First Bites are, as the name suggests, my first attempts to take my random notes and bring them into some sort of order. I am doing them primarily for myself so as to make it easier to refer to content and see how potential sections and chapters of the PhD might shape up, but I thought that others might find them useful, and I'd welcome any comments.

These ARE NOT draft chapters, they are WORKING NOTES and as such are likely to be full of errors and omissions and half-baked ideas, so I strongly suggest you check sources should you want to quote anything!

Note that this particular First Bite is very much a chronological/narrative history of urban conflict – its does not yet attempt any particular analysis or critique. I will be in a better position to do that once I have done by Historiography of Urban Conflict and begun a more thematic analysis. The quantitative work at the end is just to see if there is anything there – there probably isn't!

If you find this First Bite useful and would like me to do more then please let me know. The better ones may well form the basis of formal research papers, and all will feed into the eventual PhD thesis.

More information on the PhD at http://taunoyen.com/wiki/doku.php?id=phd and you can contact me at david@burden.name.

Ancient History

The earliest recorded image of urban combat is believed to be in a war scene carved on a slab found in Mari, near the Syria-Iraq border (Parrot, 1971). The image appears to show a spearman protected by a curved shield, and bowman firing upwards (possibly to the top of a wall), and a naked man falling from the sky (possibly from a wall) and dates from around 2500-2300BCE (Yadin, 1972). Mari itself was extensively looted and badly damaged whilst under the control of ISIS in the 2010s (Shepperson, 2018).

Figure 1: The Mari slab (c. 2500 BCE) - the earliest depiction of urban warare?

The Sumerians and Akkadians

The region around Mari, that of the Tigris and Euphrates, is where the "*history of war begins*" (George, 2013) and where civilisation "*crossed the military threshold by the mid-fourth millennium*" (Hamblin, 2006). The earliest reported war was fought between the neighbouring city-states of Lagash and Umma around 2500BCE (George, 2013) – so on the basis of the Mari slab urban conflict has a history essentially as long as recorded conflict itself.

Lagash was one of the largest cities in the world at the time, with a population of around 60-100,000 (McMahon et al., 2023). Their war with Umma was "*fought over the rich arable land that lay between the two city-states*" (George, 2013). However, the cities themselves also played a key role in the culture, and conflict, of the time, quite apart from any location or resource significance. Cities represented individual deities, although the people identified with the deity rather than with the city (Paszke, 2019), and opponents would steal or destroy the statues of the deities in order to destroy morale (Cserkits, 2022).

Sargon established the first standing army of 5,400 Akkadian soldiers around 2300BCE (Cserkits, 2022) and military conflict was a common occurrence due to rivalry between the different Sumerian city-states (Paszke, 2019).

Note: Table 2 at the end of this document presents a summary table of evolving field army size over recorded history, based on the largest battles fought each century.

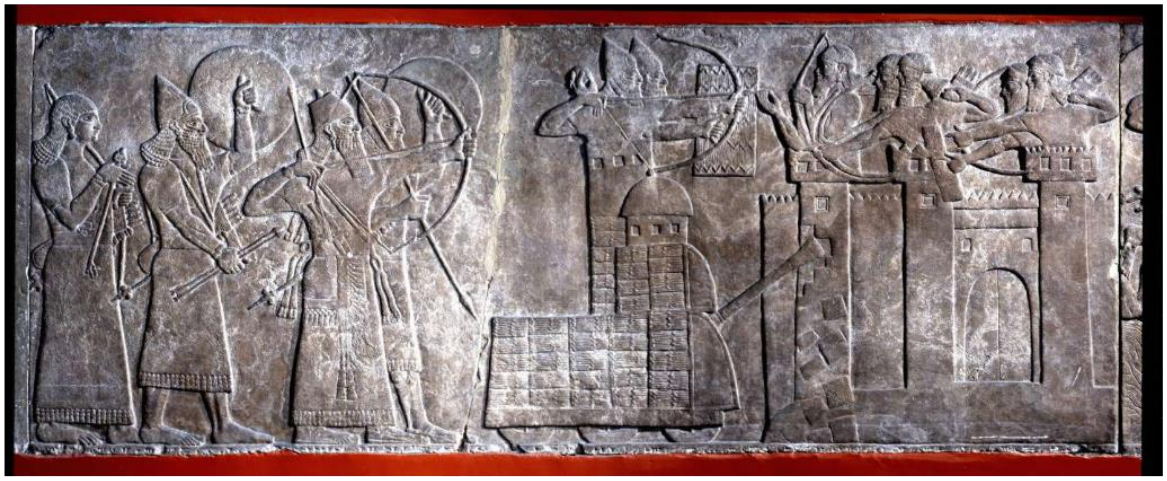
By 2100-2000 BCE siege techniques were well-developed, with evidence of heavy shields, siege towers, battering rams and slings – in designs which were "*almost indistinguishable from those used by humans a thousand years later*" (Dong, 2022). Even at this early date, though, commanders recognised that siege warfare was the last resort, preferring encirclement and starvation (Hamblin, 2006).

Egyptians, Hittites and Assyrians

The Battle of Meggido (c.1458 BCE) between Qadeshi Syrians and Thutmoses' Egyptians was the "*first battle in Western Civilisation where historians have a description of the general tactics involved*" (Carey et al., 2013). Although the battle itself took place on the plain outside the city the

Syrians retreated into the city after the battle, which was then reduced in a 7 month siege (Ferrill, 1986). The Battle of Qadesh (1285BCE) between the Hittites and the Egyptians under Ramesses II, was again a largely chariot-based battle and was fought outside of the city, but ended in stalemate. The Egyptians lacked the manpower or siege train to attack the city. By this time iron was also beginning to replace bronze for the manufacture of weapons (Carey et al., 2013).

By the 9th Century BCE siege warfare was becoming increasingly sophisticated (Connolly, 2012). A wall panel relief from the reign of Assyrian king Ashur-nasir-pal II (ruled 883-859 BCE) shows both a high siege tower and a well-protected battering ram. Other key tactics were the mining of walls (and counter-mining) and the building of large earthen ramps up to the top of a cities walls, as at the siege of Lachish (701 BCE) (Garfinkel et al., 2021). Under Sargon II (ruled 721-705 BCE) the Assyrian army began to evolve into "*a combined arms fighting force of heavy and light infantry, cavalry, chariots and siege machinery supported by specialised units of scouts, engineers, spies and sappers*." In 715 BCE Sargon II lost 22 fortified cities to the Uratu Kingdom, but in 714 BCE Sargon II "*took captured or destroyed no fewer than 430 fortified cities, towns and villages"*. According to Sargon II himself "*I destroyed their walls, I set fire to the houses inside them, I destroyed them like a flood, I battered them into heaps of ruins*" (Carey et al., 2013).



Source: https://www.britishmuseum.org/collection/object/W_1847-0623-6

Figure 2: Assyrian battering rams and siege towers, c. 860BCE

The Babylonians under King Nebuchadnezzar II laid siege to Jerusalem twice (597BCE and 589-586BCE) and to Tyre in 586–573 BCE, although there are doubts about the 13-year siege and causeway to the island (Dixon, 2022). By the time of the Persians an extensive road network enabled larger armies to be better supported and "*these broad, unpaved, packed dirt roads could handle the movement of mobile Persian siege towers drawn by teams of oxen*" (Carey et al., 2013).

The Greeks

It seems that the Greeks of the 5th century BCE had lost the skill of siege craft after the fall of the Mycenaean civilisation (c.1600-1100 BCE), Mycenaean citadels having had 5m thick walls built with 10t stones. In Greece *"the focal point of town defences was still the citadel or acropolis…. Only in the 6th century was serious attempts made to fortify whole towns. Under pressure from first from Lydia, then Persia, the Ionian Greeks were compelled to improve their fortifications."* (Connolly, 2012). However, by the time of the Peloponnesian War (431–404 BCE) siege craft was returning with the Spartans besieging Platea *"in which the methods applied were entirely Persian"* (Connolly, 2012). Thucydides describes how the locals resisted the Spartan attackers, working at night to hide their numbers, improvising barricades by dragging wagons into the streets and

"*they decided therefore that the attempts should be made, and, to avoid being seen going through the streets, they cut the passages through the connecting walls of their houses and so gather together in number*" (Thucydides et al., 2011)

The majority of Greek battles were still rural, although involving close-order phalanxes rather than chariots. Dionysus I (c.432-367 BCE) revolutionised Greek siege tactics, establishing warfare laboratories, building highly sophisticated siege engines (e.g., at Motya, 397BCE) including 6-storey towers and bolt-throwers. The Siege of Syracuse involved both circumvallation, surrounding the besieged city with an inward facing wall, and contravallation, outward facing defences against any likely relief force. Philip II (ruled 359-336 BCE) used a 35m high tower, rams and mines at Perinthus (340BCE), and the 40m high Helepolis tower against Salamis, although he preferred bribery. A major technical innovation was the use of twisted sinew instead of springs to power the stone throwers. Other developments included putting catapults on the walls as defensive weapons, spinning wheels to deflect bolts, and padding to absorb thrown stones. The Siege of Rhodes (305-304 BCE) is the best described siege in the ancient world, being recorded by Diodorus, who also wrote about the Siege of Salamis. However, it also marked "*the end of an era*" in Greek siege craft, the focus increasingly switching to stealth and isolation (Connolly, 2012).

Alexander the Great (ruled 336-323 BCE) had an "*efficient siege train to storm the highly fortified strongholds of the Levant*" and "*offered alliances to cities that would desert the Persians, and reduce those that wouldn't*" (Carey et al., 2013), although he typically fought in the open. There were, however, notable sieges, such as the year-long Siege of Tyre (332BCE) when he had to build a causeway out to the island city (Freewalt, 2014).

The Romans

Connolly (Connolly, 2012) observes that *"We know practically nothing of Latin and Roman siege warfare before the 3rd century BC when Polybius takes up the story but it was probably very similar to the Greek method".* Although the main battles of the Roman Republic such as Trebia (218 BCE), Cannae, (216 BCE) and Zama (202 BCE) were field battles, siege trains were still necessary for subduing enemy cities and included towers, rams, and a variety of throwing engines including Onagers and Scorpions throwing rocks from 10lb to 180lb out to 180 paces (Barker, 2016). Major sieges took place at Agrigentum (262 BCE), Lilybaeum (250–241 BCE), Capua (211BCE), Numantia (134 – 133 BCE), Alesia (52 BCE) and Marseille (49BCE). However, the preferred Roman tactic was to try and take a city by storm at the very start, and then if that failed to starve it out (Connolly, 2012). Connolly further notes that:

"in the scientific techniques of aggressive siege warfare, the Romans fell well short of the standards reached by the early Hellenistic monarchies. The Romans only adopted Hellenistic machinery when they were operating with Greek allies as at Ambracia…They preferred methods that exploited the boundless energy of the legionary - undermining and the building of ramps - and in this area they far excelled the Greeks".

By the time of Imperial Rome most of the western "civilised" world was under Roman control, and the remaining enemies used hillforts and less robust fortifications, causing sophisticated siege warfare to decline from around 150 BCE onwards. The sieges of Jotapata, Jerusalem and Masada (66-73 CE) saw the continuing use of ramps and mounds, and under Diocletian from 284 CE there was a move towards a more defensive use of towns by the Romans and the *"army of the early Empire trained to meet its opponents in the field"* (Connolly, 2012). The urban battles of this time are notable for the success of the defenders, in 378CE the Goths fail to take Adrianople after winning a battle outside it, and in 356/357CE Sens held out against Germans who gave up after a month. There were some successes, in 355CE Cologne fell to Franks and in 368CE Alamann's took Mainz, but only since it was ungarrisoned. (Tomlin, 2012) writes that "*the barbarian invaders lacked sophisticated siege techniques and were forced to rely upon surprise, blockade and the*

demoralisation of second-rate garrisons. The western provinces only saw real sieges during the civil war", such as at Aquileia (361CE), and that *"almost all the sieges described by Ammianus occur in Mesopotamia were both Rome and Persia were the heirs to centuries of experience".* This included the Persian campaign in 359-360CE and Julian's offensive in 363CE, and was typified by the Siege of Amida (359CE).

The Middle Ages

Early Middle Ages (c.450/500 to 1000CE)

With the collapse of the Roman Empire in the West, the model that had been seen during its dying days continued, with kingdoms and armies based around lightly defended settlements, and primarily horse and light troops preferring open ground and hit and run actions to siege actions. In the East the Byzantines were facing a largely mounted enemy and responded in kind, its armies being dominated by heavy and light cavalry. Even in the West cavalry, and increasingly armoured cavalry, was seen as the best and most mobile response to raiders and invaders. The period was not without sieges though. The Magyars laid siege (briefly) to Augsburg in 955 and the Viking "Great Army" laid siege to Paris in 885-886. By the end of the period towns and cities were being more effectively walled, or re-walled, and bridges fortified, against raiders (Carey et al., 2006).

High Middle Ages (c.1000 to 1350CE)

As kingdoms became larger and more stable the resources were once again available to undertake large scale construction projects and this period saw intensive city wall and castle building across Europe. This "age of castles" was also driven by the need to avoid losing precious fighting resources in unpredictable open battle, and where "*warfare consisted of perhaps 1 per cent battles and 99 per cent sieges*" , with those battles were still dominated by cavalry (Carey et al., 2006). Curry and Brooks (Curry & Brooks, 2020) note that *"warfare was less concerned with seeking victory through battle than with exerting economic pressure upon the enemy by laying waste his land or gaining control of it by capturing his castles."*

The early wooden castles built in England after the Norman invasion were replaced by stone castles during the 12th Century and curtain walls were added (Curry & Brooks, 2020). Over 720 masonary castles have so far been identified from the Medieval period England and Wales (Gatehouse, n.d.). Field armies in Britain were typically only 1000-5000 strong (Curry & Brooks, 2020), making it highly viable for a small number of defenders to hold out for a significant time in a well-protected castle. Hulme (Hulme, 2004) identifies 127 sieges in 42 castles between 1069 and 1482, with 77 (60%) being successful.

Writing about sieges in King Stephen's reign (1135-54), (Hulme, 2019) notes that:

> *"Twelfth-century chroniclers' views of castle strength focussed on the integration of defences into landscape features providing obstacles, steep slopes and water defences, rather than specific details of castle design. Strong, well garrisoned castles were very difficult to overcome, so long sieges were rare, though sometimes blockades by siege castle were attempted. More commonly, underhand methods, surprise attacks and assaults, particularly on less powerful castles, were the usual forms of 'siege'. Control of castles gave control of localities, conferring power and status. Power included imposing extra castle-work obligations on ordinary people, who anyway were the main victims of widespread and prolonged warfare primarily conducted by plundering and burning raids. Unsurprisingly, they – the ordinary people – viewed castles as centres of oppression." (Hulme, 2019)*

Brooks and Curry (Curry & Brooks, 2020) identify 5 stages to taking a castle by storm:

- Reconnaissance;

- Filling the moat;
- Escalade over or through the walls, including mining, trebuchets, rams, towers and ladders;
- Gaining a foothold – the storming of the breach;
- Taking the rest of the castle.

A Norwegian contemporary text, *Konungs skuggsjá* or *The King's Mirror,* (Larson, 1917) describes how fortifications were to be attacked with trebuchets against the walls and as howitzers against the interior structures, and with battering-rams when that failed, and then a wheeled siege tower failing that – all very reminiscent of the Hittites.

The Crusades were the large-scale combat operations of their day. The First Crusade opened with the siege of the Seljuk capital, Nicaea (1097), followed by the Sieges of Antioch (1098) and Jerusalem (1098). With Jerusalem taken, the Crusaders both seized existing Muslim and Byzantine era castles and walled cities and built their own with *"dotting the Levant with literally dozens of new castles over the duration of the twelfth and thirteenth centuries"* (Carey et al., 2006). In 1187 Saladin besieged Tiberias, and after the subsequent battle of Hattin took Acre, Jaffa, Gaza, Jeruslam and "*some fifty crusader castles*". In Moorish Spain, Barbastro was taken after a forty-day siege (1064), and the *Reconquista* followed a model of *"raiding and the besieging and capture of cities",* and as with the Levant then using those (re)captured castles as a base for further operations. In 1147 English, Flemish and German crusaders captured Lisbon from the Almohads after a notable siege (Carey et al., 2006).

Despite being a predominantly cavalry force even the Mongols had a siege train derived initially from Chinese weapons and techniques. Notable Mongol sieges included Riazan (1237) and Kyiv (c.1240) (S. R. Turnbull, 2004). Amongst Hulagu Khan's Golden Horde army of over 100,000 that entered Persia in 1256 was *"a very substantial siege train manned by a thousand crews of Chinese engineers"* (Carey et al., 2006) and which was used to demolish over 100 Ismaili castles. Baghdad was taken after a 7-day siege in 1258, sacking the city over a further 7 days (Carey et al., 2006).

Late Middle Ages (c.1350 to 1500CE)

By the Late Middle Ages Europe was entering a period of increasing great power competition. Warfare was moving away from the cavalry arm as archers and close-order infantry with bills and pikes were able to effectively counter them. Many of the internal European conflicts were typified by a combination of sieges and smaller scale engagements, such as those of the *chevauchée* of the British in France with relatively small armies, resulting in battles such as Crecy (1346) and Agincourt (1415). Smith (Smith, 2017) notes that "*most battles were sieges, fought by certain and set rules of war*". Notable sieges of the 100 Years War were Tournai (1340), Calais (1346-7), Harfleur (1415) and Orléans (1429) (Carey et al., 2006).

