The Metronome of Apocalyptic Time: Social Media as Carrier Wave for Millenarian Contagion

by J.M. Berger

Abstract

The Islamic State uses social media to activate a sense of "apocalyptic time" among its supporters online. Key elements of this campaign include instilling a sense of temporal acceleration and imminent arrival of end-times scenarios, leveraging the dynamics of social contagion and remote intimacy on beliefs that have an inherently viral appeal, and providing a vehicle for supporters outside its territories to immerse themselves in a highly idealized version of its millenarian project, the so-called caliphate. The Islamic State is the first group to employ these amplifying tactics on social media at an industrial scale, but it will likely not be the last.

Keywords: Jihadism, ISIS, Internet, millenarianism, apocalypticism, social media

Introduction

The Islamic State, also known as ISIS, is a hybrid organization with many facets, one of the challenges we face in understanding and countering its actions. While there are clear political dimensions to this phenomenon, ISIS has an equally clear apocalyptic and millenarian bent, both as a social movement and an organization. While its prominence varies in different aspects of the organization, it is especially prominent in ISIS's online messaging and social media activity.

The newest generation of electronic social media is an important tool in ISIS's call to action, relative to both foreign fighter recruitment and the encouragement of so-called "lone wolf" terrorist attacks. New technology offers significant new complications in dealing with the age-old problem of apocalyptic movements and their radically destructive potential.

For purposes of this discussion, which is intended as a preliminary stage-setting exploration of how these themes synergize with the use of new technologies, I will employ the following terms and definitions:

> **Apocalyptic:** Concerned with the imminent end or complete and radical transformation of the world, and signs and portents thereof.

> **Millenarian:** Concerned with the creation of a perfect society that will transform the world and establish a utopian reign on earth, generally for a set period of time prior to the end of the world or the end of a set age of linear history.

A legitimate debate endures over whether the leaders of ISIS are true believers, or whether they are employing apocalyptic ideas instrumentally. At this time, it is not possible to answer that question with great certainty. It is more clear that, at the footsoldier level, a significant number of adherents to ISIS's program believe in its apocalyptic aspects, and that these are one important component of its multifaceted appeal.

Questions regarding the beliefs of leaders are significant, particularly with respect to what ISIS leaders will do in the face of an existential challenge, but they do not change how the organization operates in terms of recruitment and messaging. Here, at least, we can draw relatively clear conclusions.

ISIS presents itself to adherents and adversaries alike as an apocalyptic sect, through clear and repeated reference to end times prophecy, and as a millenarian movement, through its consistent characterization of

its "caliphate" as an idealized society foretold by prophecy and destined to take part in a historically final war against non-Muslims. This is widely supported both by its messaging and propaganda, the statements of its adherents on social media, and interviews with ISIS members by the media.[1]

ISIS social media amplifies apocalyptic and millenarian memes and instills a sense of urgency in would-be adherents using methods that will be detailed below. Those who believe that the world is ending may be prone to act on that belief and this can potentially complicate efforts to dissuade or rehabilitate them. More directly, the apocalyptic dimension of ISIS is pragmatically significant for a number of reasons:

1. Apocalyptic beliefs have historically been understood as viral, or more specifically contagious. They have a tendency to spread swiftly through well-defined social networks.[2]

2. The most committed apocalyptic believers (those filled with a sense of imminence, discussed below) can be extremely fanatical, with a high tolerance for violence and heightened will to act.[3]

3. Apocalyptic believers are frequently unwilling to abandon their beliefs in the face of contradictory evidence and may become even more committed (and potentially violent) when their movement is faced with setbacks.[4]

All of these traits are important in characterizing the threat of ISIS, both as a magnet for foreign fighters and as inspiration to individual or loosely guided acts of terrorism. In both respects, ISIS is now far outperforming its predecessor, al Qaeda,[5] thanks in significant part to its success at using social media.

Richard Landes, writing in *Heaven on Earth: The Varieties of the Millennial Experience,* describes some of the critical elements required to activate "apocalyptic time," a experiential phenomenon that ignites the fervor of believers and helps millenarian movements achieve critical mass and distinguishes them from movements that are simply eschatological (i.e., concerned with the end of history *at some point in the future*):

> *Revolutionary ideologies only begin to appeal to large numbers (i.e., the meme only spreads widely) when people feel themselves close to the moment of transformation. … These voluntary apocalyptic communities are temporal hothouses, brief moments when a self-selecting group of strangers comes together in circumstances where all "normal existence" ceases and a series of interlocking and energizing paradoxes come to life. … The shorter the temporal horizon, the more intense the apocalyptic expectations become.[6]*

Within this framework, social media has inherent utility to amplify and facilitate the transmission and inculcation of apocalyptic beliefs through three key mechanisms:

1. Temporal compression: A belief that prophesied events preceding or accompanying the end of history are imminent or already underway, and that the clock is literally running out. Social media helps accomplish this through the pace of postings and updates relative to older forms of media.

