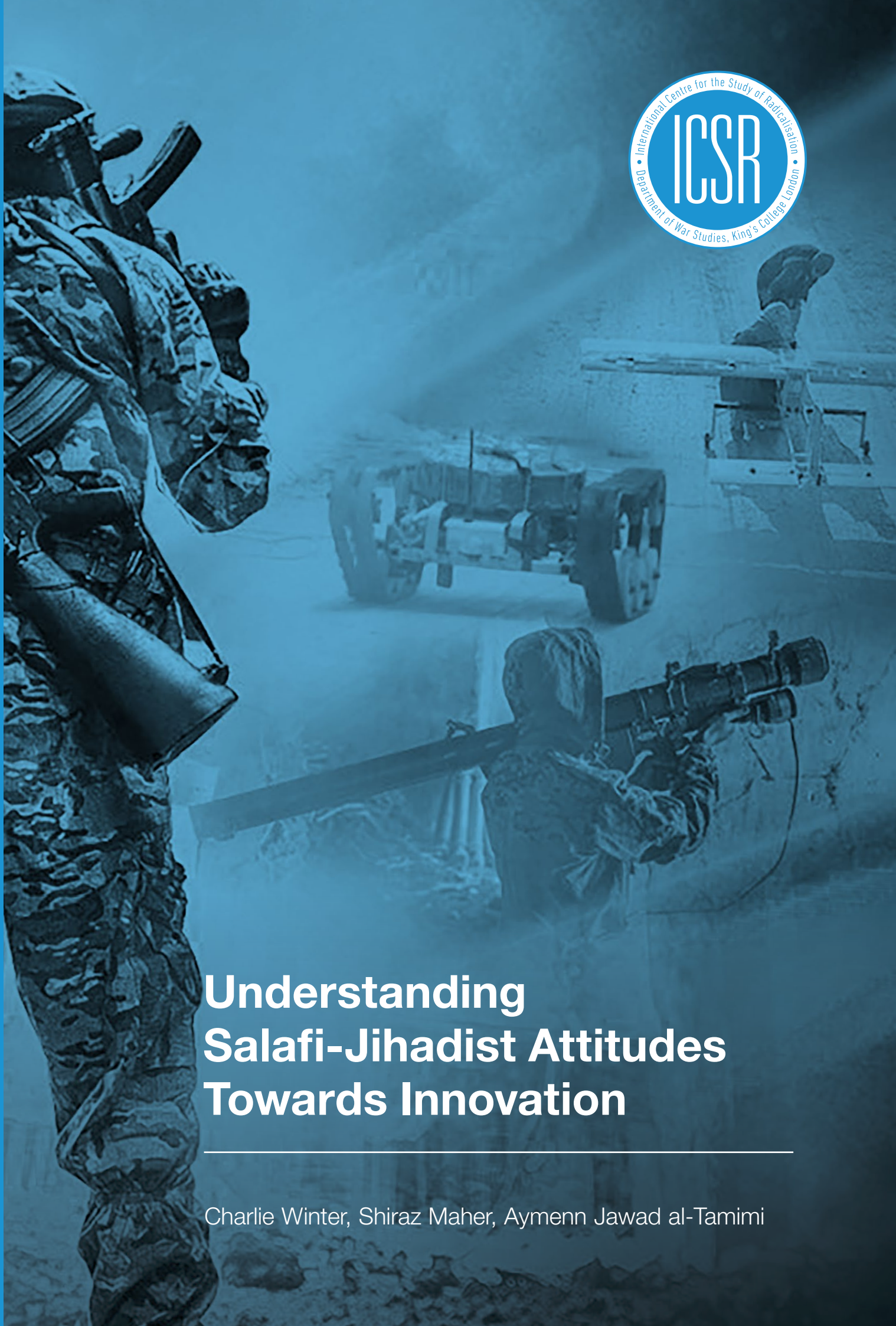

Understanding Salafi-Jihadist Attitudes Towards Innovation

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Executive Summary

Introduction

- One of the most notable features of the salafi-jihadist movement has been its consistent effort to explore technological innovation. Indeed, there is a generally permissive attitude towards innovation in this area.
- Where debate does exist, it does so with regard to the application of such technologies and their impact on civilians – which is itself a hotly contested definitional issue within salafi-jihadist circles.
- This paper has chosen to focus on three case studies where salafi-jihadist innovation has been most acute. These are: (i) improvised explosive devices (IEDs); (ii) strategic communications; and (iii) unmanned aerial vehicles (UAVs), also known as drones.

Methods

- The project team drew on a range of Arabic-language sources collected over the course of the last two decades.
- These include: (i) thousands of verified internal Islamic State (IS) documents found in Syria, Iraq, Libya and Afghanistan; (ii) hundreds of doctrinal texts authored by senior figures from across the global jihadist movement; and (iii) an obscure 575-page manual cited by leading members of both al-Qaeda and IS as an important theological treatise on asymmetric warfare.

Doctrine

- The Arabic term for 'innovation' is *bid'a* (بدعة), which applies to heretical theological innovations that fall beyond the religion's purview. The term is therefore used in negative contexts. This does not apply to the use of new technologies that are not seen as falling under the category of *bid'a*.
- Despite the Western/non-Muslim origin of some inventions in modern military warfare, using these inventions is generally accepted in salafi-jihadist propaganda and literature. This is because these groups distinguish between 'civilisation' (*hadarah*) and 'material output'. What this means in practical terms is that while some physical products – such as an ornamental crucifix – depict a certain viewpoint about life, material progress is itself neutral. Thus, a mobile phone and all the technology within it are not specific to any particular kind of civilisation and do not denote something about the individual's belief system. This ascription of neutrality to technology means that salafi-jihadist groups are willing to exploring innovation in this area.

Improvised Explosive Devices (IEDs)

- The use of IEDs is perhaps one of the most familiar tactics deployed by salafi-jihadist groups. The most common form of attacks involving IEDs is planting them along roads or on vehicles to target enemy personnel.

Strategy

- At the strategic level, IEDs can be seen as a classic example of guerrilla warfare. This thinking has been outlined repeatedly in IS's official propaganda, which has boasted on multiple occasions about the strategy of attrition designed to wear down the enemy through inflicting *nikaya* ('damage').

Deployment

- IEDs are often delivered through *'amaliyyat istishhadiyya*, which translates as 'martyrdom operations', more commonly known as suicide bombings.
- Although suicide bombings are controversial within Islam, the issue is no longer regarded as contentious within salafi-jihadist circles. The arguments on both sides are, by now, well rehearsed and adherents to militant Islam are comfortable with the tactic, considering it doctrinally valid.
- Where there is debate, it tends to focus on issues of target selection, for example, surrounding civilian targeting.

Doctrine

- In the broadest sense IEDs are planted to inflict damage on the enemy, although their use is not approved in every scenario. Indeed, even Islamic State has imposed some limits in this matter, arguing they should not be used in places that will lead to harm to Muslim civilians if alternatives are available.
- An important work for IS that justifies its frequent use of suicide bombers is Abu Abdullah al-Muhajir's *Issues of the Jurisprudence of Jihad: Twenty Issues of the most important of what the mujahid needs*.

Strategic Communications

- Salafi-jihadist strategic communications went mainstream in the 2010s, in the sense that they became both more accessible and more notorious than ever before.

Strategy

- The strategic logic that underpins salafi-jihadist communication activities has proven to be inelastic in recent decades, even as the means by which their communications are deployed has transformed.

- Salafi-jihadists see strategic communications as a way to pursue one of three objectives: (i) propagation; (ii) legitimisation; and (iii) intimidation.

Deployment

- The most prominent use of strategic communications by salafi-jihadist groups in recent years has come via mainstream social media channels. This later shifted to instant messaging services and by mid-2020, there were signs that another migration was on the horizon. For years, pressure has been mounting on Telegram to rid itself of salafi-jihadists. Meanwhile, a raft of other encrypted and privacy-maximising platforms, such as TamTam, Riot, Rocket.Chat and Threema, have started to offer a similar array of functionalities.

Doctrine

- Strategic communications are couched in rhetoric around total war and the need to repel a 'Crusader enemy'. In this respect, the role of media operatives is elevated such that they become key players in a 'cosmic' war that threatens the very essence of Islam.
- Outreach as a weapon of strategic or even existential importance is frequently emphasised by salafi-jihadists. Strategic communications are therefore an end in themselves, not just something that complements real-world military or terrorist activities.

Unmanned Aerial Vehicles (UAVs)

- Unmanned aerial vehicles (UAVs; more commonly known as drones) have become an increasingly common sight on the battlefield, particularly after President Barack Obama intensified their use in such conflict arenas as Yemen, Pakistan and Afghanistan.

Strategy

- Groups like Islamic State have weaponised commercial drone technology, which is becoming more advanced and readily available. They have achieved two strategic goals with drones: (i) propaganda/symbolism; and (ii) reconnaissance.
- The propaganda utility of drones is derived from their ability both to produce and to serve as propaganda. With regards to the former, much has been written about the high production values and slick, filmic appeal of IS videography. The very fact that the group has managed to utilise drones on the battlefield is celebrated among their supporters; the mere use of the technology has value as propaganda.

Deployment

- It has been relatively straightforward to secure almost complete and total aerial dominance against non-state actors who have not traditionally had recourse to sophisticated technological resources within the aerial space.

- Groups like IS have deployed drones for hostile reconnaissance, to identify enemy positions and roadblocks. Most dramatically, this has allowed for real-time attack management by the group when fighting against the Iraqi Security Forces and Syrian Democratic Forces.
- IS has also developed the capability to deliver modest payloads via adapted drones. A wide variety of different warheads have been used, among which the most common has been 40mm grenades.
- One clear limitation in this regard is that commercially available drones simply lack the mechanical power needed to transport more sophisticated weapons due to their weight and size.

Doctrine

- Unlike the other case studies within this paper, there is no specific doctrine relating to drones. The reason for this is that drones are a tool, rather than a tactic. While there is a large doctrinal discourse around IEDs insofar as they pertain to suicide, and around propaganda because it relates to proselytisation, drones are merely one of many battlefield tools used by salafi-jihadists.

Conclusion

- In all of the cases explored within this paper – IEDs, strategic communications and drones – it is clear that technological advancement has progressed rapidly.
- Not only have these technologies become exponentially more powerful over time, but their availability has also increased dramatically.
- The contemporary salafi-jihadist movement encourages malevolent creativity when considering the application of new technologies on the battlefield and this emphasis on innovation is unlikely to change.

Policy Implications

- This eager embrace of technological advances serves as a useful indicator when considering the future of battlefield innovation: almost nothing is considered off-limits.
- Given that the salafi-jihadist appetite for technical and technological innovation is largely unfettered by ideology, policymakers should respond by:
    - Deploying continuous horizon-scanning research programmes looking to detect and mitigate early uptake of and/or experimentation with new and emerging technologies.
    - Assessing the extent to which salafi-jihadists are more concerned with certain technologies for symbolic and prestige-related reasons (such as CBRN and drones).
    - Revisiting and revitalising approaches towards strategic communications such that responses to salafi-jihadist narrative-led warfare are similarly nuanced and consistent.

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1. Introduction

One of the most notable features of the salafi-jihadist movement (and, indeed, of the politico-salafist movement as well) has been its consistent effort to explore technological innovation. There is a generally permissive attitude towards encouraging innovation in this area with little consideration of restraints, other than applicability – for example, considering the destructive impact of a new weapon on civilians. Thus, what can be seen in salafi-jihadist literature is that the merits of a particular technology are rarely ever discussed, although the application of such technologies often lead to further and more contested discussion.