This period saw the rise of gunpowder on the battlefield, and in the number of sieges. The first cannon appeared in the West around 1330 and the first uses in Western sieges were possibly at Tournai (1340) and Calais (1346-7). By the early 1400s new developments in gunpowder were improving the use of siege artillery, and it was here rather than on the field that gunpowder weapons had the biggest initial impact. The Siege of Murten (1476) by Burgundian Duke Charles the Bold saw artillery used by both Charles's unsuccessful besiegers and the Bernese defenders (Carey et al., 2006). Smith (Smith, 2017) notes that *"Artillery was first and foremost the biggest technological advancement of the period. Town walls could no longer withstand the new power of artillery. In turn, this meant one could no longer defend passively and hope the enemy's siege would fail or sickness would ruin their army"*. However, strong castles and walled cities still provided some protection as at Orleans (1428-29) where, as was still typical, *"the cannonballs were made of stone and hence did little harm to the thick stone walls"* (Davis, 2003). The first cast-iron cannonballs in Europe were made in 1414 in Namur by Danekin Le Feron (Awty, 2007).

With regards to the War of the Roses (1455-1485), Hicks (Hicks, 2003) notes that *"campaigns*

themselves were very short… there was little garrisoning or blockading of castles or towns…the strategy was always offensive". However, there were still some examples, such as when in 1462 Henry VI and a small Scots army gained the support of the garrisons of the castles at Bamburgh, Dunstanburgh and Warkworth, the Earl of Warwick used isolation and hunger as his weapon against them since "*it would have been much too expensive to employ heavy artillery at all three castles"* (Seward, 2013).

The First Battle of St Albans (1455) is an early example of an eye-witnessed recorded urban street battle, where forces of around 2-5,000 a side fought through the narrow town streets as the Duke of York ambushed Henry VI (Burley & Watson, 2007). Henry's troops erected barricades across St Peter's Street (the main thoroughfare) and the fighting took place in side-streets and back-gardens, where the Duke of York's troops "*breakdown fondly houses and pales on the east side of the town, and entered into Saint Peters Street, slaying all those that withstood them.*" (the Abbot of St Albans, quoted in Seward, 2013). (Curry & Brooks, 2020) also note the long history of street-fighting both before and during the Medieval period, citing as other examples Jerusalem (70), Lewes (1294), Dover (1295) and Harfleur (1405).

Constantinople was captured by the Turks on 29 May 1453 as part of the culmination of a 53-day siege, with a siege train that included the "Basilica" – a 27ft long cannon firing 600lb stone balls – but with a rate of fire of only 7 times a day! In order to successfully isolate the littoral city Mohammed II also had to bring 30 ships dragged overland to enforce a maritime blockade (Davis, 2003).

Early Modern Period (c.1500 to 1800)

During the Italian Wars (1494-1559) between France and the Italian States Charles VIII (ruled 1483-1498) "*used his modern professional army and state-of-the-art field and siege artillery, mounted on carriages for greater tactical and strategic mobility, to smash all opposition…[his enemies]…left the field of battle and withdrew behind the traditional safety of city and castle walls, only to have Charles's modern artillery reduced the medieval walls in a few hours.*" (The Italian Wars and the Rise of the Spanish Tercio - Warfare In The Medieval World, n.d.)

Siege guns "*helped bring an end to the 'age of castles*'" (Carey et al., 2006). For instance, during Muscovy's wars of expansion against the Ottoman's Vasily III was able to assemble 2000 canons during the siege of Smolensko (1514) (Rodríguez, 2020).

However, the siege and resultant battle of Pavia (1525) was so one-sided, with the Imperial pike and arquebusiers defeating the more traditionally armed French that *"the decisive engagement all but disappeared from European warfare for more than 100 hundred years…. Historians have cited many reasons for this change: the defensive superiority of combining firearms with field entrenchments; a new generation of fortifications called 'trace italianne', characterised by low thick walls to defeat siege guns; and the spread of military entrepreneurship from northern Italy beyond the Alps*." (Carey et al., 2006). A new form of fortification had evolved to replace the stone castle and to counter the power of the artillery.

Some innovative techniques were also apparently tried during this period, including the "rocket-cats" and "rocket pigeon" illustrated in the *Buch von den probierten Künsten* text of master gunner Franz Helm in 1584 – Helm being in the service of various German princes against the Turks (Fraas, 2013).

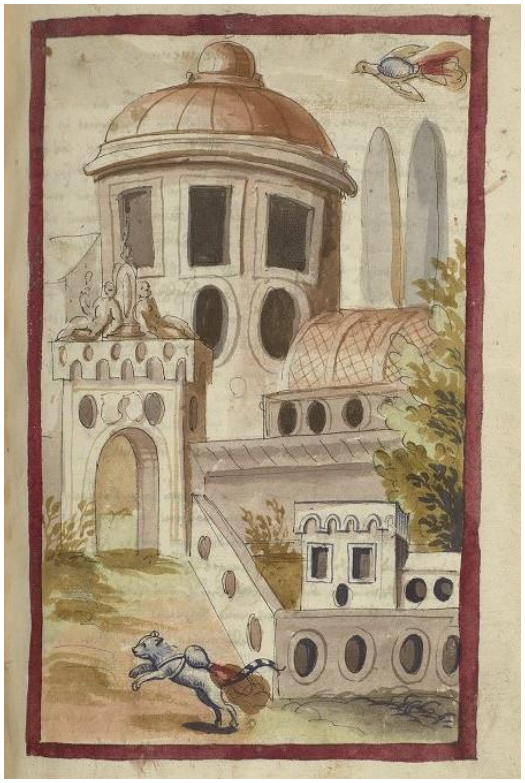


Figure 3: Rocket-powered cats and pigeons (from Helm, 1584)

Two notable island sieges of the period were Rhodes (1522) and Malta (1565) – both with the Ottoman Turks under Suleiman besieging the Knights of St John. At Rhodes, Suleiman landed his troops and attacked the city with mines from the landward-side. However, the Knights had recently recruited a Venetian engineer, Gabriele Tadini da Matrinengo, who used tightly stretched parchment to detect the Ottoman mining and initiate counter-mines. The siege ended after almost 5 months with the Knights surrendering but being offered safe passage off the island (Davis, 2003). By 1530 the Knights had established themselves in Malta and Suleiman attacked again in 1565, landing a siege-train with over 100 guns (including a 300 lb-er). An estimated 6-7000 rounds per day were being fired at Fort St. Elmo. Mines and siege towers were also used, but after 3 months' fighting the Turks had not managed to take Fort St. Michael and Senglea, and suffering from high losses, disease and hunger lifted the siege and withdrew (B. A. Watson, 2009).

The Thirty Years War

During the Thirty Years War (1618-1648) *"battles remained relatively infrequent events, and it was the siege that predominated*" (Tallett, 1992), with *trace italienne* fortifications "*that changed warfare forever, demanding ever larger armies and tying up a commander's energy and resources for months.*" (Haude, 2019). Notable sieges included Pilsen (1618), Frankfurt-Oder (1631), Nuremburg (1632), Hirschberg (1640). Whilst major field battles such as Breitenfeld (1631) and Lützen (1632) tend to dominate the perspective of the War, this was a heavily urban war with 49 cities besieged (45 with bastion/*trace italienne* fortifications), and towns were also targets. Across Schlesien, Neumark and Pommern there were over 121 events of "fortress war" between 1625 and 1648, with many towns being attacked on multiple occasions – the record being Gartz which was attacked six times between 1630 and 1638 (Podruczny, 2019). Podruczny notes that sieges were principally prosecuted by bombardment and storm and that *"Mines were used relatively rarely in attacks on fortress"* (Podruczny, 2019).

The Wars of the Three Kingdoms

The Wars of the Three Kingdoms (also known as the English Civil Wars) saw notable sieges at

Bristol (1643), Chester (1644-46) and Colchester (1648), as well as more minor sieges such as at Basing House (1643-45) and Kings Lynn (1643). Again, whilst the field battles such as Edgehill (1642) and Naseby (1645) dominate the popular narrative, there were more than 300 sieges of various types, the New Model Army fought 2 major battles but 12 sieges in its own first year, and Prince Rupert participated in twice as many strongpoint battles as he did field battles (Flintham, 2016). The 1st Earl of Orrey, writing in 1677, describes the wars in Ireland as being fought "*more like foxes than lions, and you will have twenty sieges for one battle*" (Boyle, 1677). Monck, who served on both sides during the Civil Wars noted that:

"Every Commander knoweth that man's flesh is the best Fortification that belongs to a Town; and where a Town is well manned, the best way of taking it is by Starving; and when a Town is weakly manned, the best way of taking it is by Battery and Assaults, or by Approaches, Mining, Battery, and Assaults." (Monck, 1671)

Flintham (Flintham, 2016) identifies 4 main types of sieges during the Wars:

- *Coup de main* assault, e.g., Edinburgh Castle (1639);
- "Smash and Grab" with an assault after only a preliminary bombardment;
- Blockade and isolation, e.g., Gloucester, Lyme Regis; and
- Complete investiture, complete with circumvallation, e.g. Newark (1645-6), Oxford (1646) and Colchester (1648).

The Battle of Brentford (1642) was an example of proper street-fighting during the Wars. The town had a population of around 1500 and consisted of one main street, roughly a mile long. The defending, and out-numbered, Parliamentarians had *"barricaded the narrow avenues of the town, and cast up some little breastworks at the most convenient places."* (Clarendon, 1888). With the first barricade taken by the Royalists the Parliamentarians fell back on a second barricade. However, there was no evidence of the defenders having occupied the surrounding houses in order to enfilade the Royalist advance. When the second barricade fell the Parliamentarians fled, but the Royalist then came up against fresh Parliamentary troops in the "lanes and closes" of Turnham Green who held the Royalists in check for 4 hours until night fell. Brentford itself was sacked by the Royalists forces (Porter & Marsh, 2010).

It was little different on the continent. During the Spanish-Dutch War (1621-1648) both sides maintained field armies of around 100,000 but the war was conducted by sieges not pitched battles (Parker, 2013). Parker (Parker, 2013) quotes a contemporary German military instructor as writing that nobody "*talks anymore about battles, Indeed, the whole art of war now consists only of cunning attacks and good fortification*."

Vauban and The Lace Wars

Vauban (1633-1707) was:

"the greatest of French military engineers when French military engineers were the greatest in the world. world. So far-reaching were his innovations that some of his methods of attacking and defending fortified places are still in use today, while, for more than 100 years after his death, his techniques had such enormous prestige that, in spite of advances in arms which should have been followed by corresponding change in tactics, his systems were followed slavishly." (Cohen, 1937).

During his life Vauban enhanced the defences of 300 old fortresses and built 33 new ones. Working initially with designs based on the classic star-shape bastion for designs of *trace italienne,* Vauban's "systems" (which progressed through 1st, 2nd and 3rd generations) strengthened the defensive works with the addition of casemated shoulders and flanks (Holmes, 2001). Later works incorporated significant elements of town planning, including grid-based streets, and 12 of his fortified towns and cities are covered by the *Fortifications of Vauban* UNESCO World Heritage Site (UNESCO World Heritage Centre, n.d.).

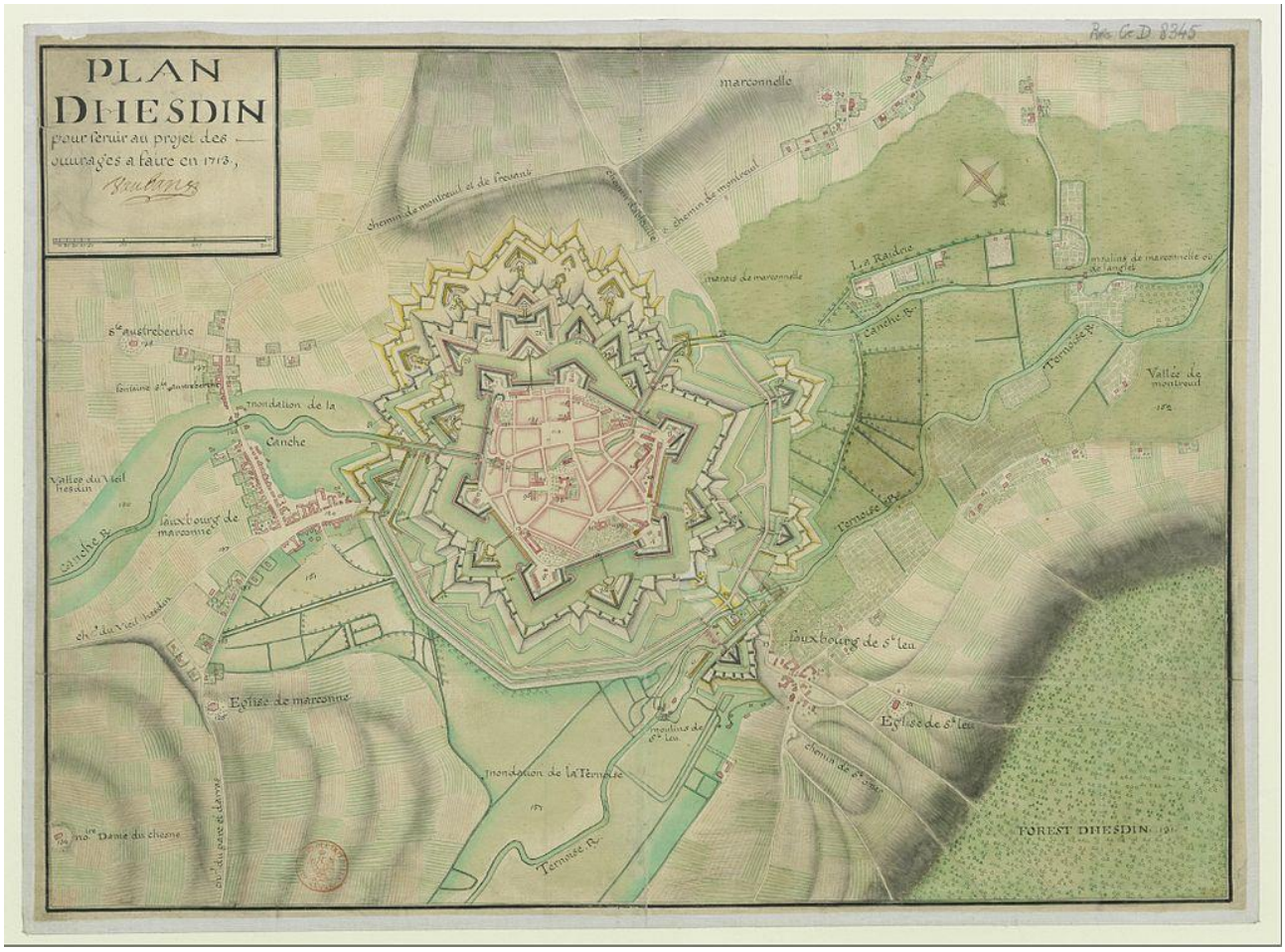


Figure 4: A Vaubin fortified town - Hesdin in 1707

Vauban was also actively involved in the besieging and occasional defence of cities and towns. During the Franco-Dutch War (1672 to 1678) Vauban participated in 17 successful sieges and one successful defence and undertook 48 sieges during his life. During the Siege of Maastricht (1673) he wrote *Mémoire pour servir d'instruction dans la Conduite des Sieges* (marquis de Vauban, 2012) to consolidate his experience, and in particular the “approach by parallels” which became the standard approach until the mechanised era – and still has some legacy to the current time. The concept was that a series of trenches running parallel to the walls were dug to connect the saps which approached the walls. Soldiers in these parallels were then largely protected from attack, and if the besieged army launched a sortie to attack the engineers in the saps then soldiers in the parallels could quickly rush to their aid and repel the attack. Vauban’s calculations and tables for the time and effort needed to undertake a siege has suggested an almost clockwork and scientific approach to the undertaking of a siege (Ostwald, 2005). This was however combined with innovative practical experimentation, such as the use of ricochet shot at the Siege of Ath (1697) which was fired with just enough powder to clear a parapet but then roll along the rampart (Ostwald, 2007). The Nine Years' War (1688-1697) between France and the League of Augsburg also featured the two sieges of Namur in 1962 and 1695 (Duffy, 2006), the latter seeing the city taken by “vigour” rather than the by Vauban’s slower “efficiency” (Lenihan, 2011).

With Vauban’s improvement to siege techniques, amongst other factors, the fortified city and related siege-craft appears to have entered a decline in the seventeenth century. As early as 1701 the Duke of Marlborough *“argued winning one battle was more beneficial than taking 12 fortresses“* (Hoof, 2004) and works such as Maurice de Saxe’s *Mes Rêveries* (published 1757) were promoting a more mobile kind of warfare (Saxe, 2012).

However, notable sieges continued. The Great Northern War (1700-1721), principally between Russia and Sweden saw sieges in Narva (1700), Riga (1700), and Straslund (1715) (Frost, 2014),

as well as the great field battle of Poltava (1709). The War of the Spanish Succession (1701-1714) featured sieges at Lille (1708), Tournai (1709) and Mons (1709), as well as field battles at Blenheim (1704), Ramillies (1706) and Malplaquet (1709). The War of the Austrian Succession (1740 and 1748) again involved most of Europe with a notable siege at Tournai (1745) – commanded by Saxe - and the reduction of the other Dutch Barrier Fortresses, and a notable field battle at Fontenoy (1745).

