research proposal form

Name:

David Burden

Provisional title of thesis:

What are the challenges in trying to wargame modern military operations in the urban environment, and how can they be addressed?

Aim or major research question:

(70 words max) – The 'aim' expresses the overarching goal of the research, though this can be written as a major research question if you prefer.

The aim of the research is to understand how well existing wargames model modern urban warfare, what unique challenges this environment presents to both warfare and the wargaming approach, and how wargames could be developed that better model urban conflict.

Objectives of proposed research or subsidiary research questions:

(300 words max) - The objectives represent a breakdown of the Aim into a number of areas of investigation that can be tackled by the application of explicit methods. These can often be expressed more easily as subsidiary questions.

The objectives of the research are to:

- Analyse the unique and key characteristics of modern (1939-2035) urban warfare;
- Consolidate an understanding of wargames theory, and available game mechanics and typologies, and the affordances of each;
- Understand what players need to learn from a game (i.e. how will the game be used)?
- Analyse, primarily by play and observation of play, existing urban warfare wargames;
- Identify how well the key characteristics of modern urban warfare are addressed by existing wargames;

- Identify and explore the unique challenges in trying to wargame modern operations in the urban environment;

- Design one or more novel wargames to model different aspects of urban warfare and evaluate their effectiveness to communicate and/or train key issues in urban warfare;

- Assess how well the challenges of modern urban warfare can be addressed through novel game design;

- Provide guidance to future wargame designers on how best to represent urban warfare within a game.

It should be noted that the study intends to focus on "manual", non-real time, wargames, rather than real-time first-person-shooter or real-time-strategy 3D computer games – although the use of computer technology to support a game is in scope. It is also intended to focus on a company to division level of combat, rather than the highly tactical, or possibly strategic, level.

Methodology:

(300 words max) – Briefly state the kinds of research you plan to undertake (e.g. audience survey, interviews, archive research, creative practice). We will be able to relate this to staff expertise.

The initial phase will be a literature review on urban warfare and on wargame design. It is planned to supplement this with interviews of those working in urban warfare training and doctrine, in modern professional and semi-professional wargame design and ideally those who have experienced urban warfare. I have spent the last 18 months working on an MOD project related to urban warfare and will investigate through formal channels access to the people involved in this, and related outputs, although the PhD is not predicated on this access. As veteran myself I also have other potential links into the military community – as well as my own experiences.

Existing wargames will then be played both solo and with groups. Groups will ideally be drawn from three areas – hobby players, professional/academic wargamers and military personnel. There is likely to be a pre-survey of players, observation of play, and a post-survey and semi-structured interviews/focus groups. I am a member of a number of hobby wargaming groups, and through wargaming forums have potential access to an international community of hobby wargamers. I am also a member of the Wargame Developments group (a semi-professional wargame design community) and have attended and built contacts at the Connections UK conference of professional wargamers in 2019 and 2021. I also have contacts within the Defence Science and Technology Laboratory's own Defence Wargaming Centre and professional military wargamers.

Novel game design will be an iterative process working with the same group types as above, and following similar pre/during/post information collection stages. The results of play will be analysed (primarily qualitatively) to assess wargame design and how well the challenges of urban warfare have been met by the wargame(s). I have designed my own wargames for over 45 years and published in several gaming books and magasines.

The needs for ethics clearance is recognised, and in particular an awareness of any post-traumatic stress triggers when working with those who have experienced urban conflict. There will be minimal need for personal data collection or personal data analysis.

Researcher context:

(300 words max) – Please explain how and why you have come to this research, why it interests you and what motivates that interest. How does it relate to what you have done (training, publications, work, practice, interests etc.? How will this help your career?