In this regard, the efforts of Islamic State (IS) in demonstrating malevolent creativity on the battlefield in Syria and Iraq have been most notable. That overarching issue – of terrorist innovation – is the focus of this paper, particularly as it relates to doctrine and strategy. In order to better understand this, we have chosen to focus on three case studies where salafi-jihadist innovation has been most acute – (i) improvised explosive devices (IEDs); (ii) strategic communications; and (iii) drones – drawing on a range of Arabic-language sources collected over the course of the last two decades including (i) thousands of verified internal IS documents found in Syria, Iraq, Libya and Afghanistan; (ii) hundreds of doctrinal texts authored by senior figures from across the global jihadist movement; and (iii) an obscure 575-page manual cited by leading members of both al-Qaeda and IS as an important theological treatise on asymmetric warfare. The remainder of this introduction explains why these three elements have been chosen and how the paper will proceed.

IS is known to have experimented with a variety of weapons, including weapons of mass destruction and chemical agents. It has also explored ways to build driverless vehicles to aid the delivery of IEDs and has deployed weaponised drones. However, before IS, it was the malevolent creativity of the terrorist attacks on 9/11 that first shocked the United States and heralded almost two decades of a global 'War on Terror' against non-state actors. In the subsequent campaigns, al-Qaeda tried to find new ways of launching terrorist attacks; the al-Qaeda branch in Yemen, known as al-Qaeda in the Arabian Peninsula (AQAP), was among the most audacious in this regard. In 2009, it attempted to bring down a Northwest Airlines flight on Christmas Day by sewing a combination of pentaerythritol tetranitrate (PETN) and triacetone triperoxide (TATP) explosives into the underwear of a would-be suicide bomber, Umar Farouk Abdulmutallab.[1] Less than a year later, AQAP once again targeted the aviation industry by inserting explosives inside printer cartridges before shipping them to the United States on cargo planes. The group believed it had found a potential vulnerability within the logistical supply chain of aviation cargo where screening checks are less rigorous than they are for commercial flights carrying passengers.[2]

1 *United states v Umar Farouk Abdulmutallab*, Indictment, [2010] (Eastern District of Michigan); 'Underwear bomber Abdulmutallab sentenced to life', BBC, 16 February 2012.
2 'Printer cartridge bomb plot planning revealed', BBC, 22 November 2010.

Although both attacks were ultimately unsuccessful, they demonstrate the ongoing commitment of a group like AQAP to push the boundaries of malevolent creativity in terrorist attack planning. By 2013, however, the group finally managed to strike. It had promoted homemade bombing recipes for years through its English-language magazine *Inspire*. One section, entitled 'open source jihad', aimed to disseminate bomb-making methods using everyday items readily available in the West. These were known as the 'Make a Bomb in the Kitchen of Your Mom' series.[3] Two brothers, Dzhokhar and Tamerlan Tsarnaev, followed the AQAP recipes and built two pressure-cooker bombs, which they detonated during the Boston Marathon, killing 3 and injuring a further 264.[4] Innovation with IED construction and its deployment has, therefore, been a longstanding and necessary component of terrorist attack planning – and consequently forms one of the case studies featured in this paper.

Much has also been written of IS's sophisticated communications strategy. Clearly, much of what the group achieved while holding territory across Syria and Iraq was unprecedented, and surpassed anything terrorist groups had previously achieved. Yet, in this regard there is a long history of innovation and evolution prior to the emergence of Islamic State. Before the group established its slick communications approach across mainstream social media platforms, salafi-jihadist groups had to find other ways of disseminating their messages. In the immediate aftermath of 9/11, this consisted of sending taped recordings to such media outlets as al-Jazeera, from which the group's message could then be amplified through traditional media channels. This was far from ideal. Channels would not necessarily publish unedited speeches from terrorist leaders, nor would they show snippets without providing context and editorialisation. To overcome this, supporters of al-Qaeda had begun, by the time of the 2003 Iraq War, to create password-restricted forums on which the group and its supporters could share their message.[5] This included chat forums, such as Ansar al-Mujahideen ('supporters of the mujahideen'), Faloja (a reference to the Iraqi city of Fallujah, which became a hotbed of insurgent activity) and Shamukh ('lofty' or 'someone to be looked up to').[6] Between them they became the primary arena for the dissemination of videos and communiqués from groups like al-Qaeda and al-Shabaab. Before this, static websites, such as Azzam.com, brought news of salafi-jihadist campaigns in Chechnya, Bosnia and Afghanistan to English-speaking audiences. Indeed, before the internet it was the early embrace of audio cassettes to disseminate their ideas that led extremist salafi preachers in Saudi Arabia (known as the *'sahwa salafiyya*') to gain support for their ideas.[7] The strategic communications space has therefore been one of dramatic and constant evolution, and forms the second of our case studies in this paper.

3 Hilary A. Sarat-St. Peter (2017), '"Make a Bomb in the Kitchen of Your Mom": Jihadist Tactical Technical Communication and the Everyday Practice of Cooking', *Technical Communication Quarterly*, 26:1, pp.76–91, DOI: 10.1080/10572252.2016.1275862.

4 Michele R. McPhee, *Maximum Harm: The Tsarnaev Brothers, the FBI, and the Road to the Marathon Bombing* (University Press of New England, 2017).

5 Abdullah Alrhmoun, Shiraz Maher, Charlie Winter, 'Decoding Hate: Using Experimental Text Analysis to Classify Terrorist Content' (GNET, 2020). https://gnet-research.org/wp-content/uploads/2020/09/GNET-Report-Decoding-Hate-Using-Experimental-Text-Analysis-to-Classify-Terrorist-Content.pdf.

6 Evan Kohlmann, 'A beacon for extremists', *CTC Sentinel*, February 2010, 3:2. Accessed at: https://ctc.usma.edu/a-beacon-for-extremists-the-ansar-al-mujahideen-web-forum/; Manuel R. Torres-Soriano, 'The Hidden Face of Jihadist Internet Forum Management: The Case of Ansar Al Mujahideen', *Terrorism and Political Violence*, 28:4 (2016).

7 Shiraz Maher, *Salafi-Jihadism: The History of an Idea* (Hurst & Co, 2016).

The last case study focuses on drones because of the fashion in which IS has been able to weaponise them during the latter stages of its territorial Caliphate. Although drones have long captured the imagination of non-state actors, they have not traditionally been able to be utilised in any meaningful ways. Abortive attempts by groups including Hezbollah and Hamas against Israel produced no great effect. IS's real success in Syria and Iraq has been to establish a proof of concept. Its drone capability remained modest and relatively primitive, but the group was nonetheless able to demonstrate how, even with limited means, readily available commercial drones can be used effectively on the battlefield. This is a significant and important innovation because it will inspire further innovation among other malevolent actors in the future.

Before turning to the case studies, this paper will offer a research review, outlining relevant literature in the field, and will then offer a discussion on salafi-jihadist doctrine with regards to innovation. Clearly, among terrorist groups innovation is not pursued for its own sake, but with a broader goal in mind. This goal will be explained and placed in context.

2. Research Review

There is broad consensus among researchers of terrorism that bad actor innovation is of critical importance to counter-terrorism policymakers, law enforcement, military practitioners and the private sector alike. After all, violent extremist movements gain significant returns from adopting newer and more shocking methods of violence, including competitive advantages over security forces, better prospects of organisational survival, and increased media attention and recruitment capabilities. Indeed, it is through innovation that violent extremists are able to overcome the obstacles they face and ultimately turn their ambitions into reality.[8] For that reason, understanding how and why innovation occurs is essential if we are to formulate strategies that can be pre-emptive rather than reactive.[9]

Most definitions of terrorist innovation are grounded in Cropley et al.'s 2008 conceptualisation of 'malevolent creativity' – that is, creativity that is 'deemed necessary by some society, group, or individual to fulfil goals they regard as desirable, but [that] has serious negative consequences for some other group, these negative consequences being fully intended by the first group'.[10] The authors identify four features of a creative product: (i) how new or surprising it is; (ii) the extent to which it achieves its intended goal; (iii) whether it is well crafted and fit for purpose; and (iv) whether it can be deployed to achieve objectives other than that for which it was designed.[11] Building on this qualified definition, Gill et al. define terrorist innovation itself as the successful implementation of ideas or technologies derived through the process of malevolent creativity.[12]

Definitions aside, notwithstanding the consensus on its importance, the research literature on terrorist innovation remains lacking.[13] That which does exist generally falls into one of two clusters: (i) *why* do terrorists innovate; and (ii) *how* do terrorists innovate. In relation to the first, Rasmussen and Hafez's edited volume, prepared in 2010 for the United States Defense Threat Reduction Agency (DTRA), is particularly valuable. In it, the challenge of bad actor innovation is disaggregated into three categories according to Crenshaw's framework: (i) tactical, which involves the invention or adoption of new techniques, tactics or technologies to achieve unchanging objectives; (ii) strategic, which involves the adoption of new objectives that necessitate new tactics,

8 See, for example, Brian Jackson, John Baker, Peter Chalk, Kim Cragin, John Parachini and Horacio Trujillo, 'Aptitude for destruction, volume 1: Organizational learning in terrorist groups and its implications for combating terrorism', RAND, 2005; and Brian Jackson, John Baker, Peter Chalk, Kim Cragin, John Parachini and Horacio Trujillo, 'Aptitude for destruction, volume 2: Case studies of organizational learning in five terrorist groups', RAND, 2005.

9 Andrew Silke and Anastasia Fllippidou, 'What drives terrorist innovation? Lessons from Black September and Munich 1972', Security Journal, 33 (2019), pp.210–27.

10 David Cropley, James Kaufman and Authur Cropley, 'Malevolent creativity: A functional model of creativity in terrorism and crime', *Creativity Research Journal*, 20:2 (2008), pp.105–15.

11 Ibid., 108.

12 Paul Gill, John Horgan, Samuel Hunter and Lily Cushenbury, 'Malevolent creativity in terrorist organizations', *The Journal of Creative Behaviour*, 47:2 (2013).