2. Social contagion: Intense social contact and prolonged interaction spreads apocalyptic memes in an impactful, life-changing manner. Social media empowers such contact over wide geographical areas and also makes contact with potentially violent people safer for the curious.

3. Immersion: The diminishment and eventual replacement of normal existence with a heightened experience of an alternate interpretation of reality. This is achieved through both the volume of ISIS's media output, combined with the always-on transmission of that output online, and its content.

The following section elaborates on each of these mechanisms.

Temporal acceleration

"But can we trust him?" he said.

"Myself, I'd trust him to the end of the Earth," said Ford.

"Oh yes," said Arthur, "and how far's that?"

"About twelve minutes away," said Ford, "come on, I need a drink."

— Douglas Adams[7]

For an apocalyptic movement to take hold among a significant number of adherents, a sense of imminence is first required. Without imminence, such beliefs are merely eschatological. The apocalyptic herald cries "The end of the world is nigh!" not "The world will eventually end" (a point on which most people can agree in principle, even if they differ on the details). Hanging over every apocalyptic movement is a ticking clock, counting down the seconds until the End.

ISIS conveys and reinforces this sense of urgency with a remarkably high pace of media creation and dissemination. The pace only accelerates as ISIS gains territory and establishes branches around the world, each of which includes a media-generating division. From April 24 to May 24, 2015, ISIS distributed a minimum of 250 pieces of propaganda, using the most conservative criteria.[8] By comparison, al Qaeda has been almost completely silent since late 2014, and for years prior, its releases have only been sporadic since a burst of activity that followed the start of the Arab Spring.[9]

On social media, ISIS's pace of output is even more remarkable. Although ISIS employs every social media platform for its propaganda and recruitment purposes, the best large-scale data on its tactics is derived from Twitter, due to data availability and the platform's relatively transparent structure.

The pace of posting on Twitter serves as a kind of metronome. By following even a modest number of ISIS supporters online, an individual can receive thousands of messages per day, describing and celebrating the latest accomplishments being promoted by ISIS. When especially significant developments occur, the pace of posting accelerates, stepping up the intensity of the viewing experience. Deceleration occurs after such events, and account suspensions also limit the growth of the dissemination network, but the pace of output never approaches zero.

The average ISIS supporter on Twitter is far more active on Twitter than the average user of the platform overall. In addition to higher averages across the board, ISIS employs activists specifically for the purpose of flooding the Internet with content at a high pace, with such activism representing about 10 percent of overall activity from October to November 2014. Nearly 8 percent of sampled ISIS supporters tweeted more than 50 times per day, and almost 3 percent tweeted more than 150 times per day. Part of a coordinated effort, these accounts serve as pace-setters and can shape overall activity in the network.[10]

Thanks to the overall volume of activity, a sense of imminence is easy to achieve. Those who are attracted to ISIS can log onto social media at any time of the day or night, secure in the knowledge something momentous will be happening.

After the name of ISIS itself, the next most common hashtag used by members of the sample was "urgent," a heightening term. There are frequent references to apocalyptic prophecies and themes, including references to al-Malhama (an apocalyptic battle loosely akin to Armageddon in the Christian tradition); Dabiq, a Syrian town currently controlled by ISIS where a key End Times battle is prophesied; and the Dajjal, an eschatological figure comparable to the Antichrist.[11]

ISIS supporters on Twitter included a link to external media in approximately one out of every 2.5 tweets. [12] A very substantial amount of this external media is produced by ISIS itself, including communiques and news broadcasts, and imagery, consisting of military footage and civil society content in roughly equal proportions.

The volume of original content produced allows ISIS activists to provide significant variety and creates a sense that the organization is constantly in motion. This sense also reflects ISIS's actual pace of real-world operations, which is similarly frenetic. In addition to the steady flow of new content, discussed further below, social media supporters also frequently post links to previously distributed material.