I have been a keen hobby wargamer for 50 years, although ironically my wargaming stopped whilst I was serving in the Army during the 1980s (it being somewhat out of favour at the time). I have always sought to actively contribute to the hobby, writing for magasines and co-authoring 6 books for one major commercial role-playing game. As a first foray into the "academic" side of wargaming in 2016 I collected data from 70 players on 339 Napoleonic wargames played during the Bicentennial and published an article analysing wargamers' performance against historical outcomes. A Waterloo game I staged for my 60th Birthday even ended up in the Daily Mirror!

My professional work in developing virtual simulations has involved me with MOD simulation research for the past 10 years. The role of the urban within peer-level military conflict has been of increasing interest to the world's militaries in the last few years. For the last 18 months I have been supporting the MOD's Ex Urban Lion series of wargames (Reynolds, 2021) on urban conflict and this has caused me to think in much more detail about the nature of urban conflict and how it can be wargamed. Whilst my professional background would suggest a technological approach to this I feel that for many lessons a more manual approach to wargaming may offer a more accessible, flexible and effective way of capturing and disseminating the lessons and doctrine of urban conflict. As someone with experience of hobby wargaming, military operations and professional wargaming I think I am ideally placed to do a Wargaming PhD.

I still expect to be actively involved in MOD projects over the next few years, and I think that the PhD would be a suitable legacy to help the next generation of professional wargamers and warfighters better understand the challenges of urban conflict, how best to wargame them, and through better communication of doctrine and best-practice how to win the urban fight whilst minimising military and civilian cost.

Case for research:

(1000 words max) – Drawing upon your reading and knowledge of the field, make a case to justify your project, characterising it as original knowledge. How will your research add to knowledge? What has already been done? Please reference in the Harvard style (author name, year of publication, pages: e.g. Matthews 2003: 5-9)

Fighting within built-up and urban areas has long been a feature of warfare. Over recent decades the conflicts in Afghanistan, Iraq, Syria and elsewhere have seen significant urban fighting, but typically within an asymmetric context. In recent years, as the possibility of confronting a peer adversary within an urban environment seems to have increased, there has been a rising interest in urban warfare within a peer-to-peer context (Reynolds, 2021).

Such warfare would be an extreme example of the Congested-Cluttered-Confused nature of modern conflict (MOD, 2010).

The UK military's renewed focus on urban combat is highlighted by conferences such as the Royal United Services' Institute's Urban Warfare Past, Present, Future (Roberts, 2018), a British Army Review two-volume Special Report on Urban Operations (MOD, 2018) and military exercise series such as Ex Urban Lion (Reynolds, 2021).

It is to be expected that other militaries are also paying renewed interest in urban combat – as typified by the Urban Warfare Project at the US Military Academy's Modern Warfare Institute (https://mwi.usma.edu/urban-warfare-project/) set up in 2019 and recent articles on the topic (e.g. Betz & Stanford-Tuck, 2019 and Spencer, 2021a).

There have been several recent (and not so recent) books on urban conflict. King (2021) provides a summary of key features 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.

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, 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, Kreigspiel, Megagames and others.

Urban Wargaming seems to have been underserved by wargaming community. For instance, only about 4 of Modern Warfare's 54 games dealt primarily with urban warfare, and about 8 of SPI's 341 games. However, around 60 urban map-based wargames have initially been identified in the public domain, including:

- SPI's CityFight (Balkoski and Donaldson, 1979) a tactical skirmish level hex-based game;

- Avalon Hill's Turning Point: Stalingrad (Greenwood, 1989), an operational level area-based game, and SPI's Turning Point: Battle of Stalingrad (Dunnigan, 1972) an operational/strategic hex based game;

- Modern Warfare Magasine's Fallujah, 2004: Urban Assault in Iraq (2016) and Block by Block – The Battle of Hue (2020);

- Nuts! Publishing's Urban Operations (de Peyret, 2017) – a tactical block and hex FIBUA game;

- PAXsim's We Are Coming Nineveh (Le Ménahèze, 2018) – a tactical/operational-level game of the Iraqi government campaign to liberate Mosul from Daesh.