13 Michael Logan, Gina Ligon and Douglas Derrick, 'Measuring tactical innovation in terrorist attacks', *The Journal of Creative Behaviour* (2019); Rashmi Singh, 'A preliminary typology mapping pathways of learning and innovation by modern jihadist groups', *Studies in Conflict & Terrorism*, 40:7 (2017); Isaac Kfir, 'Terrorist innovation and online propaganda in the post-caliphate period', SSRN (2019).

targets or technologies; and (iii) organisational, which involves new ways of structuring groups, accruing resources and enlisting recruits.[14]

As both Gill et al. and Kfir note, most hierarchically organised terrorist organisations are not intuitively creative, especially Salafi-jihadist groups, which tend to be doctrinally conservative in nature.[15] This means that, much of the time, innovation is a process that has to be driven from above – that is, fostered and facilitated by the leadership – even if it is expected to be carried out by the rank-and-file. Dolnik documents this at length in his 2009 book on the matter, which compares four cases of terrorist innovation with a view to identifying what conditions and antecedent behaviours were most favourable for it to take shape and have a meaningful impact on the outlook of the groups in question.[16] In doing so, he builds on his earlier delineation of innovation as being either radical (involving the use of a brand new tactic or technology) or incremental (involving an improvement or modification of a tactic).[17] He concludes that successful innovation, whether radical or incremental, is as reliant on internal structures and attitudes as it is on environmental and circumstantial factors, a position robustly supported by Gill et al.'s general study on malevolent creativity, among others.[18]

The second cluster of innovation studies addresses the issue of *how* bad actors go about implementing change. Published in 2012, Rasmussen and Hafez's second DTRA-backed foray into terrorist innovation explores this question, grouping facilitating factors into three clusters: (i) organisational, (ii) motivational, and (iii) enabling. Organisational factors refer to group characteristics, especially in relation to leaders' attitudes towards change and strategic compromise. Organisations that are led by charismatic and determined figures that are open to using all tools at their disposal, including mass casualty violence, are considered much more likely to innovate because their members are both more motivated and more incentivised to solve problems creatively.[19] Motivational factors refer to the reasons for which terrorists might look to innovate in the first place: anything from needing to circumvent new security measures, wanting to revitalise support for the cause, or deciding that a conflict needs to be escalated because current levels of violence are insufficient to achieve meaningful results.[20] Millenarian groups are more likely to be motivated to engage in escalation-focused innovation because of their absolutist approach towards achieving their end goals.[21] Enabling factors refer to the role played by access to wealth, resources, territory, recruits and expertise.[22] When bad actors are able to benefit from large revenue streams, draw on diverse recruitment pools and operate in safe havens, they are exponentially better placed to engage in almost all forms of innovation – whether tactical, strategic, or organisational.[23]

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14 Maria Rasmussen and Mohammed Hafez, 'Terrorist innovations in weapons of mass effect: Preconditions, causes and predictive indicators', Defense Threat Reduction Agency: Advanced Systems and Concepts Office (2010), pp.6–11; Martha Crenshaw, 'Theories of terrorism: Instrumental and organizational approaches', in David Rapoport (ed.), *From inside terrorist organizations* (Columbia University Press, 1988), pp.13–31.
15 Gill et al., p.138; Kfir, 'Terrorist innovation'.
16 Adam Dolnik, *Understanding terrorist innovation: Technology, tactics and global trends* (Routledge, 2007).
17 Dolnik, *Understanding terrorist innovation*, pp.4–21.
18 Gill et al..
19 Mohammed Hafez and Maria Rasmussen, 'Terrorist innovations in weapons of mass effect, phase II', Naval Postgraduate School: Center on Contemporary Conflict (2012), pp.2–11.
20 Ibid.
21 Ibid.
22 Consider, for one, IS, which, because of its particular circumstances in 2013–14, was able to develop new weapons systems (a tactical innovation), expand its war to Western nations (a strategic innovation) and become a quasi-state (an organisational innovation).
23 Hafez and Rasmussen, 'Terrorist innovations in weapons of mass effect, phase II', p.6.

Silke and Filippodou apply this framework to the Black September Organisation, which was behind the Munich massacre in 1972. They hold that not only was the attack avoidable, it was also predictable, something that could easily have been derailed had law enforcement been better prepared.[24] Also investigating this question of logistics and facilitation are studies by the likes of Horowitz and Acosta, both of which explore the global proliferation of suicide tactics.[25] While the former holds that intra-group learning and/or plagiarism plays a key role in their diffusion, the latter considers competition and brand imitation to be more critical as drivers.[26] Much of the rest of the academic and grey literature on how innovation occurs revolves around case study-led explorations of antecedent behaviours, preconditions and indicators that precede tactical innovations. Among others, scholars have sought to determine how and why innovation occurred at the hands of the Provisional Irish Republic Army[27] and the Japanese millenarian cult Aum Shinrikyo,[28] not to mention among lone actor terrorists.[29] While these studies are diverse in both method and subject matter, they tend to support the framework set out in Rasmussen and Hafez's two volumes.

Notwithstanding the progress made, especially over the course of the last decade, in understanding what drives and enables terrorist innovation, there remain a number of critically understudied gaps in the knowledge. First, with the exception of Schuurman et al. and Bouhana et al., scholars have generally focused on innovation at the level of organisations, excluding the phenomenon as it arises among disconnected supporters of violent extremist groups.[30] Second, and connectedly, most research appraises innovation as it manifests in a material, offline sense – that is, the research focuses on terrorists' ability to deploy new forms of violence and produce new types of propaganda, but not on how terrorists form communities, exchange advice and interact with each other online. Third, the role of ideology as an enabler and/or facilitator has only ever been assessed as one of an array of factors. In the case of salafi-jihadism, this is especially problematic because the salafi-jihadist doctrine on innovation is rich and wide-ranging, something that plays a fundamental role in how groups across the spectrum, from IS to al-Qaeda, conceptualise and implement creativity.

Through our research we hope to fill this last gap in the knowledge, fostering a better understanding of what characterises the salafi-jihadist position on innovation and thence how it manifests in both online and offline spaces.

24 Silke and Filippodou, 'What drives terrorist innovation'.
25 Michael Horowitz, 'Nonstate actors and the diffusion of innovations: The case of suicide terrorism', *International Organization*, 64:1 (2010), pp.33–64; Michael Horowitz, 'The rise and spread of suicide bombing', *Annual Review of Political Science*, 18 (2015), pp.69–84; Benjamin Acosta, 'Dying for survival: Why militant organizations continue to conduct suicide attacks', *Journal of Peace Research*, 53:2 (2016), pp.180–96.
26 Ibid.
27 Paul Gill, 'Tactical innovation and the Provisional Republican Army', *Studies in Conflict & Terrorism*, 40:7 (2017), pp.573–85.
28 Dolnik, *Understanding terrorist innovation*, pp.58–80; Adam Dolnik, 'Aum Shinrikyo's path to innovation', in Rasmussen and Hafez (eds.), 'Terrorist innovations in weapons of mass effect: Preconditions, causes and predictive indicators', Defense Threat Reduction Agency: Advanced Systems and Concepts Office (2010), pp.126–44.
29 Bart Schuurman, Edwin Bakker, Paul Gill and Noémie Bouhana, 'Lone actor terrorist attack planning and preparation: A data-driven analysis', *Journal of Forensic Sciences*, 63:4 (2017); Noémie Bouhana, Emily Corner, Paul Gill and Cart Schuurman, 'Background and preparatory behaviours of right-wing extremist lone actors: A comparative study', *Perspectives on Terrorism*, 12:6 (2018), pp.150–63.
30 Ibid.

3. Doctrine Review

In Arabic a term for 'innovation' is *bid'a* (بدعة). In the theological sense it has strongly negative connotations of devising heretical doctrines that fall outside the framework of the original religion. This idea of 'innovation' is strongly contrasted with the invention of new technologies in the broadest sense, which are not seen as falling under the category of *bid'a* in the theological context.

Thus, as the website of the late scholar Ibn Baz writes in response to a question about the appearance of new technology and modern science not present in the time of the Prophet: 'Ordinary matters, including what is from industries: all this is not connected with innovations [*bid'a*], for innovations are what is in acts of closeness, obedience and worship: these are the field of innovations. As for what people invent in matters of industry, vehicles and clothes and the like, this has nothing to do with innovations, and they are no part of innovations, as Islam encourages science and encourages what benefits the people, as the Prophet (SAWS) has said: 'Be keen for what benefits you and seek help in God.'[31] He further explains that 'if the people invent something that contravenes the law of God in their use of it, it is forbidden from the angle of their using it, not from the angle that is invented.'[32]

Although Ibn Baz is not considered to be a salafi-jihadist scholar, the position outlined can be seen as a useful summary of general Islamic attitudes towards technological innovation, and the salafi-jihadists share this outlook as well. That is, it is not the mere fact of a technological invention that may make its use forbidden, but whether the use of it leads to a forbidden act in Islamic law, which would then make the use of that technology forbidden.

To give an example of how these attitudes play out in general: IS has demonstrated willingness to deploy innovations in technology and boast about them. Outside the military realm, the organisation displayed this attitude in a propaganda video on agriculture from its self-proclaimed 'Jazeera wilaya', discussing processes of wheat harvest and flour production. It is noted during this video that up-to-date technology is used in the laboratory processes of examining wheat grains for impurities.[33]

Further, in developing the educational curricula for students in territories under its control, the group stressed the importance of students knowing the most up-to-date science with relevance to technology. Thus, in the preface to a secondary school chemistry textbook, the hope is to raise a generation of Muslim youth 'capable of employing this knowledge in accordance with current technology

31 'Fatwas of the Great Mosque: Islam's position on technology and modern science', binbaz.org.sa. https://binbaz.org.sa/fatwas/1485/%D9%85%D9%88%D9%82%D9%81-%D8%A7%D9%84%D8%A7%D8%B3%D9%84%D8%A7%D9%85-%D9%85%D9%86-%D8%A7%D9%84%D8%AA%D9%83%D9%86%D9%88%D9%84%D9%88%D8%AC%D9%8A%D8%A7-%D9%88%D8%A7%D9%84%D8%B9%D9%84%D9%85-%D8%A7%D9%84%D8%AD%D8%AF%D9%8A%D8%AB.

32 Ibid.

33 'New video message from the Islamic State: "Agriculture in Wilayat al-Jazirah",' Jihadology, 10 September 2015. https://jihadology.net/2015/09/10/new-video-message-from-the-islamic-state-agriculture-in-wilayat-al-jazirah/.

and development in what realises the will of God (Exalted be He in His Loftiness) in building the land and succession to it.'[34] The textbook includes discussion of various theories of atoms proposed by non-Muslim scientists as well as the modern theory of atoms involving orbitals and energy levels of electrons.[35] The embrace of scientific theories with practical and technological implications and applications should be contrasted with scientific theories that are not seen as having any practical implications and are rejected for supposedly contradicting religious teachings, such as the theory of evolution that is seen as being at odds with Koranic teachings on God's creation.[36]

IS has also readily deployed innovations on the battlefield, including the use of tactics such as IEDs and drones. However, the organisation did seek to restrict the use of certain technologies when it was governing populations as part of its state project. In particular, the group eventually banned the use of satellite dishes for television. In a circular issued in November 2015, the group's General Governing Committee denounced this technology as part of an enemy effort to promote non-Islamic ideas and 'devalue this Ummah, especially in its manners and creeds'.[37] Citing the Koranic obligation for believers to protect themselves and their families from Hellfire, the General Governing Committee outlined various measures against the use of satellite television, including the encouragement of sermons against the use of this technology and the likelihood of an outright ban on the apparatus within six months – something that eventually happened.

