I. Articles

Swarmcast: How Jihadist Networks Maintain a Persistent Online Presence

by Ali Fisher

Abstract

Jihadist groups have used the opportunity created by the proliferation of social media platforms to create a persistent as well as ideologically cohesive presence for jihadist propaganda online which is intended to attract fighters and fundraisers to the cause. This article uses a range of big data techniques including network analysis, combined with examples of Jihadist communication strategy to identify the elements which have allowed groups to maintain a permanent presence for their content online, despite the efforts of western governments working with social media platform providers to prevent terrorist propaganda.

The article examines the activity of the 'media mujahedeen' – the supporters of jihadist groups who disseminate propaganda content online. It shows that the media mujahideen group operates through a dispersed network of accounts which constantly reconfigures much like the way a swarm of bees or flock of birds constantly reorganizes in mid-flight. Drawing on the metaphor of a swarm this article introduces the netwar inspired concept of the user curated Swarmcast and demonstrates the role of the Swarmcast in maintaining the persistent presence of Jihadist content online.

The article concludes that future policy to counter the dissemination of Jihadist content must challenge the Swarmcast on a strategic level. To be successful, strategies will need to take account of all three components of the Swarmcast when employing takedowns or other counter measures. This will mean focusing on strategic approaches to disrupting the system-wide emergent structures and collective behaviours rather than the tactical removal of individual accounts.

Keywords: Internet, Network, Jihadism, Al Qaeda, ISIS, Netwar

Introduction

The sophisticated use of online media platforms facilitates a blend of audio-visual media interspersed with writings that further sanction and explain specific ideological dimensions of jihadist activity. Jihadist groups have used the opportunity created by the proliferation of social media platforms to create a persistent as well as ideologically cohesive presence for jihadist propaganda online which is intended to attract fighters and fundraisers to the cause. This article uses a range of big data techniques, including network analysis, combined with examples of Jihadist communication strategy to identify the elements which have allowed groups to maintain a permanent presence for their content online, despite efforts of Western governments working with social media platform providers.

As the use of the Internet has grown, so extremists have utilised the opportunity it creates. Prior to 2011, al-Qa'ida (AQ) had established a "jihadist cloud" which, Nico Prucha argued, allowed AQ to remain resilient within "its virtual spaces and niches on the Internet", despite setbacks on physical fronts.[1] Since 2011 the Syrian conflict, recognised as the most 'socially mediated' in history, has developed into the new focal point for jihadi media culture.[2]

In this context, the Jihadist online presence has rapidly evolved into an open sub-culture that uses audio-visual elements to cultivate and strengthen group cohesion within the Mujahid vanguard, while also seeking

to propagate awareness amongst the general public in the hope of mobilizing it.[3] Operating within this sub-culture, some jihadist groups are increasingly sophisticated in their approach and are able to address specific diaspora communities while also propagating enmity towards the West in general. In addition, the networks through which Jihadist groups operate have evolved to allow them to maintain a persistent presence online. Previous studies have examined examples of the use of the Internet for terrorist purposes[4], the way specific groups including 'Islamic State' have operated online[5], and how such activity might be challenged.[6] More recent studies have begun to look beyond the 'official' accounts of extremist groups to analyse the support for jihadist groups online.[7] This has included an attempt to estimate the size of the group supporting ISIS on Twitter.[8] In addition, a study of Foreign Fighters' social media activity, revealed the importance of "so-called 'disseminator' accounts, which are run by sympathetic individuals who sometimes lend moral and political support to those in the conflict".[9]

This article extends existing research by assessing the role and strategic importance of these sympathetic individuals. Specifically it looks at how individual interactions between sympathisers aggregate into system-wide structures and collective behaviours which facilitate the persistent sharing of material. These individuals connect to form a dispersed network or "media mujahedeen". The Media Mujahedeen – the supporters of jihadist groups who disseminate propaganda content online – operate through a dispersed network of accounts which constantly reconfigures much like the way a swarm of bees or flock of birds constantly reorganizes in mid-flight. This marks a shift away from the broadcast models of mass communication (often referred to as 'one-to-many') which characterises radio- and television broadcasting, to a new dispersed and resilient form (inspired by 'peer-to-peer' sharing); the user-curated "Swarmcast".[10]

In the Swarmcast model there is no longer a clear division between the audience and a content producer in control of the means through which to broadcast content to that audience. Instead, once content is produced and released, it is often the distributing network of media mujahideen, rather than the original producer, that ensures continuing content availability. This type of activity can be understood with the help of the concept of netwar; defined as 'lower-intensity conflict at the societal end of the spectrum' in which 'a combatant is organised along networked lines or employs networks for operational control and other communications'. [11] That this conception of netwar applies to groups such as ISIS was recently highlighted by Robert Hannigan, Director of the UK government's intelligence and security organisation GCHQ, who wrote that large social media and web platforms have "become the command-and-control networks of choice for terrorists."[12]

