

OPERATIONALISING HUMAN SECURITY IN THE CONTEMPORARY OPERATING ENVIRONMENT: PROPOSING POPULATION INTELLIGENCE (POPINT)

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Abstract

Drawing upon primary research funded by the UK Defence and Security Accelerator (DASA), this article is about using data analytics and artificial intelligence (AI) for operationalising human security in the contemporary operating environment. The idea of human security has gained much traction in the international community since its introduction in a 1994 United Nations Development Programme (UNDP) report and has more recently become a military concern. Yet, the core tenets of this idea remain contested, and the military role in support of human security remains an open question. Nonetheless, the concurrent increase in Open Data and AI does give rise to new opportunities to understand the various human security concerns. In response, DASA funded Projects SOLEBAY and HAMOC to research these concerns and the possibilities of data analytics for human security. Drawing on the research findings, we propose the idea of Population Intelligence (POPINT) as a new intelligence discipline to operationalise human security.

Introduction

For this article, we pose the research question, “how can data analytics contribute to operationalising human security in the contemporary operating environment” and respond with the idea of population intelligence (POPINT) as a new discipline of military intelligence. This proposal emerges from two UK DASA funded research projects¹ - Projects SOLEBAY and HAMOC - about operationalising human security. The first section considers how the population has become an actor of the contemporary operating environment to which human security is a response. The second section summarises three research findings about the practical challenges of operationalising human security in military planning. The final section reviews the opportunities of data analytics to ‘understand’ a population within the proposed discipline of POPINT. As the article will show, POPINT provides a unifying idea to

¹ Project SOLEBAY developed a proof-of-concept risk assessment methodology for human trafficking in conflict. Project HAMOC co-designed and piloted a data-driven tool for human security analysis. Both projects were funded by the UK Defence and Security Accelerator (DASA).

mainstream and in-source many existing competencies to operationalise human security.

Military organisations have given renewed focus to the idea of human security in recent years, following the initial flurry of attention it received in humanitarian and development communities during the 1990s and early 2000s. A 1994 United Nations Development Programme (UNDP) report first proposed the idea (UNDP, 1994), which has since become about enhancing “actions taken by the United Nations and its partners to fully realise the transformative promise of Agenda 2030 and the Sustainable Development Goals” (United Nations, 2016, p. 5). More recently, the UK Ministry of Defence (MOD) and North Atlantic Treaty Organisation (NATO) have been exploring its utility for enhancing military activity. In 2019, the UK’s Defence Secretary announced the creation of a centre of excellence to “better integrate UN Security Council Resolutions linked to human security into military planning and conduct of operations” (Williamson, 2019, para 7). Both organisations are also looking to develop specialised doctrine, training, and guidance to mainstream human security within operations (see: Godefroy, 2019; Stoltenberg, 2021; Ministry of Defence [MOD], 2021).

While having increased provenance, nevertheless, the core tenets of human security remain contested, as does the precise way it should be operationalised in practice (Tadjbakhsh, 2005, p. 5). Accordingly, this article’s interpretation of human security places humans and their communities as the referent analytical object. Fundamentally, this interpretation allows military actors to problematise a population in intelligence analysis and identify human security concerns. Such analytical processes as the intelligence cycle then seek to cohere this bottom-up population-centric focus with more familiar top-down state-centric analysis. To operationalise human security, POPINT then captures as broad a range of indicators and statements of insecurity as necessary to understand a population’s wellbeing and inform operational responses.

Accordingly, we propose to define POPINT as the collection and processing of information about the threats, risks, and harms to a population. We also situate POPINT alongside other NATO disciplines to develop ‘multi-source intelligence’ (MOD, 2011, pp. 2-11–2-12). For example, geospatial intelligence (GEOINT) is about the spatially and temporally referenced intelligence derived from fusing imagery intelligence (IMINT) and geospatial information (GEOINF). Human intelligence (HUMINT) is about processing information provided by human sources and the controlled exploitation, interaction with, and surveillance of those individuals. Open-source intelligence (OSINT) is about processing publicly available information like social media. While each discipline serves as a unifying idea for their

particular competencies, they interact to achieve multi-source intelligence. As a multi-source intelligence discipline, therefore, POPINT draws upon these existing disciplines and, as this article explains, new competencies like economics.

Data has become increasingly available for developing intelligence about populations since the UNDP's first human security report, and the computing power to analyse data has increased exponentially. As is explained in this article, the open data movement has seen organisations like the World Bank publish large and valuable datasets online for anyone to use. Additionally, advances in Artificial Intelligence (AI) create new opportunities for processing large datasets to gain new insights. Therefore, this article asks how the increased availability of data and computational methods for analysing data may contribute to understanding a population under the discipline of POPINT.

Projects SOLEBAY and HAMOC demonstrates that the UK military recognises the necessity of identifying ways to better integrate human security within military planning and analysis. The end-user engagement of these projects comprises: 40 semi-structured interviews and four workshops with military, NATO, UN and UK government practitioners; training development and delivery to various military audiences²; working alongside end-users; and a project conference³. Two reports and an edited book record the project findings (see: Fenton et al., 2019; Muraszkwicz et al., 2019, 2020). This article then draws on insights gained from this end-user engagement and extends a previous article (Wieltschnig et al., 2021) to offer ideas about using POPINT to bridge the gap between the theory, concept, and operationalisation of human security.