Despite the Western/non-Muslim origins of some inventions in modern military warfare, the permissibility of using these inventions is generally assumed in salafi-jihadist propaganda and literature. This is because these groups distinguish between 'civilisation' (*hadarah*) and 'material output'. What this means in practical terms is that while some physical products – such as an ornamental crucifix – depict a certain viewpoint about life, material progress is itself neutral. Thus, a mobile phone and all the technology within it neither are specific to any particular kind of civilisation nor denote something about the individual's belief system. This ascription of neutrality to technology means that salafi-jihadist groups are prone to exploring innovation in this area. As such, fundraising campaigns for salafi-jihadist groups and initiatives in Syria encourage donations for the purchasing of modern military weapons and equipment such as rifles and grenades. In 2019, a fundraising campaign called 'Equip us' for the 'And Rouse The Believers' operations room, which consisted of the al-Qaeda loyalist group Hurras al-Din and allies, featured an image of a fighter with a rifle.[38] A fundraising campaign in the same year for the 'Popular Resistance Brigades', an auxiliary force project endorsed by Hay'at Tahrir al-Sham, the leading salafi-jihadist insurgent group in northwest Syria, included a list in prices (in dollars) for grenades, rifles and magazines.[39]

There are a number of salafi-jihadist publications on the use of specific military technologies. These publications tend to use the same religious text citations and lines of reasoning to justify explaining how

34 Islamic State, Chemistry Textbook, Second Intermediate Grade, p. 6.
35 Ibid., pp. 8–17.
36 Aymenn Jawad Al-Tamimi, 'The Islamic State's Educational Regulations in Raqqa Province,' aymennjawad.org, 28 August 2014. https://www.aymennjawad.org/2014/08/the-islamic-state-educational-regulations-in.
37 Aymenn Jawad al-Tamimi, Archive of Islamic State Administrative Documents (Specimen 12F), aymennjawad.org, 27 January 2015. https://www.aymennjawad.org/2015/01/archive-of-islamic-state-administrative-documents.
38 A sample image of the campaign can be accessed here: https://justpaste.it/samplajahizunaimage.
39 Aymenn Jawad al-Tamimi, 'The Popular Resistance Brigades: Interview', aymennjawad.org, 18 September 2019. http://www.aymennjawad.org/2019/09/the-popular-resistance-brigades-interview.

to use the technologies. Again, these justifications are not defending these technologies against the notion that they are *bid'a*. Rather, they are based on the idea that one should prepare the means to fight against the enemy. For example, a publication entitled 'Course on manufacturing explosives particular to the victorious fighting sect for the truth until the order of God comes' begins with the following preface:[40]

> *'The Almighty has said: "And prepare for them what you can from force and tying of forces by which you can terrify the enemy of God and your enemy, and others besides them you do not know, but God knows them." And the Almighty has said: "Fight them: God will torment them at your hands and bring them to perdition, and will give you victory over them and will heal the hearts of a believing people." And the Almighty has said: "And fight them until there is no more* fitna *and the religion belongs wholly to God."'*[41]

The first verse in particular (Koran 8:60) is especially common in the religious text citations, appearing in another publication entitled 'Group of explosives for the Egyptian Salafis',[42] which further explains that 'the Ummah now is occupied from its east to its west' and the question arises of how to undertake the obligation of jihad in the state of weakness. The answer, the publication claims, lies in obeying God and His Messenger and being patient, fighting until there is no more *fitna* (intra-Muslim unrest) and 'preparing what you can from force' (similar to the Koranic verse citations above).[43] The publication also cites the medieval theologian Ibn Taymiyya: 'It is also obligatory to prepare for jihad with preparing force and tying of horses in the time of its falling for weakness, for that without which the obligation cannot be done is itself obligatory.'[44]

Likewise, a publication on explosive belts published for the occasion of Eid al-Adha 2018 by the pro-Islamic State 'al-Saqri Foundation for Sciences of Warfare' cites Koran 8:60 and comments: 'From this principle of terrifying the enemies of God Almighty from the Cross, apostasy and Rafidites, and in order to realise the obligation of supporting our mujahideen brothers in the Islamic State (may God make it mighty and enable it from establishing His law in the land), your brothers in the al-Saqri Foundation for Sciences of Warfare present to you four means of explosive belts.'[45]

Some salafi-jihadist publications dispense entirely with explanations for the use of military technologies or justify them only in the briefest terms. For example a salafi-jihadist media foundation called the Shahadh al-Himam Foundation has put out multiple guides to using and understanding technologies.[46] The guide to using mines features no introduction at all to explain why the use of such technology is necessary.[47] This is also true of the foundation's guide to using the RPG-7.[48] The guide on forensic investigation, however, includes the following justification for exploring the topic: 'In order to confront the

40 'Course on manufacturing explosives particular to the victorious fighting sect for the truth until the order of God comes', written by 'Raji Afw Rabbihi, Ibn al-Islam' (undated), p.4.
41 The respective Koranic verses cited in this preface are 8:60, 9:14 and 8:39.
42 'Group of explosives for the Egyptian Salafis', a publication based on materials gathered from jihadist forums by a group calling itself the 'Salafi Fighting Group in the Land of al-Kinana (Ansar Allah)'. Publication undated.
43 Ibid., pp.1–2.
44 Ibid.
45 'Four simplified means for the explosive belt', al-Saqri Foundation, Dhu al-Hijja 1439 AH (August-September 2018), pp.1–2.
46 For example, 'the mujahid's guide to heat sniping', Shahadh al-Himmam Foundation, Shawwal 1440 AH (June-July 2019); 'The mujahid's guide to facial recognition systems', Shahadh al-Himmam Foundation, 1440 AH (2018–2019).
47 'The mujahid's guide to mines', Shahadh al-Himmam Foundation, 1440 AH (2018–2019).
48 'The mujahid's guide to using the RPG 7', Shahadh al-Himmam Foundation (undated, but probably 2018–2019).

technology of the disbelievers that they use to confront the honest monotheists and attack them, we have established a reference that will benefit every monotheist who wants to support the religion of God, and we will speak about the forensic sciences and the means of overcoming them by God's permission, for many of the operations have failed for this reason (ignorance of forensic sciences) and God is the One whose help is to be sought.'[49]

In summary, the issue then is not one of salafi-jihadist hostility to general technological innovation, which is to be strongly contrasted with theological innovation. In fact, insofar as technological innovations can aid performance on the battlefield and the conduct of insurgent operations and terrorist attacks, the move towards technological innovation is actually encouraged. Rather, the issue is whether the use of a technology or tactical innovation in a particular situation may give rise to something that contravenes God's law, in which case the use of the technology in that situation would be forbidden.

49 'The lone mujahid's guide to forensic investigation', Shahadh al-Himmam Foundation (undated, but probably 2018–2019), p.1.

4. Case Studies

Case Study I: Improvised Explosives Devices (IEDs)

i. Introduction

The use of IEDs is perhaps one of the most familiar tactics deployed by salafi-jihadist groups. The most common form of attack involving IEDs is planting them along roads or on vehicles to target enemy personnel. To give one example of the pervasiveness of the use of IEDs, consider that in IS's daily reports of its operations around the world, hardly a day goes by without some claim of an attack involving IEDs. However, a more controversial aspect of the use of IEDs is in the form of IEDs carried by an actor, more commonly known as 'suicide bombings' in popular discourse.

ii. Strategy

As outlined in the preceding section on general attitudes towards technological innovation, the use of IEDs per se is not thought to be controversial. At the strategic level, one can view the use of IEDs in the broadest sense as an example of guerrilla warfare and one of multiple tactics intended to wear down the enemy through attrition. This thinking has been outlined repeatedly in IS's official propaganda, which has boasted on multiple occasions about the strategy of attrition designed to wear down the enemy through inflicting *nikaya* ('damage') and eventually trigger its rapid collapse in an open fight, allowing the group to seize territory and essentially re-create the experience of 2014, which saw the group take over large swathes of land in Iraq and Syria.[50]

Various views have been put forward in academic literature as to the strategic reasons for the use of suicide-borne IEDs. The literature uses descriptions such as 'suicide attacks', 'suicide terrorism', 'suicide bombings' and other formulations. Hoffman and McCormick view suicide attacks as part of terrorist groups' 'strategic signalling', whereby 'high profile attacks are carried out to communicate a player's ability and determination to use violence to achieve its political objectives.'[51] The key emphasis here is on the contrast between a projection of one's apparent strength and one's actual abilities: suicide attacks give the appearance that the terrorists are better equipped or more powerful than they actually are. Based on his datasets on suicide attacks, Pape viewed suicide terrorism as primarily a response to foreign occupation, which was criticised by Moghadam as exaggerating the link between the two.[52] Lewis argued that suicide bombings constitute a form of technology that ultimately serves a practical purpose: that is, 'how to make best use of available resources

50 Aymenn Jawad al-Tamimi, 'The Islamic State's Portrait of its Current Strategy', aymennjawad.org, 15 May 2019 https://www.aymennjawad.org/2019/05/the-islamic-state-portrait-of-its-current-strategy.
51 Bruce Hoffman and Gordon H. McCormick, 'Terrorism, Signaling and Suicide Attack', *Studies in Conflict and Terrorism*, 27:4 (2004), pp.243–81.
52 Assaf Moghadam, 'Suicide Terrorism, Occupation, and the Globalization of Martyrdom: A Critique of DyingtoWin,' *Studies in Conflict & Terrorism*, 29:8 (2006), pp.707–29.

in order to produce a weapon system that can deliver ordnance reliably and with precision.'[53] Analysing a database of thousands of suicide attacks, Acosta argued more recently that suicide attacks are primarily a means for ensuring a militant group's survival and bolstering its support base.[54] Acosta also distinguished between 'high-status' organisations and 'low-status' organisations, arguing that the pursuit of suicide bombings could 'elevate' a 'low-status' organisation and create ties with a 'high-status' organisation.

In the case of present-day salafi-jihadist use of suicide-borne IEDs (and particularly IS's use of this tactic), probably no explanation from the theories surveyed above can suffice on its own. For example, the narrative of fighting a foreign occupation certainly does feature in salafi-jihadist discourse, such as when Hay'at Tahrir al-Sham speaks of fighting the 'Russian and Iranian occupations' of Syria. However, as will be seen below, conditions outlined for conducting a suicide bombing need not be that the target comprises foreign forces. Indeed, many suicide bombings by various salafi-jihadist groups are not conducted against foreign forces, but actually strike the forces of the governments of the countries within which they are operating. Acosta highlights some examples of how suicide attacks can elevate a militant group's status, but in his discussion of the case of Ansar Beit al-Maqdis and how it became IS's Sinai affiliate, he perhaps places too much emphasis on the group's use of suicide tactics as a means for attracting IS's support. For IS, what ultimately matters when it comes to deciding who is a 'soldier of the Caliphate' is a person's willingness to pledge allegiance to its caliph. The calculations as to elevating a group or collection of groups to the status of representing an IS 'province' are not fully understood and may have changed with time, but it is notable that in the same period when the Sinai affiliate was declared, affiliates were also declared in places where supporters of IS had not demonstrated that they were worthy of support through suicide attacks (such as in Algeria). In fact capabilities were rather mediocre in those places, but factors such as a location's significance in salafi-jihadist history and portraying an image of mass defections from al-Qaeda to IS probably played a role.

In short, the strategic considerations behind the use of suicide-borne IEDs in given situations vary from time to place. Within IS's thinking, IEDs undoubtedly fall within the same repertoire of tactics designed to 'damage' and 'wear down' the enemy. In a given battle situation, the use of the suicide bomber might be seen as an effective way to inflict heavy casualties on the attacking/defending enemy force and demoralise it, triggering the enemy force's collapse. At the same time, suicide bombings can serve as effective propaganda messaging to the group's own supporters and fighters, who may similarly wish to achieve the same 'martyrdom' as their predecessors. This was the view offered by Abu Eisa al-Masri, a Shari'i who defected from IS and became part of the dissident-turned-opposition movement standing against the current leadership of the organisation, accusing it of distorting the supposedly glorious past legacy. Masri argues that IS's media apparatus has created a cult around 'martyrdom operations'

53 Jeffrey W. Lewis, 'Precision Terror: Suicide Bombing as Control Technology,' *Terrorism and Political* Violence, 19:2 (2007), pp.223–45).
54 Benjamin Acosta, 'Dying for survival: Why militant organizations continue to conduct suicide attacks,' *Journal of Peace Research*, 53:2 (2016), pp.180–96.

intended to make all its supporters and fighters want to follow the same path.[55] There is probably some truth to this view, which fits with Acosta's idea of group survival.

iii. Deployment

In the broadest sense, the deployment of IEDs by salafi-jihadist organisations is ubiquitous and can be effectively seen as part of their 'basic toolkit'. It is the use of the suicide-borne IEDs by salafi-jihadists that has become the most problematic and controversial today, and as the datasets show, the use of suicide-borne IEDs has almost certainly increased substantially over time. However, it is necessary to highlight here that suicide-borne IEDs are not the only form of 'suicide tactics' in the salafi-jihadist repertoire. One can distinguish between *'amaliyyat istishhadiyya* and *'amaliyyat inghimasiyya*. The former term is the familiar euphemism of 'martyrdom operations' or suicide-borne IED attacks more commonly called suicide bombings.