An understanding of netwar and, specifically in the context of the jihadist modus operandi of Swarmcast, is an important aspect of future strategy as the U.S. and its Western allies are being drawn into open online warfare, on a battlefield chosen by their jihadist adversaries. The following sections of this article focus on: the meaning of netwar, its application in a Jihadist context, and the evolution of the jihadist strategy into the contemporary Swarmcast. The final section will build on a previous study of *Jabhat al-Nusra* to identify factors which underpin the Jihadist approach to netwar.[13] Through social network analysis this research shows how Jihadist groups choose to share content and how the interactions between individual media mujahideen aggregate to produce structures on a strategic, system-wide, level which facilitate the persistent presence for Jihadist content online. After identifying three elements which underpin the Swarmcast—Speed, Agility and Resilience—the article concludes that future policy to counter the dissemination of Jihadist content must challenge the Swarmcast on a strategic level. To be successful, strategies will need to take into account all three components of the Swarmcast when employing takedown or other counter measures. This will mean focusing on strategic approaches to disrupting the system wide emergent structures and collective behaviours rather than the tactical removal of individual accounts.

Netwar

This section examines the meaning of Netwar, how this applies in a Jihadist context, and the importance of embracing insights from the study of emergence and self-organisation in understanding the online behaviour of jihadist groups.

Jihadist groups, including Jabhat al-Nusra (JaN) and specifically the Islamic State of Iraq and Syria (ISIS), have been able to maintain a persistent online presence by sharing content through a broad network which has become one of the clearest incarnations of Netwar since it was first envisaged. The concept of Netwar is an important "emerging mode of conflict in which the protagonists—ranging from terrorist and criminal organizations on the dark side, to militant social activists on the bright side—use network forms of organization, doctrine, strategy, and technology attuned to the information age," according to an October 2001 RAND paper by David Ronfeldt and John Arquilla.[14]

Part of netwar is the increasing "irregularisation" of war since the end of the Cold War which has become a growing focus amongst analysts of strategy, such as Martin Van Creveld. [15] Concomitant with the increasing irregularisation was the increasing use of Information Technology within the military and civil society. The interrelated development of Information Technology (IT) and irregularisation, emphasises that conflicts would increasingly depend on information and communications. As argued in the *Advent of Netwar*, "cyberwar and netwar are modes of conflict that are largely about 'knowledge' – about who knows what, when, where, and why, and about how secure a society, military, or other actor is regarding its knowledge of itself and its adversaries."[16]

This fusion of informational and physical aspects of conflict is often exhibited by groups such as ISIS, epitomised by images of fighters wearing Go-Pro cameras to provide a first person perspective of combat. The use of the term 'netwar' was intended to highlight an approach to conflict at a societal level which involves measures short of all out war and which emphasises network forms of organisation, doctrine, strategy, and communication. While the concept of 'Cyberwar' focuses on the use of information-age technology in high intensity conflicts where formal military forces are pitted against each other, netwar was conceived as occurring at the societal end of the conflict spectrum, involving non-state, paramilitary and other irregular forces.[17] Interpreting the contemporary persistent presence of Jihadist digital content as the result of Netwar rather than Cyberwar, highlights that their activity is conducted by irregular forces who are focusing on societal change. For example, the purpose of producing content, as highlighted in greater detail below, is in part to cultivate and strengthen group cohesion within the Mujahid vanguard, guiding their behaviour in all aspects of their life.[18] In addition, the approved communication strategy of jihadist groups and the activity of the media mujahideen specifically,[19] seeks to propagate awareness amongst the general public in the hope of mobilizing it.[20] This emphasis on the strategic use of information, irregularisation, alternate operational structures, and the connection between physical battlefield and information based (or digital) forms of conflict, makes netwar an important conceptual tool for the understanding of Jihadist social media, and the Swarmcast.

For hierarchically organised government departments, groups based on dispersed network principles are "very hard to deal with. …What these have in common is that they operate in small, dispersed units that can deploy nimbly—anywhere, anytime."[21] Successfully executing netwar strategy requires that a group know "how to swarm and disperse, penetrate and disrupt, as well as elude and evade."[22] This type of behaviour is evidenced by the ability of Jihadist groups to continue to disseminate content in the face of concerted efforts by Western governments and social media platforms to disrupt their channels of communication. Jihadist groups have consistently shown their ability to swarm and disperse. Furthermore, their use of 'crowd-out'

strategies, has demonstrated their ability to penetrate and disrupt the communication channels for alternative voices.[23]

Initially, as David Ronfeldt and John Arquilla argued in their report *Swarming and the future of conflict*, the concept of Swarming was defined as:

> "*Seemingly amorphous, but it is a deliberately structured, coordinated, strategic way to strike from all directions, by means of a sustainable pulsing of force and/or fire, close-in as well as from stand-off positions. It will work best—perhaps it will only work—if it is designed mainly around the deployment of myriad, small, dispersed, networked maneuvre units (what we call "pods" organized in "clusters").*"[24]

This thought was further elaborated by Sean J. A. Edwards who argued that "Swarming occurs when several units conduct a convergent attack on a target from multiple axes."[25]