The Seven Years' War (1756–1763) continued the pan-European strife with significant sieges at Olomouc (1758), Dresden (1760), Cassel (1761 & 1762) and Almeida (1762). The largest field battles were at Prague (1757), Hochkirch (1758), Minden (1759), Kunersdorf (1759), Torgau (1760), Villinghuasen (1761) and Wilhelmsthal (1762) – each battle involving over 100,000 men. Beyond Europe the war saw notable sieges and urban assaults at Quebec (1759), Havana (1762), Calcutta (1756), Madras (1758-9) and Masulipatam (1759). Black (Black, 1996) notes that:

During the Seven Years War the British were essentially obliged in their colonial warfare to defeat small armies composed of regular European units supported by native irregulars. Campaigns centred on the capture of major fortresses and centres of government, such as Louisbourg and Quebec, all of which could be reached by water. Experience with sieges was obviously important. Operations in the hinterlands were limited: the British captured Manila and Havana, not the Philippines or Cuba, but they gave effective political and military control of what the British sought, bargaining counters for the inevitable peace treaty. The same was even more true of those French bases that lacked any real hinterland: Goree, Pondicherry, Louisbourg and the principal fortresses in the West Indies. The military objective necessary to secure victory in colonial campaigns was therefore clear: assured naval superiority sufficient to permit the landing and supply of an amphibious force that would successfully besiege the major fortress whose capture would lead to the effective end of Bourbon strength. (Black, 1996)

Drawing the Seventeenth Century to a close, Dean comments that:

"During the classic age of siege warfare, from Vauban to Frederick the Great, fortresses virtually dominated the conduct of war. After the Thirty Years' War (1618-48), the greater dependence on magazines for supply brought with it a stagnation into wars of position. The heavy siege guns and large supply trains required to undertake a successful siege contributed materially to the immobility of armies. It was the large number of forts constructed on the main theatres of operations which reduced the possibilities for decisive results. Due to concerns about supply, it was not deemed possible to penetrate deep into enemy territory leaving hostile strongpoints unsubdued as a threat to the line of communications." (Dean, 1989)

The American War of Independence

Full-blown sieges were a rarity in the American War of Independence (1775-1783), the only significant sieges being at the very start of the war at Boston (1775-1776), and at end of the war at Yorktown (1781). Black (Black, 1996), relates the British "seaboard strategy" in the war to that of the fortress strategy in the Seven Years War described above. Whilst hardly urban it is notable that the opening shot of the American War of Independence was fired during a brief skirmish on the town green of Lexington (population c. 900) on 19th April 1775 – although the forces were arrayed in parade-ground order (Phinney, 1825). Trenton (1776) included a running fight with the Hessians through the town.

Non-European Urban Conflict prior to 1800

Before moving on to Nineteenth century it is useful to examine how sieges and other forms of urban combat had been manifest before Europe and North America.

China

The Jurchen besieged Kaifeng (then Bianjing), the Northern Song dynasty capital, in 1126 for four months, and then 4 months later for a further 6 months (Chaffee, 2007). Kaifeng was again besieged in 1232-1233 by which time it was the Jurchen capital and the Mongols were the besiegers. During the Mongol siege an estimated 600,000 to 1.2 million inhabitants died of sickness, out of a total population of around 1.4 million (Hymes, 2021). The weaponry used at the second siege showed how more advanced the Chinese were in the use of gunpowder as alongside stones the trebuchets were also used to launch gunpowder bombs – although this was possibly only by the Jurchen defenders (S. R. Turnbull, 2004) (Twitchett et al., 1978).

Discussing the Second Jinchuan War (1771-1776), Waley-Cohen (Waley-Cohen, 1993) describes how the fortified cities were so inaccessible that cannons had to be forged on the front since only the metal ingots could be carried in, and that the Qing forces' were unfamiliar with the siege methods needed despite that fact that "*the Chinese had for centuries been fortifying entire towns with massive walls and were quite familiar with the concept of siege warfare, but the traditional means of ending a siege were mining, mass assault, or blockade, none of which was feasible in this case because of the mountainous terrain. Furthermore, Chinese city walls generally were made of tamped earth rather than of the stone that confronted the Qing armies in western Sichuan."* Waley-Cohen also notes in the 1790s *"an official who had been besieged by rebels in Guizhou province produced a detailed manual on urban defense based on personal experience (Wu Pei Ji Yao [Collected Essentials of Military Preparedness])"*.

Japan

Turnbull (S. Turnbull, 2008) notes that it is only from the Heian Period (794 to 1185) onwards that there are reliable contemporary accounts of military operations involving fortifications and stockades. The wooden stockades of the Heian were particularly susceptible to attack by fire and storm. At the siege of Akasaka (1333) a dummy wooden outer wall was built that was then allowed to fall on the assaulting troops. At Chihaya (1333) Kusunoki Masashige used dummy troops to line the ramparts, released boulders to tumble down the cliffs below the walls onto the besiegers, and dropped fire onto their assault bridges (S. Turnbull, 2008). The Ōnin War (1467-77) largely took place in, and devastated, the city of Kyoto (S. Turnbull, 2021) The war initiated the Warring States (*Sengoku*) period (1467-c.1638). The *Azuchi–Momoyama* period (1568 to 1600) which brought the *Sengoku* to a close saw a shift from stockades to more substantial and impressive structures and included a series of sieges at Nagashino (1575), Kitanosho (1583), Odawara (1590), Fushimi (1600), Osaka (1615) and Hara (1638) (S. Turnbull, 2003). Turnbull comments on how "t*he prevalence of particular fortress types in medieval China, Mongolia, Japan and Korea demanded the evolution of different modes of siege warfare in each country. The wealthy walled towns of China, the mountain fortresses of Korea and the military outposts of Japan each presented different challenges to besieging forces.*" (S. Turnbull, 2012).

Mongols

The Mongol conquests featured many sieges including Kuju (1231), Kaifeng (1232), Ch'oin (1232), Vladimir (1238), Kyiv (1240), Ch'ungju (1253), Baghdad (1258), Aleppo (1259), Xiangyang (1268-1273), as well as the capture of Hanoi (1287) and Nanjing (1356). The sieges featured the full panoply of siege-weapons and techniques including siege towers, covered protection for assaulting troops, rams, ladders, mining, counter-mining, trebuchets, fire-weapons, subversion and starvation. (S. R. Turnbull, 2004)

India

Dincecco et al (Dincecco et al., 2020) describe how in India *"the population density was high enough in both early modern Europe and pre-colonial India to make territorial conquest through*

battle a worthwhile endeavor".

The Delhi Sultanate (1206–1526) had well developed siege techniques with siege mounds (*pasheb*), siege towers (*gargaj*), saps (*sabat*), mines, light and heavy sling-throwers (*añada* and *manjaniqs*), rams (*kharak*), and ballistas (*charkh*). Notable sieges by the Sultanate included Gwalior (1232), Ranthambore (1301) and Warangal (1309) (Athar, 1990).

Mughal Empire (1526–1857) history includes notable pre-colonial sieges at:

- Chitor (1567–68), Ranthambhor (1569), Kalinjar (1569) and Surat (1572-73) – known as the Akbar sieges (Nath, 2018),(Nath, 2014);
- Kabul (1629) by the Uzbeks against the Mughals (Foltz, 1996); and
- Bijapur (1685-6) and Golconda (1687) against an internal revolt and the Persians respectively (Pearson, 1976).

Edwardes and Garrett (Edwardes & Garrett, 1995) provide further detail of numerous Mughal sieges.

Nath notes, quoting Streusand (Streusand, 1989), that the Moghuls had a "*definite but limited*" superiority over their rivals and that this extended to the ability *"to take large stone fortresses, albeit after very slow, arduous and painstaking sieges"* and that *"the difficulties the Mughal armies endured during these sieges persuaded them to accept the conditional surrender of garrisons in later ones"* and that *"these sieges [under Akbar] demonstrated how forts would always function as pivotal bargaining points between the empire and local powers. Underlining the only marginal importance of gunpowder artillery in deciding the outcomes of these sieges..."*.

Moghul sieges used the familiar techniques of the mines, zigzagging saps and siege towers, along with guns for both offence and defence. Garza (Garza, 2016) comments that "*Siege craft became increasingly important over time. The Mughals' basic techniques for siege warfare were not dissimilar to contemporary European practices. The target fortress or city was surrounded by lines of circumvallation and contravallation*" and that "*Catapults and trebuchets remained in Indian siege trains for decades after Babur's invasion*" and that being inexpensive and easily transportable offered significant advantages over early gunpowder cannons. Gommans (Gommans, 2002) and Nath (Nath, 2019) provide further analysis of Mughal sieges and siege-craft.

In colonial times there were sieges at Bombay (1689–90) at the end of the First Anglo-Mughal War (1686-90) against the East India Company (Hunt, 2017), and twice at Seringapatam (1792 and 1799) during the Third and Fourth Anglo-Mysore Wars (M. R. Howard, 2020). During the Indian Rebellion (also known as the Indian Mutiny) there was the siege at Delhi (1857) (Dalrymple, 2009), but the sieges at Lucknow (1857)(Blunt, 2000) and Cawnpore (1857) (Luscombe, n.d.) are more well known and were of a different nature, with small isolated garrisons with minimal defences protecting small numbers of women and children – with many of the women at Lucknow writing memoirs. Engagements more akin to street-fighting took place at the Battle of Gwalior (1858), the last major engagement of the Indian Rebellion, and where Rani Lakshmibai of Jhansi, one of the heroines of the Rebellion was killed leading an attempted breakout (Paul, 2011).

Africa

There were sieges at Timbuktu (1468) and Djenné (1475) when the Songhay Empire under Sunni Ali expanded into the Mali Empire – with Djenné featuring a riverine assault (Wilson, 2015), (Samuel, 2021). Djenné was besieged again by the French in 1818 (*Djenne Djenno*, n.d.).

Bala describes how in pre-colonial (circa 17th century) Hausaland (present day Northern Nigeria, south of Mali) the development of fortifications surrounded by ditches and thickets required siege tactics to be developed which consisted of ravaging the farmlands of the besieged so as to force them to either come out and fight in the open or be starved into submission. The Hausa though were also capable of more formal siege tactics, which they learnt from the Bornoan in the 16th

century, using archers to fire over the walls whilst sappers dug below the walls and assaulting troops used scaling ladders. Battering rams did not appear to be in use (Bala, 1988).

Ethiopian Emperor Tewodros II besieged the mountain stronghold of Magdala (present day Amba Mariam) in 1855, made it his treasury, and was then defeated in the same stronghold when it was besieged by the British in 1868 (Narasingha, 2015). Tewodros even had his own foundry making large cannons and mortars of up to 75 tons (Tadesse, 2015).

Olukoju describes the Nupe in the 1880s "besieging" Akoko towns in Northeastern Yorubaland (in present day Nigeria), particularly in Oka, although inhabitants often fled to the caves in the hills, and used these as a base for guerilla attacks on the invaders (Olukoju, 2003). Ongoing wars involving the Ibadan, Ilorin and Nupe featured possibly more traditional sieges at Ikorodu (c.1862-65), Ilesa (c.1867), Kabba and Olle, where the defences were typically mud and stone walls and earthen ramparts. (Usman & Falola, 2019).

Meso and South America

Fortifications have been identified in Mesoamerica from as early as 1000 BCE in the Maya lowlands, and later in the Valley of Oaxaca, typically of a ditch and embankment design, sometimes topped with a wooden palisade. The hilltop Zapotec stronghold of Monte Alban had a population of 16,000 by 200 BCE, a 3km earthen wall in its most exposed flanks and a reservoir holding 67,500 m^3 if water (Hassig, 1992). At Muralla de León there is another walled settlement in a good defensive position dating back to c. 400-200 BCE and with an at least partly defensive purpose with a 1.5km long wall which is up to 5.5 meters high and 12m deep (Bracken, 2023).

Hassig notes that:

"Fortifications existed from early times in Mesoamerica and some basic siege craft must have been developed to counter these, but there is little evidence of it. In part, the lack of siege craft may reflect the unwillingness of defenders to remain behind urban fortifications while their dependent towns and fields remained vulnerable. Thus, walls were useful against small raids, but conventional forces usually had to be met in the open. Yet the decision was sometimes made to resist behind walls and the murals at Chichen Itza offer the only solid evidence of a siege machine in pre-Columbian Mesoamerica. The mural depicts an assault up the stairway of a pyramid that stands behind three towers reaching three to four stories high." (Hassig, 1992)

Considering Chichen Itza an outlier, Bracken comments that:

"Sieges of any length are often dismissed as unlikely to have been practiced by the Maya due to the necessary logistical considerations and the difficulty of sustaining them for a long period in such a setting…. it may be the case that prolonged siege campaigns began to appear with the wider use of the bow and arrow as an effective projectile weapon. Many of the same supply chain considerations, however, remained in effect despite the shift in weaponry, and with little evidence otherwise it does not seem that a prolonged siege effort was common. Fortifications were therefore likely designed to repel relatively quick, focused attacks, ranging from secretive raids involving a few attackers to open assaults carried out by hundreds or even thousands … Heavy investment in fortification may be a testament, then, to a great frequency (as opposed to duration) of attacks against the settlement." (Bracken, 2023)

Tecolote in Guatemala (600-900) featured a series of stone walls (which may have been topped by a wooden palisade) and hilltop watchtowers protecting one avenue of approach to a ~2 sq. km. site. The walls seem to be arranged to support gates within each layer, and kill-alleys between each set of walls (Scherer & Golden, 2009). Scherer and Golden comment that *"In the absence of siege engines, gate doors need not have been robust to serve as formidable barriers"* and that *"Unlike medieval warfare in Europe, Maya warfare likely did not involve protracted siege. Rather, the Tecolote system was built as a barrier to slow or halt enemy warriors who were attacking the settlement on foot".*

Under the Aztecs, who were also engaged in high ritualistic "flower wars" *(Isaac, 1983)*, Hassig notes that *"sieges remained few and shortlived because they required too much food, despite improved logistical support. Starving out a distant city was not a feasible option. Yet the more sophisticated siege towers used at Chichen Itza had vanished, made unnecessary by the greater range of arrows. Fortified cities were now stormed with the help of ladders built on the spot, or they were not conquered at all."*

Writing about the Inca and the Andes Meddens and Lane (Meddens & Lane, 2022) note that whilst many hilltop fortifications were built (*pukaras*), especially around 1250-1400:

"Siege warfare in the Andes appears to have been a relatively rare occurrence (Arkush and Stanish 2005: 9), and native fortified settlements were not suited to long-lasting sieges. Their defensive walling often restricted access only along the sides of a site where entry otherwise would have been easy, impeding ingress but not rendering it impossible for a determined foe, …. Facilities to store or procure water were often lacking at such sites. Fortified positions tended to be taken by storm or subterfuge.

The siege of Cayambi (c.1487) is one example of a more deliberate siege, with the pukara being isolated and the land around laid-waste to before the fort was stormed – "The Incas were eventually victorious, but only after a protracted and bloody campaign, and only after having used their full arsenal of siege tactics: frontal assault, blockade, and deceit." *(Arkush, 2010).*

The conquistador era siege of Tenochtitlan (1521) comprised of two main phases: the Aztec assaults on Cortés's force whilst they were trapped in the royal palace, and then, after his breakout, when Cortés returned to take the city, first isolating, then gaining brief access through some riverine manoeuvres on Lake Texcoco, and then a 10 week fight to gain full entry to the city and subdue it (Davis, 2003) (McKenna, 2014).

The Siege of Cuzco (1536-1537) demonstrated a lack of investiture and isolation by the Incas besieging the Spanish, with the latter regularly being able to sortie out by horse and the former gathering for sporadic assaults but also drifting away as seasonal farmwork was required. (Meddens & Lane, 2022).

The Nineteenth Century

French Revolutionary Wars and the Napoleonic Wars

Although Napoleon arguably first came to prominence at the Siege of Toulon (1793)(Roberts, 2014) and his use of cannon in the streets of Paris for the infamous "whiff of grapeshot" on 13 Vendémiaire An IV (5 October 1795) to stop rebels from attacking the Convention (Roberts, 2014) is well-remembered, sieges and urban combat were not to be the major features of the Napoleonic Wars.

In 1796/7 Napoleon successfully besieged Mantua, but having prepared the city to withstand a new siege by the Austrians, Napoleon embarked on his Egyptian campaign and the defence of the city was badly managed and it capitulated in 1799 (Cuccia, 2014). In his Egyptian Campaign the taking of Cairo (1798) was more akin to an urban battle than a traditional siege (Robson, 2018). Napoleon also led a successful siege at Jaffa (1799), but a failed siege at Acre (1799), despite a large siege train (Cvikel & Goren, 2008). The Egyptian campaign came to an end, after Napoleon had left Egypt, in a series of British-led sieges at Damietta (1799), Cairo (1800) and Alexandria (1800) (Mackesy, 1995). Other sieges of the Revolutionary period included Mainz (1799) and Genoa (1800)(Davis, 2003).

Dean sums up the evolving situation with "*The campaign of 1799 in Italy demonstrated that the*

Austrians were still the masters of siege warfare. The French-occupied forts capitulated one after another, usually following a well-prepared and intense bombardment" but that "*the dominant role of forts in war had been supplanted by French mobility and their preference for rapid advances to destroy their opponents' will to resist.*" (Dean, 1989).

It is hardly surprising then that the Napoleonic Wars were dominated by great field battles, fought by large armies. Even where major cities were taken, such as Vienna, Berlin and Moscow they were taken fundamentally unopposed after major field battles or engagements – in these cases Ulm (1805), Jena–Auerstedt (1806) and Borodino (1812). Some large battles were fought predominantly within urban areas, notably Leipzig (1813), and even the Battle of Paris (1814). More typical, though, was that since the battlefields tended to be large and the environments reasonably well populated there were often villages within the battlefield which became the focus for urban and street fights. Notable examples include Hassenhausen at Auerstedt (1806), Fuentes de Onoro (1811), Arinez at Vitoria (1813), the 4 villages at Lutzen (1813), and Plancenoit at Waterloo (1815) (Chandler, 2009).

What sieges there were tended to be away from the areas of Central Europe where the main campaigns took place, such as when the British Army and Royal Navy besieged Flushing in 1809 as part of a plan to deny the Dutch shipyards and arsenals to Napoleon during the disastrous Walcheren Campaign (M. R. Howard, 2012). The most notable set of sieges was in the Peninsular, where armies were smaller and supply routes more vital. These sieges included two at Zaragosa (1808-9), Badajos (1811), Cuidad Rodrigo (1812), Badajos again (1812) and San Sebastián (1813) (Hughes, 1982). Daly (Daly, 2022), whilst cautioning against overlooking the importance of sieges during the Napoleonic period, admits that *"of all the Napoleonic theatres of war, it was the Peninsular War where sieges were most frequent and important, with around thirty formal sieges during the conflict."*

Towards the Year of Revolutions

Bilbao was besieged twice, in 1835 and 1836 during the First Carlist War. The Belgian Revolution began with the populace taking to the street, seizing key points and preparing barricades in anticipation of Dutch counter-attacks.