The latter term is a derivation of the Arabic root '*gh-m-s*' (with connotations of submersion etc.). *Inghimasi*, which literally means 'one who plunges', in this context should be thought of as applying to kamikaze fighters. Although a variety of salafi-jihadist groups use *inghimasi* soldiers, IS inghimasi fighters usually if not always carry suicide vests, typically detonating themselves after a firefight with their opponents. However, if they achieved the goal of their attack – for example, by overwhelming an enemy position – then these fighters would return to base without detonating their payloads.

This notion of *inghimas* is a famous one, owing to a substantial body of salafi-jihadist literature that traces its roots back hundreds of years. Ibn Taymiyya, for example, wrote a 79-page treatise on the subject, *Qa'ida fi-l-inghimas fi-l-'adu wa hal yubah?*, and an entire chapter is devoted to it in Ibn al-Nahaas al-Dumyati's work, *Mashari' al-ashwaq ila masari' al-'ushaq*.[56] In both cases, the authors argue that it is not only permissible but desirable for Muslims proactively to risk their lives when attacking more numerous and better equipped enemies (provided, that is, that their intention is sound).

In the context of groups like Islamic State and Hay'at Tahrir al-Sham,[57] *inghimasi* operatives are distinct from *istishhadi* suicide bombers. The term therefore refers to special operations involving fighters who willingly place themselves in harm's way, maximising the risk of death in order to cause as much damage as possible. In this sense, *inghimasi* operations are different because their success is not predicated on the perpetrators' death, although such an outcome is probable. In August 2015, an official IS video defined *inghimasi* attacks as those in which:

55 Aymenn Jawad al-Tamimi, 'Opposition to Abu Bakr al-Baghdadi: Sheikh Abu Eisa al-Masri's Critique of Islamic State Media', aymennjawad.org, 27 May 2019. http://www.aymennjawad.org/22742/opposition-to-abu-bakr-al-baghdadi-sheikh-abu.

56 Ahmad bin 'Abd al-Halim bin Taymiyya, ''قاعدة في الانغماس في العدو وهل يباح'', compiled and annotated by Abu Muhammad Ashraf b. 'Abd al-Maqsud, Riyadh: Adwa' al-Salaf (2002); Abu Zakariyya Ahmad bin Ibrahim bin Muhammad al-Dimashqi al-Dumyati, 'الباب الرابع والعشرون: في فضل انغماس الرجل الشجاع أو الجماعة القليلة في العدو الكثير رغبة في الشهادة', in 'مشارع الأشواق إلى مصارع العشاق', Beirut: Dar al-Basha'ir al-Islamiyya (2002), pp.522–64.

57 Hay'at Tahrir al-Sham has an elite unit of fighters dubbed 'The Red Bands', one of the specialities of which is so-called *inghimasi* operations. See, for example, 'The Red Bands threaten the regime and Russia with inghimasi operations', Enab Baladi, 18 September 2019. https://www.enabbaladi.net/archives/322231.

> *'One or more people plunge into an enemy position in which they are outnumbered, usually resulting in their death.* Inghimasi *operations usually target fortified locations or urban buildings to kill important leaders …* Inghimasi *operations are considered to be a lethal weapon by which to make the enemy shudder … As such, just one* inghimasi *fighter can make an entire army collapse.'*[58]

While the *inghimasi* operations entail a probable risk of death, the fact that their death is not necessitated means that such attacks are less controversial within salafi-jihadist literature than suicide-borne IED attacks called martyrdom operations. As such, there is more salafi-jihadist literature devoted to exploring suicide-borne IEDs and the debates surrounding them.

Although suicide bombings are controversial within Islam, the issue is no longer regarded as contentious within salafi-jihadist circles. The arguments on both sides are, by now, well rehearsed and adherents to militant Islam are comfortable with the tactic, considering it doctrinally valid. Where there is debate, it tends to focus on issues of target selection. For example, the Syrian cleric Abu Basir al-Tartusi publicly condemned the 7/7 terrorist attacks in 2005 without challenging the idea of suicide bombing. Instead he argued that the attacks were misguided because they violated rules about civilian targeting. 'The sharia texts have stringently forbidden targeting the children and women of the polytheists with any type of killing or fighting, no matter what the reasons and causes for doing so,' he wrote.[59] Tartusi also argued that killing people on the basis of citizenship alone is prohibited and that only specific people should be held accountable for their actions, such as heads of state.[60]

iv. Doctrine

The approval of planting IEDs in general to inflict damage on the enemy does not mean that the use of IEDs is approved in every scenario. Indeed, even IS has placed some limits. For instance, IEDs should not be put in places that will lead to harming Muslim civilians if there are viable alternatives. An example of the discussion on the matter can be seen in the publication 'Sinaitic Questions', which was issued by IS's Research and Studies Office (a body that was eventually dissolved by the group). The document answers some questions that had been directed to it by members of the Sinai affiliate of the organisation. In the third question,[61] it is asked:

> *'The mujahideen plant IEDs on both sides of the roads to target the vehicles and armoured vehicles of the apostates, the apostates destroy the houses surrounding the place of the explosion, and therefore some of the people inform about the place of the devices in order to protect their homes from the oppression of the apostates, so what is the ruling of this person, and what is the appropriate way to deal with them?'*

58 The Islamic State, 'الانغماسيون.. فخر الأمة', video, Barakah Province Media Office, 2 August 2015.
59 Abu Basir al-Tartusi, *Refutation Regarding the Targeting of Women and Children* (no publisher, 24 July 2005).
60 Maher, *Salafi-Jihadism*, pp.55–8.
61 Sinaitic Questions, Office of Research and Studies, 1436 AH (2014–2015), pp.14–15.

The response explains that 'the mujahideen must observe the state of the oppressed people who live among them, so they must not cause harm to them or impose the disbelievers over them or their regarded wealth as far as they can.' As the response elaborates:

> *'The brothers must not plant IEDs near the homes of the Muslims if there is in that harm caused to them, when there is the possibility of placing the IEDs in other places that do not cause harm to the Muslims. As for if there is no alternative to planting them near the homes, it is fine in giving preference to the interest of the jihad since its interest is a general one, and abandoning it is a general act of corruption as well. Therefore, the general interest is preferred over the particular interest, and repelling the general act of corruption is preferred over repelling the particular act of corruption.'*

This line of reasoning is justified by citation of the words of Ibn Taymiyya, who mentioned that 'if wealth cannot feed the hungry and the jihad that is harmed by its abandonment, we prefer the jihad, even if the hungry dies as in the case of shielding and all the more so, for indeed there we kill them by our deed and here they die by the deed of God.'

The sixth question also deals with IEDs,[62] mentioning a scenario in which they are planted to protect an area from the 'army of apostasy'. The IEDs are activated when the army assails the area but to be dismantled by the 'brother responsible for them' when the army departs. However, in one instance, the person responsible for the IEDs delayed in dismantling them, which led to the killing of a 'mujahid brother' even though he knew of the booby-trapping in the place. However, it had been decided that the traps should be dismantled as soon as the 'Tawagheet' depart, so should the brother responsible for dismantling the traps face any consequences for killing a person? The office's response compares the situation with the scenario of someone digging a well into which someone falls (mentioned by Imam Ibn Qudama), so the answer to the question depends on whether the person has shown 'negligence' in the matter and, if he has, whether the place is one entered by people and/or mujahideen in general. If that is the case, then the person is required to pay blood money in compensation.

These issues may seem to be trivial in comparison with those surrounding suicide-borne IEDs. Martyrdom operations, when perceived to have been conducted as an effective military tactic, have won approval across the spectrum of salafi-jihadist groups. For example, Abu al-Fatah al-Farghali, an Egyptian Shari'i official in Hay'at Tahrir al-Sham, asserts that martyrdom operations have 'conditions to permit them, among them that great damage against the enemy should occur, impossible to be accomplished except by this means, or they should repel an evil from the Muslims that cannot be repelled except by this means.'[63]

But Farghali defines the concept of 'great damage' in relative terms rather than the mere number of enemy personnel killed: if the bombing is intended only to kill the supreme commander of the 'disbelievers' and his killing will resolve the battle 'for the interest of

62 Ibid., pp.25–7.
63 Response to a question posed to Farghali, issued 7 July 2020.

the Muslims' then it is permissible; similarly it is permissible if the operation takes out a sniper inflicting great harm on the Muslims who cannot otherwise be killed. In contrast, if the operation kills only a large number of ordinary recruits used merely as cannon fodder and whose deaths do not impact the enemy, then he considers there to be no benefit and so the martyrdom operation is not permitted in that scenario.

Farghali has also cited the words of Ibn Taymiyya to justify the concept of martyrdom operations: that if one does what God commands and that leads to the killing of oneself, such as in the case of someone who attacks the enemy alone, benefiting Muslims and believing that he will be killed, then this is good.[64]

As noted, the phenomenon of suicide bombing and its extensive use is most heavily associated with Islamic State, the media output of which has recorded hundreds of instances of martyrdom operations by its personnel. In IS discourse, there seems to be less focus on outlining military conditions for carrying out such operations. Instead, the emphasis is on justifying the general idea of martyrdom operations and pushing back against the idea that they constitute a form of suicide (*intihar*) condemned in Islam. A key work for IS that justifies its frequent use of suicide bombers is the book *Issues of the Jurisprudence of Jihad: Twenty Issues of the most important of what the mujahid needs* written by Abu Abdullah al-Muhajir and issued under the imprint of IS's al-Himma Library, a part of the group's official media apparatus.[65]

Replete with citations from the Koran, hadith and theologians, the book contains a section devoted to martyrdom operations, which Muhajir says in their contemporary form constitute 'a new incidental issue that was not known before, but pondering the texts of the Shari'a … will make us decide that the martyrdom operations, even if not known among the foremost 'ulama of the Ummah in their form today, were nonetheless known among them in their meaning, truth and essence, while noting that they did not know this contemporary form for no reason except the lack of existence of this type of arms and technology that those operations rely on today.'[66]

Muhajir makes a number of arguments in support of martyrdom operations. First, he argues that it is permitted for a Muslim to plunge into large numbers of the enemy even if he is certain he will be killed. Second, he states that scholars have agreed by consensus that it is permissible in jihad to dive into a situation that causes the loss of one's own life, and that one should choose the path of death over disbelief. Third, he argues that it is permissible to destroy one's own life for the interest of making the religion supreme. Fourth, he declares that it is permitted to destroy one's life in the desire for martyrdom, citing among other texts one of the hadiths in which the Prophet spoke of his desire to be killed in the path of God, then resurrected only to be killed again and so on.