Both these interpretations of swarming in a military setting maintain a paradigm of centralised design, thereby contrasting hierarchies with networks as modes of operation.[26] However, swarms in nature occur without the centralised direction or design. Equally, in their most extreme incarnations, beyond that which Ronfeldt and Arquilla envisioned, the media mujahideen, and other dispersed networks, cease to depend on centralised direction, and instead adopt genuine swarming behaviours as observed in nature. This extends the understanding of netwar and requires netwar to include the importance of emergent behaviour and collective action in complex systems.[27]

In nature swarms often exist as an emergent behaviour and collective action in complex systems rather than due to centralised design. Works ranging from Alan Turing's Morphogenesis[28] to the work by Deborah Gordon on ant colonies[29] and Evelyn Fox Keller's writing about the erroneous belief in pacemaker cells controlling Slime mold[30] have all argued that the concept of centralised organisation has overshadowed the potential for individual interactions to aggregate into system-wide behaviours in complex systems.

As Jeffrey Goldstein put it "emergent phenomena are conceptualized as occurring on the macro level, in contrast to the micro-level components and processes out of which they arise."[31] Emergence her refers "….to the arising of novel and coherent structures, patterns, and properties during the process of self-organization in complex systems."[32] It is the reason why there are hurricanes, and ecosystems, and complex organisms like humankind, not to mention traffic congestion and rock concerts, according to Peter Corning.[33]

Interpreting the production, distribution and dispersal of Jihadist digital content as an emergent element of netwar, provides a conceptual framework through which strategic and system-wide assessments of Jihadist digital activities can be developed. Specifically, it can explain how the actions of individual members of the media mujahideen aggregate into system-wide structures and behaviours for the purpose of content distribution. Ayman al-Zawahiri, the successor of Osama Bin Laden expressed it in this way when he stressed that AQ "did not tie our jihad to any organization, to any [specific] leader or leadership, not to any group, and not to any name or territory."[34] This type of statement indicated that an individual can choose to join the movement, particularly online, without formal connection or explicit approval of senior figures.[35] This ability to act without explicit direction is also the reason why the Swarmcast can survive the loss of prominent nodes and 'official' accounts by constantly reorganising, just as a flock of birds reorganises in flight if attacked by a predator. The notion of Swarmcast combines the understanding of emergent properties of complex systems observed in nature with an emphasis on information-age technology with the irregularisation of conflict, alternate operational structures, and the connection between physical and Internet based battlefields.

Swarmcast: The Jihadist Approach to Netwar

This section examines the specifically jihadist approaches to Netwar and the evolution of the jihadist Swarmcast since the killing of Osama Bin Laden.

In line with the concepts of 'netwar' and 'emergence' in complex systems, Jihadist groups, such as ISIS and JaN, have adopted fluid, dispersed networks to distribute their media content online. In this approach, individuals have opted into a loose affiliation as media mujahideen, and actively redistribute content in an attempt to ensure it remains available despite ongoing content removal and account suspensions. This approach has evolved amongst Jihadist groups since the death of Osama Bin Laden. In addition to applauding his martyr's death, Jihadist groups rapidly began developing new ways to communicate their self-definition as the only true believers.[36]

In the wake of the death of Bin Laden, as Nico Prucha has demonstrated, Jihadist groups emphasized the strong connection between the physical and the digital battlefields–one of the key principles of netwar. A statement issued by *al-Fajr* on May 6th 2011, argued:

> *"Internet is a battlefield for jihad, a place for missionary work, a field of confronting the enemies of God. It is upon any individual to consider himself as a media-mujahid, dedicating himself, his wealth and his time for God."[37]*

From these initial statements, to the release of The Media Mujahid – First Steps to Professionalize the Media Jihad by the "al-Qayrawan" media foundation in the course of the 2012, and individual guides to using social media, the Jihadist operational approach has evolved into one which actively embraces dispersed forms of network organisation and strategy.[38]

The dispersed network of media mujahideen has allowed Jihadist groups to disseminate rich audiovisual content from the battlefield in near real-time. This serves to cultivate and strengthen group cohesion within the Mujahid vanguard, while also seeking to strike a responsive chord amongst the general public in the hope of mobilizing it.[39] The ability to produce content that is appealing to some users on social media is further augmented by the opportunity for sympathizers to interact through forums and social media platforms like Facebook and Twitter with prominent *Mujahidin* or supporters (*Ansar*) and ask for guidance or advice about the physical battlefield.[40] As Nico Prucha has argued, Twitter, YouTube and Facebook are natural choices for jihadist strategic communication:

> *Whether via 'retweets' on Twitter, posting comments on YouTube videos, or 'likes' on Facebook, by embracing the emergent behaviour and 'social search' which sites such as Twitter and Facebook facilitate, anyone can connect with and disseminate propaganda content outside of the 'classical forums'.[41]*