Seven games have already been identified just dealing with the Battle of Hue – which would allow for a comparison of approaches for the same urban battle.

Amongst other hobby modern rules whilst urban combat is typically covered it is often relegated to a few adjudication modifiers, and almost always at a very tactical level. Those with specific rules for urban combat include Force on Force (Ambush Alley, 2011) which has breaching and asymmetric engagement rules, Skirmish Sangin (Phillips & Watterson, 2016) includes ladders and elevated spotting, UltraModern (Phillips & Dieck, 2020) includes window ingress/egress and Albedo Combat Patrol 164 (Surdu, 2019) includes weapon backblast in confined spaces.

It should be noted that several modern "tabletop" games with a Science Fiction setting have significant urban components including Deadzone (Haley & Thornton, 2013) and Albedo Combat Patrol 164 (Surdu, 2019). There may be some original ideas within them about how to deal with some aspects of urban warfare.

It is harder to identify what urban wargames might be being played and developed by the military. Watling (2021) reported on one of the Urban Lion series of wargames being run in 2020/21 by the Land Warfare Centre (and which I have observed). Spencer (2021) reports on the US Army's First Urban Warfare Planners Course. Jim Wallman's Connections UK 2019 plenary game was on "Super Soldiers & Killer Robots 2035" a multi-player mega-game set in a city in the midst of a future Baltic States conflict (Brynen, 2019).

An initial consideration of the wide and complex nature of the challenges of urban conflict and a comparison with the relatively low number and limited scopes of existing urban wargames suggests that there is a significant gap between what needs to be, or could be, modelled in a wargame, and what is actually being modelled. Significant gaps would appear to include the break-in battle (the modern equivalent of the siege?), combat engineering operations, the subterranean, the impact of building height, urban clutter, command and control, navigation and situational awareness and the civil population.

As a result, there would seem to be an opportunity for further research, and, in particular looking, at:

- The quality of representation (and possibly understanding) of urban warfare issues in professional (and hobby) wargames;
- The hard-to-train nature of many aspects of urban warfare with current non-wargame training "systems" and how wargames can help address them;
- The increasing impact (not all positive) of modern technology on urban combat;
- The impact of next-generation technologies, such as AI/swarms/UAVs/UGVs;
- The impact of the smart city, particularly in relation to cyber;
- The impact on and of the civilian population.

Bibliography:

(300 words max) – List those works you have read which have informed your knowledge of this topic.

Balkoski, J.M. and Donaldson, S.A. (1979) Cityfight: Modern Combat in the Urban Environment. SPI. Available from https://boardgamegeek.com/boardgame/4436/cityfight-modern-combat-urban-environment

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

Betz, D and Standford-Tuck, H. (2019) The City Is Neutral: On Urban Warfare in the 21st Century. Texas National Security Review. Vol 2, Iss 4 October 2019, pp 60–87. Texas, USA. Available from http://dx.doi.org/10.26153/tsw/6667

Brown, J. (2006) Combat Service Support (CSS) in Urban Operations. *British Army Review* 140.

Brynen, R. (2019) Connections UK 2019 Report. Available from https://paxsims.wordpress.com/2019/09/12/connections-uk-2019-report/

de Peyret, S. (2017) Urban Operations. Quimper: Nuts! Publishing.

Dick, C. (2006) FIBUA: Lessons from History. *Army Training and Doctrine News* No. 22.

Dilegge, D et al. (2019) Blood and Concrete. Small Wars Journal/XlibrisUS. USA.

DiMarco , L.A. (2012) Concrete Hell: Urban Warfare From Stalingrad to Iraq. Osprey Publishing. UK.

Dunnigan, J. (1972) Turning Point: The Battle of Stalingrad. SPI. Available from https://boardgamegeek.com/boardgame/8363/turning-point-battle-stalingrad

Elliot-Square, M. (2005). Urban Operations 2004. *British Army Review*. 136.