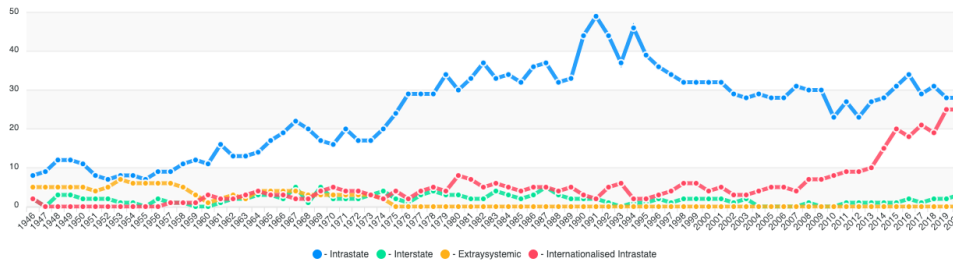
² For example, Muraszkwicz, J., & Fenton, T. (2021). *Training on human trafficking: A component of the human security operationalisation framework*. Trilateral Research. <https://www.trilateralresearch.com/training-on-human-trafficking-a-component-of-the-human-security-operationalisation-framework/>

³ Muraszkwicz, J. (2019, May 14). *Project Solebay Conference – Discussing modern slavery in conflict*. Trilateral Research. <https://www.trilateralresearch.com/project-solebay-conference-discussing-modern-slavery-in-conflict/>

The Contemporary Operating Environment

Figure 1

A Rising Prevalence of Intrastate and Internationalised Intrastate Conflict



This first section is about how the ‘population’ has become an actor in the political economy of the contemporary operating environment. The section begins with how the changing character of conflict gives increased prevalence to a population. This changing character is depicted in Figure 1 using data from the Uppsala Conflict Data Programme (UCDP) (Uppsala Conflict Data Programme [UCDP], n.d.a). The data reveals the rarity of interstate warfare when compared to intrastate and internationalised intrastate conflict in which populations strongly feature. The section then explains how a population’s interacting political and economic agendas may drive violence. The subsequent sections then explain how POPINT is about analysing a population to reveal potential sources of violence and inform a human security response.

The Increased Prevalence of a Population in Contemporary Conflict

Interstate warfare reflects the ‘conventional’ paradigm of war defined by UCDP as a contest between governments (UCDP, n.d.b) and is characterised by Clausewitz’s famous dictum, “War is merely not an act of policy, but a true political instrument, a continuation of political intercourse, carried on with other means” (Clausewitz, 1976, p. 87). This dictum reflects the prevailing view of war as a political instrument of state power within a constantly evolving rules-based system of international relations. Reflecting an interplay of International Humanitarian and Human Rights Law, the Geneva Conventions and the Rome Statute govern the conduct of warfare in this system. The jurisprudence of interstate war places sovereign states as legal subjects, their armed forces as an organ, and members of the armed forces as combatants and non-combatants (Fleck & Bothe, 2014, p. 80).

For Clausewitz, “it is inherent in the very concept of war that everything that occurs must originally be derived from combat” (Clausewitz, 1976, p. 95). For interstate warfare, industrialised weaponry, such as rifles, artillery,

missiles, and nuclear weapons, characterise the means of combat. International law regulates the indiscriminate use of such weaponry to protect civilians, mitigate harm against combatants and non-combatants, and minimise savagery (Fleck & Bothe, 2014, pp. 115–119). After imagining the brutality of warfare without the moderating influence of international law, Clausewitz explains how “wars between civilised nations are far less cruel and destructive than wars between savages, the reasons lie in the social conditions of the state themselves and their relationship to one another” (Clausewitz, 1976, p. 76).

In contrast to interstate warfare, Intrastate conflict is a contest between a government and non-government actors (UCDP, n.d.b). Figure 1 shows how this paradigm has been the dominant form of organised violence for some time. Kaldor describes intrastate warfare as “New Wars”, which she characterises as a blurring of distinctions between war, organised crime, and large-scale human rights violations against a population (Kaldor, 1999, p. 2). In his influential *The Utility of Force*, General Rupert Smith boldly declares “war no longer exists” and defines interstate warfare as “industrial warfare” and new forms of organised violence as “wars among the people” (Smith, 2006, p. 1). Extending this intrastate paradigm, Internationalised Intrastate is an armed conflict between a government and a non-government party where either side receives troop support from other governments actively participating in the conflict (UCDP, n.d.b), in effect, an interplay of both inter- and intrastate conflict.

The non-government actors of intrastate conflict generally emerge from a government’s population to create what Kelshall calls Violent Transnational Social Movements (VTSMs) (Kelshall, 2021, p. 1). Kilcullen characterises such movements as “insurgent groups operating across international boundaries”, global terrorist networks with “unprecedented demographic depth”, or tribal and regional groups with “post-modern capabilities, but premodern structures and ideologies” (Kilcullen, 2009, p. 6). Where the jurisprudence of international law governs the conduct of interstate warfare, VTSMs operate outside of such legal systems, raising questions about their combatant status (Smith, 2006, p. 7), especially when child soldiers are involved (Muraszkiewicz, 2021). Their means of warfare have evolved from industrialised weaponry to include severe Human Rights abuses to control populations. A contemporary example is genocide, rape as a weapon of war, sexual slavery and organ trafficking against the Yazidi people in Iraq. The United Nations condemned these brutal acts in 2017 and resolved to investigate ISIS for crimes against humanity, albeit years after they took place (United Nations, 2017).

The Political Economy of Armed Conflict

While most post-Cold War analyses of conflict focused on political agendas to explain sources of violence, the Greed and Grievance debate from Collier and Hoeffler suggests a population's economic agendas in intrastate conflict have greater explanatory value (Berdal, 2009, p. 77). For Collier, "it is likely some groups benefit [economically] from conflict, and these groups have some interest in sustaining it" (Collier, 2000, p. 91). The debate began with Collier's and Hoeffler's 1998 paper, which was the first to reveal the economic incentives of intrastate conflict (Collier & Hoeffler, 1998), and was advanced across two subsequent articles (Collier et al., 2009; Collier & Hoeffler, 2004). As Ballentine and Sherman (2003) observe, this debate provoked "ongoing, sometimes heated questions" from which the political economy approach to analysing armed conflict emerged to understand interacting greed and grievance agendas (Ballentine & Sherman, 2003, pp. 3–6).

Political discourse about ISIS (Islamic State of Iraq and Syria) or ISIL (Islamic State of Iraq and the Levant) provides a contemporary example of interacting political and economic agendas. In a 2015 UK House of Parliament debate about authorising airstrikes against ISIS in Syria, the Rt Hon Hilary Benn delivered a well-received speech that focused on ISIS's political motives and their "warped ideology".