The increased use of social media was in part a reflection of changing Internet use in general, but it was equally a positive decision to engage via online platforms such as Twitter. To support those wanting to contribute to the effort of the media mujahedeen, and speed the adoption of particular social media platforms and digital technologies, practical guides were contributed by members of forums, blogs or posted on social media, which included lists of accounts to follow.[42] For example, a posting on the *Shumukh al-Islam* forum included a "Twitter Guide" (*dalil* Twitter). This 'guide' outlined reasons for using Twitter as an important arena of the electronic ribat ('front' in contemporary military terms); identified the different types of accounts which users could follow; and highlighted 66 users which *Ahmad 'Abdallah* termed the Most Important Jihadi Users and Support Accounts for Jihad and the Mujahideen on Twitter.[43]
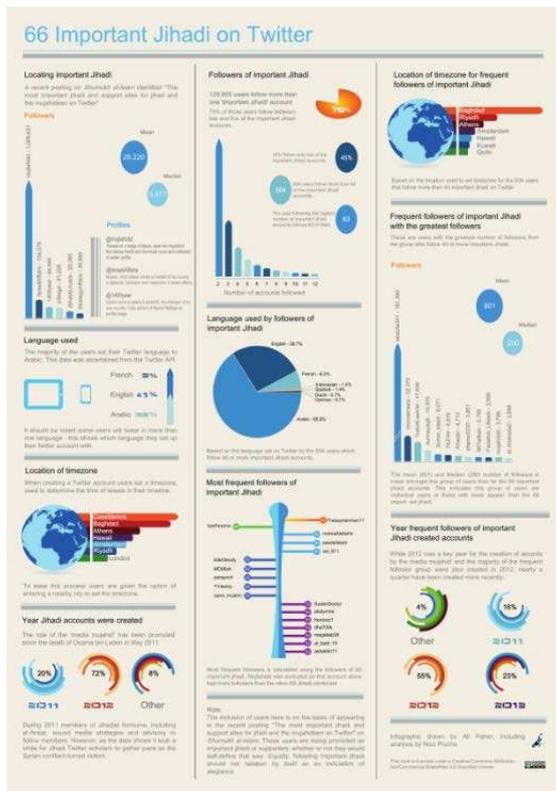
Full Version can be found here: http://bit.ly/14kYuuI

The recognition and approval[44] of the media mujahideen, the decision to engage via social media and the increasing violence in Syria provided an opportunity for jihadist groups such as ISIS and JaN to evolve their online strategies which became increasingly aligned with the concepts of netwar. In doing so both ISIS and JaN have enabled them to disseminate content through an interconnected network that is constantly reconfiguring, akin to the way a swarm of bees or flock of birds constantly reorganises in flight. It marks a shift from the hierarchical and broadcast models of communication during conflict to a new dispersed and resilient form which embraces the strength of emergent behaviour; the user curated 'Swarmcast'.[45]

Swarmcast: Speed, Agility, Resilience

The final section of this article provides a series of examples and introduces social network analysis to explore some of the key elements of the Swarmcast, namely speed, agility and resilience.

Resilience

Resilience against takedowns and account suspensions has become an important element of the Jihadist Swarmcast. This resilience has emerged over the last two years as jihadist groups have moved from broadcasting content via a few 'official' accounts to a dispersed network of media mujahideen who have been able to ensure that jihadist content maintains a persistent online presence.

The resilience of the Swarmcast originates from the interconnected nature of the social media accounts. For example within the Twitter guide (dalil Twitter) posted on the Shumukh al-Islam (SSI) forum, discussed previously, included a list of 66 twitter accounts which the author of the guide termed the 'Most Important

Jihadi Users and Support Accounts for Jihad and the Mujahideen on Twitter', which fellow forum members were encouraged to follow.

An analysis of the relational dynamics between the 66 Twitter accounts uncovered a network of 958 follower / following relationships. This level of interconnection gives the network resilience against accounts being suspended.

Interactive version can be found here: http://bit.ly/1cFbjDg

It is easy to note in the above visual representation of the network, that this is a distributed network, rather than a hub and spoke one, where one central node facilitates communication between the others. Hub and spoke structures have tended to be the result of 'coordination games', where there is a specific strong reason for individuals to huddle around a central node. However, centralised 'hub and spoke' networks can be very fragile, because a loss of the central node, or the strong reason to coordinate around a specific point causes, others in the network to lose contact.[46] This has been long known since simulations run by Paul Baran (published in 1964), showed that "the centralised network is obviously vulnerable as destruction of a single central node destroys communication between the end stations".[47] However, Paul Baran concluded that "extremely survivable networks can be built using a moderately low redundancy of connectivity level ... The redundancy level required to survive even very heavy attacks is not great – on the order of only three or four times that of the minimum span network".[48]

In our case, the network density of the graph is 0.2 on the directed graph; meaning around 20 percent of all the connections that could exist, actually do exist. (A score of 1 would represent a complete graph, where all connections would exist.) This is a sufficient level of interconnection for information to flow through the network even if some important nodes are removed – or accounts are suspended. This dispersed structure, which functions as a swarm on Twitter, has continued to develop with multiple back-up accounts allowing users to maintain contact after a specific account is suspended.

