimbra: unpublished PhD thesis, 2008), 195.

⁴⁵ Andrade, "The Artillery Fortress was an Engine of Expansion," 157-158.

walls. The lower rampart thus negated many of the advantages that Andrade claims were so important for the bastioned European artillery fortress. The terminology used by Andrade can also be criticized. He styles the conflict over Taiwan as the “Sino-Dutch” war, but this suggests that the conflict can be taken as a direct proxy for a conflict between a European power and China. Of course, the conflict was no such thing; it was a conflict between China and a chartered trading company, a “company-state” which had developed a military apparatus in line with the perceived threats and opportunities in Asia.⁴⁶ The VOC’s armed forces were a hybrid military institution, in which European and Asian personnel served together and which had developed in response to the needs of the VOC in Asia. They cannot simply be taken as a proxy for a “European” field army.

These examples are indicative of a larger trend in the historiography. Assertions that a particular design was “up to contemporary European standards” or “modern” are often made without backup. There thus seems good reason to make a more elaborate comparison between the development of fortification design in Europe and in the European settlements overseas, in our case, the VOC’s fortifications in South Asia. Did the VOC actually follow European examples of fortification design, or did it develop its own school of design, better suited to local circumstances? Did the individuals responsible for drafting designs for fortifications or for making the decision on which design to build have the experience or training to do their job well? The example of the German-born Trenks in the service of the West India Company in the 1770s already suggests that this may in fact have been problematic. To ascertain the qualities of individual designers, this book will compare developments in fortification design in Europe with the development of the fortification designs drafted by engineers in the service of the VOC in South Asia. Crucial to this study are the debates between various engineers concerning their designs. It is through debating their proposals that engineers attempted to convince superiors of the soundness of their designs. It is in the debates, too, that engineers disclosed their sources of inspiration and their reasons for preferring one model over another.

⁴⁶ Andrade, *Lost Colony*, 12–13, also 309, where he compares VOC infantry companies to European Dutch infantry companies. To make that comparison stick, we need more information on the drill and leadership of the VOC’s army in the 1660s. Ironically, by the 1660s, the Dutch army in Europe was in a deep rut, making the claim to Dutch quality in musketry more difficult to sustain. Sharman, *Empires of the Weak*, 74, also argues that there were no wars involving “the Dutch” in the seventeenth or eighteenth centuries.

Method, Sources, and Structure

Given the debates sketched in outline above, the approach taken in this book is to combine text and images in the sources, to look for debates between engineers in which their design principles and sources of inspiration can be ascertained. This means that the following work is not merely concerned with the works proposed or completed. It is primarily a history of the individuals who designed the fortifications and debated the merits of their designs. To understand the debates between the various men responsible for their design, it is necessary to understand their backgrounds and the circumstances in which they worked. I will therefore at times zoom out from the specific designs and designers to appreciate the broader social context of these employees of the Company. Crucial too, is the understanding that the Company's fortifications are the consequence of the commercial and strategic circumstances in which it found itself and the aims it tried to achieve. These aims varied widely throughout the period, from attempts at wholesale conquest in the 1660s and 1670s to a more "pacified" stance in defense of already established trades and possessions by the second half of the eighteenth century.⁴⁷ The perceived threats are especially interesting, as this establishes the perception by the VOC's engineers not only of its European rivals, but also of the local polities that could possibly threaten the fortifications they were responsible for (re)designing. As will become apparent, there was a profound shift in these threat perceptions over time, especially in India. Here relatively new states such as Mysore and Travancore were by the late eighteenth century perceived as profound threats, capable of successfully besieging the Company's fortifications. This development over time is another important aspect of this study. Instead of focusing on one design or a number of designs in the same period, this study will provide a broad view of many debates between engineers over a longer period of time. A longer time-frame allows us to see how later generations of engineers reflected on the work of their predecessors, giving a contemporary evaluation of the fitness for purpose of the original designs in changing strategic circumstances.

