

WARGAMING URBAN CONFLICT

INTRODUCTION V0B

What are the unique challenges in trying to wargame modern military operations in an increasingly urbanised world and (how) can they be better addressed?

Note: This is a first draft before I've really done much of the research so VERY liable to change.

Planet Earth is becoming more urbanised. The UN states that “*Urbanization has been one of the most significant trends shaping the built environment in the twentieth and twenty-first centuries*” (Acioly et al, 2020). Their UN-Habitat 2020 study revealed that “*there are nearly 2,000 metropolitan areas globally where a third of the world’s population now live*” and predicts that “*by 2035, the majority of the world’s population will live in metropolitan areas*” (Knudsen et al, 2020). In their UN-Habitat World 2022 World Cities Report the UN noted reported that “*we are witnessing a world that will continue to urbanize over the next three decades—from 56 per cent in 2021 to 68 per cent in 2050*” (Khor et al, 2022).

Since the days of Jericho and Megiddo (around the 15th century BCE) battles have been fought in, around and for urban areas. Whilst urban combat was common (if not necessarily dominant) in WW2 many lessons about fighting in the built environment were learnt, but then lost during the protracted peace of the Cold War and the switch to a counter-insurgency focus from the 1950s to the late 1990s or even into the 2000s (Kilcullen, 2021).

In 2012 David Kilcullen argued in *Out of the Mountains* (Kilcullen, 2021) that guerrillas were moving, primarily, from rural to urban operations – the core argument being that the urban helped to level the playing field and rob sophisticated militaries of many of the technological advances that they were beginning to enjoy. In *Urban Warfare in the 21st Century* (King, 2021) Anthony King broadened the argument to claim that with the reducing sizes of contemporary armies even Large Scale Combat Operations (LSCO) were likely to result in any fighting becoming focussed on city and urban areas – as they represent the population, cultural, infrastructural, commercial and governmental hubs of modern nations. Much of what has been since in the Ukraine since 24th February 2022 seems to bear this out. A lot of this flies in the face of traditional military thought which since the age of Sun Tzu (c. 500 BCE) has warned commanders that “*The worst policy of all is to besiege walled cities*” (Tzu, 2002:48). The impact of climate change, particularly on littoral cities, is only likely to increase the importance of, and pressure on, cities in the medium term (Khor et al, 2022).

Given this direction of travel it is no surprise that the military are spending more time and effort considering how to operate in cities and urban areas, and in most cases how to minimise civilian casualties whilst doing so. Just as some immediate examples, the Modern Warfare Institute in West Point (the American equivalent of Sandhurst) set up an Urban Warfare Project in 2019 (Modern Warfare Institute, 2022), the British Army ran a two year long Exercise Urban Lion (Reynolds, 2021) to work with Battalions and Brigades to consider urban issues (and which I supported through my professional work) from 2020-2022, and NATO’s Allied Rapid Reaction Corps (ARRC) dedicated its 2022 study day to “Multi-Domain Operations in the Urban Environment” (ARRC, 2022). Much more is going on as I explore in my research – and many military professionals think that even more should be being done (Spencer, 2021c).

The MOD’s Wargaming Handbook describes wargaming as “a decision-making technique that provides structured but intellectually liberating safe-to-fail environments to help explore what works (winning/succeeding) and what does not (losing/failing), typically at relatively low cost.” (MOD, 2017). Longley-Brown (2019) identifies 9 key benefits of wargaming to professional and military audiences, the most salient of which within the current context are: a greater understanding, practicing the conceptual element of fighting power and mechanism for exploring innovation in the

art of war. Longley-Brown also presents a typology of wargames including Board, Seminar, Course of Action, Matrix, Role-Play, Kreigsspiel, Megagames and others.

Wargaming, at least in an abstracted form, goes back as far as the time of Sun Tzu, with games like *Go* and *Chaturanga* (a forerunner of Chess) having their origins around his time (Perla, 2011:29). It was not though until the 17th and 18th Centuries that wargaming began to take on a more structured form and be more widely adopted in the armies of Europe through personalities such as Helwig, Reisswitz and Verdy (Perla, 2011:31-45). In the twentieth century wargames were used extensively by the US Navy to explore possible scenarios in any war with Japan (Perla, 2011:79-80), by the Royal Navy to help defeat the German wolfpacks hunting the Atlantic Convoys (Strong, 2017). Significant use was also made of them by the German Army in World War 2 to rehearse a variety of ground operations, including responses to an American attack on the Siegfried Line in 1944, which when it occurred for real in the middle of the wargame they just switched from issuing game orders to real orders (Perla, 2011:54-55). In the post-war period manual wargames were largely supplanted first by Operational Research – Robert McNamara’s “whizz kids” (Perla, 2011:110) – and then by ever more complex computer games which needed huge staffs to support them.