The evolution of the dispersed Swarmcast structure is not limited to follower/following relationships on social media but can also be observed in the content sharing behaviours of social media users. A case study of Twitter activity between January and March 2013 provided evidence of the emergence of jihadist social media strategies and the dispersed networks distributing content. This study has demonstrated how Jabhat

al-Nusra (JaN) used Twitter to disseminate content, and the type of content they shared.[49] The analysis of a JaN hashtag (جبهة_النصرة#) in 2013 provided two specific findings, first, social media provided a means for "official" channels to engage in active communication with sympathizers, and, second, the study concluded that

> "Twitter functions as a beacon for sharing shortlinks to content dispersed across numerous digital platforms ... Today's social media zeitgeist facilitates emergent behavior producing complex information-sharing networks in which influence flows through multiple hubs in multiple directions."[50]

Network analysis of tweets containing the same tag, (جبهة_النصرة#) during spring 2014 showed that users have continued to interact using the tag and that the network has remained distributed and resilient. Analysis of the retweets containing, (جبهة_النصرة#) reveals that JaN and a community of media mujahid sympathetic to their cause have maintained a dispersed network, as opposed to a single chain or hub-and-spoke structures. This is shown in the image below, with the top right cluster having the greatest concentration of accounts connected with JaN and sympathetic media mujahedeen. The level of interconnection in this dispersed network limits the potential impact that the suspension of major accounts–or important nodes in network terms–can have on the ability of the group to maintain a persistent and coherent presence online. [51]
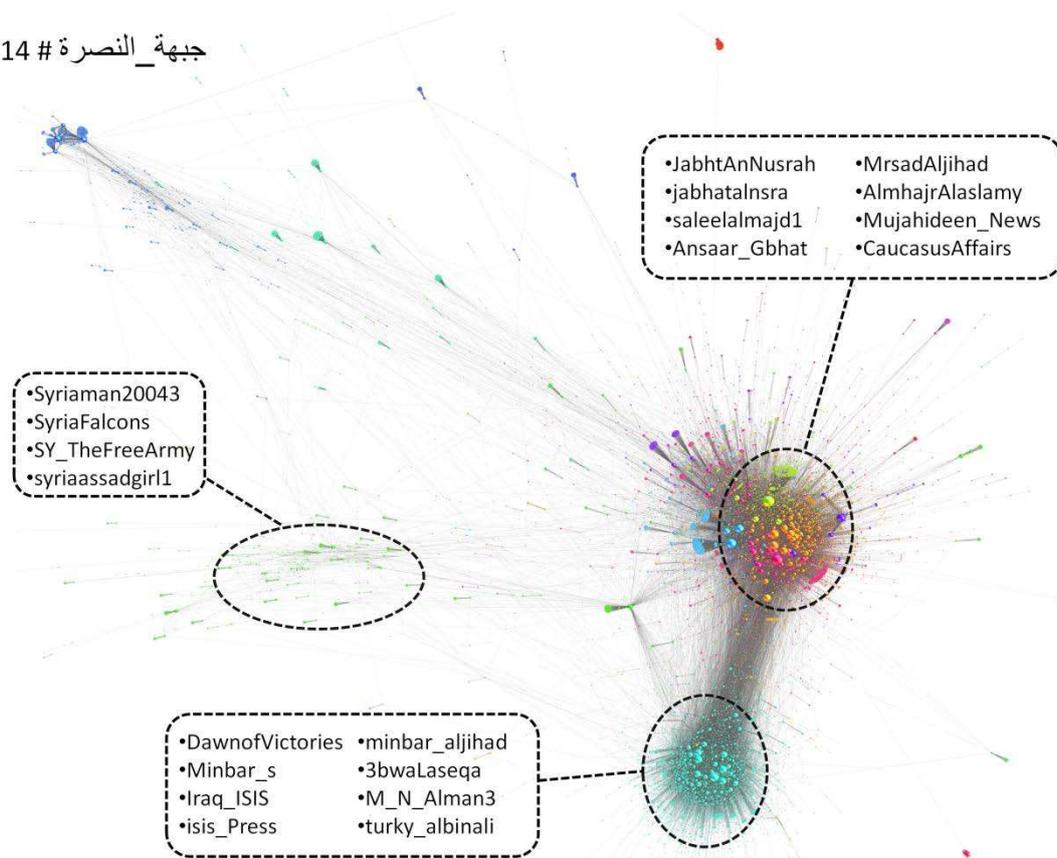
In addition to observing the resilience of the network around JaN, the analysis of other clusters revealed that groups with other allegiances, including ISIS, were also using the tag to distribute content. The cluster at the bottom of the image contains those likely to have greater sympathy for ISIS objectives – although mere presence in the cluster should not be considered evidence of allegiance. The cluster of accounts most likely to be sympathetic to ISIS, similar to the JaN sympathetic cluster, contains a sub-network of interconnected accounts, which provides resilience against disruption due to account suspensions. This is because the cluster

does not operate as a hub-and-spoke network, and as such there is no single hub point through which all communication and authority flows.

Instead, this dispersed form of network structure is attuned to the information age, in which a mode of conflict based on netwar is largely about "who knows what, when, where, and why, and about how secure a society, military, or other actor is regarding its knowledge of itself and its adversaries."[52] The structures imagined by Arquilla and Ronfeldt in their vision of netwar are sufficiently interconnected to reconfigure after disruption, as a flock of birds reconfigures after avoiding a predator. In other words, loss of a few important nodes cannot inhibit overall operational ability to maintain a persistent presence.