We are faced by fascists—not just their calculated brutality, but their belief that they are superior to every single one of us in this Chamber tonight and all the people we represent. They hold us in contempt. They hold our values in contempt. They hold our belief in tolerance and decency in contempt. They hold our democracy—the means by which we will make our decision tonight—in contempt. (Benn, 2015, para. 69)

One year earlier, at a meeting of the Valdai International Discussion Group on 24 October 2014, Russia's President Vladimir Putin gave an alternative, more economic focussed interpretation of ISIS:

Are you really not aware of who is fighting there? It is mostly mercenaries fighting there. Are you not aware that they get paid to fight? And they go wherever they get paid more. So they get arms, and they get paid for fighting...then they hear that they can get more money elsewhere, and so they go there, and then they capture oil fields in Iraq and Syria say, start producing oil, and others buy this oil, transport it and sell it. (Putin, 2014, para. 193)

Neither politician is right or wrong; the point here is that motives for intrastate war are a complex interplay of interacting political and economic agendas. For Keen, applying a Clausewitzian, thus political, view on VTSMs like ISIS “can confer legitimacy on certain kinds of violence, given the widespread belief certain kinds of war are just and legitimate” (Keen, 2000, p. 19). He suggests political motives may legitimise economic agendas for the illegitimate accumulation of power and profit. Therefore, not accounting for economic agendas may inadvertently confer some degree of political legitimacy to criminal violence. Keen even goes as far as to challenge Clausewitz’s political conception of warfare by suggesting, “war may [now] be the continuation of economics by other means” (Keen, 2000, p. 27).

The Greed and Grievance Methodology

Collier and Hoeffler used a logistic regression analysis of macroeconomic variables to analyse the interacting political and economic agendas of intrastate conflict. The dependent variable of this regression is the onset of violence, for which they drew upon data from the Correlates of War (COW) and UCDP. The COW project and UCDP have coded all armed conflicts for all countries to create a dataset for the onset of violence. From the 2004 paper onwards, Collier and Hoeffler (as cited in Wallensteen et al., 2018) used the following UCDP definition of armed conflict:

A state-based armed conflict is a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in one calendar year. (Wallensteen et al., 2018, p. 3)

As the distinguishing feature of conflict, UCDP models combat using the battle-deaths metric, which refers to “the use of armed force between warring parties in a conflict dyad, be it state-based or non-state, resulting in deaths” (UCDP, n.d., para. 12). This metric distinguishes the severity of war from peace, whereby intentionally killing another human is lawful within the constraints of international humanitarian law. As degrees of severity, minor conflict incurs between 25–999 battle deaths, major warfare incurs more than 1000, and intermediate wars incur more than 1000 deaths but no more than 1000 in a given year (Wallensteen et al., 2018, p. 4). While severity does account for intentional killing, it does not account for the deleterious consequences of warfare such as starvation, disease-related deaths, sexual violence, among other human security concerns.

With a dataset identifying 79 intrastate wars between 1960–79, Collier and Hoeffler (2004) found statistical models focussing on economic opportunities

for rebellion performed well. Counterintuitively, such grievance variables as inequality, political rights, ethnic polarisation, and religious fractionalisation that are commonly associated with causes of violence were statistically insignificant (Ballentine & Sherman, 2003, p. 3). Their article concludes by suggesting, “opportunity as an explanation of conflict risk is consistent with the economic interpretation of rebellion as greed motivated...it is also consistent with grievance motivation as long as perceived grievances are sufficiently widespread to be common across societies and time” (Collier & Hoeffler, 2004, p. 589). Collier, Hoeffler, and Rohner (2009) subsequently introduces a new factor of feasibility and conclude with, “in a territory in which there are fewer impediments to rebellion, the risk that a civil war will erupt somewhere in the territory is now an astonishing 99.8%” (Collier et al., 2009, p. 23). Essentially, they argue a rebellion will likely occur if economically feasible.

The Population as an Actor of Contemporary Conflict

This first section has sought to establish the population as an actor in the political economy of the contemporary operating environment using the Greed and Grievance debate. Concerning threat, risk and harm, populations are both the targets and sources of violence. As sources of violence, threats like VTSMs emerge from a population to become belligerents of intrastate and internationalised intrastate conflicts. As targets of violence, harm refers to large-scale human rights violations and abuses from either governments or VTSMs who seek to control their populations. For risk, the Greed and Grievance methodology uses macroeconomics to understand the likelihood of intrastate conflict. The accompanying political economy analysis then seeks to explain how belligerents might exploit political grievances to legitimise violent economic agendas. This methodology and analytical approach become competencies of POPINT to understand the threats, risks and harms to a population and inform human security responses. In operationalising such responses using POPINT, the following section provides three challenges identified during our project research.

The Challenges of Operationalising Human Security

In addition to the Greed and Grievance debate, a growing body of research has helped foster a progressively more nuanced understanding of the underlying drivers of conflict and insecurity within a population (Jarvis, 2019, pp. 108–109), leading to the adoption of an increasingly more human-centric view of conflict. Climate and environmental changes (Burke et al., 2009), poverty (Buhaug et al., 2011), gender inequalities (Caprioli, 2005) and many other varied issues are now recognised as population concerns that can contribute to conflict and instability. As these threats interact and compound,

they result in heightened harm and long-term instability, in turn producing insecurities that cascade across time, national and regional boundaries.

By appreciating how broader issues of societal wellbeing and fulfilment contribute to instability, POPINT seeks to complement traditional understandings of interstate warfare and give provenance to a population's human security concerns. The former Canadian Minister of Foreign Affairs, Lloyd Axworthy, who drove efforts to embed human security approaches in foreign policy, reflected this position. He commented,

Human security today puts people first and recognises that their safety is integral to the promotion and maintenance of international peace and security. The security of states is essential, but not sufficient, to fully ensure the safety and wellbeing of the world's peoples. (Axworthy, 2001, p. 20)

POPINT, therefore, focuses military planning on the security, safety, and wellbeing of a population. And as one HAMOC interviewee observed about perceived tensions between the security of states and humans, “getting human security right is what gives a military its legitimacy to bear arms”⁴.