The Mexican-American War, which opened with the Siege of Fort Texas, saw serious urban fighting at the Battle of Monterrey (1846) where US soldiers initially took heavy casualties in the city streets until advised by veterans of San Antonio de Béxar (1835) and Mier (1842) to "mouse-hole" between the buildings (Dishman, 2011). In 1847 the US performed an amphibious landing at Veracruz, besieged the city and then marched 300-400km to Mexico City, taking the city after a series of engagements largely outside the city walls. The US then occupied the city for almost a year (Bauer, 1993).

1848 Revolutions

1848 saw a spate of revolutions across Europe, all focussing on urban centres. On 22nd February 1848 Parisians rose up against King Louis Phillipe, by 24th February the city streets were barricaded, and by 25th February Louise Phillipe had abdicated and the Second Republic was declared. Despite a bloodless revolution in Buda and Pest in March 1848 the twin cities were taken by the Austrians, but then retaken by the Hungarians in 1849. Also in March 1848, demonstrations in Berlin resulted in barricades and a battle with the Army around the *Tiergarten;* and there were also uprisings and clashes with the military in Elberfeld and Karlsruhe. In October 1848 the Vienna Uprising ejected the Army from the city, but the city was bombarded, stormed and retaken 25 days later.

Crimean War

After the three big field battles of Alma (1854), Balaclava (1854) and Inkerman (1854) the Crimean War (1853-6) became mainly focussed on the Siege of Sevastopol (1854-5). The city fell after 11 months in September 1855 and the Russians sued for peace in March 1856. Six great bombardments are recorded, and the siege and campaign were amongst the first to leverage industrial warfare with the use of railways to provide logistical support and large factories to produce prodigious quantities of ammunition (Ponting, 2011). Watson (B. A. Watson, 2009) remarks that Sevastapol "*was a battle of attrition. Artillery did not open gaping holes and defences, nor did it stop the Allied assaults against them; Artillery did make both forces bleed.... What did not change was the tactical stagnation that insisted frontal assaults were the proper approach to siege warfare. The consequences of that differential development between technology on the one side and tactics on the other were played out in World War 1.*"

US Civil War

As with the Napoleonic Wars, field battles seem to significantly outnumber sieges during the American Civil War (1861). Notable sieges were at Charleston (1860-65)(Burton, 2022), Yorktown (1862) (McCarley, 2019), Vicksburg (1863), Port Hudson (1863) and Petersburg (1864-5), although both Charleston and Petersburg were not traditional, isolation-led sieges. Hagerman (Hagerman, 1992) discusses how experiences in the Mexican Wars, the Crimea and the writings of Jomini influenced Civil War generals and strategists and the conflicting ideas of frontal assault and holding siege and turning operations.

Nelson (Nelson, 2012),(Nelson, 2016) sees a more significant place for sieges, and an important shift in the conduct of wars – and people attitudes to them:

"During the American Civil War, Union and Confederate commanders made the capture and destruction of enemy cities a central feature of their military campaigns. They did so for two reasons. First, most mid-19th-century cities had factories, foundries, and warehouses within their borders, churning out and storing war materiel; military officials believed that if they interrupted or incapacitated the enemy's ability to arm or clothe themselves, the war would end. Second, it was believed that the widespread destruction of property—especially in major or capital cities—would also damage civilians' morale, undermining their political convictions and decreasing their support for the war effort.

Both Union and Confederate armies bombarded and burned cities with these goals in mind. Sometimes they fought battles on city streets but more often, Union troops initiated long-term sieges in order to capture Confederate cities and demoralize their inhabitants. Soldiers on both sides were motivated by vengeance when they set fire to city businesses and homes; these acts were controversial, as was defensive burning—the deliberate destruction of one's own urban center in order to keep its war materiel out of the hands of the enemy.

Urban destruction, particularly long-term sieges, took a psychological toll on (mostly southern) city residents. Many were wounded, lost property, or were forced to become refugees. Because of this, the destruction of cities during the American Civil War provoked widespread discussions about the nature of "civilized warfare" and the role that civilians played in military strategy". (Nelson, 2016)

Charleston 1865

Petersburg 1865

Figure 5: The Earliest Urban Warfare Photographs? (Nelson, 2016)

Nelson also notes that:

"From Jackson, Mississippi, to Gettysburg, Pennsylvania, battles and skirmishes carried over into the streets of small towns. But as important as urban centers were to campaign strategies, generals on both sides tried to avoid long-term battles in cities. The urban landscape was not conducive to fights between large armies, and the presence of civilians was problematic for the development of battle strategy. Fredericksburg, Virginia, was the only southern city to host a major battle between the Civil War's largest armies."

Civil War battles that featured significant street-fighting included Kirksville (1862), Augusta (1862) and Winchester (1862-5), and of course the town of Gettysburg itself (1863).

Wars of German Unification

In February 1864, during the Second Schleswig War (1864) the Danish Army withdrew from their Danevirke Line to the fortifications at Dybbø. There was an urban fight at Vejle and the Prussian began besieging Dybbø on 15th March. The Prussians successfully stormed the fort on 18th April 1864. It was also the first battle to be monitored by the Red Cross.

In a similar manner to the Napoleonic Wars, the battles of the Austro-Prussian War (1866) often featured towns and villages as key points, such as Václavice at Náchod, Gitschin, Kissingen, Tauberbischofsheim, and Chlum at Königgrätz.There was a siege at Mantua on the Italian front and Königgrätz itself was prepared for a siege before the decisive battle there (Wawro, 1996).

The Franco-Prussian War (1870-71) opened with the Battle of Wissembourg (1870) where French forces were encircled in the town and after intense street-fighting surrendered. Gravelotte (1870) featured intense street-fighting in St. Privat. The Battle of Sedan saw the village of La Moncelle reduced to rubble after intense fighting and shelling. Metz was besieged from August 19 to October 27 with the Prussians starving the fortress out after failing to take it by storm or bombardment. (M. Howard, 2021),(Wawro, 2010).

The Prussians besieged Paris from 19 September 1870 to 28 January 1871. As with Metz the approach was a combination of artillery bombardment, encirclement and starvation until an armistice concluded. Several minor battles and skirmishes occurred during the siege around the suburbs and peri-urban including Châtillon, Le Bourget, Villiers and Rueil-Malmaison (Horne, 2012). The siege trapped around 2.1 million people (around 300,000 managing to escape before the encirclement was complete but many more fled into the city), and caused around 70,000 additional deaths during 1870/71 (on top of a baseline 45,000 per year) in the city (Cogneau & Kesztenbaum, 2016). Following the armistice the National Guard seized power and established the Paris Commune from 18 March to 28 May 1871 until it was crushed by the French Army during *La semaine sanglante* ("The Bloody Week") of street-fighting from 21 May 1871 (Tombs, 2014).

Figure 6: Saint-Cloud after French and German bombardment during the battle of Châtillon - part of the Siege of Paris (1870)

Figure 7: A Barricade during the Paris Commune (1871)

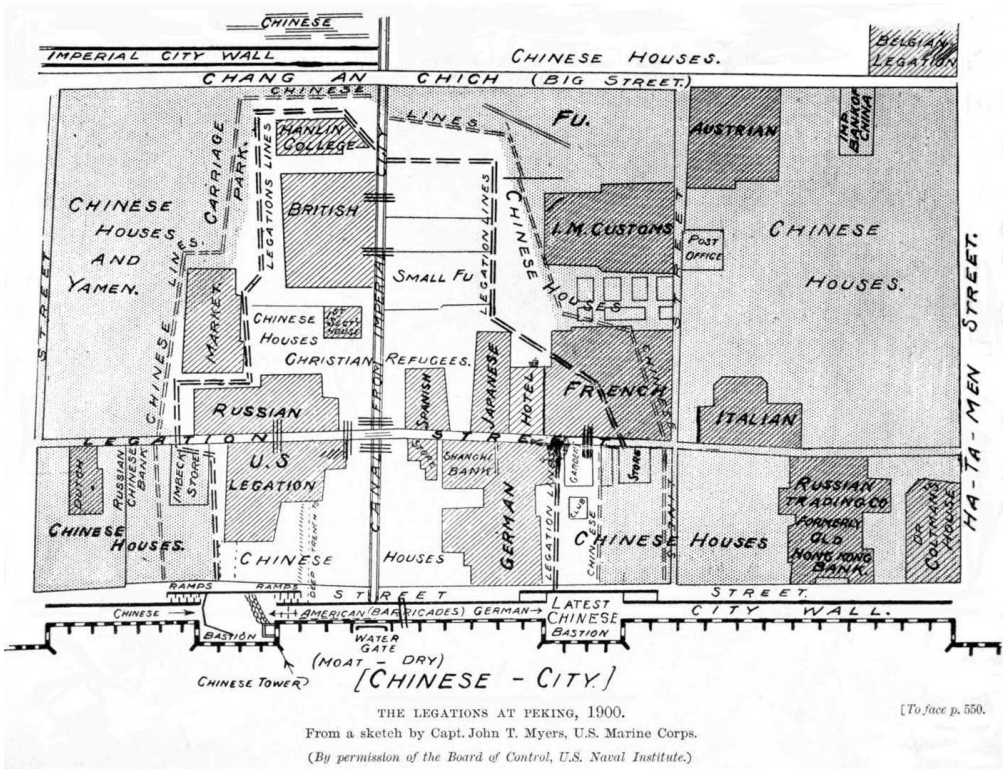
Colonial Wars

For reasons of space the focus here will be on the British colonial wars of the Nineteenth Century. The Indian Rebellion has already been covered above.

The Mahdist War (1881-1899) featured the Siege of Khartoum which began on 13 March 1884, and after encirclement and starvation of the inhabitants was ended by the storming of the city on 26 January 1885.

The First Boer War (1880-81) saw minor sieges at Rustenburg, Lydenburg, Marabastad, and the Second Boer War (1899-1902) saw the more significant sieges at Ladysmith, Kimberley and Mafeking – all three of which were eventually relieved and which were prosecuted more by isolation and starvation than significant bombardment – although the siege of Kimerbley did feature a Boer 100-pounder gun named "Long Tom". The Boers deliberately avoided pitched battles and allowed the British to take Pretoria and Bloemfontein without a fight (Nasson, 2011).

The Boxer Rebellion (1899-1901) saw Western diplomats, missionaries and their families besieged within the Legation Quarter of Beijing. Chinese forces continually tried to take the Legation but the guards of the different national delegations mounted a stiff defence. The siege of the Legation and the Beitang (the Catholic Cathedral) was lifted after 55 days when a multi-national relief force (part of the Eight-Nation Alliance) from the USA, Britain, France and Japan arrived, engaging with the Chinese in intense urban fighting and then taking the city, looting it and occupying it for over a year. There was also a similar operation to relieve the siege at the walled city of Tientsin (Leonard, 2016).



THE LEGATIONS AT PEKING, 1900.
From a sketch by Capt. John T. Myers, U.S. Marine Corps.
(By permission of the Board of Control, U.S. Naval Institute.)
[To face p. 550.

Figure 8: The Legation Quarter in Beijing, 1900.

During the Spanish-American War (1898) Santiago in Cuba was besieged by American-Cuban forces against the Spanish, but disease forced the US forces to withdraw from the island. The invasion of Puerto-Rico (1898) included an essentially urban battle at Coamo. The invasion of the Philippines resulted in the “Mock Battle of Manila” (1898) where the attacking US and besieged Spanish forces staged a mock battle in order that the Spanish could surrender to the Americans

rather than to the Filipinos (Francisco, 1973),(Ward, 2016). The subsequent Philippine-American war led to a second Battle of Manila (1899), although divisional-sized on the US side it was brief and mainly focussed on some perimeter blockhouses.

The Chinese and Japanese Wars

During the First Sino-Japanese War (1894-1895) there was a brief but significant battle at the walled city of Pyongyang, and the Japanese push into Manchuria seems to have featured many smaller urban engagements. Port Arthur was taken by the Japanese after only token resistance. (Jowett, 2013).

In 1904 during the Russo-Japanese War (1904-5), Port Arthur, now leased by Russia from China, was besieged by Japan, and after bombardment and mining and the destruction of the harboured Russian fleet, surrendered. The 140km long Russian line at the Battle of Mukden (1905) included numerous villages and the last stand was made along a line of villages by the railhead which were destroyed by shelling (Kuhn, 1906).

The Mexican Revolution (c.1910-1920) included widespread urban insurgency, protest and revolt, more significant urban fights such as at Torreón (repeatedly), and a US urban battle during the seizure of the port of Veracruz (Robert, 1967).

World War 1

Whilst World War 1 is not notable for sieges (or even urban combat) there was actually a siege at the very beginning, the Siege of Przemyśl in Austria-Hungary (present day Poland) when the Russians besieged a force of around 127,000 was besieged by 6 Russian divisions from 16th September 1914 to 12th October 1914. The siege was lifted as an Austro-Hungarian Army advanced to its relief, but was besieged again from 10th November to 22nd March 1915, this time successfully from Russians took the town and fortress. The Russians are believed to have lost 115,000 soldiers, the Austro-Hungarians 20,000 dead and around 120,000 captured (Dowling & Menning, 2015), (Buttar, 2016), (Buttar, 2017), (A. Watson, 2019).

On the western front the opening moves were also against cities surrounded by rings of forts at Liège, Namur and Antwerp (Evans, 2009). The siege of Medina, by Western backed Arabs against the Ottomans, was the longest of the War, lasting from 10th June 1916 to 10th January 1919 (Uyar & Erickson, 2009). The siege of Novogeorgievsk from 10th August 1915 to 20th August 1915 has been argued as a greater victory for the Germans than Tannenberg, with the German Army capturing a heavily fortified fortress against a numerically superior opposition (Buttar, 2017). Kut (7th December 1915 to 29th April 1916) in Mesopotamia (modern Iraq) saw the Ottomans besiege around 11,000 soldiers in the town of Kut, resulting in what Watson (B. A. Watson, 2009) describes as an “unintentional and unnecessary” siege which “became a tragic defeat for British arms”.

García notes that:

“Along with the industrial revolution and the growth of cities, the urban perimeter became blurred, making the city’s frontier disappear. With the advent of railways, roads and industrial lines of communication, cities went from being fortresses full of human and material resources to nodal elements on which to logistically base their strategies for deploying troops and supplies. And this remained even throughout the First World War, where, while cities were fought around, they were not (or very rarely) fought inside, but relied on as defensive and logistical elements. By capturing cities, the aim was to gain access to the nodal element of the enemy logistical network in order to bring in our resources more quickly and make the enemy take longer.” (García, 2022).

Quoting Marshall (Marshall, 1973), García gives as examples the battles around Liège (1914), Ypres (1914), the Marne (1914) (for Paris) or Gallipoli (1915-16) (for Constantinople).

In terms of street-fighting, Marshall (Marshall, 1973) notes that *"Close-quarter fighting in built-up areas characterized the [late-war] period, though it was mainly catch-as-catch-can, the soldiers in the attack having no special training in house-to-house warfare"*.

The First World War saw significant underground activity in the form of mining and counter-mining, but this was typically against trenchworks rather than city walls (S. Jones, 2010).

The War also saw the extension of warfare up into opposite end of the third dimension – aerial warfare. Dowdall (Dowdall, 2020) notes that:

> *The First World War had a devastating physical impact on urban centres and populations, in France and elsewhere in Europe. New aerial bombing technologies brought destruction to cities far from the armies in the field while, closer to the lines, towns and villages along the Western, Italian, and Eastern Fronts were consumed by artillery fire. Urban destruction had been an established feature of the history of warfare prior to 1914. The quintessential form of urban combat-the siege-had always had profound effects on European towns and their inhabitants, …. But the events of 1914-18 marked a major development in the scale of siege warfare, as both sides were now simultaneously besieging each other, by attacking and defending across an entire continent. Europe was, in effect, besieging itself.1 Furthermore, the power of modern weaponry, especially high-explosive artillery, now allowed armies to reduce whole towns to rubble. By November 1918, the destruction done to numerous large French towns, such as Reims and Lens, was vast, and served as a harbinger of what would befall towns and cities in subsequent conflicts... Between 1914 and 1918, the effects of warfare on urban spaces and communities entered a transformative period." (Dowdall, 2020)*

The Era of Mechanised Warfare

Note: From this point forwards many of the battles deserve more in-depth study as their direct relevance to modern urban warfare increases. However, this current work will continue to present only a high-level view so as to maintain a balance in its approach. Specific battles can be followed up within the main comparative works on urban warfare, e.g. (Antal, 2003), (DiMarco, 2012), (Dilegge, 2019), (Wahlman, 2015), (Collins & Spencer, 2022), (Davis, 2003) and (B. A. Watson, 2009), as well as the specific works cited. I may also produce my own case studies on the battles most relevant to the PhD, and they will also be more thematically analysed as part of the synthesis of the characteristics of urban conflict which will inform much of the rest of the PhD.

Inter-War Period

The Japanese seizure of Manchuria in 1931 resulted in regular skirmishes, including the January 28 incident in 1932 when Chinese and Japanese troops clashed in an urban battle in Shanghai involving around 80,000 troops (Jordan, 2001),(Niderost, 2015).