This is to be contrasted with the conventional concept of 'suicide' that is forbidden: namely, deliberately taking one's life with the intention of 'warding off pains of morale and material', whether that is

64 Post by Farghali on his Telegram channel, 19 August 2020.
65 The second printing of this work under the imprint of the al-Himma Library was in 1436 AH (2014–2015 CE).
66 Abu Abdullah al-Muhajir, *Issues of the Jurisprudence of Jihad*, p.79. Page references here to a printing of this publication that is undated.

done through actually killing oneself or getting someone else to do it. Thus, he writes that 'the believer must distinguish between what God has forbidden from the intention of the human – killing himself or his causing that – and what God has mandated from the believers' selling their lives and wealth to Him.'[67] He concludes his arguments by noting that if it is permissible for the mujahid to kill other Muslims in the scenario where the enemy uses Muslim hostages as shielding when the intention is to kill the enemy, then it is all the more permissible for the mujahid to kill himself for that very purpose when the broader goals are to make supreme the religion and inflict damage and killing on the enemy.[68]

Case Study II: Strategic Communications

i. Introduction

The history of how salafi-jihadists deploy strategic communications – that is, long-term, goal-orientated outreach – is a textbook case of tactical and sometimes strategic innovation. To be sure, their involvement in salafi-jihadist insurgency is not remotely new. Indeed, audiovisual media have long been deployed to brand the global jihad. In the 1980s, after the Soviet invasion of Afghanistan, the mujahideen used audio- and videotapes to draw in new fighters and secure fresh donations.[69] In the 1990s, as the 'Arab Afghans' dispersed across the world, this smattering of propaganda transitioned into a cottage industry, with battlefield films of Bosnia, audio wills of Kashmiri martyrs and pamphlets on the plight of the Rohingya readily available the world over.[70] In the 2000s, as the global jihad became synonymous with al-Qaeda, salafi-jihadist messaging met a mass audience and came to be characterised by grainy images of Osama bin Ladin and Abu Mus'ab al-Zarqawi broadcast across satellite news channels alongside clips of blurred beheadings.[71]

However, it was not until the 2010s and the rise of Islamic State that salafi-jihadist strategic communications went truly mainstream, in the sense that it became both more accessible than ever and more notorious than ever. This was a result of the fact that IS's approach to propaganda was unparalleled in its scope and complexity.[72] An essential pillar of its overarching caliphate project, audiovisual media and interpersonal outreach was deployed to augment and amplify IS's activities on a day-to-day basis. Its approach was characterised by nuance, with multiple aims and means. Some materials instructed, while others solicited, and yet more had no obvious, action-orientated function.[73]

67 Ibid., pp.101–3.
68 Ibid., pp.117–18.
69 See, for example, Thomas Hegghammer, *The caravan: Abdallah Azzam and the rise of global jihad* (Cambridge University Press, 2020), pp.244–87.
70 See, for example, Rafaello Pantucci, *'We love death as you love life': Britain's suburban terrorists* (Hurst, 2015), pp.79–120.
71 Peter Chambers, 'Abu Musab al Zarqawi: The making and unmaking of an American monster (in Baghdad)', *Alternatives: Global, Local, Political*, 37:1 (2012), pp.30–51.
72 Colin Clarke and Charlie Winter, 'The Islamic State may be failing, but its strategic communications legacy is here to stay', *War on the Rocks*, 17 August 2017. https://warontherocks.com/2017/08/the-islamic-state-may-be-failing-but-its-strategic-communications-legacy-is-here-to-stay/.
73 Charlie Winter, 'Redefining propaganda: The media strategy of the Islamic State', *The RUSI Journal*, 165:1 (2020), pp.38–42.

ii. Strategy

The strategic logic that underpins salafi-jihadist communication activities has proven to be inelastic in recent decades, even as the means by which their communications are deployed has transformed.

Broadly speaking, salafi-jihadists see strategic communications as a way to pursue one of three objectives: (i) propagation; (ii) legitimisation; and (iii) intimidation.[74] The first essentially refers to efforts to attract new recruits, draw in new donors and expand the reach of ideology. The second speaks to a more defensive form of communication, one that focuses on justifying violence and situating the actions of the movement in question within a broader Islamic context. The last focuses on the adversary audience; it manifests most prominently in terrorist operations deployed because of their communicative rather than kinetic potential.

While the strategy behind IS's outreach efforts has always been highly conventional, the material sum of its efforts set a new benchmark for the entire global salafi-jihadist movement, especially between 2014 and 2017.[75] As it innovated technically and technologically, changing both what it communicated about as well as how it communicated, the likes of al-Qaeda in the Arabian Peninsula, Boko Haram and Hay'at Tahrir al-Sham imitated it in turn.[76]

This has resulted in a situation that sees salafi-jihadists viewing narrative control not as a complementary good but a commodity of critical importance. Indeed, by 2020, strategic communications had become an essential pillar of their efforts, not just a sideshow to it. Accordingly, salafi-jihadists across the spectrum now employ professional-quality videographers, producers and editors, affording media operatives a privileged lifestyle for work that is often better remunerated than that afforded to ordinary military operatives.[77]

iii. Deployment

In contrast to their relatively unchanging strategic underpinnings, the actual means by which salafi-jihadists deploy their strategic communications activities has transformed over the last few decades, especially online.

This incremental innovation reflected advances in technology and shifts in both the physical and information security environment. While organisationally administered static websites were in vogue for much of the 1990s, they turned out to be imperfect vehicles for content distribution. By the mid-2000s, salafi-jihadists began to shift to online forums.[78] Besides being a more secure way to disseminate propaganda and share instructional advice, these new platforms were advantageous for another reason: a virtual sense of community was able to take root.

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74 Charlie Winter, 'Making sense of jihadi stratcom: The case of the Islamic State', *Perspectives on Terrorism*, 13:1 (2019), pp.54–62.
75 Clarke and Winter.
76 See, for example, Cori Dauber, Mark Robinson, Jovan Baslious and Austin Blair, 'Call of duty: Jihad – How the video game motif has migrated downstream from Islamic State propaganda videos', *Perspectives on Terrorism*, 13:3 (2019), pp.17—31.
77 Greg Miller and Souad Mekhennet, 'Inside the surreal world of the Islamic State's propaganda machine', *Washington Post*, 20 November 2015. https://www.washingtonpost.com/world/national-security/inside-the-islamic-states-propaganda-machine/2015/11/20/051e997a-8ce6-11e5-acff-673ae92ddd2b_story.html.
78 Aaron Zelin, 'The state of global jihad online', New America Foundation (2013). http://www.washingtoninstitute.org/uploads/Documents/opeds/Zelin20130201-NewAmericaFoundation.pdf.

Forums were not, however, without their disadvantages – they were often clunky and difficult to administer. By 2013, seeking to make more efficient use of their time and energy, groups like IS (then ISI), al-Qaeda (AQ) and al-Shabaab had established networks on mainstream platforms like Twitter, Facebook and YouTube.[79] This ideology-wide migration was cemented when al-Shabaab became the first terrorist group in history to live-tweet one of its operations, in September 2013 to an audience of millions, providing tactical updates on the attack it mounted against the Westgate Shopping Mall in Nairobi, Kenya.[80] In the aftermath of events like Westgate, which was a clear example of how mainstream social media could be set to 'work' for the salafi-jihadist cause, the use of Twitter swelled exponentially such that, by 2014, all the major organisations were heavily invested in the platform, including IS, which was then calling itself the Islamic State of Iraq and al-Sham.

The evolution did not stop there. By the end of 2015, government pressure was mounting and social media corporations had started to crack down on salafi-jihadists using their platforms. The decline of salafi-jihadist networks was precipitous.[81] However, they did not disappear – they simply innovated once more, responding to these measures by migrating elsewhere, this time to Telegram, a hybrid social networking platform that proved to be ideal for peer-to-peer communication, group discussions and propaganda dissemination.[82]

By mid-2020, there were signs that another migration was on the horizon. For years, pressure had been mounting on Telegram to cleanse itself of salafi-jihadists and, contemporaneously, a raft of other encrypted and privacy-maximising platforms – such as, for example, TamTam, Riot, Rocket.Chat and Threema – had started to offer a similar array of functionalities to it.[83] While it remains to be seen whether this migration will manifest in earnest in 2020, there can be little doubt that it will one day occur, the inevitable outcome of salafi-jihadists' efforts to innovate their way around their adversaries.

iv. Doctrine

While the evolution in tactics and deployment systems is driven by rational and material necessity, salafi-jihadists have expended a significant amount of energy in attempting to justify their deployment of and experimentation with strategic communications. To do this, they draw on a relatively limited pool of ideological and theological literature.

The former is characterised by speeches by famed ideologues of bygone years, be they universally revered doctrinaires like 'Abdullah 'Azam and Osama bin Laden or group-specific influencers like Abu Hamzah al-Muhajir. In any case, the refrain is repetitive. Strategic communications are couched in rhetoric around total war and the need to repel the purported intellectual invasion being levelled against

79 Gabriel Weimann, 'Terror on Facebook, Twitter, and Youtube', *Brown Journal of World Affairs*, 16:2 (2010), pp.45–54.
80 Rachel Sullivan, 'Live-Tweeting Terror: A Rhetorical Analysis of @Hsmpress_ Twitter Updates during the 2013 Nairobi Hostage Crisis', *Critical Studies on Terrorism*, 7:3 (2014), pp.422–33.
81 J. M. Berger and Heather Perez, 'The Islamic State's diminishing returns on Twitter: How suspensions are limiting the social networks of English-speaking ISIS supporters', Program on Extremism (2016). https://cchs.gwu.edu/sites/cchs.gwu.edu/files/downloads/Berger_Occasional%20Paper.pdf.
82 Neil Johnson, Minzhang Zheng, Yulia Vorobyeva, Andrew Gabriel, Houliang Qi, Nicolas Velasquez, Pedro Manrique, Darnell Johnson, Eduardo Restrepo, Chaoming Song and Stefan Wuchty, 'New Online Ecology of Adversarial Aggregates: ISIS and Beyond', *Science*, 352:6292, pp.1459–63.
83 Charlie Winter and Amarnath Amarasingam, 'The decimation of Isis on Telegram is big, but it has consequences', *WIRED*, 2 December 2019. https://www.wired.co.uk/article/isis-telegram-security.

Sunni Muslims by the Crusader enemy.[84] In this respect, the role of media operatives is elevated such that they become key players in a cosmic war that threatens the very essence of Islam. Quoting a 2002 statement by bin Laden, one of IS's most influential texts of strategic communications opens by stating that: 'There is a group of media operatives and companions of the pen that has a prominent and important role in steering the war, shattering the morale of the enemy and raising the spirits of the ummah.'[85]

This implied notion of outreach as a weapon of strategic, or even existential importance is frequently emphasised by salafi-jihadists. Consider, for example, the likes of Abu Hamzah, one-time Minister of War for IS, who said in 2010 that 'media missiles are more fierce and significant to the ummah and its men than projectiles shot from planes'[86], or the late Saudi cleric Hamud bin Aqla al-Shuaybi, who famously argued that:

> *'The media offers a fine way to spread news of Muslim victories over the enemy, support the* mujahideen*, demonstrate their courage and extoll their virtues. These matters are critical in terms of their potency for sustaining the* mujahideen*'s steadfast pursuit of victory for the Muslims and defeat for their enemies.'*[87]

This sentiment was most seamlessly captured in a letter from now-al-Qaeda leader Ayman al-Zawahiri to then-al-Qaeda in Iraq leader Abu Mus'ab al-Zarqawi in 2005. Reprimanding Zarqawi for his excessive brutality in Iraq, Zawahiri wrote, 'we are in a battle and that more than half of this battle is taking place in the battlefield of the media.'[88] Perception, held Zawahiri, was an essential commodity, something that had to be prioritised at all times.