Interpreting Human Security

Existing approaches that echo the substance, if not the label of human security, provide inspiration for operationalising human security in the military context. The UN Department for Peacekeeping Operations (DPKO) broad interpretation of the Protection of Civilians principle conferred within UN Security Council mandates represents an attempt to protect civilians by addressing the root causes of conflict (Holt et al., 2009). Moreover, the work of UN peace operations and political missions integrates human rights issues into the planning, overseeing and implementation of operations (UN Office of the High Commissioner for Human Rights et al., 2011, paras. 15, 20 & 30). NATO's Stabilisation and Reconstruction (S&R) measures aim to achieve this integration through the establishment of what the MOD terms “safe and secure environments” (SASE) (MOD, 2015, pp. 2–1).

In operationalising human security, all agencies recognise the necessity of close collaboration and cooperation between military and civilian actors (see: MOD, 2015, pp. 2–1, 2021, p. 18). Additionally, the UK military stresses the need to understand the nuances of a population's cultural dynamics and local

⁴ British Army Officer, Project SOLEBAY interview, 29 January 2019.

contexts (see: MOD, 2016a, 2016b), particularly considering military experiences over the past two decades in places like Afghanistan and Iraq. In addition to the civilian and military interface, human security must also be integrated with strategic military concerns of the state, giving rise to sometimes competitive priorities that commanders need to resolve. As such, attention must be paid to how military doctrine and policy accommodates the interacting population and state centric analyses of human security concerns, which we offer is the aim of POPINT.

Our project interviews aimed to gain a qualitative understanding of the operational challenges and general opinion on how human security applies in a practical and meaningful manner in the planning and conduct of military operations. The authors of this paper have identified at least three core challenges within military planning and analysis. First, human security orientated approaches can direct the military's attention to pertinent security issues; however, the 'ground truth' of those issues is highly subjective. Second, the context-specific nature of human security means any attempt to develop one-size-fits-all guidance for military operations is unlikely to be successful. Third, while human security 'themes' – such as Women, Peace and Security (WPS), Children in Armed Conflict (CAAC), and Modern Slavery & Human Trafficking (MSHT) – provide a practical lens for focussing on clear and defined issues, applying these themes in silos may fail to capture their complex interactions.

Determining Ground Truth

The first of these core challenges is determining 'ground truth' about a population in operational planning; in effect, who's truth does a human security analysis represent? This problem entails two further sub-challenges. The first sub-challenge is determining which human security theme is most relevant to the population. For example, when looking at a particular theme – say, CAAC or WPS – it will be necessary to identify which aspects of such themes are most relevant to different constituencies of a population. The second sub-challenge concerns the level of detail required to provide the maximum utility at the strategic, operational, and tactical levels of planning, analysis and decision-making. The intuition is to draw upon as much data as possible, but analysis could become paralysed when some human security themes may date back over centuries and are filtered through many perspectives of truth.

Maps provide an instructive example of the problems of representing ground truth. Whether geographical, conceptual, or cognitive, maps are abstract representations of reality to represent different versions of ground truth. Different maps serve different purposes; the level of detail they provide and

how they capture and communicate those details changes depending on the map's intended use. When representing human security concerns on a map for military planning and analysis, an over-simplification of reality may skew the military's version of ground truth away from a population's lived experience. As such, Gregory's first-hand observation of a US military operations centre in Iraq explains how "cartographic reasoning" about a population using maps gave "the world an order and a reasonableness which it didn't possess" (Gregory, 2010, p. 275).

Special care will be needed to avoid the trap of false precision when determining ground truth: merely having 'more information' or 'more data' is unlikely to be sufficient. Greater complexity does not necessarily make for better decision-making or understanding. Indeed, excessive detail may inhibit understanding and decision-making through the sheer force of overly complex visualisations. The quality of relevant, valuable and actionable insights around human security will be as important as the quantity of those insights. While military practitioners often seek to understand the ground truth, the idea of truth itself is subjective. The challenge, therefore, is to capture and communicate 'a ground truth' by generating human security insights in a relevant and actionable manner from a population's subjective perspective.

The Importance of Context

The second core challenge is around the importance of context within a population. Identifying human security concerns within specific operating environments may be highly context-specific and certainly not static. As Busumtwi-Sam writes,

Communities around the world differ not only in their level of exposure to threats but also in their vulnerability to the physical and psychosocial harms caused. Even when exposed to similar threats, the impact is likely to be greater for those who because of various deprivations/exclusions are more vulnerable to harm. (Busumtwi-Sam, 2008, p. 16)

For example, in our literature review of human trafficking literature, we find a skew in research towards the experience of women and children, but not much on how men are affected. In effect, the literature has abstracted the male experience from the context.

While planning and analysis frameworks and processes assist with integrating human security considerations, no single framework can account for all the relevant variables within a given operating environment; once again, the

solution is unlikely to be ‘one size fits all’ (the next section reviews the commonly used ASCOPE-PMESII framework). As a highly contextual undertaking, addressing human security in particular operating environments needs to be context-specific to be effective. Military planning must move beyond merely understanding specific population dynamics to generate and acquire actionable insight to inform an appropriate operational response to human security concerns.

Embracing the Complexity of Human Security Themes

The third challenge is about embracing the complexity of the interacting human security themes within a population. The specific meaning of ‘complexity’ is understood in relation to ‘complicated’. As McChrystal explains, complicated systems comprise of components that interact in a series of “tidy deterministic relationships”, whereas the interactions of complex systems “defy prediction” (McChrystal et al., 2015). In operationalising human security, the complexity of human systems creates a discomfort of uncertainty when offering analytical insights since most populations have a spectrum of potential interactions giving rise to ‘most likely’ or ‘worst-case’ scenarios.