The Second Sino-Japanese War (1937-1945) saw the Japanese capture Beijing, Shanghai and Nanjing – the latter notable for the massacre (after minimal military resistance) of around 200,000 civilians and the rape of up to 80,000 women. The Battle of Shanghai (13th August – 26th November 1937) was one of the biggest and deadliest battles of the war and has been described as "Stalingrad on the Yantze" (Harmsen, 2013). Harmsen notes that:

> *"In the early part of 1937, the concept of urban warfare was still new to the world. Three months of Battle in Shanghai in the fall of that year changed all that"*

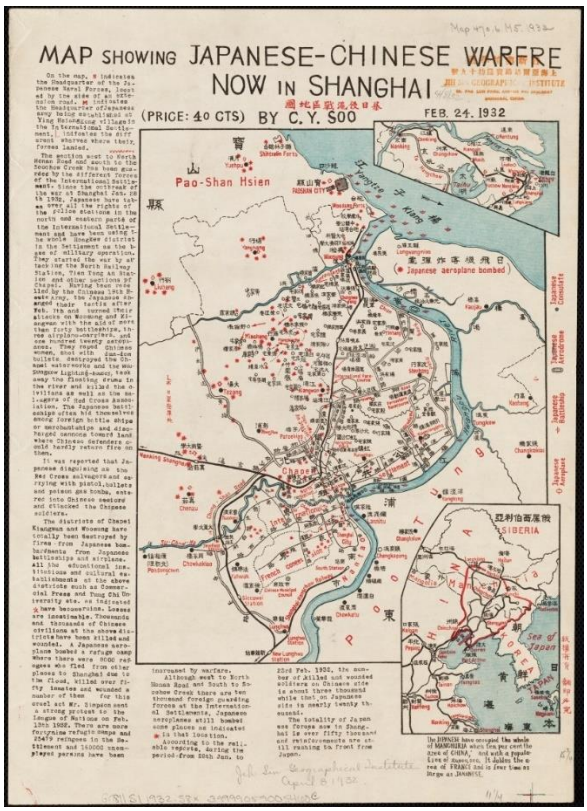


Figure 9: A Contemporary Map of the Battle of Shanghai, 1932

The other notable urban battle of the conflict was the Battle of Taierzhuang (2th March – 7th April 1938) when the Japanese Army was "*Lured into a city fight it was dangerously unprepared for"* and the Chinese displayed "*remarkable imagination*" and "*not only understood their adversaries mind-set but manipulated it to advantage*" in order to set and spring the trap (Antal, 2003).

The Spanish Civil War (1936-1939) saw uprisings in almost all of the Spanish cities. The Siege of Madrid lasted from 8th November 1936 to 28th March 1939, and there were other sieges at Alcázar (1936), Teruel (1937-8) and Gandesa (1938). The bombing of Guernica (1937) killed "only" around 300 people, but its immortalisation by Picasso gave it a lasting impact (Xifra & Heath, 2018). There were significant urban battles at Teruel (1937-8) – "*one of the most terrible [battles] in a terrible war*" (Beevor, 2012), and where mouse-holing again made an appearance, and Oviedo (1936), as well as lower level street-fighting by militias, workers and rebels. (Beevor, 2012)

World War 2

Blitzkrieg, with its focus on speed, penetration and depth meant that urban areas were places to be bypassed or screened and dealt with by follow-up force, the German's *"deliberately avoiding any areas where they could be slowed down and leaving the enemy armies to wither without supplies and eventually be mopped up by trailing infantry divisions" (Sinisi, 2018).* However, lower level urban fighting did take place in the towns and villages along the German advance through the Belgium and France including at Bouillon, Bouvellemont, Lueven, Amiens, Rotterdam, Boulogne (where a ladder had to be borrowed from a nearby kitchen to help break the city walls!) and Calais, with the attack on Dunkirk "*to be left to the Luftwaffe*" – Guderian quoting Hitler *(Guderian, 2009)*.

Rather than (re)produce a blow-by-blow account of the urban battles of World War 2, Table 1 identifies some of the key urban sieges and battles in each theatre.

Theatre	Urban Battles	Sieges
Early War	See above	Warsaw (1939)
North Africa		Tobruk (1941)
Mediterranean		Malta (1940-2)
Far East		Singapore (1941-2) Imphal (1944)
Eastern Front	Kyiv (1941) Stalingrad (1942) Kyiv (1943) Warsaw (1944) Budapest (1944) Berlin (1945)	Leningrad (1941-4) Sevastopol (1941-2) Stalingrad (1942-3) Breslau (1943)
Italy	Gela (1943) Ortona (1943) Monte Cassino (1944) Trieste (1945)	
NW Europe	Caen (1944) Arnhem (1944) Troyes (1944) Aachen (1944) Troyes (1944) Channel Ports, incl Brest, St Malo, Cherbourg, Boulogne (1944) Venray (1944-5) Rees* (1945) Aschaffenburg (1945) Trieste (1945) Nuremburg (1945) Bremen (1945)	Dunkirk (1944)
Pacific	Manilla (1945)	
Manchuria	Mutanchiang (1945) (Glantz, 2015) Siping (1946) (Tanner, 2013)	

Table 1: Notable Urban Battles and Sieges of World War 2

*There were many other urban battles, large and small, that occurred in 1945 as the Allies pressed on into Germany, such as at Cleve, Kervenheim, Rotenburg, and Uelzen.

The Eastern Front also featured an engagement at Lodz, where an expected urban battle didn't happen due to the Russians seizing vital ground which dissuaded the Germans from defending (Whitchurch, 2019).

Immediate Post-War (1945 - 1959)

From late 1945 to 1948 British troops were involved in civil order and urban counter-terrorism operations in Palestine. The battle in Jaffa (1948) was a notable urban engagement (Antal, 2003).

The Cyprus Emergency (1955-59) saw British troops again involved in urban counter-terror operations in Cyprus – particularly in the capital, Nicosia.

The Korea War (1950-53) saw a major urban battle at Seoul when McArthur landed at Inchon and took the city (Antal, 2003),(DiMarco, 2012),(Wahlman, 2015).

The Battle of Algiers (1956–1957) saw significant urban fighting as part of the French counter-terrorism operations, resulting in around 4000 casualties.

The 1960s

From 1962 through to withdrawal in 1967 the British Army was engaged in rural and urban counter-terrorism operations in Aden.

In 1965 US forces were involved in urban operations in Santo Domingo as part of the Dominican Civil War.

The only major urban operation of the Vietnam War was the battle of Hue (1968). The battle featured the use of CS-Gas, mouse-holing, river boats, helicopters and the use of the Ontos, a small tracked vehicle with 4 recoilless guns which was ideal for close-urban support in narrow streets (if a little unprotected) (Bowden, 2017).

The 1970s

The British Army deployed in 1969 on Op Banner and remained there on active peace-keeping and counter-terrorism operations until 2007. Belfast, Londonderry and border towns like Newry and Armagh saw the majority of the activity.

The Arab-Israeli Wars

The 1948 Arab-Israeli War saw significant urbans battles for Jerusalem and Jenin.

During the 1956 Suez Crisis Israeli forces engaged with the Egyptians and Palestinian *fedayeen* in Rafah, Gaza City, and Khan Yunis. During the Crisis, British Royal Marines were also involved in intense urban fighting with the Egyptians in Port Said (Varble, 2003).

The 1967 Arab-Israeli War (the Six-Day War) featured significant urban fighting, including in the battles for Jerusalem, Arish, and in the Gaza Strip.

In the nineteen-day 1973 Arab-Israeli War (the Yom Kippur War), which took place mainly in the Sinai peninsula, across the Suez Canal and in the Golan Heights, there was urban fighting in El-Qantarah el-Sharqiyya and Port Said, and the Israeli's had encircled Suez City and were approaching Damascus when the ceasefire was declared. The war also saw the first use of SCUD missiles, one of which struck Arish.

In 1982 Israel invaded Lebanon which resulted in urban fights in Tyre (by accident), Sidon, Jezzine and Baabda, with the siege of Beirut lasting from June to August until the PLO were evacuated, supervised by a Multinational Force (Robertson & Yates, 2003).

The 1980s

The Iran-Iraq War (1980-88) featured a large urban battle at Khorramshahr (1980). "*Much of the initial 'battle' was in fact an intensive artillery siege designed to drive out Iran's defenders. The relative inefficiency of artillery used against built-up areas meant, ultimately, however, that Iraqi ground forces had to engage the defenders*." (McLaurin, 1982).

Towards the end of the Falklands War (1982) there was an expectation about how bloody the Battle for Port Stanley may be, but in the end with the capture of the high ground around the town, such as Wireless Ridge, Tumbledown and Sapper Hill, the capital became untenable and the Argentines surrendered (Thompson, 2007).

Although the World War 3 envisioned by books such as Hackett's Third World War (Hackett, 1987)

never happened, significant planning was done (by both sides) on how a Battle for Berlin would be fought, as well as battles for the urban centres of West Germany such as Hannover. Operation Centre detailed the Soviet plans to attack the city (Meek, 1994).

The First Nagorno-Karabakh War (1988-1994) included the siege of the capital at Stepanakert (1991–1992) by the Azerbaijani, the bombardment of multiple towns, and the assaults and capture of Khojaly and Susha by Armenian forces (Cornell, 1999).

In 1989 the USA invaded Panama in order to depose General Manuel Noriega, who was involved in racketeering and drug trafficking. Most of the fighting focussed on locations within Panama City (Yates, 2014).

The 1990s

There was a short but fierce fight around the Dalman Palace when the Iraqis initially seized Kuwait City in 1990. The recapture of the city by Coalition forces was expected to be a bloody affair but instead in the First Gulf War (Operation Desert Storm - 1991) the Coalition made the Iraqi occupation of Kuwait City irrelevant by the wide sweep to isolate it – Schwarzkopf's "Hail Mary" play (Tsouras, 1991).

In the Balkans, the Croatian War of Independence (1991 to 1995) saw the siege of Dubrovnik and the siege and assault of Vukovar. Vukovar saw storm-group like strike teams, mouse-holes, tank convoys trapped by front and rear ambushes in narrow streets, driving tanks straight through houses to demolish them, tear-gas, direct HE support from tanks, anti-aircraft guns in a direct fire role, and the use of light 60 and 82mm mortars due to their accuracy (Sebetovsky, 2002) - Sebetovsky actually fought in the battle.

During the Bosnian War (1992-95), Sarajevo was besieged from 5th April 1992 to 29th February 1996, with urban fighting up until May 1992. There were also long sieges at Bihać, Goražde and Srebrenica (Magas & Zanic, 2013).

In 1992 a multi-national force deployed to Somali to provide humanitarian protection and relief in response to the ongoing Somali Civil War. Much of the activity was focussed on the capital, Mogadishu. The defining incident was the "Black Hawk Down" episode on 3rd October 1993, when an attempt to capture aides of faction leader Mohamed Farrah Aidid ran into significant issues with units getting lost and the downing of two Black Hawk helicopters (Bowden, 2001).

In the First Chechen War (1994-96) Russia attempted to seize Grozny on 31 December 1994 but met with significant Chechen resistance, mainly from small groups operating throughout the city, which resulted in 1st Bn 131st Independent Motor Rifle Brigade being effectively wiped out. The city was finally taken after a more cautious campaign but resistance continued for many weeks. With the Russians distracted by operations in the south of the country the Chechens took the opportunity to recover the city, again using small units, on 6th August 1995. In the Second Chechen War (1999-200) Russia returned to isolate the city from October 1999 and began its assault on 12th December 1999, with the main push, a slower and more cautious advance than in 1994, starting on 15th January 2000. The Russians declared Grozny 'liberated' on 6th February 2000 (Galeotti, 2014).

The 2000s

The 2003 invasion of Iraq featured notable urban battles at Nasiriyah, Baghdad, Samawah, Najaf and Basra. During the ensuing insurgency there were significant urban battles at Mosul (2004), Fallujah (in April 2004 and then more successfully in November 2004), Tal Afar (2005), Ramadi (2006), and at Sadr City in Baghdad (2008) (Hamilton, 2008), (Pirnie & O'Connell, 2008),(Farina et al., 2014).

There were a number of Israeli operations against Palestinian territories during this period. Operation Defensive Shield (2002) saw Israeli incursions into Ramallah, Tulkarm, Qalqilya, Bethlehem, Jenin and Nablus (DiMarco, 2012). In 2008-9 Operation Cast Lead was launched against Gaza City and the Gaza Strip. In 2014 Operation Protective Edge again targeted Gaza City and the Gaza Strip. In 2006 the Israelis engaged Hezbollah in Southern Lebanon, with significant urban fighting and bombing.

In 2008 Russia moved to support the self-proclaimed Republic of South Ossetia and attacked Georgia. There was a major urban battle at Tskhinvali. Gori was heavily bombed by the Russians and vacated by the Georgian Army and most civilians also fled, and Tbilisi was also bombed (Cornell & Starr, 2009).

On 26th November 2008, 10 terrorists embarked on a sophisticated 3-day attack on the streets of Mumbai. The attack was notable for the way in which the terrorists were apparently being remotely directed in real-time by superiors in Pakistan (FAS, n.d.).

The 2010s

The Libyan Civil War (2011) saw urban battles at Misrata, Bengahzi, Tripoli and Sirte and included interventions in the air and on the ground by NATO and other multi-national forces in support of a United Nations Security Council Resolution. Sirte and the other major cities saw renewed fighting during the ongoing factional fighting in Libya, and the resulting Second Libyan Civil War (2014-2020).

The Syrian Civil War (2011-present) has seen significant urban fighting and destruction, such as in the cities of Aleppo, Homs and Hama. A notable element of the war has been the involvement of Russian forces, directly and through Private Military Companies such as Wagner, and the use of the war by them as a testing and training ground for urban operations (Williams & Souza, 2016),(Bendett, 2020).

In 2013 Moro National Liberation Front (MNLF) rebels occupied the city of Zamboanga in the Philippines and were then subject to a 20 day siege before the city was finally retaken – although with significant loss of life, displacement and destruction (Medina, 2016).

In 2014 Russia invaded the eastern provinces of the Ukraine, in Donetsk and Luhansk, as well as annexing the Crimea, after the Maidan Revolution and the accompanying street-protests and riots. The provinces were taken over by separatists, with low-level street-fighting in several cities, including Mariupol. The first significant “urban” battle was between Ukrainian forces and the separatists and Russian proxies at Donetsk International Airport (May 2014), after the separatists had seized the airport. In July the Ukrainians fought to retake Donetsk and Luhansk cities, and there were also urban combats in nearby cities and towns such as Horlivka, Sievierodonetsk, and Lysychansk. In August Russian forces overtly entered the provinces, adding to the fighting around and in Donetsk and Luhansk cities. After the ceasefire in September 2014 lower-level fighting and particularly shelling continued until 2022. There was a second, more extended battle at the airport with the Ukrainians now on the defensive between September 2014 and January 2015, and a significant increase in fighting in 2017 (Walker, 2023).

After the rise of the Islamic State (IS)/Islamic State of Iraq and the Levant(ISIL)/ Islamic State of Iraq and Syria (ISIS) in 2013, a coalition of Iraqi, Kurdish and Western forces began the process of retaking IS held cities and regions leading to significant, but largely asymmetric, battles in Tikrit (2014 & 2015), Ramadi (2015), Fallujah (2016), Al-Shirqat (2016) and Mosul (2017) (Mumford, 2021). There were even indications that ISIS was planning an attack on Baghdad in 2014 (Lewis, 2014). A battle was also fought in Raqqa, Syria, by Syrian Democratic force supported by Western nations to re-take the city from ISIS (Postings, 2018),(Irving, 2022).

The civil war in Yemen started in 2014 when Houthi insurgents seized Yemen's capital, Sana'a. A Gulf-state coalition force led by Saudi Arabia has been trying to defeat the insurgents and retake the capital ever since. There have also been fights over the cities of Hodeidah, Taiz, and Marib. Much of the war has been prosecuted by airstrikes which have caused significant humanitarian damage (Center for Preventive Action, 2023).

On 23rd May 2017 the Islamic State-linked Maute group seized the city of Marawi in the Philippines. The resulting siege lasted for almost 6 months, and its recapture resulted in significant urban destruction (Inton, 2017), (Franco, 2017),(Divinagracia et al., 2018), (Knight & Theodorakis, 2019).

The 2020s

The Second Nagorno-Karabakh War (2020) began on 27th September with an Azerbaijani offensive which culminated in the seizure of Shusha by stealth attack on 8th November. The loss of Shusha exposed Stepanakert, the Nagorno-Karabakh capital, and a ceasefire was signed on 9th November. The whole conflict was notable for the extensive use of drones to direct fire (Spencer & Ghoorhoo, 2021). Tensions in the region have continued, and flared up again in September 2023 when Azerbaijan launched a large-scale but brief attack against the breakaway Republic of Artsakh, which included the shelling of Stepanakert.

On 15th August 2021 the Taliban seized control of an almost defenceless Kabul. In a campaign that had only started on 1 May 2021 the Iraqi forces had been defeated, or just evaporated in the face of the Taliban advance. With the US withdrawal President Ashraf Ghani relinquished power and fled the country the same day.

On 24th February 2022 Russian airborne troops landed at Hostomel airport on the edge of Kyiv in Ukraine. By 2nd March there were reports of a 40-mile-long Russian convoy "stalled" just NW of Kyiv, and fighting in the surrounding suburbs of Bucha, Irpin and Brovary. By 29th March 2022 Russia announced that it was withdrawing its forces from the area around Kyiv. The continuing Russian-Ukrainian War has seen major urban battles in Mariupol (including the siege of the Azovstal Iron and Steel Works), Kupiansk, Izium, Lyman, and Bakhmut (Stepanenko, 2023), and the ongoing use of drones for both ISR and (especially in first-person-view mode) direct attack (Kunertova, 2023). By mid/late 2023 the conflict appeared to be transitioning to one of positional/attritional warfare (Zaluzhnyi, 2023) with most combats taking place along or around prepared defensive lines between villages, rather than in or around major towns and cities (S. G. Jones et al., 2023).