This work is largely based on a study of the primary sources held in the National Archives of the Netherlands in The Hague. For my description of the strategic circumstances and general background of the company I have relied on the many excellent existing studies on the VOC. Many VOC sources have been made readily accessible through source publications such as the *Generale Missiven*. These source publications have in their turn been made more accessible through digitization. Increasingly, the archival pieces themselves are accessible online through scanning. This has both up- and downsides for the researcher. On the one hand, it becomes

47 G.D. Winius, and M. Vink, *The Merchant-Warrior Pacified: VOC (The Dutch East India Company) and Its Changing Political Economy in India* (Oxford: Oxford University Press, 1991), 4-5.

quite easy and convenient to quickly work through a vast collection of archival material at home or in the office. On the other hand, if scanning means that the originals are increasingly out of reach, we risk losing much of the historical sensation of archival research. Wherever possible, I have tried to use not just the VOC archives themselves, but also the many smaller collections in The Hague that hold much valuable material. Examples are the scattered parts of the archive of the High Government of the Indies that were deposited in The Hague, and the personal archives of men such as Joannes Hudde, Thomas Hope, and Jacob Pieter van Braam. These smaller collections are often overlooked, but for some topics in some periods they may contain more and more clearly structured and accessible material than the Company archives themselves. In using the VOC archive itself the database of incoming letters and papers compiled by the TANAP project is an invaluable tool. But using the TANAP database also carries its risks. Not all VOC governments structured their papers in a way that was compatible with the structure of the TANAP database. The Coromandel Government especially structured its papers differently after 1740. So, while it may seem that there is but little material for Coromandel if one is to go by the TANAP database, this is not actually the case. This is not, of course, a complaint about the team which compiled the TANAP database, but it does provide a warning. Our work as historians is made easier by such tools as databases and scanned archives. But we must never forget to question those tools we use, and which may make our lives so much easier, for otherwise we run the risk of losing sight of large, valuable, collections simply because they are not easily searchable and findable by means of those tools.

The Structure of This Work

The chapters that follow can be divided into two categories. Chapters one and two provide the necessary background to fortification design (chapter one) and the East India company on Ceylon and in India (chapter two). Chapter one will argue that fortification design in Europe was a highly dynamic discipline in which, by the eighteenth century, engineers could work in different styles of design, using different “toolboxes” of design solutions. Chapter two will describe the organizational setup of the company in as far as it is relevant for this work. It will devote special attention to the composition of the Company’s armed forces, since the best fortress in the world was only as good as the quality of the garrison manning it. I will argue that it is remarkable that the VOC insisted in maintaining a relatively large European force, instead of taking the approach ultimately chosen by the French and English Companies of recruiting soldiers in India and arming and drilling them to European standards. From chapter three onwards, the structure of the book is

chronological, with each chapter focusing on debates surrounding proposed and realized new fortifications or alterations to existing works. Each chapter will briefly present the more general commercial-strategic position of the VOC in the period and in the various areas.

Chapter three has a twofold aim. It will detail the creation of the system of fortifications in South Asia from 1638 until the end of Rijckloff van Goens's tenure in 1681. Van Goens is of exceptional importance as he proved to be the driving force behind the large-scale construction program that the VOC undertook after expelling the Portuguese from Ceylon, Negapatnam, and the Malabar Coast. Secondly, the chapter will present a new way of classifying fortifications. Existing schemes of classification are often form-based, but this, I will argue, leads to inconsistent classification. A better approach is a classification based on the function of a particular fort within the system as a whole. The chapter will then turn to the actual construction of the system of fortifications, as well as the individual fortifications themselves. Special attention will be paid to the design of the fortress of Cochin, as this particular fortress can well illustrate the problems of fortification design and the defects that were sometimes built into the original designs.

Chapter four takes over where the previous chapter left off. In the 1680s the construction program initiated by Van Goens was still underway and many of "his" forts would only be completed in the second half of the decade. But already criticism was mounting. Critics of Van Goens disagreed both with the plans of individual fortifications, as well as with the larger strategic conception that underpinned the system as a whole. The debates of the 1680s would have an important impact upon the Company and the way in which the Company's directors viewed expenditure on its military. However, even Van Goens's critics once in power proved unable to reduce the number of fortifications, and even added to it with some spectacular new works. The chapter covers the period up to the successful war against the Zamorin of Calicut, after which the VOC would build what proved to be its last new fort for nearly three decades: Wilhelmus at Chowghat.