Several organisations have sought to embrace this complexity by applying different thematic areas of human security, which in turn provide analytical themes for POPINT. For instance, the seven categories of human security outlined in the UNDP’s 1994 report have an expansive reach across the domains of economic, food, health, environmental, personal, community and political security (UNDP, 1994, pp. 24–25). The MOD’s approach uses different themes to understand the complexity of human security: primarily Women, Peace & Security (WPS), and others, including CAAC and MSHT (see: MOD, 2021). NATO is exploring how to consolidate its own “Cross-Cutting Themes” – including Protection of Civilians (PoC), Gender, Human Trafficking, and Cultural Property Protection (CPP) – into a broader human security approach (Godefroy, 2019). None are distinct; these human security themes have unpredictable cause-and-effect interactions.

Applying complexity theory to human security is a broad topic; we offer one insight here. During our military and cross-government interviews, we found a tendency to place a ‘generalist vs. specialist’ distinction against these thematic areas. The premise of this distinction is to employ a generalist who has broad knowledge and a specialist who has deep knowledge of each theme. Nonetheless, we have found that in-depth analysis of a particular theme must draw upon expertise from others. For example, a WPS expert must also develop knowledge about MSHT or CAAC to address the harmful experiences of women. In effect, the generalist vs. specialist distinction is

inverted: the deeper the analysis into one theme, the more one must draw upon the others. We offer, therefore, that applying ‘generalist vs. specialist’ to the human security thematic areas is a false distinction, and people should be generally employed as human security advisers.

Operationalising Human Security

Operationalising human security responds to recognising the population as an actor of the contemporary operating environment. As explained in this section, the challenges of operationalising human security in military analysis and planning are about gaining relevant insight from a population’s perspective within the specific operational context that embraces the complexity of each thematic area. Complexity means a population’s security concerns are never static, they are subject to constant change. Accordingly, operationalising human security means continuous analysis that embraces the discomfort of uncertainty. We suggest POPINT provides a unifying idea for these challenges by focusing on problematising a population’s security concerns to develop an operational response. And in positioning POPINT as multi-source intelligence, we have found many required analytical systems from other disciplines already exist. The following section shows how data analytics and AI enhance these existing systems.

Operationalising Human Security with Data Analytics

Having established the population as an actor in the contemporary operating environment and provided three challenges of operationalising human security as a response, this final section reviews the role of data analytics and AI to enable POPINT. The section begins by introducing the meaning of data analytics for analysing a population using open data and AI. In response to end-user engagement during projects HAMOC and SOLEBAY, we then review computational methods of applying the ASCOPE-PMESII framework for analysing a population. While AI is a potential enabler of POPINT analysis, we recognise three cautions: firstly, the need to look beyond “AI-hype” (Bender & Koller, 2020, p. 5186); secondly, problems with the availability and quality of data in a conflict environment (Wieltschnig et al., 2021, pp. 71–77); finally, the critical ethical challenges of AI, especially around the concept of Explainable AI (see: Goldberg, 2021; O’Hara, 2020). This section is more about stimulating a conversation on the role of data analytics and AI for POPINT, and addressing these cautions become a competency of the discipline.

The Opportunities of Data Analytics

Data analytics (variously referred to as Big Data or predictive analytics) is generally about the computational methods of analysing large data sets for decision support (see: Edwards, 2019; Davenport, 2014; Verma & Marchette, 2020). Accordingly, data analytics is an interdisciplinary field including aspects from many other scientific disciplines such as statistics, machine learning, pattern recognition, system theory, operations research, or AI (Runkler, 2016, p. 2). Data analytics is no doubt transforming business, whereby “large datasets can transform business models, boost innovation capabilities and productivity, and open up new markets using data-driven approaches” (Akter et al., 2020, p. 23). In a more population-specific example, the United Nations are exploring how to responsibly apply data analytics to “enable more agile, efficient and evidence-based decision-making to measure progress on the Sustainable Development Goals in a way that is both inclusive and fair” (United Nations [UN], n.d., para. 3).

The decision-making application of data analytics for human security in military planning is to “understand...the human environment, potential conflict drivers and dynamics to improve integrated planning and entrench Human Security” in military operations (MOD, 2021, p. 2). According to the UK Doctrine, “understanding helps us make decisions; it also helps us manage any associated risks and any second and subsequent order effects” (MOD, 2016b, p. 3). As such, Collier’s and Hoeffler’s Greed and Grievance methodology from the previous section is an example of data analytics to understand the risk of rebellion. Their methodology relies upon processing and analysing large datasets through linear regression analysis to identify conflict risk. When their articles were initially published, access to data and computational processing power was limited. Since the publication of their articles, data has become more open and processing power has advanced considerably, especially through AI.

The open data movement generally refers to making data publicly available, most often over the internet, for re-use and redistribution while subject to attribution and share-alike requirements. An early example of open data is the US’s National Research Council’s 1994 call for “an international system of full and open exchange” of data as the “best means for supporting essential environmental research” (National Research Council, 1995, p. 2). As a free service, community collaboration is central to the movement. One such example of community collaboration is the DBpedia project that provides open-source technologies to convert Wikipedia content into publicly available structured knowledge (Auer et al., 2007). Various Government Directives and Initiatives, such as the G8 Open Data Charter, have also since formalised open access to data (Attard et al., 2015, p. 399).

Related to data analytics, the field of AI has grown substantially over the last decade, for which there are two types: General and Narrow. General AI (also known as Strong AI) is a philosophical inquiry that questions whether machines can exhibit human-like intelligence. Alan Turing initiated this inquiry in his thought experiment, originally called “The Imitation Game”, which has since become known as the Turing Test (Turing, 1950). His test has usefully become the subject of thought experiments about AI ethics and often features in science-fiction writing. However, the more practical application is Narrow AI (also known as Weak AI). This version of AI refers to “using mathematical logic to formalise common-sense knowledge in such a way that common sense problems can be solved by logical reasoning” (McCarthy, 1989, p. 1). In this formulation of AI, common-sense knowledge includes “the basic facts about events (including actions) and their effects, facts about knowledge and how it is obtained, facts about beliefs and desires” and “facts about material objects and their properties” (McCarthy, 1989, p. 1).