On 8th August 2023 Timbuktu was placed under siege by the *Jama'at Nasr al-Islam wal Muslimin* (JNIM) Islamist group after the withdrawal of the UN mission to Mali (Arslan, 2023).

Quantitative Analysis

In addition to the qualitative, narrative, account above, it may be useful to also perform some quantitative analysis regarding urban warfare. An initial examination has been made of the number of sieges, and the changes in field army sizes.

Sieges and Urban Battles

There are a number of database of conflicts which might enable a quantitative analysis of sieges and urban combats in history – although none of the database yet examined indicates whether a battle was primarily urban. Databases that I am aware of but have not yet been able to examine are:

- The Conflict Database (Brecke, 1999) – which lists 3213 “violent conflicts” from 1400 to present;
- Jaques (Jaques, 2006) - which is perhaps the best known and most used;
- The Historical Conflict Event Dataset (Miller & Bakar, 2023) - a newer database listing “conflict event” from 1468BCE to 2003.

The Interstate War Battle Dataset (version 1.0) (Min, 2021) is based largely on Jaques but adds other sources, includes 1708 battles but only from 1823 onwards. A copy has been obtained but it does not flag whether a battle was even a siege, let alone urban.

A copy of the World Historical Battles Database (WHBD) (Kitamura, 2022) has been obtained, and this includes data on “*8,000 battles in world history from ancient times to the present day*”. It has been developed largely from the data in Wikipedia. The provisional analysis below is based on this database.

Figure 10 plots the count of battles in the database against century, split by sieges and non-sieges. The recency bias in the data is immediately apparent, as well as the relatively small numbers of sieges (in orange) compared to non-sieges (in blue) across all centuries. As will be evident from the history above there were certainly sieges and non-sieges during the earlier period represented by the graph.

Note: -0.01 represents the period -1 BCE to -99 BCE as Excel doesn’t recognise -0!

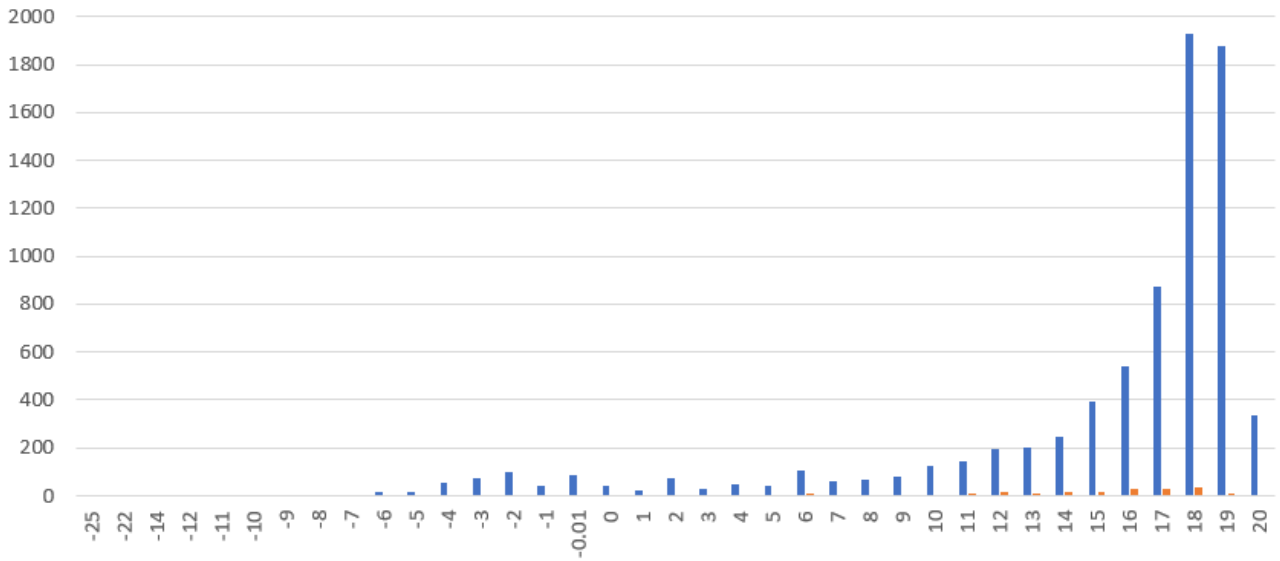


Figure 10: Battles of all types on the WHBD by Century (as 00s) and Type

Figure 11 shows the same data but shows the relative share of sieges and non-sieges, sieges in orange, non-sieges in green. Again, the narrative above has identified multiple sieges prior to the 3rd Century BCE, so we know that the data is incomplete, and so any conclusions or even observations on it should be treated with caution. The relatively small number of sieges makes the graph hard to interpret anyway.

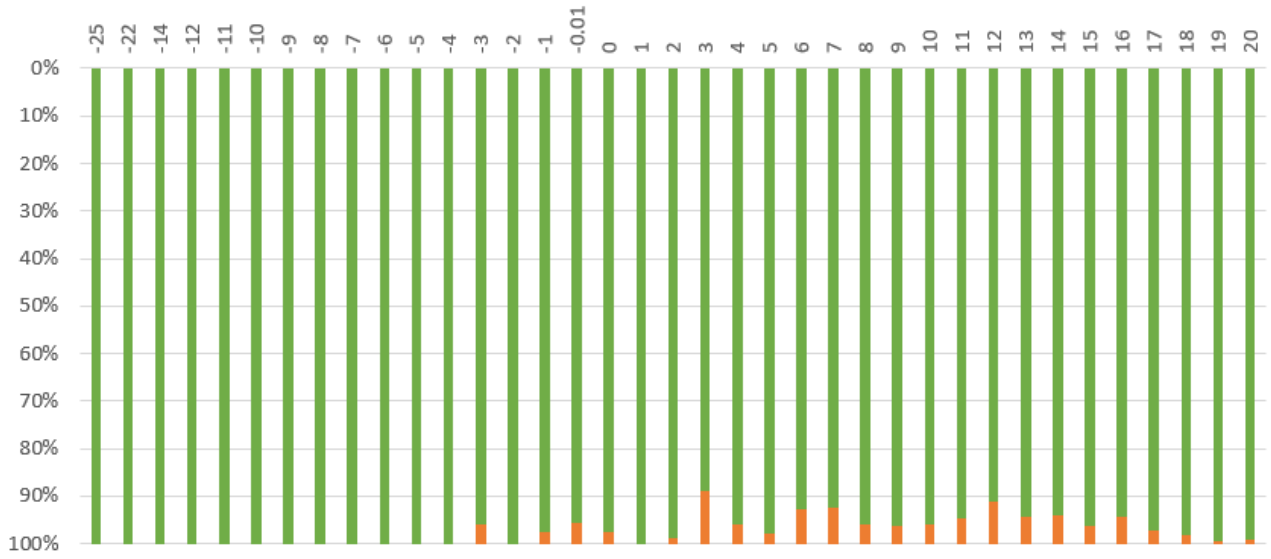


Figure 11: Share of Sieges and Non-Sieges on the WHDB by Century (as 00s)

Figure 12 shows the same data as Figure 10, but the vertical scale has been zoomed in on the sieges, so as to better show the relative changes in siege share over time. Given the caution that should be noted the data just generally seem to align with the narrative given above. Sieges are more common before the peak of the Roman Empire, then build slowly up during the medieval period, peaking in the 1200s when medieval castles were at their peak, then falling temporarily away, til a fresh peak in the 1600s to 1700s when Vauban was influential, then a final peak in the 1800s which seems to be driven by the colonial wars, before falling rapidly away in the 1900s and 2000s. Figure 13 shows the zoomed data in terms of the siege share, which shows a more marked decline since the 1200s and then 1600s.

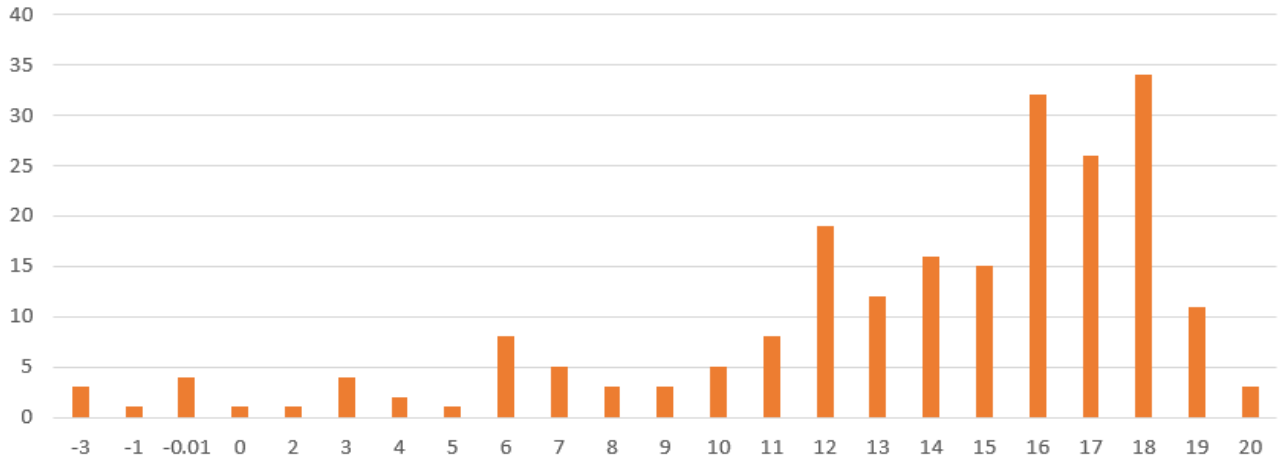


Figure 12: Count of Sieges on the WHBD by Century (as 00s)

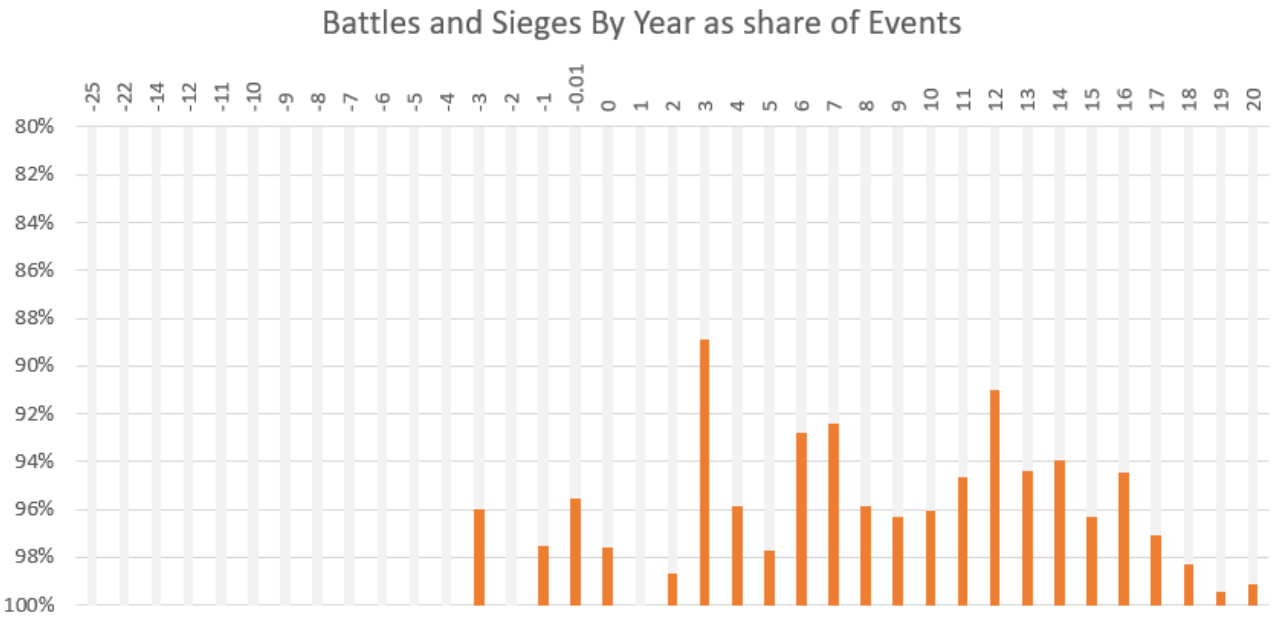


Figure 13: Siege Share on the WHBD by Century (as 00s)

Battle and Army Sizes

Also useful in understanding the conflict landscape of the past 2 or 3 millennia is the changing size of field armies and battles in terms of soldiers under arms, particularly as this has often been linked to the argument about the reasons for urban battles - e.g. King (King, 2021). Neither of the two datasets examined have this information so Table 2 has been compiled from data on Wikipedia and is highly provisional. The size of the largest army at the biggest field battle has been used in order to try and get a consistent measure – battles may more typically feature armies of half the given size.

Century	War	Field Battle	Date	Largest Army
-23	Sargon's Army		-2300	5,400
-14		Meggido	-1457	11,000
-12		Qadesh	-1285	20,000
-8	Sargon II's Army		-715	50,000
-5	Greco-Persian	Marathon	-490	25,000
-4	Alexander the Great	Gaugamela	-331	120,000
-3	2nd Punic War	Cannae	-216	86,400
-2	Roman–Seleucid War	Magnesia	-190	72,000
-1	Gallic Wars	Alesia	-52	75,000
1	Roman Invasion of Britain	Mons Graupius	83	30,000
2	Roman-Dacian Wars	Second Battle of Tapae	101	80,000
3	Gothic Wars	Abritus	251	15,000
4	Roman-Sassanid	Samarra	363	65,000
5	Hunnic Wars	Catalaunian Plains	451	70,000
6	Byzantine-Sassanid Wars	Thannuris	528	40,000
7	Goguryeo–Tang War	Goguryeo	645	200,000
7	Byzantine-Arab Wars	Carthage	698	40,000
8	Byzantine/Bulgarian Wars	Litosoria	774	60,000
9	Byzantine/Bulgarian Wars	Versinikia	813	30,000
10	Sviatoslav's invasion of Bulgaria	Silistra	968	60,000
11	Byzantine/Pecheneg	Levounion	1091	80,000
12	Third Crusade	Acre	1189	40,000
13	Scots War of Independence	Falkirk	1298	28,000
13	Golden Horde		c.1242	100,000

Century	War	Field Battle	Date	Largest Army
14	Hundred Years War	Crecy	1346	30,000
15	Hundred Years War	Agincourt	1415	40,000
15	Wars of the Roses	Towton	1461	30,000
16	Italian Wars	Pavia	1525	28,000
17	Thirty Years War	Breitenfeld	1631	40,000
17	Eighty Years War	No pitched battle	1621	100,000
18	War of the Spanish Succession	Malplaquet	1709	86,000
18	Seven Years War	Torgau	1760	52,000
19	Napoleonic Wars	Leipzig	1813	195,000
19	Crimea	Alma	1854	58,000
19	ACW	Gettysburg	1863	105,000
19	Franco-Prussian War	Koniggratz	1866	238,000
20	Russo-Japanese War	Mukden	1905	292,000
20	World War 1	Somme	1916	c.1.25m
20	World War 2	Stalingrad	1943	1.14m
20	World War 2	Berlin	1945	2.3m
20	Vietnam	(peak US)	1969	543,000
21	Ukraine	(initial invasion)	2022	150,000
21	Ukraine	Bakhmut	2023	50,000

Table 2: Largest Army size at largest battle by Century/Decade (provisional)

Figure 14 plots the (log) values of (Western) army sizes and siege numbers by century (in 00s). Both datasets are relatively soft at the moment , as well as the lack of definite information on participants in many of the battles more than 500 years or so ago, so it is probably too early to draw any conclusions.

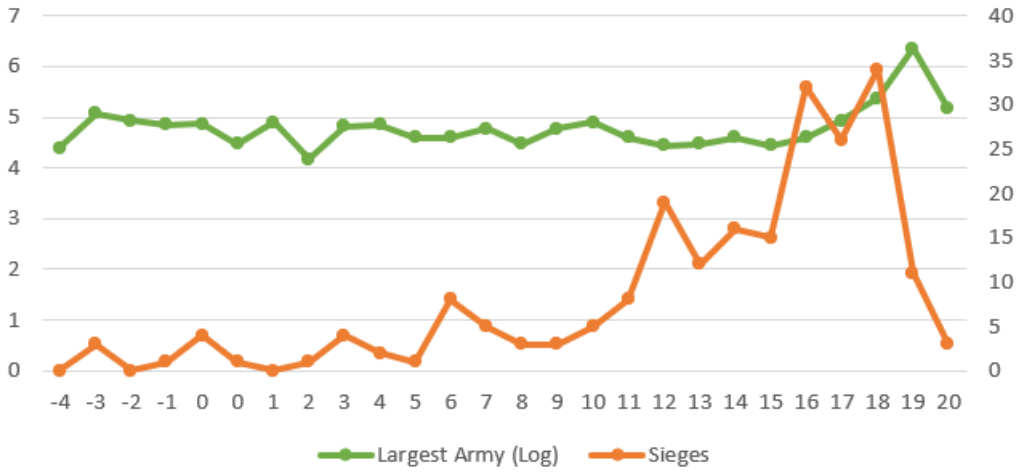


Figure 14: Army Sizes (log) and Siege Numbers by Century (00s)

Summative Analysis

This working paper currently focuses on providing a narrative account of the history of urban warfare. An analysis will come having completed a corresponding historiography of urban warfare and a more thematic analysis of the various urban conflicts.