Cast through this lens, strategic communications is an end in itself in salafi-jihadist warfare, not just something that complements real-world military or terrorist activities. While the logic of this is clear to see from the perspective of insurgency, in which signalling, influence and political effect play as fundamental a role as violence,[89] salafi-jihadists have had to exert a good deal of effort to make sense of it from an Islamic theological position.

Generally speaking, the religious basis for offensive and defensive strategic communications in war is grounded not in medieval Islamic literature, as is the case with, say, suicide operations (see above), but in both the Koran and early accounts of the life of the Prophet Muhammad. These accounts refer both to the words and example of Muhammad. For example, one oft-quoted hadith has him saying, 'Strive against the polytheists with your money, your souls, and your tongues.'[90] Another, favoured in particular by IS, notes that he was purported to say, 'Satire is harder on the disbelievers than if they were to be shot with arrows.'[91] Another hadith favoured on online pro-al-Qaeda forums holds that, among the earliest community of

84 See Carsten Bockstette, 'Jihadist terrorist use of strategic communication management techniques', George C. Marshall European Center for Security Studies, (2008). https://www.marshallcenter.org/mcpublicweb/MCDocs/files/College/F_Publications/occPapers/occ-paper_20-en.pdf.
85 Osama bin Laden, 'One year of American failure in Afghanistan' (2002).
86 Abu Hamzah al-Muhajir, 'Pathways to victory', Rumiyah, 2 October 2016.
87 Hamud bin 'Aqla al-Shu'aybi, 'The neighing of horses in the explanation of the book of jihad', 2003.
88 Ayman al-Zawahiri, 'Letter from al-Zawahiri to al-Zarqawi', October 2005.
89 Mao Tse Tung, *On Guerrilla Warfare*, translation by Samuel Griffith (The Nautical & Aviation Publishing Company of America, 1992).
90 Related by Abu Dawud. https://binbaz.org.sa/audios/2726/426-من-حديث-جاهدوا-المشركين-باموالكم-وانفسكم-والسنتكم.
91 Related by al-Waqadi, quoted in al-Shu'aybi, 'The neighing of horses in the explanation of the book of jihad'. https://islamweb.net/ar/library/index.php?page=bookcontents&ID=1350&bk_no=58&flag=1.

Muslims, the truest believers were considered to be those who both fought and spoke against polytheism: 'He who strove against them with his hand was a believer: he who strove against them with his tongue was a believer, and he who strove against them with his heart was a believer.'[92]

So pronounced is the salafi-jihadist elevation of strategic communications that the doctrinal literature frequently emphasises that all those involved in it will be admitted to paradise, from photographers and producers to editors and distributors. This is of foundational importance to supporter-run communications efforts because it implies that even disconnected, remote supporters of groups like IS can consider themselves mujahideen, irrespective of their not being formerly affiliated with it. The basis for this idea is a hadith that asserts that 'Allah will admit three people into Paradise for one arrow: The one who makes it, intending it to be used for a good cause, the one who shoots it, and the one who passes it to him.'[93] Importantly, these 'arrows' need not be deployed in an offensive capacity, for, per IS, 'bring[ing] glad tidings to the hearts of the believers' is just as desirable pursuit as 'infuriating the unbelievers'.[94]

v. Discussion

This section (i) tracks key tactical innovations in how salafi-jihadist groups have deployed strategic communications in recent years, and (ii) highlights key ideological and theological arguments they make with a view to justifying the extent to which they now incorporate strategic communications in jihad.

When considered in the context of the conceptual framework outlined in Sections 2 and 3 of this paper, it is not difficult to compute the tactical evolution of salafi-jihadist outreach. A range of factors, both internal and external to the global movement, has driven its transformation in recent decades. Revolutions in technology democratised audiovisual media production, thereby making media work easier to engage in. Transformations in the conflict paradigm increased the incentive to deliver outreach campaigns that were globally relevant and resonant. Furthermore, the ascendance of successive leaders who enthusiastically bought into the role of narrative in war meant that few opportunities were missed to advance the propagandistic agenda. It was, in short, an almost inevitable product of the circumstantial and the deliberate, a paradigmatic test-case of battlefield innovation.

The potential political and material impact of strategic communications was always plain to see, but that alone was not enough to justify its being folded into the heart of the salafi-jihadist arsenal. This task was iteratively achieved through a wide array of doctrinal literature drawing from both established ideologues and Islam's canonical sources. When considered through the lens of broader salafi-jihadist considerations around innovation, it is no mystery that this operational sphere in particular has come to be characterised by creativity – in many ways, it faced fewer obstacles than other, more overtly kinetic areas.

92 Related by Muslim. https://ar.islamway.net/article/20301/-1وقفة-مع-حديث.
93 Related by Abu Dawud. https://islamweb.net/ar/library/index.php?page=bookcontents&ID=3077&idfrom=0&idto=0&flag=1&bk_no=56&ayano=0&surano=0&bookhad=0.
94 Author unknown, 'Media operative, you are a mujahid too', al-Himmah Library (2014).

Case Study III: Unmanned Aerial Vehicles (UAVs)

i. Introduction

Unmanned aerial vehicles (UAVs; more commonly known as drones) have become an increasingly common sight on the battlefield, particularly after President Barack Obama intensified their use in conflict arenas as Yemen, Pakistan and Afghanistan. By contrast, the insurgent actors they targeted have traditionally longed for their own drone capability. While the aspiration has been there, this has not always translated into anything meaningful in practice – until the recent campaign against Islamic State in both Syria and Iraq.

Unlike the other case studies within this paper, this one does not contain a section looking at 'doctrine'. The reason for this is that drones are a tool rather than a tactic for IS. While there is a large doctrinal discourse around IEDs insofar as they pertain to suicide and around propaganda because it relates to proselytisation, drones are merely one of many battlefield tools used by salafi-jihadists. Similarly, there is no specific doctrinal or textual discussion around the use of guns, grenades or knives. The only area where we can identify notable doctrinal discussion around a tool is where it relates to the indiscriminate use of weapons of mass destruction (WMDs), although this falls beyond the scope of this paper. As such, this case study focuses much more tightly on the practical strategy and deployment of drones by IS.

ii. Strategy

The wars following 9/11 have, almost exclusively, confronted non-state actors against whom it is relatively straightforward to secure complete and total aerial dominance. These non-state actors' relative lack of sophistication and recourse to modest technological resource has meant that any presence within the aerial space is almost entirely limited to states conducting counter-terrorist and counter-insurgency operations. However, technology within this space is evolving rapidly, providing an increased availability of commercial drones. Although these remain relatively primitive for now, the unchallenged control and dominance of aerial space cannot be assumed. Indeed, it is likely that, as this technology develops and becomes more readily available, malevolent actors will seek to innovate their approaches with regard to aerial methods. Groups like IS have already achieved two strategic goals with drones, which are as follows: (i) propaganda/symbolism; and (ii) reconnaissance.

Propaganda

The propaganda utility of drones is derived from the ability both to *produce* propaganda and to *serve* as propaganda. With regards to the former, much has been written about the high production values and slick, filmic appeal of IS videography.[95] Of course, most of the propaganda designed to inspire Muslims to join IS focused on more

95 Aaron Y. Zelin, '"Picture or it Didn't Happen": A Snapshot of the Islamic State's Official Media Output', *Perspectives on Terrorism*, 9:4 (2015), pp.85–97, http://www.terrorismanalysts.com/pt/index.php/pot/article/view/445/876; Carol Winkler, 'Visual Images: Distinguishing Daesh's Internal and External Communication Strategies', in *Countering Daesh Propaganda: Action Oriented Research for Practical Policy Outcomes* (The Carter Center, 2016), pp.15–19. https://www.cartercenter.org/resources/pdfs/peace/conflict_resolution/countering-isis/counteringdaeshpropaganda-feb2016.pdf; Mark D. Robinson & Cori E. Dauber (2019) 'Grading the Quality of ISIS Videos: A Metric for Assessing the Technical Sophistication of Digital Video Propaganda', *Studies in Conflict & Terrorism*, 42:1–2, pp.70–87., DOI: 10.1080/1057610X.2018.1513693.

'soft power' elements of the group's activities with idyllic depictions of life inside the Caliphate versus its more blood-curdling propaganda from the battlefield. One indicative video, therefore, entitled 'territories of the Caliphate', uses extensive footage shot from drones to provide atmospheric and panoramic shots of the Euphrates upon which fisherman sail and on the muddy banks of which children play.[96] This is just one example, but IS has utilised drone technology to amplify the overall quality of its video output.

Another propaganda element relates to the filming of attacks. IS repeatedly deployed drones to capture dramatic angles of suicide-vehicle-borne improvised explosive device (SVBIED) attacks (see image 1 below). These became particularly prominent when the group found itself on the defensive from the Iraqi Security Forces (ISF) in Iraq and the Kurdish-dominated Syrian Democratic Forces (SDF) in Syria. It was an important moment. Despite being on the defensive, propaganda moments like the ones below allowed the group to continue projecting a sense of force and momentum, both of which were needed to maintain morale among its supporters.

Image 1[97]
Suicide attack in the al-Tamim neighbourhood of Mosul conducted by Abu Mujahid al-Maghribi

Finally, drones can also serve as propaganda through their mere deployment. Although Hezbollah is not a salafi-jihadist movement (it is a Shia movement), it was nonetheless among the first violent non-state actors to try this method successfully.[98] Following an incursion into Lebanese airspace by the Israeli Defence Forces in 2005, Hezbollah drones (the Iranian supplied Mirsad-1) successfully flew over the Israeli city of Acre in northwest Israel, before returning to base. The drones themselves carried no payload and only incurred about 18 miles into Israeli airspace before leaving after 9 minutes.[99] The value in the incursion lay in the propaganda of the deed, with Hezbollah telegraphing its capacity not just to the Israelis but to the broader Arab world as well.

96 The territories of the Caliphate [*Rubue Dawla al-Khilafa; wilaya al-furat*], al-Furat Media, 1 October 2017.
97 Image taken from Christiaan Triebert, 'Mapping Mosul's SVBIED Attacks', Bellingcat, 9 January 2017. https://www.bellingcat.com/news/mena/2017/01/09/mapping-mosuls-vbied-attacks/.
98 Robert J. Bunker, 'Terrorist and insurgent unmanned vehicles: uses, potentials, and military implications' (Strategic Studies Institute and U.S. Army War College Press, August 2015), p.14.
99 'Hezbollah Mirsad-1 UAV Penetrates Israeli Air Defenses', Defense Industry Daily, 20 April 2005.

Reconnaissance

The easiest and most obvious use of drones is to deploy them for hostile reconnaissance, as IS did when confronted by the ISF and SDF. The ability to conduct aerial reconnaissance as a means to collect visual intelligence allowed IS to understand where opposing forces were advancing from and to react accordingly. Quite often, this would be done by launching an SVBIED, as shown in image 2 below (a secondary attack that followed the one depicted in image 1 above). In this case, the aerial reconnaissance has allowed Islamic State to identify the location of several Humvees from the ISF, which are then targeted for attack.