Whilst codified hobby wargaming with miniatures dates back at least until HG Wells’s 1913 classic *Little Wars* (Wells, 2015) - and even exists in an uncodified form in the works of the Bronte sisters (Pearson, 2007) - it was not until the 1960s that its current incarnation began to emerge. In the UK was this through the work of miniature gamers such as Donald Featherstone, Charles Grant and Paddy Griffiths (Hyde, 2015). In contrast, in the USA hobby wargaming became more synonymous with the hex-and-counter board games of designers such as Charles S. Roberts of publishers Avalon Hill and Jim Dunnigan of Simulations Publication Incorporated (SPI) (Perla, 2011:114-119). Perhaps partly due to the more “serious” nature of the US style games and a more open US attitude towards wargaming as a whole (I personally spent 10 years in the British Army in the 1980s and didn’t hear wargaming mentioned once), closer ties were developed between US military wargamers and hobby wargamers, with designers such as Jim Dunnigan working on projects that straddled the divide, resulting in games such as *Red Star/White Star* (Dunnigan, 1972), *Firefight* (Dunnigan & Hardy, 1976), and *Gulf Strike* (Herman, 1983) being played by military and civilian players.

Although the power of computer simulations (particularly at the tactical level where they have been able to leverage developments in “first-person-shooter” (FPS) recreational computer games, the last decade has seen a real resurgence in professional interest in manual wargaming on both sides of the Atlantic, exemplified by global instances of the Connections series of professional wargames conferences (which has been running in the USA since 1993) starting up in UK (2013), Australia (2014), the Netherlands (2014) and Canada (2016), and the UK’s Defence Science and Technology Laboratory establishing a Defence Wargames Centre in 2020 (Dstl, 2020).

Wargames have been applied, both professionally and recreationally to urban warfare. A database which I have been building since the start of my PhD currently lists over 150 urban wargames, around 90% of which are recreational (a figure that more reflects the difficulty in getting access to information on professional/military games than their actual absence). However, many of the recreational games are about the battles of the past (there are 18 games alone on Stalingrad in my database – over 10% of the total), and many focus on the tactical, door-to-door, house-to-house fighting elements of urban combat. The rich and complex challenges of modern urban warfare appear, at first sight, to be somewhat poorly served by modern wargames, and that is the primary impetus for this PhD.

What Makes Urban Different?

King (2021) provides a summary of the key features of urban conflict, and general surveys have been provided by Dilegge et al (2019) and DiMarco (2012). King identifies the following key features of modern urban warfare:

- Asymmetric conflict;
- Cities as systems;
- Structures;
- The changed air domain;
- The changed Fires domain;
- The concept of “fractal manoeuvre”;
- The role of partners;
- The role of rumour and influence.

Dick (2018) identifies further challenges such as the limitations on Intelligence, Surveillance and Reconnaissance (ISR), especially when conducted by aerial, electronic and other stand-off means, and dealing with the likely presence of a considerable civilian population, including refugees and maintaining control. Jenkins (2018) discusses the role of the subterranean environment. Shipley (2013) notes the vulnerability of tanks and infantry alone, and the increased need for combined arms operations – which then potentially generates problems for infantry/armour co-ordination and information sharing. Brown (2006) discusses the specific challenges of Combat Support Services (CSS) and Logistics within the urban environment and Reynolds (2021) highlights the need for effective use of limited engineering resources. Elliot-Square (2005) presents three different approaches to the problem of the urban break-in, as well as the continuing challenge of command and control in urban operations. Howcroft (2019) highlights the usefulness and challenges of Uncrewed Aerial Vehicles (UAVs) in urban intelligence gathering, and Russia seems to be using the Syrian conflict as a testing ground for Uncrewed Ground Vehicles (Bendett, 2020). Finally, Matson (2019) emphasises that cities will be complex cyber terrain as well as complex physical terrain.