Greenwood, D. (1989) Turning Point: Stalingrad. Avalon Hill. Available from https://boardgamegeek.com/boardgame/759/turning-point-stalingrad

Haley, G. and Thornton, J. (2013) Deadzone. Nottingham: Mantic.

Her Majesty's Government (2021) Global Britain in a Competitive age. The Integrated Review of Security, Defence, Development and Foreign Policy. CP403. London: Her Majesty's Government.

Howcroft, J. (2019) 'Intelligence Challenges in Urban Operations', in Dilegge, D. et al. (eds.) *Blood and Concrete: A Small Wars Journal Anthology*. USA: Xlibris, pp. 225-236.

Jenkins, R. (2018) Some notes on Fighting in Built-Up Areas (FIBUA). *British Army Review* 75.

King, A. (2021) Urban Warfare in the 21st Century. Cambridge: Polity.

Le Ménahèze, J., Brewer, H., Train, B. and Brynen, R. (2017). We Are Coming Nineveh. Available from https://paxsims.wordpress.com/2018/07/25/we-are-coming-nineveh/

Longley-Brown, G. (2019) Successful Professional Wargames: A Practioner's Handbook. Ed. Curry, J. The History of Wargaming Project.

Ministry of Defence (2010) Future Character of Conflict. London: Ministry of Defence.

Ministry of Defence (2015) Future Operating Environment 2035. London: Ministry of Defence.

Ministry of Defence (2017) Wargaming Handbook. London: Ministry of Defence.

Ministry of Defence (2018) Special Report. Urban Operations Vol 1. *British Army Review*. London: Ministry of Defence.

Ministry of Defence (2021) Defence in a Competitive Age, CP411. London: Ministry of Defence.

Modern Warfare (2016) Fallujah, 2004: Urban Assault in Iraq. *Modern Warfare*, 23. Available from https://shop.strategyandtacticspress.com/ProductDetails.asp?ProductCode=MW23

Modern Warfare (2020) Block By Block – The Battle of Hue. *Modern Warfare*, 48. Available from https://shop.strategyandtacticspress.com/ProductDetails.asp?ProductCode=MW48

Palmer, N. (1980) The Best of Board Wargaming. London, UK.

PAXsims (2020) The Derby House Principles. Available from https://paxsims.wordpress.com/derby-house-principles/

Perla, P. (2011). Peter Perla's The Art of Wargaming. Ed: J. Curry. The History of Wargaming Project. UK.

Reynolds, N. (2021) The British Army and Mass in Urban Warfare, *The RUSI Journal*. London: RUSI. Available from doi:10.1080/03071847.2021.1968314

Roberts, P. (2018) RUSI Conference Report - Urban Warfare: Past, Present, Future. London: RUSI.

Sabin, P. (2012) Simulating War. Fakenham: Continuum.

Shipley, S. (2013) Operation NEW DAWN: Fallujah. *British Army Review*. 158.

Spencer, J. (2021b) The Eight Rules Of Urban Warfare And Why We Must Work To Change Them. *Modern Warfare Institute.* Available from https://mwi.usma.edu/the-eight-rules-of-urban-warfare-and-why-we-must-work-to-change-them/

Spencer, J. (2021b) The US Army's First Urban Warfare Planners Course. *Modern Warfare Institute's Urban Warfare Project Podcast.* Available from https://mwi.usma.edu/the-us-armys-first-urban-warfare-planners-course/

Watling, J. (2021) Relearning the Art of Proactive Defence. *RUSI Defence Systems Volume 23*. London, UK.

Watson, M. (2019) 'Complex Cyber-Terrain in Hyper-Connected Urban Areas', in Dilegge, D. et al. (eds.) *Blood and Concrete: A Small Wars Journal Anthology*. USA: Xlibris, pp. 564-576.

Wilson, A. (1970) War Gaming. Middlesex: Pelican Books.