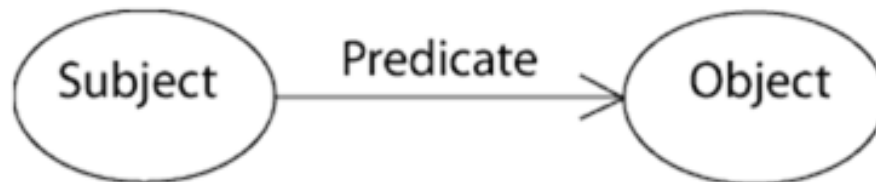
The combination of open data and advances in data analytics and AI provide new opportunities to understand the population within POPINT. The World Bank DataBank⁵ and UCDP now provide the data used by Collier and Hoeffler in open source. Noting Collier’s ethical caution about creating “self-fulfilling prophecies” of a country’s propensity for violence (Collier, 2007, p. 19), open data leads to the possibility of reproducing their methodology. Moreover, the computational methods they used have advanced significantly, leading to the potential for new insight about conflict risks. With the Greed and Grievance debate as an example of Data Analytics, an example of applying Knowledge Graphs from AI to existing analytical frameworks now follows.

⁵ <https://databank.worldbank.org/home.aspx>

Applying Knowledge Graphs to ASCOPE-PMESII

Figure 2

Modelling Semantic Pairs



As an enabling technology of AI, we have been experimenting with knowledge graphs to develop an implementation of the above ASCOPE-PMESII analysis to develop common-sense knowledge. Knowledge Graphs are “large semantic nets that integrate various and heterogeneous information sources to represent knowledge about certain domains of discourse” (Fensel et al., 2020, p. 6). The semantic element of Fensel’s description refers to how pairs of objects in a network are meaningfully related. The Resource Description Framework (RDF) documentation from the World Wide Web Consortium (W3C) provides the technical documentation for semantic relationships. As shown in Figure 2, the subject and the object represent the semantic pairs, while the predicate represents the nature of their relationship (Brickley & Guha 2014).

Figure 3*The ASCOPE-PMESII Framework (Moore, 2019)*

	P Political	M Military	E Economic	S Social	I Information	I Infrastructure
A Areas	Areas - Political (District Boundary, Party affiliation areas)	Areas - Military (Coalition / LN bases, historic ambush/IED sites)	Areas - Economic (bazaars, shops, markets)	Areas - Social (parks and other meeting areas)	Areas - Information (Radio/TV/newspapers /where people gather for word-of-mouth)	Areas - Infrastructure (Irrigation networks, water tables, medical coverage)
S Structures	Structures - Political (town halls, government offices)	Structures - Military / Police (police HQ, Military HHQ locations)	Structures - Economic (banks, markets, storage facilities)	Structures - Social (Churches, restaurants, bars, etc.)	Structures - Information (Cell / Radio / TV towers, print shops)	Structures - Infrastructure (roads, bridges, power lines, walls, dams)
C Capabilities	Capabilities - Political (Dispute resolution, Insurgent capabilities)	Capabilities - Military (security posture, strengths and weaknesses)	Capabilities - Economic (access to banks, ability to withstand natural disasters)	Capabilities - Social (Strength of local & national ties)	Capabilities - Info (Literacy rate, availability of media / phone service)	Capabilities - Infrastructure (Ability to build / maintain roads, walls, dams)
O Organizations	Organizations - Political (Political parties and other power brokers, UN,)	Organizations - Military (What units of military, police, insurgent are present)	Organizations - Economic (Banks, large land holders, big businesses)	Organizations - Social (tribes, clans, families, youth groups, NGOs / IGOs)	Organizations - Info (NEWS groups, influential people who pass word)	Organizations - Infrastructure (Government ministries, construction companies)
P People	People - Political (Governors, councils, elders)	People - Military (Leaders from coalition, LN and insurgent forces)	People - Economic (Bankers, landholders, merchants)	People - Social (Religious leaders, influential families)	People - Info (Media owners, mullahs, heads of powerful families)	People - Infrastructure (Builders, contractors, development councils)
E Events	Events - Political (elections, council meetings)	Events - Military (lethal/nonlethal events, loss of leadership, operations, anniversaries)	Events - Economic (drought, harvest, business open/close)	Events - Social (holidays, weddings, religious days)	Events - Info (IO campaigns, project openings, CIVCAS events)	Events - Infrastructure (road / bridge construction, well digging, scheduled maintenance)

During Project HAMOC, multiple military personnel (UK and international) suggested the ASCOPE-PMESII framework shown in Figure 3 provides a framework for thinking about human security-related issues. Several analytical frameworks have been developed within the NATO ecosystem that in some respects capture elements of human security (MOD, 2019b, pp. 3–21):

- *PMESII/PMESII-PT* – political, military, economic, social, information and infrastructure perspectives, with a more expansive version encompassing the physical environment and temporal perspectives.
- *PESTLE* – political, economic, social, technological, legal, and environmental perspectives.
- *STEEPLEM* – social, technological, economic, environmental, political, legal, ethical, and military perspectives.
- *Constituents of a Nation* – the rule of law, education, commercial, humanitarian, health, information, military, economic, diplomacy, administration, governance perspectives.

These frameworks focus on a population's concerns in contrast to interstate warfare analysis, which is about states and military capabilities. Under each framework, analysts analyse the operating environment relative to each sub-

heading (political, economic, commercial, area, etc.). By doing so, analysts can determine the areas of most concern for a population.

PMESII is an analytical framework that considers the (P)olitical, (M)ilitary, (E)conomic, (S)ocial, (I)nformation, (I)nfrastructural dynamics of an operational environment. The US military originally devised PMESII to improve their decision-making on who and what to target (Ducote, 2010, p. 6). In this sense, PMESII was not initially a human security framework, though the US military later reconfigured it to understand complex operational environments. NATO has since adopted this framework whilst recognising the analysis may be expanded with additional issues, therefore adding “physical environment” and “time” into their assessments (PMESII-PT) (Tolone et al., 2014, pp. 9–2).