In addition to the unique challenges of urban there is also a need to consider urban in the context of evolving doctrine. Whilst Chapter 2 looks at the evolution of urban doctrine, Chapter 4 examines current doctrines and doctrinal thought in more detail, including:

- Manoeuvrism (Brown, 2018);
- Defeat mechanisms (Hoffman, 2021);
- Effects-based operations (Smith, 2003); and
- Multi-Domain Operations (TRADOC, 2018).

These have then been applied to the wargames developed for the research in order to provide added focus and a different set of lenses with which to design and evaluate urban wargames.

Why am I doing it?

If the wars of the future are going to focus around urban areas then militaries need to better understand how to deal with conflict in and around those urban environments. A principal reason for this is that urban areas are full of people – no matter how many attempts may be made to encourage civilians to flee – and there is an imperative on most modern armies to minimise civilian harm. Both the International Red Cross Committee and the Centre for Civilians in Conflict have working groups looking at urban combat and producing guidance for military commanders to reduce human suffering and infrastructure damage in urban combat (ICRC, 2022; Muhammedally, 2022). With respect to this the well-known professional wargame designer Matt Caffrey once stated “Wargaming saves lives” (Longley-Brown, 2019). For me these twin considerations provide a real motivation to do this work – better understanding of, and planning and training for urban operations so that they can be conducted in the most efficient and effective ways possible helps to save lives – both of the soldiers participating and the civilians caught in the crossfire.

As a former soldier I closely identify with those who wage our current wars, and who will have to wage our future wars. Having been involved in a variety of Dstl projects over the last decade I have valued the opportunity to both pay-back for the experiences and opportunities that the Army gave me during the Eighties, and to hopefully use the technical skills, knowledge, insights and creativity that I have developed since (principally in virtual reality and conversational AI) to help the

military address the challenges of the future. This PhD is very much an extension of that.

I was a hobby wargamer long before I joined the Army – and my interest in wargaming and my interest in the Army as a career were no doubt closely interlinked. However, I became really aware of the concept of “professional wargaming” over the last 10 years or so (as mentioned above it was almost a dirty word whilst I was serving) and so when I realised through a note that my supervisor, Dr John Curry posted in The Nugget, the journal of the Wargames Development Group, that there might be the opportunity to apply my wargaming expertise to real-world issues then it seemed like an obvious path to follow. The opportunity also coincided with some of my first opportunities to apply my wargaming knowledge directly to professional wargaming projects.

In my professional life I am no stranger to the academic world. Many of the projects that I have led have been collaborative partnerships between industry, academia and government. As a result I am used to the discipline of properly conducted research, research ethics, peer-reviewed publications and conference presentations.

The creation of new knowledge and insights has been a driving force in my professional career. Applying that discipline alongside my wargaming experience, and with the benefit of being a military veteran through a PhD to hopefully help the military better understand urban conflict in order to help ensure that future wars can minimise the harm to civilians has got to be a worthy goal. If I can also help the broader academic and wargaming communities to better understand the how and why of urban conflict through creating new tools and perhaps new insights then that can only add to the undertaking.

What do I aim to contribute?

In undertaking this PhD there are 4 key areas where I hope to be able to contribute to the existing sum of knowledge on wargaming urban conflict:

- How well do existing wargames model urban conflict?
- Where are the gaps between current urban wargames and the key challenges of urban urban combat, and future urban conflict?
- Can we better wargame urban conflict, and if so how?
- What guidelines can be offered to help future wargame designers better represent future urban conflict?

In order to address these questions there are a number of supporting questions that I also need to address:

- Is urban conflict becoming more important, and if so why, and will this continue?
- How has the operational practise of urban conflict evolved through its history?
- Do the sieges of the past provide any useful learnings for the sieges, or urban conflicts in general, of today?
- What are the key challenges in undertaking urban operations?
- How are large urban areas evolving, and how do those changes affect the possibilities and realities of urban conflict?
- Are megacities a special case?
- How do different doctrinal lenses (e.g. effects based, manoeuvrist, defeat mechanism) affect urban conflict?
- What urban wargames already exist?

I believe that there is significant freedom to research within this area, melding the findings of researchers into urban conflict, along with my own findings and insights, with the best practice of wargames development and in the identification of new ways forward.

Wargames provide a useful way to structure and codify knowledge, and present it in a way in which a person can actively engage with it and the concepts explored in a way that is not possible with conventional printed or audio-visual forms.