Speed

The second element of the Swarmcast is speed and, more specifically, the ability to rapidly transfer content or information to a wide network of individuals. This section shows how the media mujahideen successfully executed a netwar-based strategy through which they were able to distribute video content to a wide network.

Once the initial wave of postings had been removed from social media, sufficient numbers of users have downloaded the content to enable it to be reposted faster and in a greater variety of places than platform owners and government agencies can remove them. In doing so the Swarmcast demonstrated some of the key netwar behaviours: "swarm and disperse, penetrate and disrupt, as well as elude and evade."[53]

In essence, a video is at its most vulnerable at the moment before release, as at that moment it is stored on only a few devices. Hence, the group releasing the video has the tactical problem that it needs to efficiently distribute that video so it can be stored on sufficient devices, and so achieve a level of redundancy that the video can be, in effect, permanently available. The key element in this tactical problem is that public releases are the most efficient method, yet once the video is publicly released and the media mujahideen are alerted, so are the government agencies and platform providers who begin the race to remove the content.

The utility of speed in response to this tactical challenge, in effect the rapid and high energy swarming behaviour envisaged in netwar, was aptly demonstrated by the release of the video 4 صليل الصوارم (*Salil al-sawarim*–SAS4) by ISIS's media department al-Furqan. The film was rapidly distributed, creating a

multiplatform Zeitgeist, ensuring users had access to the content before it could be removed by platform owners.
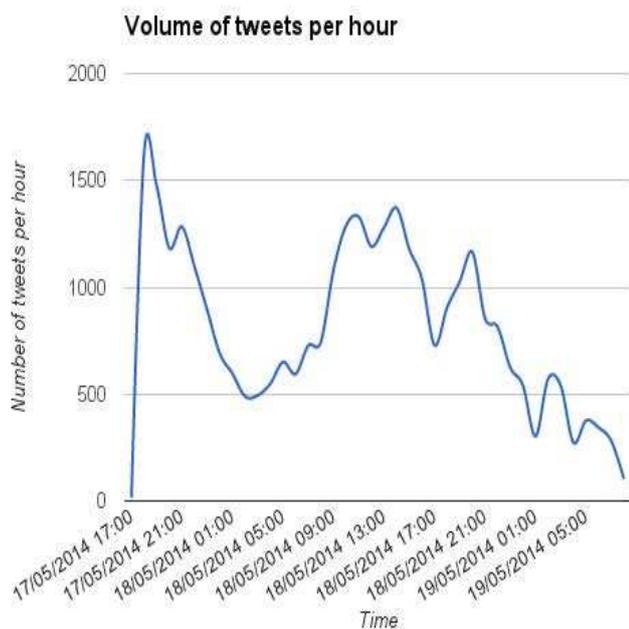
Al-Furqan's sister department, al-I'tasimu, announced the release of the fourth installment of *Salil al-sawarim* on Twitter on Saturday March 17th, 2014 at noon. The video was published via *al-I'tasimu's* high-profile Twitter account and the tier-one jihadist forums. In the first twenty four hours after the video was posted on YouTube, it was viewed 56,998 times with an average user watching a little over 17 minutes of the hour long film. By Monday morning when the video file was eventually removed from YouTube, this single posting of the video on YouTube had been viewed over 150,000 times with users collectively spending well over 680 days watching this single version of the video.

The ability to achieve this breadth of distribution was the result of the speed at which the media mujahideen reacted, causing sharp spikes in the volume of tweets and video views. Between 17th May and 8am on the 19th May a total of 32,313 tweets were observed carrying the name of the video in Arabic. This was an average of roughly 808 tweets per hour over a period of two days, with most tweets occurring in two periods of intense activity. In total the tweets containing the name of the film were tweeted by 6,428 Twitter users.[54]

Embedded within the tweets, were links to a range of platforms. YouTube was the most linked platform in these tweets including various different postings of the video, but other frequently linked domains included *justpaste.it* and *archive.org*. In addition, the most linked to *justpaste.it* page contains links to further locations where the video could be downloaded including *archive.org*, and *gulfup.com*.[55] This multi-platform approach to video release highlights the importance of speed within the Swarmcast. Users were able to rapidly locate, view and download the content for further distribution in the future.

Speed also embraces the ability to out-manoeuvre an adversary. For example, in contrast to the Media Mujahideen who rapidly reached a wide audience, accounts charged with countering jihadist social media content were silent on the release. The Twitter account run by the US State Department intended to engage jihadist accounts in Arabic (*@dsdotar*) did not tweet at all on the Saturday 17th and Sunday 18th May, as shown in their public timeline. By the time *@dsdotar* burst into action again on Monday 19th, "The Clanging

of the Swords, 4" had been viewed over 100,000 times and was on sufficient devices to remain effectively permanently available to web users (see below).