ASCOPE in this framework refers to entities of (A)reas, (S)tructures, (C)apabilities, (O)rganisations, (P)eople, and (E)vents within the operational environment. As a process to detect these entities in text, consider the following sentences from a news report about an attack on a Kabul Military Hospital on 02 November 2021 (BBC News, 2021).

- More than 20 people have been killed and at least 16 injured in a gun and bomb assault on a military hospital in the Afghan capital Kabul.
- Attackers targeted the 400-bed Sardar Daud Khan hospital starting with two massive explosions outside the building, officials said
- An affiliate of the Islamic State group, IS-K, later said it had carried out the attack.
- Mr Karimi said Taliban fighters shot and killed four IS-K attackers and captured one alive.
- Sayed Ahad told broadcaster EVN that one of the blasts was a suicide attack.

The ASCOPE entities in each sentence are highlighted according to what they represent: Area, Structure, Capabilities, Organisation, People and Events. According to their PMESII classification, these entities are now placed into the analytical framework.

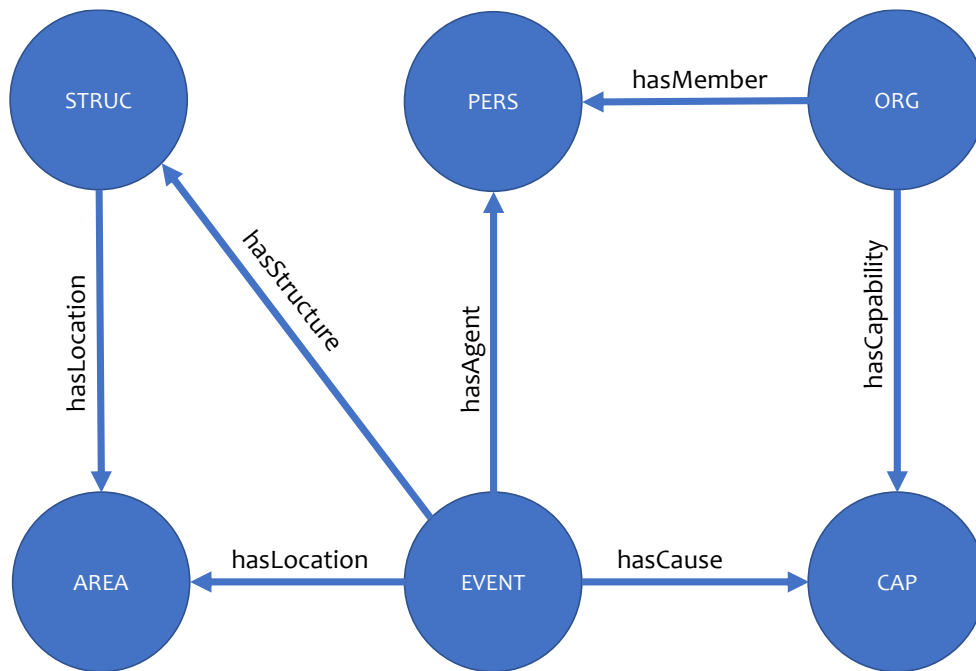
Table 1*An ASCOPE-PMESII Analysis of a News Report*

	Political	Military	Social
Event		a gun and bomb assault on a military hospital	
People		four IS-K attackers one IS-K alive. Mr Karimi	20 people killed at least 16 injured Sayed Ahad
Organisation	Taliban fighters EVN	Islamic State group, IS-K	
Capabilities		two massive explosions a suicide attack	
Structure			Sardar Daud Khan hospital
Area	Afghan capital Kabul		

Table 1 shows a simple ASCOPE-PMESII analysis of the highlighted entities from the above sentences. The *events* row shows two events of the attack, namely the initial explosions and subsequent actions by Taliban fighters. The *people* row shows how many were killed and injured in the attack, while the *organisation* row shows the organisations connected to *people*. The *capabilities* row shows the devices used in the attack against the hospital shown in the *structure* row. The *area* row shows where the attack took place. We find most analysts seem to use Microsoft Office tools for this analysis; the following shows how this framework can be enabled using knowledge graphs to develop common-sense knowledge.

Graph 1

An ASCOPE Knowledge Graph

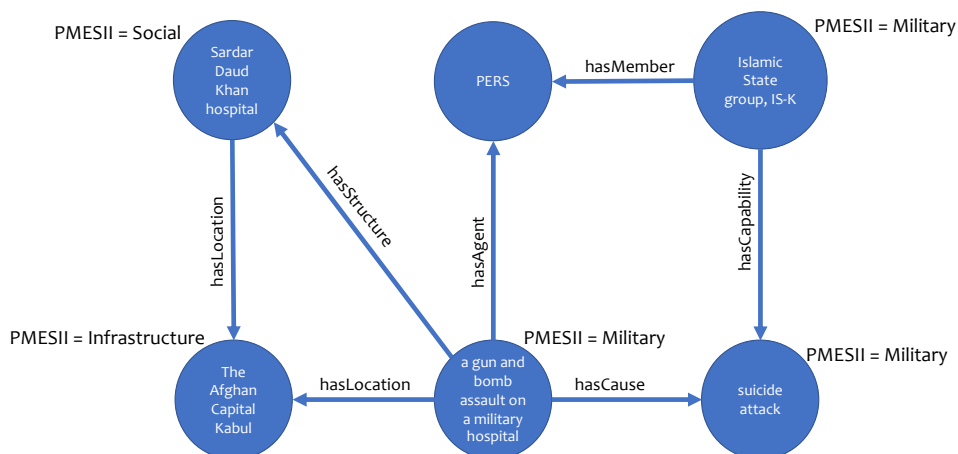


Graph 1 depicts a slice of an experimental ASCOPE knowledge graph we are developing for the HAMOC application⁶ from the perspective of an event. The graph explains how an event (EVENT) has a capability that caused it to happen (CAP), a structure (STRUC), and a place (AREA) for where it occurred. It also shows how the agent involved in the event (PERSON) is associated with a particular organisation. Each entity then has uniquely identifiable properties. For example, name and date of birth uniquely identify a *person*, timestamp for an *event*, and latitude and longitude coordinates for an *area or structure*. Equally, the PMESII labels apply to each entity as properties. Note that the semantic pairs shown here are directed relationships, but they can also be bi-directional; for example, the relationship between ORG and PERS is “hasMember”, while PERS to ORG could be “isMemberOf”.