A wargame of modern urban conflict should help people (both civilian and military) to better understand the dilemmas of urban conflict and the linkages between the different civilian and military elements within a cluttered, congested and confused environment, where modern technologies from drones and cyber to social media are likely to be prevalent. Traditional military training facilities struggle to represent these aspects of urban conflict (being better at the building by building tactical level), and being able to complement such facilities with a wargame (which can be played anytime, anywhere by anyone) should enable a broader understanding of the issues.

The accessibility of a wargame should also make it possible to help build a bridge between the military and civilian views of urban conflict, enabling better civil-military co-operation, and better management for military-civil affairs in the future.

The Research in Context

Three notable (then) recent books on urban conflict provided an initial anchor to my research: DiMarco (2012), Dilegge et al (2019) and King (2021). A main tenet of King (2021) is that modern urban warfare is the result of smaller armies being unable to fight on long linear fronts – and so fighting converges on urban areas and takes on a positional nature. Wargames provide a structured and critical way to examine this change in the character of warfare. DiMarco (2012) takes a case-study approach, looking at notable urban battles such as Stalingrad, Hue and Grozny. Since multiple wargames exist for all of these battles DiMarco's descriptions and assessment, supplemented by other primary and secondary sources, provide a way to potentially validate both these existing wargames, and my new wargames. The ability of a wargame to provide a more visceral sense of a battle as against the textual descriptions such as in DiMarco also helps to confirm the ability of wargames to improve the understanding of a battle. Finally, Dilegge (2019) edits a collection of 54 essays on multiple aspects of urban warfare. Only one of these looks at wargaming specifically, however the essays identify key areas of urban operations, including doctrine, intelligence, drones and cyber, all of which have helped not only to inform the design of my wargames but have also been challenged and explored through the playing of the wargames.

Whilst the amount of secondary research available has reduced the amount of primary research required in terms of identifying challenges, it has still been essential to conduct significant primary research – through field manuals, training material and battle diaries (both of individuals, in the form of memoirs, and of regiments and formations) to validate the findings of others, and battle level reports have been of use in designing and validating the wargames.

Within the books, studies, reports and projects investigating urban conflict only three were initially identified in the public domain which used wargaming as the means of investigation (rather than training), and these have focussed on a military analytical approach and have not come from the academic community (or had academic involvement):

- The Land Warfare Centre has just concluded a 2 year study into urban warfare using a free Kriegsspiel style wargame, verging on a Tactical Exercise Without Troops (TEWT), which I supported in a professional capacity (Reynolds, 2021).
- Jim Wallman's *Super Soldiers & Killer Robots 2035* a multi-player mega-game set in a city in the midst of a future Baltic States conflict run as the plenary game at Connections UK 2019 (Brynen, 2019).

- The Defence Science and Technology Laboratories (Dstl) conducted a study into Commercial-Of-The-Shelf (COTS) urban wargames in 2019 (Beaves, 2019). Their survey only appeared to consider 8 games and 11 features of urban conflict, and was a relatively short duration task.

Beyond the DSTL study I am unaware of any systematic review of urban wargames, or a systematic evaluation of them against modern urban conflict challenges or varying military doctrines. Notably only 1 paper out of 505 from a listing of presentations the US Connections professional wargaming conference explicitly mentions “urban” or an urban battle in its title (plus one mentioning in a COVID context), despite 9 mentioning cyber (Connections, 2021).

No doubt US, NATO and other militaries have conducted urban wargaming studies, but these do not appear to be in the public domain. Part of the literature review will be finding such studies and seeing if they could be made available for the purposes of this research

Wargaming can provide a useful lens through which to assess a topic such as Urban Conflict as it allows interested parties to actively engage with the topic, rather than just reading about it, and enables practitioners to explore a topic which is cost-prohibitive to do at any scale for physical exercises (the largest US Urban Training town in Muscatatuck, Indiana consists of only 190 buildings).

Through my study I hope to both provide a wider, systematic analysis of urban wargames assessed against the identified characteristics of urban warfare, and to use them a means to better communicate and understand the challenges of urban warfare.

Bounding The Research

It is no doubt already evident that the potential scope of a PhD in wargaming urban conflict is huge. As a result it is important to bound the research. There are 6 broad dimensions in which I have set the bounds for the PhD:

- Historic time period;
- Type of conflict;
- Levels of command;
- Domains of warfare;
- Possible protagonists;
- Type of wargames; and
- Form of outputs.