Chapter five covers what is the crucial period in which the VOC found itself outclassed by its French and English rivals as a military power in South Asia. In 1717, when the Zamorin was defeated, the VOC was still by far the largest European power in Asia, and certainly stronger than either French or English rivals. By 1759, this had all changed and the VOC in India was now the least of the three European companies. The same period also saw dramatic changes in India itself as Anglo-French rivalry and the collapse of the power of the Mughal empire caused unprecedented turmoil and warfare. The VOC's decision to abstain as much as possible from these conflicts meant it could not try to change the new circumstances in its favour. This policy of neutrality is visible in the fortification of previously unfortified trading posts at Vengurla, Sadras, and Bimilipatnam. The end of the period is marked by the

disastrous attempt to intervene in Bengal in 1759, an intervention that was itself brought about by the wish to secure a site for a new fortress.

Chapter six deals with the aftermath of the disaster at Bedara in 1759, which constituted a clear break with the previous period. It proved that the VOC could no longer compete on an equal footing either with the newly empowered EIC or the French. Bedara was actual two battles: a naval battle followed by a land battle. Together these battles proved that the VOC could not challenge for control of the ocean (or river waterways in this specific case) and that its armed forces were insufficient as field forces compared to the EIC's army. The response to Bedara was thus to make fortification all the more important to the VOC. The 1760s and 1770s thus witnessed a number of proposals to improve the defensibility of the main fortresses in the event of European siege. At the same time, the war with Kandy in the 1760s would show that the isolated inland forts constructed on Ceylon in the seventeenth century were vulnerable to Kandyan attack. In Malabar, the threat posed by Travancore and Mysore posed new challenges to fortifications there as well. But when war came in the 1780s, it was not with Mysore or Travancore, but Britain. The resulting war was an unmitigated disaster for the VOC, leading to the permanent loss of Negapatnam.

Chapter seven starts with the Fourth Anglo-Dutch War of 1780-1784 and its aftermath. A great number of rival engineers worked on Ceylon in attempts to improve the VOC's defensive position on the island. The chapter deals with the frequently heated debates between those engineers. It argues that a lack of organization within the VOC's engineering ranks meant that debates could never be settled between them as there was no hierarchy that could resolve conflicts and enforce a decision. As a result, rival cliques within the Company promoted the ideas of rival engineers and no improvements were actually carried out. The VOC's inability to resolve the engineering disputes of the 1780s resulted in the imposition by the States-General of a "Military Committee" of naval and army officers from the Netherlands. This Committee is the subject of Chapter eight. The Committee was charged to inspect the VOC's fortifications, garrisons, and shipyards and to suggest means to improve the defense of the empire in the east. Difficulties in attracting skilled engineers to the mission meant that one of the VOC's engineers was tasked with making the Committee's plans.

The final chapter will briefly deal with the fall of the system in 1795-1796. The fall of the Dutch Republic to French revolutionary forces in 1795 and the creation of the new Batavian Republic in the Netherlands caused great uncertainty in the VOC's possessions. Should they now fight Britain in alliance with France, with which the Republic had been at war since 1792? Or should they heed the Kew letters signed by the former stadholder in Britain and hand over their forts to British forces for safekeeping? The British conquest of Ceylon and the Malabar Coast is interesting. For though the fight was short and – from the contemporary Dutch perspective – not

elevating, it did feature a number of sieges, notably of Cochin and Trincomalee. Did the sieges confirm the strengths and weaknesses of the fortifications as the last generation of VOC engineers had identified them? This chapter will also briefly present the opinions of later British engineers of the Ceylon fortifications, showing that although the fortifications were not sufficiently strong for a power which unable to contest control of the ocean, they were perfectly acceptable to the premier naval power of the age. Finally, I have collected some remarks on the terminology used, as well as the illustrations, in an Appendix. Illustrations have been added to the text when possible and will, I hope, clarify and enliven the narrative.