As a result, current efforts to stop ISIS and other groups from disseminating their propaganda have had little effect. There remains a persistent as well as ideologically cohesive presence for jihadist propaganda online. The use of netwar concepts allows ISIS, and jihadists in general, to withstand the U.S., and its allies' attempts to weaken their distribution networks by shutting down individual Twitter accounts and remove YouTube videos. This is because the Swarmcast, in contrast to traditional broadcast approaches, relies on the network of accounts run by the media mujahideen to maintain the availability of content once the original YouTube videos, the YouTube accounts that posted them, and even the Twitter accounts which tweeted links to them had all been removed by platform owners.

Agility

The final element of the Swarmcast is agility, the ability to move rapidly between platforms and even adopt new technologies for short periods of time before migrating to other digital locations. The advantage of such agility in maintaining a persistent presence online is that it takes time for the files posted across multiple different platforms to be located – by which time, as the release of the SAS4 video demonstrates, the content has reached a large network capable of reposting multiple copies, thereby ensuring this content can have a persistent presence online.

Agility is not merely breadth of platforms, but is also the ability to rapidly adopt new platforms, knowing some will rapidly become obsolete while others flourish. In the Swarmcast, moving between platforms forces the Western online adversaries to identify the adoption of a new platform and locate and contact the appropriate platform administrators before that content may be removed. The longer that takes to achieve, the more time the media mujahideen have to download the video content and repost it elsewhere.

For example, trailers for the ISIS-released *Flames of War* video could easily be found on YouTube. A single posting of the trailer was watched over 750,000 times and the average duration was over one minute for the 1 minute 27 second trailer.[56] The full version was also easily available via the agile, multiplatform release. For example, a version of *Flames of War* with Russian subtitles was posted on *Vimeo* and played over 13,000 times, while another version available on *LiveLeak* has been viewed 5,500 times. At least two versions of the full HD download were available on *Gulfup* and had been downloaded 21,550 and 5,600 times respectively. Another version of the video was hidden in the e-books section of *Archive.org* and had been downloaded over 12,000 times. Further versions were also available from *180upload.com* and *Mediafire. com*, while references to the film are still shared on Twitter using both Arabic (#الحرب لهيب) and English (#FlamesOfWar) tags.[57]

The rapid dispersal of content means that within a day of being released copies of jihadist films such as *Flames of War* were on thousands of devices around the world. With copies of a film dispersed so widely it then has a permanent presence as it can be re-shared any time a copy is removed or a user requests a specific video. Furthermore, if a user cannot locate a specific piece of content they can simply ask. This ability to request videos is an important element of the Swarmcast. For example, less than five hours after a Twitter user had requested a video produced by AQAP (Al-Qaeda in the Arabian Peninsula), that particular video was uploaded to YouTube and the link shared via Twitter (see below).
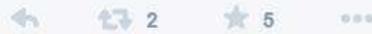
In addition to posting a single video to multiple platforms, the media mujahedeen are constantly reconfiguring the mix of platform which comprise the Swarmcast. At the start of 2014 there was increased use of Google+ and experiments with platforms such as *Friendica.eu* had little success. A recent attempt to establish an Internet presence is *VK.com* (a social network with headquarters in St. Petersburg). VK briefly appeared to be more successful at establishing relatively static libraries of content. VK's publicity claims that the platform is the "most visited site in Eastern Europe. It has over 60 million average daily users, 260 million registered accounts, and 2,800,000,000 daily page views."[58]

A list of VK accounts shared via *page* on *Justpaste.it*, for example, revealed an interconnected network of 'friend' relationships between these accounts. While these accounts were active, links to the content posted on VK were shared via other platforms, including lists of accounts made available on *Justpate.it*. However, these accounts were subsequently closed by VK after about a week of activity.
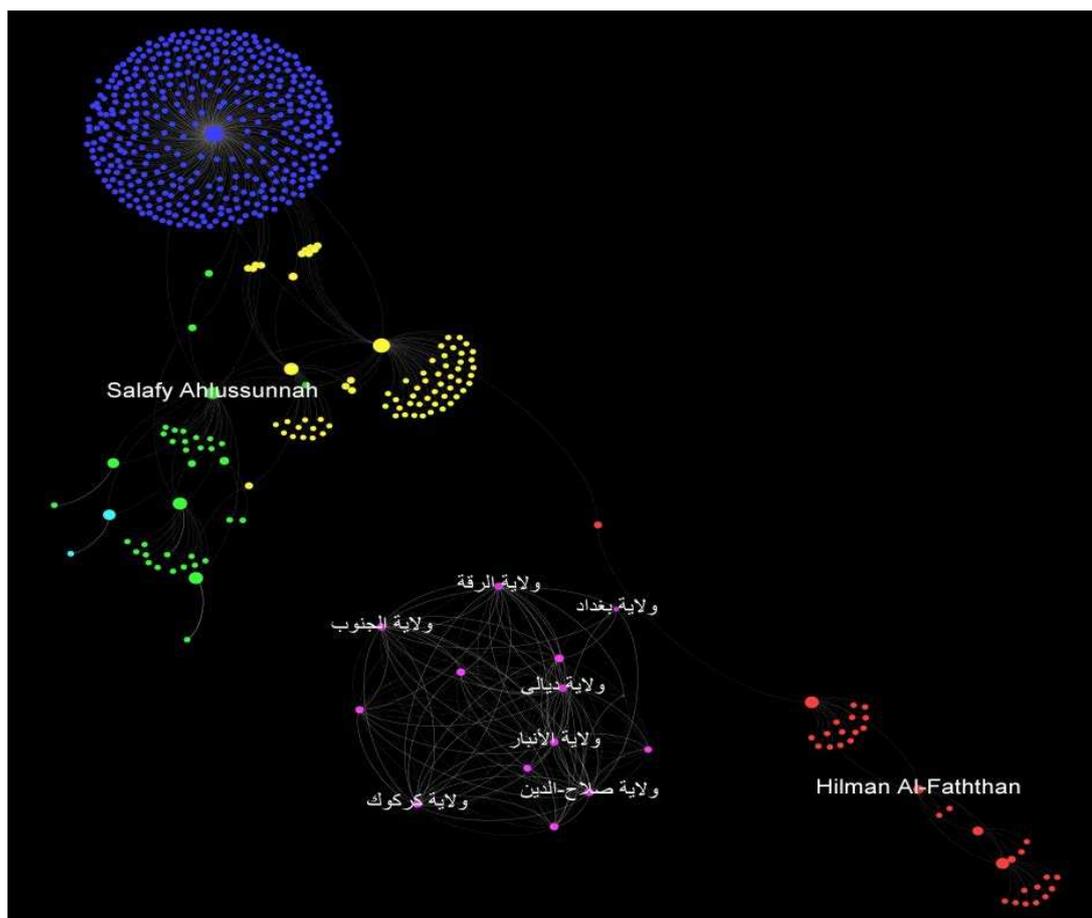
Network of connected accounts on VK (only those accounts found on the Justpaste.it list are labeled)