Historic Time Period

Since the ultimate aim of the research is to help inform current militaries the primary focus will be on mechanised urban combat –essentially from 1939 onwards. However, it will be important to place urban conflict in a historic context, with urban conflict dating back to at least the times of Troy and Jericho (King, 2021) It may also be pertinent to look at sieges of the past given the prevalence of reference to sieges in modern urban conflicts (including the Ukraine). As the 2022 war Ukraine shows there are likely to be new examples of urban conflict during the PhD, and with new technologies being deployed that challenge current analysis so the aim will be to keep the research current with them.

Type of Conflict

The second dimension is that of the type of conflict. In military terms the focus is primarily on limited and total war (less nuclear) – now commonly referred to as Large Scale Combat

Operations (LSCO). There is significant overlap in terrorism and counter-insurgency (COIN) and urban warfare (e.g. the Troubles in Northern Ireland, Algeria, Marawi), and so COIN type operations will be considered only where they have a high-intensity phase.). The research will certainly need to consider aspects of Hybrid and Grey Zone warfare (Bachmann, 2019) as they are likely to be part of the shaping of any urban conflict.

Level of Command

Military operations are typically considered at a Tactical, Operational and Strategic level (MOD, 2014). Much of the work on urban warfare doctrine has been at the Tactical (e.g. Section, Platoon, Company) level – such as Fighting in Built Up Areas (FIBUA) (Jenkins, 1983). It is proposed to not make this the focus of the PhD as it seems to be the better explored end of the spectrum, and the one where social and technology change may have the lesser impact. It is at the Battalion, Brigade and Division level (moving from Tactical into Operational) where the fight becomes a true all-arms fight, and where elements of the cluttered and congested environment (such as the civilian population, social media and media) become more important (Morgan, 2021). Beyond Division in the current environment (the UK only have one real operational Division) the emphasis is more on the political-military Strategic considerations. It is therefore intended to focus on the Battalion, Brigade and Division levels of command. It should also be noted that the behaviour and action space of the civilian population is also in scope, and a wargame taking the civilian perspective may be an interesting area to study.

Domains of Warfare

Urban conflict is typically all-domain operation, although dominated by land. Air faces unique challenges in dense urban environments such as collateral damage, and the use of UAVs and loitering munitions is blurring the boundary between land and air domains (Howcroft, 2019). Many cities and urban environments are located within the Littoral zone which is a key focus of much military planning and training and would significantly involve the sea domain (Vego, 2015). The space domain may help with many ISR tasks that air finds a challenge in urban environments (Dick, 2018), and cyber (and other aspects of the Information Environment) is likely to be a significant part of future urban conflict (Matson, 2019) - although the extent of its use in the Ukraine conflict is unclear (Hauptman, 2022).

Possible Protagonists

As a former British Army officer it is natural that my primary focus is on urban conflict as it pertains to the British Army, and within the British Army's NATO context. As the largest Army in NATO the US Army (and US military in general) is making much of the running in current urban doctrine development and also needs to be considered. Between the British and US Armies much of NATO doctrine is also covered, but any particular exceptions will be highlighted. Of possible adversaries the main focus is naturally on Russia and China – seen as the pacing threats in the UK and USA. In both cases the ability to do research (particularly into military subjects) is somewhat limited by the lack of open-source material, but recent operations in Ukraine obviously give some idea of Russian tactics (even though they may change in the future). Other countries, and non-state actors, will be considered where they have explicit lessons for the urban (such as Israel and the PLO).

Types of Wargame

This PhD is focussed on manual wargames – i.e. those that can be played over a map, board or table using counter, blocks, figures, cards or other artefacts, and those which are played purely through semi-structured discussion, such as Matrix Games (Curry, 2014). This limitation does not preclude the use of computer to enable these games to be played remotely (such as using Roll20, Vassal or Tabletop Simulator), and indeed such tools are likely to be embraced to speed development and enable play. First-person-shooter (FPS) type wargame are considered out of

scope since they are more akin to a virtual exercise or simulation, missing any level of abstract. Fully computerised wargames (including both real-time-strategy and defence style computer wargames) are also considered out of scope due to the additional effort required to develop them and the fact that their mechanics are hidden make them hard to analyse or to change. However, computer wargames will be covered in the literature review

Form of Outputs

The final project scope is that of the outputs which are achievable by a single researcher on a part time PhD within a 5-year timeframe. The minimum output, apart from the thesis, will be a single wargame, with multiple plays by different cohorts for evaluation, and in a form which could be taken up by military and non-military players, and which explore one or more of the challenges identified. It may be that given the number of challenges it is better to design a small number of smaller wargames rather than one larger one – this is a decision to be taken later. It is also hoped to collect the research outputs of the PhD into a more accessible “guide to wargaming urban conflict” which can help support others in developing their own wargames.