However, some initial observations are:

- Urban warfare is essentially as old as organised warfare itself;
- The shape of sieges and the tools and techniques of siege craft were established very early on (c.2000 BCE), and remained qualitatively the same until the advent of gunpowder, with some elements (e.g., mining and tunnelling) projecting even beyond that;

- Siege techniques were also common across the globe, although adjusting for local conditions, including in pre-colonial times;
- Urban fighting (i.e., non-sieges) has probably always run alongside sieges, even if specific accounts only start later (c. 400 BCE), and right from the start urban warfare tropes such as mouse-holing are present;
- Even during a period when castle focussed sieges dominated there were still accounts of street-based urban engagements;
- The high point of the art of fortification with Vauban was followed by the demise of the siege until it evolved into a more modern form in the twentieth and twenty-first centuries.
- The “big” wars of the nineteenth and early twentieth century (the Napoleonic Wars, the American Civil War, the Franco-Prussian War and the First World War) probably had the lowest ratio of sieges to field battles before the mechanised era;
- The mechanised era has still seem significant urban battles, and anecdotally their share of significant engagements seems to be increasing, but part of this has possibly been due to the number of asymmetric wars which in the last fifty years have been more urban-based (Kilcullen, 2013);
- Despite significant urban battles in its earlier stages, the Russian-Ukrainian war seems to have transitioned to one of more rural, positional warfare.

References

Antal, J. (2003). *City fights: Selected histories of urban combat from world war II to Vietnam*. Presidio Press.

Arkush, E. (2010). HILLFORTS AND THE HISTORY CHANNEL - A VIEW FROM THE LATE PREHISPANIC ANDES. *The SAA Archaeological Record*, *10*(4), 33–39.

Arslan, F. E. (2023). *Mali's ancient city Timbuktu under siege again*. Anadolu Agency. https://www.aa.com.tr/en/africa/mali-s-ancient-city-timbuktu-under-siege-again/2992331

Athar, A. (1990). Siege Craft Techniques of the Delhi Sultans During 13th & 14th Century. *Proceedings of the Indian History Congress*, *51*, 217–226.

Awty, B. G. (2007). The Development and Dissemination of the Walloon Method of Ironworking. *Technology and Culture*, *48*(4), 783–803.

Bala, A. C. H. (1988). *ARMS AND ARMOUR IN THE WARFARE OF PRE-COLONIAL HAUSALAND*. https://jambo.africa.kyoto-u.ac.jp/kiroku/asm_normal/abstracts/pdf/ASM%20%20Vol.8%20No.3%201988/Bala%20ACHI.pdf

Bauer, K. J. (1993). *The Mexican War, 1846-1848*. Univ. of Nebraska Press.

Beevor, A. (2012). *The Battle for Spain: The Spanish Civil War 1936-1939*. Hachette UK.

Bendett, S. (2020). Russian Unmanned Vehicle Developments: Syria and Beyond'. In J. Mankoff (Ed.), *Improvisation and Adaptability in the Russian Military* (pp. 38–47). Center for Strategic and International Studies.

Black, J. (1996). Could the British have won the American War of Independce. *Journal of the Society for Army Historical Research*, *74*(No. 299 (Autumn 1996)), 145–154.

Blunt, A. (2000). Spatial Stories under Siege: British women writing from Lucknow in 1857. *Gender, Place & Culture*, *7*(3), 229–246. https://doi.org/10.1080/713668876

Bowden, M. (2001). *Black Hawk Down: A Story of Modern War*. Signet.

Bowden, M. (2017). *Hue 1968: A Turning Point of the American War in Vietnam*. Grove Press/Atlantic Monthly Press.

Boyle, R. (1677). *A treatise of the art of war dedicated to the King's Most Excellent Majesty*.

Bracken, J. (2023). PRECLASSIC MAYA FORTIFICATION AT MURALLA DE LEÓN, PETEN: DEDUCING ASSETS, MILITARY STRATEGIES, AND SPECIFIC THREATS THROUGH ANALYSIS OF DEFENSIVE SYSTEMS. *Ancient Mesoamerica*, *34*, 1–25. https://doi.org/10.1017/S0956536121000171

Brecke, P. (1999). Violent conflicts 1400 AD to the present in different regions of the world. *1999 Meeting of the Peace Science Society*. https://brecke.inta.gatech.edu/wp-content/uploads/sites/19/2018/09/Brecke-PSS-1999-paper-Violent-Conflicts-1400-AD-to-the-Present.pdf

Burley, E. & Watson. (2007). *The Battles of St Albans*. Pen & Sword.

Burton, E. M. (2022). *The Siege of Charleston, 1861-1865*. Univ of South Carolina Press.

Buttar, P. (2016). *Collision of empires: The war on the Eastern Front in 1914* (Paperback edition). Osprey Publishing.

Buttar, P. (2017). *Germany ascendant: The eastern front 1915* (Paperback edition). Osprey Publishing.

Carey, B. T., Alfree, J. B., & Cairns, J. (2006). *Warfare in the medieval world*. Leo Cooper.

Carey, B. T., Allfree, J. B., & Cairns, J. (2013). *Warfare in the ancient world*. Pen & Sword Military.

Center for Preventive Action. (2023, October 17). *War in Yemen*. Global Conflict Tracker. https://cfr.org/global-conflict-tracker/conflict/war-yemen

Chaffee, J. (2007). Examinations During Dynastic Crisis: The Case of the Early Southern Song. *Journal of Song-Yuan Studies*, *37*, 135–160.

Chandler, D. G. (2009). *The campaigns of Napoleon*. Simon and Schuster. https://books.google.co.uk/books?hl=en&lr=&id=hNYWXeVcbkMC&oi=fnd&pg=PR14&dq=%22whiff+of+grapeshot%22+Napoleon+&ots=QijC9XX_om&sig=I1K00ovlw7rWA5CSpR2WXuxHA3M

Clarendon, E. H. C. (1888). The History of the Rebellion and Civil Wars in England Begun in the Year 1641. *Book*, *II*(135).

Cogneau, D., & Kesztenbaum, L. (2016). *Short and long-term impacts of famines: The case of the*

siege of Paris 1870-1871. https://shs.hal.science/halshs-01321939
Cohen, P. (1937). The Marquis de Vauban. *The Military Engineer*, *29*(165), 169–171.
Collins, L., & Spencer, J. (2022). *Understanding Urban Warfare*. Howgate.
Connolly, P. (2012). *Greece and Rome at war* (2nd ed.). Pen and Sword.
Cornell, S. E. (1999). *The Nagorno-Karabakh Conflict*. https://opendata.uni-halle.de/bitstream/1981185920/105775/329/595776787.pdf
Cornell, S. E., & Starr, S. F. (2009). *The Guns of August 2008: Russia's War in Georgia*. M.E. Sharpe.
Cserkits, M. (2022). The Concept of War in Ancient Mesopotamia: Reshaping Carl von Clausewitz's Trinity. *Expeditions with MCUP*. https://www.muse.jhu.edu/article/846135.
Cuccia, P. R. (2014). *Napoleon in Italy: The Sieges of Mantua, 1796–1799*. University of Oklahoma Press.
Curry, J., & Brooks, R. (2020). *A Practical Guide to Medieval Warfare: Exploring History through Wargaming*. History of Wargaming Project. https://www.amazon.co.uk/Practical-Guide-Medieval-Warfare-Exploring-ebook/dp/B08F5LMCJF
Cvikel, D., & Goren, H. (2008). Where are Bonaparte's siege cannon? An episode in the Egyptian campaign. *Mediterranean Historical Review*, *23*(2), 129–142. https://doi.org/10.1080/09518960802528803
Dalrymple, W. (2009). *The Last Mughal: The Fall of Delhi, 1857*. A&C Black. https://books.google.co.uk/books?hl=en&lr=&id=wYW5J-jQn8QC&oi=fnd&pg=PT10&dq=siege+of+delhi%23&ots=d4vN3AsgLO&sig=MzgtURy8AvjeJdGLw7_o2_aHVKc
Daly, G. (2022). *Storm and Sack: British Sieges, Violence and the Laws of War in the Napoleonic Era, 1799–1815*. Cambridge University Press.
Davis, P. K. (2003). *Besieged: 100 Great Sieges From Jericho to Sarajevo*. Oxford University Press.
Dean, M. C. (1989). Changes in the role of fortresses during the French revolutionary wars. *Fort*, *17*. https://www.academia.edu/download/51202633/Changes_in_the_Role_of_Forts.pdf
Dilegge, D. (2019). *Blood and Concrete*. Small Wars Journal/XlibrisUS.
DiMarco, L. A. (2012). *Concrete Hell: Urban Warfare From Stalingrad to Iraq*. Osprey Publishing. UK.
Dincecco, M., Fenske, J., Menon, A., & Mukherjee, S. (2020). Pre-Colonial Warfare and Long-Run Development in India. *Warwick Economics Research Papers*, *1272*.
Dishman, C. D. (2011). *A Perfect Gibraltar: The Battle for Monterrey, Mexico, 1846*. University of Oklahoma Press.
Divinagracia, E. C., COMMAND, A., & States, G. S. C. F. L. K. F. L. U. (2018). *Urban Terrorism: The Siege of Marawi City* [PhD Thesis, United States Army Command and General Staff College]. https://apps.dtic.mil/sti/citations/AD1088958
Dixon, H. (2022). Reexamining Nebuchadnezzar II's 'Thirteen-Year'Siege of Tyre in Phoenician Historiography. *Journal of Ancient History*, *10*(2), 165–199.
djenne djenno: The Siege of Djenné. (n.d.). Retrieved 3 November 2023, from https://djennedjenno.blogspot.com/2016/09/the-siege-of-djenne.html
Dong, X. (2022). *Warfare in Ur III Dynasty A Comprehensive Study about Military and Diplomacy* [(Doctoral dissertation, University of Liverpool]. https://livrepository.liverpool.ac.uk/3163751/1/201323563_Aug2022.pdf
Dowdall, A. (2020). *Communities under Fire: Urban Life at the Western Front, 1914-1918*. Oxford University Press.
Dowling, T. C., & Menning, B. (Eds.). (2015). *Russia at war: From the Mongol conquest to Afghanistan, Chechnya, and beyond*. ABC-CLIO.
Duffy, C. (2006). *Fire and Stone: The Science of Fortress Warfare, 1660-1860*. Castle Books.
Edwardes, S. M., & Garrett, H. L. O. (1995). *Mughal Rule in India*. Atlantic Publishers & Dist.
Evans, M. M. (2009). *Forgotten Battlefronts of the First World War*. The History Press.
Farina, A. S., Reyes, J. I., & Violette, C. (2014). *Angels in Sadr City: A Soldier's Memoir of the Final Battle for Baghdad*. Gold 5 Publishing.
FAS. (n.d.). *Mumbai Terrorist Attacks*. Federation of American Scientists. Retrieved 17 November 2023, from https://irp.fas.org/eprint/mumbai.pdf
Ferrill, A. (1986). *The origins of war: From the stone age to Alexander the great*. Thames &

Hudson.
Flintham, D. (2016). *Siege types of the English Civil War*. https://www.englishcivilwar.org/2016/02/guest-blog-siege-types-of-english-civil.html
Foltz, R. (1996). The Mughal Occupation of Balkh 1646–1647. *Journal of Islamic Studies*, *7*(1), 49–61.
Fraas, A. M. (2013). *A Rocket Cat? Early Modern Explosives Treatises at Penn*. https://uniqueatpenn.wordpress.com/2013/02/05/a-rocket-cat-early-modern-explosives-treatises-at-penn/
Francisco, L. (1973). The first Vietnam: The U.S.-Philippine war of 1899. *Bulletin of Concerned Asian Scholars*, *5*(4), 2–16. https://doi.org/10.1080/14672715.1973.10406345
Franco, J. (2017). The battle for Marawi: Urban warfare lessons for the AFP. *Security Reform Initiative*, *6*, 16.
Freewalt, J. (2014). *Battle Report: Alexander the Great's Siege Of Tyre-332 BC*. American Military University. http://freewalt.com/freewaltfamily/jason_erika/documents/BattleReport--Tyre332BC-JasonFreewalt.pdf
Frost, R. I. (2014). *The Northern Wars: War, State and Society in Northeastern Europe, 1558 - 1721*. Routledge.
Galeotti, M. (2014). *Russia's Wars in Chechnya 1994–2009: 78* (1st edition). Osprey Publishing.
García, J. F. R. (2022, November 10). An introduction to urban warfare. *Armies Magazine*. https://www.armiesmagazine.com/2022/11/10/an-introduction-to-urban-warfare/
Garfinkel, Y., Carroll, J. W., Pytlik, M., & Mumcuoglu, M. (2021). CONSTRUCTING THE ASSYRIAN SIEGE RAMP AT LACHISH: TEXTS, ICONOGRAPHY, ARCHAEOLOGY AND PHOTOGRAMMETRY. *Oxford Journal of Archaeology*, *40*(4), 417–439.
Garza, A. de la. (2016). *The Mughal Empire at War: Babur, Akbar and the Indian Military Revolution, 1500-1605*. Routledge.
Gatehouse. (n.d.). *Statistical Information*. Gatehouse. https://www.gatehouse-gazetteer.info/stats1.html
George, A. (2013). *The poem of Erra and Ishum: A Babylonian poet's view of war*. https://eprints.soas.ac.uk/17171/1/Warfare&Poetry_Ch2_proof.pdf
Glantz, C. D. M. (2015). *August Storm: The Soviet 1945 Strategic Offensive In Manchuria [Illustrated Edition]*. Pickle Partners Publishing.
Gommans, J. J. L. (2002). *Mughal Warfare: Indian Frontiers and Highroads to Empire 1500–1700*. Routledge.
Guderian, H. (2009). *Panzer Leader*. Penguin UK.
Hackett, G. S. J. (1987). *Third World War*. Penguin.
Hagerman, E. (1992). *The American Civil War and the Origins of Modern Warfare: Ideas, Organization, and Field Command*. Indiana University Press.
Hamblin, W. J. (2006). *Warfare in the Ancient Near East to 1600 BC: Holy Warriors at the Dawn of History*. Routledge.
Hamilton, E. (2008). *Iraq Report 8*. Institute for the Study of War. https://www.understandingwar.org/sites/default/files/reports/Iraq%20Report%208.pdf
Harmsen, P. (2013). *Shanghai 1937: Stalingrad on the Yangtze*. Casemate.
Hassig, R. (1992). *War and Society in Ancient Mesoamerica*. University of California Press.
Haude, S. (2019). The World of the Siege in New Perspective: The Populace during the Thirty Years' War (1618–1648. In *The World of the Siege* (pp. 21–43). Brill.
Hicks, M. (2003). *The Wars of the Roses*. Osprey.
Holmes, R. (2001). Vauban, Marshal Sebastien le Prestre de. In *The Oxford Companion to Military History*. Oxford University Press. https://www.oxfordreference.com/display/10.1093/acref/9780198606963.001.0001/acref-9780198606963-e-1326
Hoof, J. van. (2004). *Menno van Coehoorn, 1641-1704: Vestingbouwer, belegeraar, infanterist*. Matrijs.
Horne, A. (2012). *The Fall of Paris: The Siege and the Commune 1870-71*. Pan Macmillan.
Howard, M. (2021). *The Franco-Prussian War*. Routledge.
Howard, M. R. (2012). *Walcheren 1809: The Scandalous Destruction of a British Army*. Pen & Sword Military.
Howard, M. R. (2020). *Wellington and the British Army's Indian Campaigns 1798—1805*. Pen and

Sword Military.
Hughes, B. P. (1982). Siege Artillery in the 19th Century. *Journal of the Society for Army Historical Research*, *60*(243), 129–149.
Hulme, R. (2004). Title – from John. *Castle Studies Bulletin*, *17*.
Hulme, R. (2019). Siege warfare in King Stephen's reign (1135–54): An introduction. *Castle Studies Group Journal*, *33*, 186–203.
Hunt, M. R. (2017). The 1689 Mughal Siege of East India Company Bombay: Crisis and Historical Erasure. *History Workshop Journal*, *84*, 149–169. https://doi.org/10.1093/hwj/dbx034
Hymes, R. (2021). A Tale of Two Sieges: Liu Qi, Li Gao, and Epidemics in the Jin-Yuan Transition. *Journal of Song-Yuan Studies*, *50*(1), 295–363.
Inton, C. (2017). *Battle for Marawi*. Reuters. http://fingfx.thomsonreuters.com/gfx/rngs/PHILIPPINES-ATTACK/010041F032X/index.html
Irving, D. (2022, July 1). Civilian Casualties: Lessons from the Battle for Raqqa [Website]. *The RAND Blog*. https://www.rand.org/pubs/articles/2022/civilian-casualties-lessons-from-the-battle-for-raqqa.html
Isaac, B. L. (1983). The Aztec 'Flowery War': A Geopolitical Explanation. *Journal of Anthropological Research*, *39*(4,), 415–432.
Jaques, T. (2006). *Dictionary of Battles and Sieges: A Guide to 8,500 Battles from Antiquity Through the Twenty-first Century [3 Volumes]*. Bloomsbury Academic.
Jones, S. (2010). *Underground Warfare, 1914–1918*. Pen and Sword.
Jones, S. G., Palmer, A., & Bermudez Jr, J. S. (2023). *Ukraine's Offensive Operations*. https://www.jstor.org/stable/pdf/resrep50629.pdf?acceptTC=true&coverpage=false&addFooter=false
Jordan, D. A. (2001). *China's Trial by Fire: The Shanghai War of 1932*. University of Michigan Press.
Jowett, P. (2013). *China's Wars: Rousing the Dragon 1894-1949*. Bloomsbury Publishing.
Kilcullen, D. (2013). *Out of the Mountains: The Coming Age of the Urban Guerrilla*. C Hurst & Co Publishers Ltd.
King, A. (2021). *Urban Warfare in the Twenty-First Century*. PolityPress.
Kitamura, S. (2022). *World_Historical_Battles_Database_v1*. https://osf.io/https://osf.io/j357k
Knight, C., & Theodorakis, K. (2019). The Marawi crisis—Urban conflict and information operations. *Australian Strategic Policy Institute*, *31*. https://researchoutput.csu.edu.au/files/152897427/149406699_published_report.pdf
Kuhn, J. E. (1906). From Port Arthur to Mukden with Nogi. *Royal United Services Institution. Journal*, *50*(340), 798–804. https://doi.org/10.1080/03071840609436389
Kunertova, D. (2023). The war in Ukraine shows the game-changing effect of drones depends on the game. *Bulletin of the Atomic Scientists*, *79*(2), 95–102. https://doi.org/10.1080/00963402.2023.2178180
Larson, L. M. (1917). The King's Mirror (Speculum regale-Konungs skuggsjá. *Scandinavian Monographs*, *3*. https://archive.org/details/kingsmirrorspecu00konuuoft.
Lenihan, P. (2011). Namur Citadel, 1695: A Case Study in Allied Siege Tactics. *War in History*, *18*(3), 282–303. https://doi.org/10.1177/0968344511401296
Leonard, R. (2016). *The China Relief Expedition*. John Hopkins University. https://web.archive.org/web/20161206044959/http://www.jhuapl.edu/ourwork/nsa/papers/China%20ReliefSm.pdf
Lewis, J. (2014). *ISIS Battle Plan for Baghdad*. Institute for the Study of War. https://understandingwar.org/sites/default/files/ISIS-not-culminated.pdf
Luscombe, S. (n.d.). *Indian Mutiny: The Siege of Cawnpore* [Online]. British Empire. https://www.britishempire.co.uk/forces/armycampaigns/indiancampaigns/mutiny/cawnpore.htm
Mackesy, P. (1995). *British Victory in Egypt, 1801: The End of Napoleon's Conquest*. Psychology Press.
Magas, B., & Zanic, I. (2013). *The War in Croatia and Bosnia-Herzegovina 1991-1995*. Routledge.
marquis de Vauban, S. L. P. (2012). *Mémoire pour servir d'instruction dans la conduite des sièges et dans la défense des places*. Editorial MAXTOR. https://books.google.co.uk/books?hl=en&lr=&id=0nQLBAAAQBAJ&oi=fnd&pg=PA1&dq=M%C3%A9moire+pour+servir+d%27instruction+dans+la+Conduite+des+Sieges&ots=rzVeBF