In a similar approach to the accounts listed in the in the Twitter guide, discussed earlier, the intent was not to analyse whether they should be identified as jihadist, but instead to identify those accounts which were being promoted as jihadist.

The accounts using Arabic display similar network characteristics to the networks of core jihadist users on Twitter. The network of accounts on VK has sufficient interconnection for the network to survive the loss of some members and additional resilience is provided by the links created to other platforms, including Facebook, Google+ and Twitter. Furthermore, while much interaction now takes place via social media, the classic forums still have a role in providing information allowing the swarm to reconnect and reconfigure. The way the combination of platforms is used, emphasises the need for a strategic level approach which treats Internet use as a multi-platform phenomenon.

Conclusion

According to a recent report by the London-based Institute for Strategic Dialogue, "It is now recognised that violent extremists have made effective use of the Internet and social media to advance their aims, whether through engagement, propaganda, radicalisation or recruitment." [59] The contemporary social media *Zeitgeist* facilitates emergent and self-organising behaviours within complex information-sharing networks. In these online networks, influence flows in multiple directions through multiple influential actors.

Since Twitter was first identified as the beacon for Jihadist content, the Internet has become an increasingly important 'battlefield for *jihad*' in which the media-*mujahideen* believe they conduct missionary work and confront the enemies of God.[60]

As an approach to Netwar, the Swarmcast has proven that it is very hard to deal with, as the media-mujahedeen are able to operate as small, dispersed units that can deploy nimbly—anywhere, anytime.[61] According to Director of GCHQ Robert Hannigan, ISIS "are exploiting the power of the web to create a jihadi threat with near-global reach."[62] To challenge these activities from a law enforcement perspective, Hannigan continues, will take "greater co-operation from technology companies" to develop "better arrangements for facilitating lawful investigation by security and law enforcement agencies than we have now."[63]

While "much of the emphasis to date has been placed on restrictive measures, such as take-downs and filtering emphasis to date has been placed on restricting counter-narratives.[64] Attempts to counter jihadist messages, for example by the Center for Strategic Counterterrorism Communications (CSCC), have included: "creating communities of interest, supporting positive voices, narrowing the space violent extremists have to work in, repeatedly and aggressively presenting the reality of what is going on on the ground," according to now former CSCC coordinator Alberto Fernandez."[65] In addition, The Think-again-Turn-away campaign run by the US State Department has produced images and video which seeks to counter ISIS, including a video "Welcome to the 'Islamic State' Land" which seeks to satirise elements of ISIS.[66] Other counter narratives, not run by the US State Department, including 'Abdullah X', produced by a UK-based former Muslim radical, have sought to develop a more direct message to extremists through framing YouTube videos in the style of graphic novels.[67]

However, in spite of these incipient efforts to develop counter-narratives and block websites, to date the components of the Swarmcast–Speed, Agility and Resilience–have ensured a persistent presence for Jihadist content online. Future policies to counter the dissemination of Jihadist content must challenge the Swarmcast on a strategic level and take account of all three components of the Swarmcast modus operandi when employing take-downs or other counter-measures. The challenge is not to disrupt the activity of individual members of the media-mujaheden, but to focus on strategic approaches to disrupt the system wide emerging structures and collective behaviours rather than go after individual accounts.

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Note

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[55] As in the earlier example of the Twitter Guide, justpaste.it is used to share lists of accounts users may wish to follow, such as @wa3tasimu.

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