⁶ Trilateral Research. (2021). Human-Centric Analysis for Conflict and Crisis (HAMOC) Application. <https://www.trilateralresearch.com/work/hamoc-human-centric-analysis-for-conflict-and-crisis/>

Graph 2

ASCOPE Modelling of an Event



Graph 2 shows a slice of Table 1 as an ASCOPE-PMESII knowledge graph. The *security event* of “a gun and bomb assault on a military hospital” links to the *social structure* of “Sardar Daud Khan hospital”, and both link to the *political area* “The Afghan Capital, Kabul”. The *event* also links to the *cause* of a “suicide attack” *capability*, which in turn is linked to the *military organisation*, “Islamic State group, IS-K”. This graph connects IS-K to the Sardar Daud Khan hospital to a suicide attack through common-sense reasoning. As a pre-defined schema, knowledge graphs also tell analysts what is unknown. In the case of Graph 2, a machine can reason that the *persons* connected to the *event* are unknown and automatically generate new information requirements in response. This simple example shows how machines generate common-sense knowledge by automated reasoning over knowledge graphs.

The reality of knowledge graphs is much more sophisticated than is presented here, and developing graph structures is a non-trivial task. Such open-source projects as schema.org⁷ or Linked Data⁸, both of which use the RDF schema mentioned above, are tackling the task. As commercial projects, nonetheless, they do not presently include military elements. Additionally, gathering data to populate knowledge graphs raises reasonable ethical concerns about data gathering for military applications. To demonstrate feasibility, nevertheless, knowledge graphs do feature in the relatively new field of ‘computational journalism’, which for the benefit of this article is about investigating and representing a population’s concerns - POPINT (see: Castells et al., 2004; Fernández et al., 2006; Rospocher et al., 2016; Rudnik et al., 2019; Vossen et al., 2016). Nevertheless, the point of this section is to show the relevance of

⁷ <https://schema.org/>

⁸ <https://lod-cloud.net/>

existing analytical frameworks like ASCOPE-PMESII and how they may be computationally enabled using AI for POPINT.

Conclusion

This article has sought to develop ideas for operationalising human security in the contemporary operating environment by proposing a new intelligence discipline of POPINT. The increased incidences of intrastate and internationalised intrastate conflict in the contemporary operating environment show how state-centric views of warfare have declining relevance. States are seemingly losing their monopoly on violence giving rise to belligerents who do not respect the norms of international law. Collier and Hoeffler show how warfare is increasingly motivated less by politics and more by financial opportunities that harm a population. Human rights abuses in pursuit of power and profit replace the rules-based norms of interstate conflict that von Clausewitz imagined. In response to these evolving threats to populations, we continue to explore how to develop POPINT analysis and how AI can facilitate and enhance existing analytical processes.

For interstate and internationalised intrastate conflicts, the population is as much an actor as the belligerents of warfare and is why human security is required. In operationalising human security using POPINT, the general problem is embracing the complexity of a population's dynamics. The industrial machinery of interstate conflict has much more predictability than a population's constantly evolving political and economic agendas. There is also the problem of ground truth since analysts must represent a population's lived experience rather than skewed perceptions of military perspectives. These problems are not necessarily new to military intelligence; as a new discipline, therefore, POPINT draws upon existing competencies from such others as GEOINT or HUMINT to create multi-source intelligence. This article also shows how other existing competencies not generally associated with interstate warfare, such as economics, are also required. POPINT then becomes a unifying idea for drawing together existing and new competencies for operationalising human security within military intelligence.

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Biographies

Stephen Anning is the Product Manager for CESIUM, an Artificial Intelligence Platform for assisting the Police with tackling child exploitation. Steve joined Trilateral Research following a career in the British Army and four years at IBM, primarily working with UK Police on responding to cybercrime. Now as an Army Reservist, he has specialised in Human Security and has worked on understanding the implications of modern slavery and human trafficking in conflict. He is currently finishing a PhD about developing computational methods to analyse hostile narratives. Steve also holds an MA in Conflict, Security and Development from Kings College London and an MSc in Web Science from Southampton University.

Toby Fenton is a Growth Manager at Trilateral Research. His work directly supports the wider development of STRIAD—Trilateral’s cloud-based application for data-driven decision support—through leveraging sociotechnical projects on human security, crime, crisis planning, risk assessment, and decision-making. As such, he worked on Project SOLEBAY and Project HAMOC, two UK MOD-funded sociotechnical projects to develop capabilities around modern slavery and human trafficking (MSHT) and human security (HS) respectively. Toby’s background lies in research and consultancy within the defence and security space. Toby holds an MA in International Peace and Security from King’s College London and a BSc in International Relations from the University of Plymouth.

Dr Julia Muraszkievicz is the head of Trilateral Research’s Sociotech Insights Group. She manages the Applied Research and Innovation team and works on human security, criminal law, human trafficking, and human rights projects. Dr Muraszkievicz regularly delivers training on human security issues. She has co-edited a book on human trafficking in conflict published by Palgrave Macmillan. She volunteers with organisations addressing human trafficking and protecting its victims in her spare time.

Dr Hayley Watson is a Senior Practice Manager, leading Trilateral’s Sociotech for Good offering. Hayley’s core background lies in social research that examines the positioning of citizens in relation to security-related issues. She has researched the public’s response to security issues (including crises), public vulnerabilities stemming from the impact of security-related issues, considerations for improving the public’s resilience, and other research projects. Hayley has a PhD in Sociology from the University of Kent.



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