58kj&sig=uGMB3DfUbxGGIuI9gx4bGgFj3KU
Marshall, S. (1973). *Notes on Urban Warfare* (AD0758841). Army Material Systems Analysis Agency. https://apps.dtic.mil/sti/citations/AD0758841
McCarley, J. B. (2019). THE OTHER SIEGE: Developing and Conducting a Staff Ride for Yorktown, 1862. *Army History*, *110*, 10–19.
McKenna, A. (2014). THE SIEGE OF TENOCHTITLAN: AZTEC CULTURE BEFORE AND AFTER THE CONQUEST. *The 2014 WEI International Academic Conference Proceedings*. 2014 WEI International Academic Conference, New Orleans, USA. https://www.westeastinstitute.com/wp-content/uploads/2014/11/Alexandra-Mckenna1.pdf
McLaurin, R. D. (1982). *Military Operations in the Gulf War: The Battle of Khorramshahr*. Aberdeen Proving Ground, MD: US Army Human Engineering Laboratory. https://apps.dtic.mil/sti/citations/ADB067661
McMahon, A., Pittman, H., al-Rawi, Z., Ashby, D., Burge, K., Goodman, R., Hammer, E., & Pizzimenti, S. (2023). *Dense urbanism and economic multi-centrism at third-millennium BC Lagash* (pp. 1–20). Antiquity. Cambridge University Press. https://doi.org/10.15184/aqy.2023.36.
Meddens, F., & Lane, K. (2022). Ploughing up the battlefield; Inca warfare, conquest and resilience. *Estudios Latinoamericanos*, *42*, 71–107.
Medina, M. C. T. (2016). Aftermath of the 2013 Zamboanga Siege: Peacebuilding Strategies from Civil Society. *Philippine Sociological Review*, *64*, 9–39.
Meek, A. D. (1994). Operation Centre. *British Army Review*, *107*, 5–16.
Miller, C., & Bakar, K. S. (2023). Conflict Events Worldwide Since 1468BC: Introducing the Historical Conflict Event Dataset. *Journal of Conflict Resolution*, *67*(2–3), 522–554. https://doi.org/10.1177/00220027221119085
Min, E. (2021). *Interstate War Battle Dataset (version 1.0)* [dataset]. Harvard Dataverse. https://doi.org/10.7910/DVN/KLQFAP
Monck, G. (1671). *Observations Upon Military & Political Affairs*. Henry Mortlocke. https://quod.lib.umich.edu/e/eebo/A26617.0001.001?view=toc
Mumford, A. (2021). *The West's War Against Islamic State: Operation Inherent Resolve in Syria and Iraq*. Bloomsbury Publishing.
Narasingha, P. (2015). Tewodros and Tipu as Warrior against Imperialist Britain: A comparative study. *Asian and African Studies*, *24*(1). https://www.academia.edu/download/46869192/Tipu_Tewodros.pdf
Nasson, B. (2011). *The Boer War: The Struggle For South Africa* (UK ed. edition). Spellmount.
Nath, P. (2014). Building the Empire: Military Infrastructure and the Career of Muhammad Qāsim Khān Mughal Commander. *Proceedings of the Indian History Congress*, *75*, 270–274.
Nath, P. (2018). Through the Lens of War: Akbar's Sieges (1567–69) and Mughal Empire-Building in Early Modern North India. *South Asia: Journal of South Asian Studies*, *41*(2), 245–258. https://doi.org/10.1080/00856401.2018.1430467
Nath, P. (2019). *Climate of Conquest: War, Environment, and Empire in Mughal North India*. Oxford University Press.
Nelson, M. K. (2012). *Ruin Nation: Destruction and the American Civil War*. University of Georgia Press.
Nelson, M. K. (2016). Urban Destruction during the Civil War. In *Oxford Research Encyclopedia of American History*. https://doi.org/10.1093/acrefore/9780199329175.013.313
Niderost, E. (2015, August 17). The Fall Of Shanghai: Prelude To The Rape Of Nanking & WWII. *Warfare History Network*. https://warfarehistorynetwork.com/the-fall-of-shanghai-prelude-to-the-rape-of-nanking-wwii/
Olukoju, A. (2003). The siege of Oka, ca. 1878-1884: A study in the resistance to Nupe in Northeastern Yorubaland. *Warfare and Diplomacy in Pre-Colonial Nigeria: Essays in Honour of Robert Smith. Madison: African Studies Program, University of Wisconsin-Madison*.
Ostwald, J. (2005). Like Clockwork? Clausewitzian Friction and the Scientific Siege in the Age of Vauban. In *Instrumental in War* (pp. 85–117). Brill. https://doi.org/10.1163/9789047407034_009
Ostwald, J. (2007). Chapter Two. The Perfect Siege Of Ath 1697. In *Vauban under Siege* (pp. 21–45). Brill. https://brill.com/display/book/9789047411505/Bej.9789004154896.i-393_003.xml

Parker, G. (2013). *Global Crisis: War, Climate Change and Catastrophe in the Seventeenth Century*. Yale University Press.
Parrot, A. (1971). *Les fouilles de Mari Dix-neuvième campagne (printemps 1971* (pp. 253–270).
Paszke, M. Z. (2019). Let's Pile Up Some Corpses And Pour Out A Libation–A Reconstruction Of IIIrd Millennium BC Battlefield Burial Tumulus In Ancient Mesopotamia. *Acta Archaeologica Lodziensia*, *65*, 27–38.
Paul, E. J. (2011). *The Greased Cartridge: The Heroes and Villains of 1857-58*. Roli Books Private Limited.
Pearson, M. N. (1976). Symposium: Decline of The Mughal Empire. *The Journal of Asian Studies*, *35*(2), 221–235. https://doi.org/10.2307/2053980
Phinney, E. (1825). *History of the Battle of Lexington: On the Morning of the 19th April, 1775*. Phelps and Farnham.
Pirnie, B., & O'Connell, E. (2008). *Counterinsurgency in Iraq (2003-2006)*. Rand Corporation. https://books.google.co.uk/books?hl=en&lr=&id=FXQ957OLq74C&oi=fnd&pg=PP1&dq=Counterinsurgency+in+Iraq+(2003%E2%80%932006)&ots=mEa1IBpWr8&sig=qEnh33KptAvuNrRPGVvZCFtPTtk
Podruczny, G. (2019). Siege activities during the Thirty Years' War and their impact on the construction of modern fortresses in Pommern, Neumark and Schlesien. *Przegląd Zachodniopomorski*, *34*(04), 189–222.
Ponting, C. (2011). *The Crimean War: The Truth Behind the Myth*. Random House.
Porter, S., & Marsh, S. (2010). *The Battle for London* (1st edition). Amberley Publishing.
Postings, R. (2018, July 9). A Guide to the Islamic State's Way of Urban Warfare. *Modern War Institute*. https://mwi.westpoint.edu/guide-islamic-states-way-urban-warfare/
Robert, Q. E. (1967). *An Affair Of Honor: Woodrow Wilson And The Occupation Of Veracruz*. W. W. Norton and Company, Inc.
Roberts, A. (2014). *Napoleon the Great*. Allen Lane, an imprint of Penguin Books.
Robertson, W. G., & Yates, L. A. (2003, January 1). *Block by Block: The Challenges of Urban Operations:* https://doi.org/10.21236/ADA446541
Robson, F. (2018). Siege Warfare in Comparative Early Modern Contexts: Norms, Nuances, Myth and Massacre During the Revolutionary Wars. In A. Dowdall & J. Horne (Eds.), *Civilians Under Siege from Sarajevo to Troy* (pp. 83–105). Palgrave Macmillan UK. https://doi.org/10.1057/978-1-137-58532-5_5
Rodríguez, M. F. (2020). Comparative study on institutional and military changes in XV Century Europe. *International Journal of Legal History and Institutions*, *4*, 71–100.
Samuel, isaac. (2021, September 4). *A complete history of Jenne: 250BC-1893AD*. https://www.africanhistoryextra.com/p/a-complete-history-of-jenne-250bc
Saxe, M. de. (2012). *Reveries on the Art of War*. Courier Corporation.
Scherer, A. K., & Golden, C. (2009). Tecolote, Guatemala: Archaeological Evidence for a Fortified Late Classic Maya Political Border. *Journal of Field Archaeology*, *34*(3), 285–305. https://doi.org/10.1179/009346909791070907
Sebetovsky, M. (2002). *The battle of Vukovar: The battle that saved Croatia* [United States Marine Corps: Command and Staff College, Marine Corps University]. https://apps.dtic.mil/sti/citations/ADA407751
Seward, D. (2013). *A Brief History of the Wars of the Roses*. Hachette UK.
Shepperson, M. (2018). *Destruction at the ancient site of Mari in Syria. The Guardian*. https://www.theguardian.com/science/2018/apr/19/destruction-at-the-ancient-site-of-mari-in-syria
Sinisi, S. (2018). *Stuck in Traffic: The Wehrmacht's Failure in Urban Russia* [Florida State University]. https://www.proquest.com/openview/8da2951fa714d315e2d7bac583dac165/1?pq-origsite=gscholar&cbl=18750&diss=y
Smith, R. G. (2017). The Hundred Years War: A Different Contextual Overview. *The Saber and Scroll Journal*, *6*(1).
Spencer, J., & Ghoorhoo, H. (2021). The Battle of Shusha city and the missed lessons of the 2020 Nagorno-Karabakh war. *Modern War Institute*. https://mwi.usma.edu/the-battle-of-shusha-city-and-the-missed-lessons-of-the-2020-nagorno-karabakh-war/
Stepanenko, K. (2023). The Kremlin's Pyrrhic Victory in Bakhmut: A Retrospective on the Battle for

Bakhmut. *Institute for the Study of War*. https://www.understandingwar.org/backgrounder/kremlin%E2%80%99s-pyrrhic-victory-bakhmut-retrospective-battle-bakhmut#:~:text=The%20Battle%20of%20Bakhmut%20exposed,adjust%20its%20military%20objectives%20appropriately.
Streusand, D. E. (1989). *The formation of the Mughal Empire*. Oxford University Press. https://cir.nii.ac.jp/crid/1130282272659287424
Tadesse, B. (2015). Manufacturing Emperor Tewodros cannon at Gafat. *Ethiopian E-Journal for Research and Innovation Foresight*. https://www.academia.edu/download/63791185/tewodros-ii-s-sebastopol-cannon_120200630-12857-1rf77b.pdf
Tallett, F. (1992). *War and Society in Early Modern Europe, 1495–1715*. Routledge.
Tanner, H. M. (2013). *The Battle for Manchuria and the Fate of China: Siping, 1946*. Indiana University Press.
The Italian Wars and the Rise of the Spanish Tercio—Warfare In The Medieval World. (n.d.). Erenow. Retrieved 21 November 2023, from https://erenow.org/ww/warfareinthemedievalworld/31.php
Thompson, J. (2007). *No Picnic: 3 Commando Brigade in the Falklands*. Pen & Sword Books Limited.
Thucydides, C., R., & Thucydides, T. (2011). *The History of the Peloponnesian war*. Nabu Press.
Tombs, R. (2014). *The Paris Commune 1871*. Routledge.
Tomlin, R. (2012). Siege Warfare, 4th Century. In P. Ed. Connolly (Ed.), *Greece and Rome at War* (2nd ed.). Pen and Sword.
Tsouras, P. (1991). The Ground War. In B. Watson (Ed.), *Military Lessons of the Gulf War*. Greenhill Books.
Turnbull, S. (2003). *Japanese Castles 1540-1640: No. 5* (1st edition). Osprey Publishing.
Turnbull, S. (2008). *Japanese Castles AD 250-1540: 74* (1st edition). Osprey Publishing.
Turnbull, S. (2012). *Siege Weapons of the Far East* (1st edition). Osprey Publishing.
Turnbull, S. (2021). *The Ōnin War 1467-77: A Turning Point in Samurai History*. Helion and Company.
Turnbull, S. R. (2004). *Genghis Khan & the Mongol conquests 1190—1400* (2. Dr.). Osprey.
Twitchett, D. C., Franke, H., & Fairbank, J. K. (1978). *The Cambridge History of China: Volume 6, Alien Regimes and Border States, 907-1368*. Cambridge University Press.
UNESCO World Heritage Centre. (n.d.). *Fortifications of Vauban*. UNESCO World Heritage Centre. https://whc.unesco.org/en/list/1283/
Usman, A., & Falola, T. (Eds.). (2019). The Nineteenth Century: The Internecine Wars and Consequences. In *The Yoruba from Prehistory to the Present* (pp. 177–201). Cambridge University Press. https://doi.org/10.1017/9781107587656.008
Uyar, M., & Erickson, E. J. (2009). *A Military History of the Ottomans: From Osman to Atatürk*. Bloomsbury Academic.
Varble, D. (2003). *The Suez crisis, 1956*. Osprey Publishing.
Wahlman, A. (2015). *Storming the City: U.S. Military Performance in Urban Warfare from World War II to Vietnam*. University of North Texas Press.
Waley-Cohen, J. (1993). China and Western Technology in the Late Eighteenth Century. *The American Historical Review*, *98*(5), 1525–1544. https://doi.org/10.2307/2167065
Walker, N. (2023). *Conflict in Ukraine: A timeline (2014 – eve of 2022 invasion)* (Number CBP 9476). House of Commons Library. https://commonslibrary.parliament.uk/research-briefings/cbp-9476/
Ward, K. (2016). *The Thirteenth Minnesota and the mock battle of Manila*. https://www.mnmilitarymuseum.org/files/9815/0187/6130/ALLIES_Vol-XXIV-No-1_2016-Winter.pdf
Watson, A. (2019). *The Fortress: The Great Siege of Przemysl* (First Edition). Allen Lane.
Watson, B. A. (2009). *Sieges: From the Siege of Jerusalem to the Gulf War* (Illustrated edition). Stackpole Books.
Wawro, G. (1996). *The Austro-Prussian War: Austria's War with Prussia and Italy in 1866*. Cambridge University Press.
Wawro, G. (2010). *The Franco-Prussian War: The German conquest of France in 1870-1871* (11.

print). Cambridge Univ. Pr.
Whitchurch, M. (2019). Urban Operations. *British Army Review Urban Special*, *2*.
Williams, B. G., & Souza, R. (2016). Operation “Retribution”: Putin’s Military Campaign in Syria, 2015–16. *Middle East Policy*, *23*(4), 42–60. https://doi.org/10.1111/mepo.12232
Wilson, J. D. (2015). *In Search of Askia Mohammed: The Epic of Askia Mohammed as Cultural History and Songhay Foundational Myth*. JAMES MADISON UNIVERSITY.
Xifra, J., & Heath, R. L. (2018). Publicizing atrocity and legitimizing outrage: Picasso’s Guernica. *Public Relations Review*, *44*(1), 28–36. https://doi.org/10.1016/j.pubrev.2017.10.006
Yadin, Y. (1972). The earliest representation of a siege scene and a’Scythian bow’from Mari. *Israel Exploration Journal*, 89–94.
Yates, L. A. (2014). *The US Military Intervention in Panama: Operation Just Cause, December 1989-January 1990* (Vol. 55). Center of Military History, United States Army. https://books.google.co.uk/books?hl=en&lr=&id=OTAhwk3f7J8C&oi=fnd&pg=PR9&dq=The+U.S.+Military+Intervention+in+Panama:+Operation+Just+Cause,+December+1989+%E2%80%93+January+1990&ots=qZ6Jg9__o9&sig=_Ja5zC7o_QqMDkfjC6G0jaIAmas
Zaluzhnyi, V. (2023). *MODERN POSITIONAL WARFARE AND HOW TO WIN IN IT* (UDC 355). Ukrainian Defence Forces. https://infographics.economist.com/2023/ExternalContent/ZALUZHNYI_FULL_VERSION.pdf