Defining Terms

It is useful at the outset to define some of the terms that will dominate this PhD. A full glossary is provided in Annex A, but for now there are two principle sets of terms of art that need to be considered, those related to the urban, and those related to urban combat.

Urban Terminology

One problem with researching anything to do with urban, and particularly cities, is the lack of common definitions of the terms. When does a village become an urban town? Are cities defined by having a Cathedral (as was traditional in the UK), or as a settlement of almost any size as long as it is an incorporated municipalities with local government (as in the USA)?

In his seminal study Wirth (1938) considers that population size, density, and heterogeneity are useful metrics to use in the categorisations of urban settlements. Brenner (2015) concurs, but recognises that there are no globally accepted values for these metrics, stating that “*within the major strands of urban age discourse, the city is defined with reference to an arbitrarily fixed population size, density threshold or administrative classification*”, and seeing urban and urbanization as “*theoretical categories, not empirical objects*” and even that “*urban is a process, not a universal form, settlement type or bounded unit*”.

US military doctrine defines an urban centre as any with a population of over 3000 (US Doctrine, in King, 2021) and King (2021) further identifies as a city as an urban settlement with a population of over 100,000 (King2021:20). The World Bank defines a city as a settlement as having a population density of over 400 people per sq km (World Bank/UN in King, 2021), and a settlement with over 7.5 sq km of buildings as urban.

A topic of much discussion in civilian and military circles since the mid 2010s has been “megacities” – these are defined by the UN as cities with over 10 million inhabitants. The UN World Cities 2018 report forecasts that “*Globally, the number of megacities is projected to rise from 33 in 2018 to 43 in 2030*” (UN DESA, 2018). Russell Glenn, a RAND consultant who wrote much on urban warfare during the 2010s, warns though that “*many if not all observations made regarding megacities ... apply to the larger of world cities with somewhat smaller populations is a given. Westerners liking for multiples of five and 10 should not causes to limit insights to the serendipitous choice of the 10 million mark*”. (Glenn, 2016). This seems to be echoed by the UN who wrote in their 2022 Envisaging the Future of Cities report that “*The message emerging from these dynamics is that infrastructure investments and urban planning interventions should not be biased towards megacities. Instead, governments must pay attention to small and secondary cities*” (UN HABITAT, 2022), and which uses a 5 million rather than 10 million threshold for its data analysis. In this context the 2018 UN World Cities report notes that “*In 2018, 48 cities had populations between 5*

and 10 million. By 2030, 10 of these are projected to become megacities. Projections indicate that 28 additional cities will cross the 5 million mark between 2018 and 2030” (UN DESA, 2018) – giving a net increase to 66 of these secondary cities, to be added to 43 megacities – over 100 very large cities.

I consider these definitions in more detail in Chapter 4.

Urban Combat Terminology

The US Army defines urban operations as “those operations across the range of military operations planned and conducted on, or against objectives on a topographical complex and its adjacent natural terrain, where man-made construction or the density of population are the dominant features (ATP3-06, US Army, 2017). Over the years a number of different acronyms have been used to describe such operations including:

- Close-Quarters Battle (CQB) – house to house fighting;
- Fighting in a Built-Up Area (FIBUA), the British doctrinal term for urban operations;
- Military Operations on Urbanized Terrain (MOUT), the US equivalent of FIBUA/OBUA, and used by NATO interchangeably with it;
- Operations in a Built-Up Area (OBUA), the NATO doctrinal term for urban operations.

Military planners often focus on the “dense urban”. However, there is again the problem of definition of “dense”. Morrison (2016) highlights the problem “*There is currently no standardized, metric-based definition for what constitutes a dense urban environment or for determining the point at which an area switches from urban to dense urban. ... we can begin to understand dense urban environments as places where either all three metrics—Floor Area Ratio, Dwelling Unit/Area and Population—are high or where Dwelling Unit/Area and Population remain high while Floor Area Ratio decreases*” (Morrison, 2016).