Image 2[100]
SVBIED attack by Abu Hamza al-Iraqi in al-Tamim neighbourhood of Mosul

In the image above, the green vehicle is the Islamic State SVBIED moving towards ISF forces marked in red (towards the top of the picture).

iii. Deployment

Attack Management and Planning

From the perspective of deployment, the most interesting way in which IS deploy their drones is to develop the reconnaissance aspect into an offensive tool. During the intense fighting that took place in densely populated, urban areas of both Mosul and Raqqah, both the ISF and SDF created roadblocks to hinder SVBIED attacks launched by IS. These would often consist of parking buses, cars and vans across roads in order to block the path of vehicles. IS was able to determine how best to break the barricades before advancing on the enemy. Image 1, above, shows an explosion after which a secondary vehicle, shown in image 2, is able to accelerate towards an ISF position. Image 3, below, shows the moments before image 1 was taken, revealing how IS was able to identify a roadblock that it then targeted for attack.

100 Triebert, 'Mapping Mosul's SVBIED Attacks'.

Image 3[101]
The moments before Abu Mujahid al-Maghribi's suicide attack

In the image above, the green vehicle is the SVBIED. It is moving towards the vehicle parked perpendicular to the road on the right-hand side. It is unclear from the video itself whether this specific bombing then paved the way for Abu Hamza al-Iraqi to proceed towards ISF positions that were located about one hundred metres away – but the underlying principle remains that IS used this tactic to clear the way for their attackers. As the battles around Mosul became more frenetic, the ISF began using more vehicles in their roadblocks to thwart IS's offensive capabilities. Nonetheless, as the images below show, the use of drones as an effective offensive reconnaissance tool meant the group could continually monitor ISF efforts on the ground.

Image 4[102]
Cars ringed in red show enhanced vehicular barricades constructed to thwart SVBIEDs from Islamic State members

101 Ibid.
102 Ibid.

In many cases, for reconnaissance purposes of this kind, commercially available drones equipped with high-quality cameras are sufficient and are known as 'spotter drones'.[103] Moreover, given their commercial nature, there are relatively few barriers to entry either in terms of acquisition or technical capability from the perspective of the operator.

Payload Delivery

It is widely estimated that from about January 2017, IS developed the capability to deliver modest payloads via adapted drones.[104] Since then a wide variety of different warheads have been used, among which the most common has been 40mm grenades.[105] The advantage these attacks have is that, they are more accurate than mortar attacks, event though they are less effective and carry a smaller payload.[106]

One clear area of limitation is that commercially available drones simply lack the mechanical power needed to transport more sophisticated weapons due to their weight and size. This makes them effective within a limited scope on the battlefield. To that end, research from Bellingcat has shown that two thirds of all attacks from IS drones were targeted against just two different types of battlefield nomenclature: (i) vehicles (Humvees, SUVs, trucks); and (ii) personnel (fighting positions, infantry).[107]

Image 5

Image from Islamic State propaganda of a warhead dropped from a modified drone

iv. Discussion

This case study has shown the remarkable innovation and development of commercially available drone technology by IS for nefarious purposes. While such innovation serves clear propaganda purposes, allowing the group to film offensive attacks, the real value lies in reconnaissance. As a reconnaissance tool deployed in dense urban areas, IS drones have not only been able to effectively reveal

103 Ash Rossiter, 'Drone usage by militant groups: exploring variation in adoption', *Defense & Security Analysis*, 34:2 (2018), pp.113–26, DOI: 10.1080/14751798.2018.1478183.
104 Don Rassler, 'The Islamic State and Drones: Supply, Scale, and Future Threats', CTC, 11 July 2018.
105 Nick Waters, 'Types of Islamic State Drone Bombs and Where to Find Them', Bellingcat, 24 May 2017. https://www.bellingcat.com/news/mena/2017/05/24/types-islamic-state-drone-bombs-find/.
106 Serkan Balkan, 'Daesh's Drone Strategy: technology and the rise of innovative terrorism', SETA Foundation for Political, Economic, and Social Research, 2017.
107 Waters, 'Types of Islamic State Drone Bombs'.

the fortification strategies of IS adversaries but have also been a tool to guide attacks against them. This has required almost no technological adaptation from what is already commercially available. Where innovation has become relevant is with regard to the type of warheads and their delivery into enemy positions. While commercial technology limits the size and scale of a payload that can be delivered, what IS has demonstrated is a highly effective proof of concept, albeit with modest means.

5. Conclusions

There is a permissive view towards technological creativity and innovation within salafi-jihadist literature. Salafi-jihadist groups generally embrace technological advances because of their belief in the 'neutrality' of technology. It is neither specific to any civilisation nor does its use depict any particular outlook on life. To that end, technological products such as assault rifles, grenades, explosives and drones are all merely tools to be used. There is some limited discussion surrounding the permissibility of WMDs, although this tends to focus on the human cost of using such weaponry. Thus the destructive nature of the technology is overlooked. This is mostly true for all battlefield innovations, where concerns primarily arise over deployment and use.

Discussion about the limits of permissibility has often extended into the esoteric and fantastical.[108] One of the most prominent disseminators of salafi-jihadist literature, al-Tibyan Publications, argues that any tactic or tool is permissible provided it does not result in an act that is expressly forbidden by Islam. The example they cite is inflicting death by sodomy because Islamic injunctions expressly prohibit the practice.[109] Salafi-jihadist clerics such as the Saudi preacher Nasir ibn Hamad al-Fahd therefore justified the use of WMDs against enemy states. 'Anyone who considers America's aggressions against Muslims and their lands during the past decades,' wrote Fahd, 'will conclude that striking her [with WMDs] is permissible merely on the basis of the rule of treating as one has been treated. No other arguments need to be mentioned.'[110]

That view was echoed by Ayman al-Zawahiri in his book *The Exoneration*. 'Is it not all the more proper for us to use such means [WMDs] by way of equivalence?' he asked. 'To bomb them as they are bombing us and blow them up as they are blowing us up.'[111] To support this position, both Fahd and Zawahiri used verses of the Koran, such as 2:194, which states, 'whoever has assaulted you, then assault him in the same way that he has assaulted you.'[112] Osama bin Laden therefore argued that al-Qaeda should be free to use whatever means it wanted. In a statement issued in January 2004 he declared:

> *'We do not differentiate between those dressed in military uniforms and civilians. American history does not distinguish between civilians and military, not even women and children. They are the ones who used bombs against Nagasaki. Can these bombs distinguish between infants and the military?'*[113]

108 Maher, *Salafi-Jihadism*, p.51.
109 *The Clarification Regarding Intentionally Targeting Women and Children*, p.46.
110 Nasir ibn Hamad al-Fahd, *A Treatise on the Legal Status of Using Weapons of Mass Destruction Against Infidels* (no publisher, 2003), pp.11–12.
111 Ayman al-Zawahiri, *The Treatise Exonerating the Nation of the Pen and the Sword from the Blemish of Weakness and Fatigue* (no publisher, 2008); Rolf Mowatt-Larssen, *Islam and the Bomb: Religious Justification For and Against Nuclear Bombs* (Belfer Center for Science and International Affairs, 2011), p.34.
112 Koran 2:194
113 John Miller, 'A conversation with the most dangerous man in the world', *Esquire Magazine*, February 1999, in Compilation of Osama Bin Laden Statements 1994–2004 by Foreign Broadcast Information Service (FBIS), p.96.

The use of WMDs and other mass casualty weapons arising from new technology are contested within Islamic jurisprudence, even though groups like al-Qaeda and Islamic State have broadly sanctioned their use. To rebut opposing views, they often invoke arguments of necessity and modernity.[114] The first of these positions is relatively straightforward, arguing that the 'duty' to wage jihad outweighs prohibitions against it. The second is more imaginative and is illustrated in a book written by the al-Qaeda theorist Abu Yahya al-Libi, *al-Tatarrus fi al-Jihad al-Mu'āsir* ('human shields in modern jihad').[115] The term 'human shields' in this context refers to the unintended victims of an attack, or collateral damage in human terms. Libi affirms classical views on *tatarrus* and argues that injunctions to guard against indiscriminate attacks on human targets are neither invalid nor misguided. 'Jihad should not imply non-respect for the sanctity of blood,' he explained, 'it does not dispense with the correct legal weighting.'[116] However, he argued that advances in modern weaponry made it difficult to adhere to rules about minimising civilian casualties. As al-Qaeda is an irregular group with limited and improvised means Libi explained the group inadvertently killed civilians because it is forced 'to use the kinds of weapons that cause large numbers of deaths because [we] cannot find better and more efficient ones in such cases.'[117] The classical rules were therefore not incorrect, but simply outdated. 'It is difficult to separate [combatants and civilians] in distinct cases such as the ones cited by the scholars of Islam in the distant past,' Libi argued.[118]

In all of the cases explored within this paper – IEDs, strategic communications and drones – it is clear that technological advancement has progressed at rapid pace. Not only have these technologies become exponentially more powerful, but their availability has also increased dramatically. It is also clear that the contemporary salafi-jihadist movement encourages malevolent creativity when considering the application of new technologies on the battlefield and that this emphasis on innovation is unlikely to change. Indeed, as the introduction revealed, these actors have consistently demonstrated their willingness and propensity to become early adopters of new technology insofar as it supports their aims, whether that was the use of cassettes to disseminate their message in the 1990s or the internet after 9/11. This eager embrace of technological advances by different groups serves as a useful indicator when considering the future of battlefield innovation: almost nothing is considered off-limits. We can expect the movement to embrace technological advances and to deploy them to the extent such technologies are available to them. Where points of friction do exist with regards to the use of technology, it tends to emerge only with regards to its application and the resulting impact on civilians – a concept that is itself hotly contested within salafi-jihadist literature.

114 Maher, *Salafi-Jihadism*, p.61.
115 Abu Yahya al-Libi, *Human Shields in Modern Jihad*, (no publisher, 6 January 2006).
116 Ibid.
117 Ibid.
118 Ibid.

Implications

This study has demonstrated that the contemporary salafi-jihadist movement explicitly encourages malevolent creativity when considering the application of new technologies on the battlefield and that this emphasis on innovation is unlikely to change. Given this appetite for technical and technological innovation appears to be largely unfettered by ideology, policymakers should respond by:

- Deploying continuous horizon-scanning research programmes looking to detect and mitigate early uptake of and/or experimentation with new and emerging technologies.

- Assessing the extent to which salafi-jihadists are more concerned with certain technologies for symbolic and prestige-related reasons (e.g., CBRN and drones).

- Revisiting and revitalising approaches towards strategic communications such that responses to salafi-jihadist narrative-led warfare are similarly nuanced and consistent.

Moreover, from an academic perspective, this study has highlighted that some critical knowledge gaps persist. While certain aspects of the challenges presented by malevolent creativity and innovation have been studied, especially in relation to specific approaches towards the deployment of violence, issues such as the role of ideology and non-violent innovative practices remain underexplored. Further research should focus on matters such as:

- How salafi-jihadist organisations foster innovative practices among supporters as well as official operatives, and what factors facilitate or inhibit these practices.

- To what extent do innovative practices diffuse across ideologies, and what appears to drive or facilitate this diffusion.

- How innovation – or, indeed, innovative thinking – has impacted on salafi-jihadist attitudes towards target selection and the permissibility of violence against civilians.

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