Terms like FIBUA, MOUT, OBUA and CQB carry with them an implicit suggestion of a tactical level of operations. The doctrine they are largely associated with is of house and street clearances conducted by squads, sections, platoons or at most companies. As stated above the focus for this PhD is more on the operational level of command – so primarily Brigade and Division. This is one of the reasons why I tend in this research not to refer to urban warfare (with a suggestion of a kinetic fight within an urban environment) but to urban conflict (where the conflict may involve urban areas but does not necessarily imply fighting in them).

Plan of Work

Warning – this section is a) very likely to change and b) actually needs the work to be done! Has been written in the present/past tense to maintain the conceit of being the draft of the introduction to the final thesis.

General Approach

In the first phase of the PhD I examined primary and secondary literature, and conducted semi-structured interviews in order to better understand the nature and challenges of modern urban conflict with academics, professional wargamers and ideally military (and ex-military) personnel and other stakeholders. I also reviewed the existing published (and some unpublished) wargames focussed on urban conflict in order to understand how well they represented the identified challenges. This included professional and hobby games, computer and manual wargames, as well as different types of such games. In the second phase, I developed ~~XX~~ new wargames to explore the gaps in representation that I had identified. The aim was to iteratively develop and assess the games with a variety of cohorts of stakeholders which included academic wargamers

and subject matter experts, hobby wargamers and military personnel.

Thesis Structure

This thesis is split into 11 chapters, including this introduction. The remainder of the thesis is structured as follows:

2. A History and Historiography of Urban Warfare

The chapter opens with an initial introduction to urban development theory as this will particularly inform the discussion in Chapter 4. The concept of Urban Terrain Zones, some of the common models and my own model are also introduced here as they will be useful in structuring some of the descriptions of urban battles (and maps). Current theories around why we fight in cities are summarised – but more critically examined in Chapter 4. The bulk of the chapter consists of a summary of urban warfare and a historiography of urban warfare. The former looks at the main historic periods as they relate to urban warfare (Ancient/Biblical/early Medieval, pre 1900 (i.e. pre-mechanised), WW1, Inter-War, WW2, 1950-1989 (Cold War), 1990 - 2010 (War on Terror), 2010 - present). A number of key battles are examined in more detail in Annex B with 2 pages each to highlight the main lessons from each. Battles have been chosen to ensure that each of the key characteristics discussed in Chapter 3 is evidenced. The historiography looks at how writers have talked about the urban fight, using roughly the same time periods, from Sun Tzu to present. The historiography also includes how military urban doctrine has evolved over the same period.

3. Key Characteristics of Urban Warfare

Based on the evidence presented in Chapter 2 and the work of secondary sources this chapter looks at what the key characteristics are which differentiate urban conflict/warfare combat from more rural forms. Characteristics are evidenced back to the battles covered in Chapter 2 and to secondary research. Characteristics considered include: physical structure, infrastructure, manoeuvre (incl subsurface), direct fire (inc HE and anti-tank), indirect fire, close air support, combat engineering, command and control, communications and Electronic Warfare, Intelligence Surveillance and Reconnaissance (ISR, incl Space), Uncrewed Vehicles (air and ground), "exotic" weapons (including CS Gas, flame, non-lethal weapons), the civilian population, influence and information operations, cyber, littoral and riverine considerations, service support and futures. For ready reference each section has a summary table of pro/cons resulting from the use in urban of each aspect.

4. Current and Future Urban Conflict

This chapter presents a critical examination of the current trends and theories on urban warfare and on cities themselves, in particular covering concepts such as cities as systems, cities as organisms and megacities. It then examines the different types of operation that a military might be required to undertake in an urban environments (such as humanitarian, protected evacuation, peace-making/keeping, counter-insurgency operations - COIN, and Large Scale Combat Operations - LSCO) . The current urban warfare doctrine of notable global players is critically examined including NATO (with separate consideration of at least the UK and USA), China, Russia and Israel. Much of the current discussion about urban warfare planning is that it should be situated (literally in concrete), so potential future conflict zones are examined and their urban patterns and main urban areas identified and considered in the light of their potential impact on any conflict operations. Areas examined include the Baltic States, Eastern Europe, the Mediterranean, the Middle East, the 'Stans', India/Pakistan, Taiwan, Korea, South East Asia and developing nations. The intention has been to identify and characterise the type of operations, doctrine and locations that any modern urban wargame should seek to represent.

5. Wargaming Rationale

This Chapter discusses why wargames are used by the military and academia, and also how they

are a valid, useful and appropriate means of investigation for this PhD. A short history of wargaming is presented, followed by a more focussed history and historiography of urban wargaming. A typology and examination of the main elements of wargames is presented. The pros and cons of manual vs computer games are discussed, along with a rationale for the focus on manual games for this PhD. Key approaches to wargame (and game) design theory are considered, along with an evidenced discussion of the benefits of wargaming.

6. Existing Urban Wargames

This chapter presents and exploits the Urban Wargames database (<https://airtable.com/shreVPHaoJBpxGzFj>) that I have built since the beginning of the PhD and which at the time of writing has over 150 urban wargames on it. The full list is included at Annex C. Where possible I have sought to bring information about professional and military urban wargames into the public domain so that they can be considered in this PhD. A number of different typologies are used to describe and analyse the games and a representative selection described in Annex D. Where possible observations from observed play have been included, along with the criteria for selection, the evaluation methodology, recruitment model and data collection results in Annex D. Since some battles are covered by multiple games (e.g. Stalingrad, Hue) an additional analysis of the treatment of these battles by different games is included in order to show how different games can cover the same battles but in quite different ways, highlighting different aspects, and with different degrees of success.

7. Urban Wargames – Summative Analysis & Challenges

This chapter is a summation of all of the previous chapter. Based on the evolution of urban warfare, the particular instances of urban battles, the derived characteristics of urban warfare, and the current expectations of how future urban conflicts should be conducted this chapter examines:

- how well existing urban wargames meet current and future capabilities, doctrine and expectations, and past performance;
- how well the unique characteristics of urban conflict are addressed by these games; and
- what, as a result, are the unique challenges and gaps in trying to wargame modern operations in the urban environment.

This identifies the opportunity for the practical part of the PhD, which is presented in the second half of the thesis.

8. Experimentation and Evaluation Planning

This chapter considers the planning undertaken for the experimentation and evaluation phase of the PhD. It considers what needs to be evaluated (and why), a critique of the researcher/myself to consider any bias and expectations, what methods of experimentation and evaluation were used, and which were rejected and why. It also considers the models of validity that could apply to wargames as this drives the what/why of evaluation. The data capture and management plan will be presented. Peter Perla provides a useful framework for hobby wargame data capture (Perla, 2011:234) which has been adapted with input from the professional Data Collection and Analysis Plan (DCAP) (Longley-Brown, 2019). The chapter also considers the ethical framework and implications of the experimentation.

9. Experimentation

This chapter presents the core of the experimentation that was conducted for the PhD. Based on the issues and opportunities identified in Chapter 7 it identifies the specific aims of the experiments - which then led to the aims of the wargames, type of wargames and the audiences (research participants). More than one wargame was required in order to adequately explore even a subset of the "gap" issues identified in Chapters 3 and 4. Sabin's concept of "nested wargames" (Sabin,

2012:135-136) has been useful here is relating the games to the greater whole of wargaming urban conflict. The rationale for selection is presented, along with a brief summary of some of the rejected wargames. A generic approach to wargame development, informed by the work of Longley-Brown (2019) is presented and was followed for each wargame developed. For each game developed the chapter presents the objectives, the design, the method of player recruitment, a description of how the game was staged (the experiment) and what data is captured (and how), and a description of the iterations in design made based on feedback from each play.

10. Evaluation & Discussion

This chapter present the results, evaluation and disscision from each of the wargames – and each play of each wargame. The evaluation for each game focuses on the evaluation criteria established in Chapter 8 - looking in particular at the measures of validity and player experience. A summative evaluation and discussion follows, looking at the degree to which the experimentation and research has answered the fundamental research question of the PhD "What are the unique challenges in trying to wargame modern military operations in an increasingly urbanised world and (how) can they be better addressed?".

11. Conclusions

The final short chapter provides a conclusion to the work. This recapitulates the main observations on urbanisation, urban warfare and existing urban wargaming. It summarises the key challenges and novel approaches identified and the results of the experimentation (with practical findings and advice captured in an attached Guide to Wargaming Urban Conflict). It concludes with identifying what has been learnt, how this has furthered the knowledge in this area (for the academic, professional wargaming and military community), to what extent it has changed the researcher, and ultimately how successful the research has been as answering the research question.

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