Social contagion

> If you'd come today, you could have reached a whole nation.
>
> Israel in 4 B.C. had no mass communication.
>
> — *Jesus Christ Superstar*[13]

For an apocalyptic movement to grow, potential recruits must be exposed both to its message and to social contact with adherents. Historically, these requirements have exerted a limiting effect on growth, based primarily on geographic reach.

This limit is not absolute, but it is significant. For instance, early Christianity had a strong apocalyptic component that helped fuel remarkably rapid growth over a wide geographic area. Nevertheless, its growth is measured in decades and centuries, during which time its apocalyptic tone evolved and mellowed.[14]

The apocalyptic ideology of ISIS has spread globally in mere months. The most significant factors empowering this speed are technological – the vastly increased mobility allowed by modern transportation, and the rise of socially networked global communities via cheap, instantaneous and easy-to-use communication technologies.

Apocalyptic rhetoric has long been associated with social contagion.[15] The idea of social contagion among apocalyptic and millenarian believers has a long history. References to the "contagion" of Christianity can be found in Roman writings of the second century CE.[16] In 1917, a Methodist minister bemoaned the "contagion" of millenarianism in his day, saying "no serum has yet been discovered that seems potent enough to stay it."[17] As a caveat, the terminology may at times reflect the biases of those reporting (establishment speakers baffled or threatened by the appeal of a new religion), and the term is often used with extremism writ large.

To date, several studies have attempted to capture a magic formula pointing to which ideas will become contagious (or "viral") and which will not, with few conclusive and replicable results. Elements of excitement (related to imminence) may play a role, as well as ideas which transgress mainstream boundaries of belief in one way or another. For instance, some particular scandal stories generate more viral activity than straight news, even though straight news performs more reliably over time.

A promising line of inquiry looks at the structural features of a social network, for instance the density of connections or the number of connected components, metrics for which ISIS registers strong scores.[18] It is possible that the social network structures of people vulnerable to extremist or apocalyptic beliefs may be structurally suited in some way to mesh with networks that are apt to facilitate the transmission of such ideas, but this has not yet been studied in a quantifiable way.

Regardless, social contagion does play some role in the spread of apocalyptic ideologies, and not just among adherents. Contagion can also spread to antagonists, i.e., those who perceive the millenarian group as an existential threat or as the fulfilment of their own eschatological expectations, creating a vicious circle of reinforcement.

This further undermines any 'sober' discourse, and, under some rare conditions, can cause the conflict to metastasize far beyond its initial cultural matrix," Landes writes.[19] Similarly, Barkun warns that "the millenarians and the state possess mirror images of each other. These images are important because they have behavioral consequences." He argues that these images are overly simplified, "systematic and symmetrical misreadings" that "can powerfully affect group activation and violence."[20]

Studies have suggested the efficacy of social media in facilitating social contagion,[21] and most people can turn to anecdotal observation of "viral" phenomena to viscerally understand the speed with which memes can spread in the information age.[22]

The speed of contagion may have an amplifying effect on the contagion itself, contributing to temporal compression, as people marvel at an apocalyptic movement that they perceive "came out of nowhere" and antagonists react with disproportionate alarm, effects that can easily be seen in popular reactions to the rise of ISIS in 2014 and early 2015. Such reactions fuel curiosity about the movement and ultimately expand the reach of its messaging.[23]

Despite all the complexities detailed above, the core concept is relatively simple. Social contagion is the spread of memes or ideas through personal contact, and social media enables high levels of personal contact across wide geographies without the loss of intimacy that once attended such great distances.

Mediated Discovery

New information technologies, such as the printing press or shortwave radio, can find early adopters among apocalyptic movements.[24] However such technologies are not equally impactful. The telegraph and telephone enabled instant communication over distances, but they did not enable community discovery. The printing press and shortwave enabled community discovery, but not peer-to-peer communication.

Social media combines these two vectors to powerful effect. Social media platforms are designed for broadcasting content, enabling group conversations, and sharing information, in the form of pictures, audio, video and links to articles. New social media users seek out sources of information reflecting their interests and also share information about themselves. This process puts them in contact with like-minded others, allowing peer-to-peer conversations about the content to take place.

These shared interests allow users to quickly form focused communities. In most cases, the orientation of these communities is innocuous — a school, a shared professional interest, or a favorite television show. Most people have multiple interests, and therefore their social networks may not be especially cohesive or insular. In fact, their exposure to diverse sources of information over social media likely helps inoculate them against extremism.[25]

For people who are inclined toward, or vulnerable to, extremist or apocalyptic beliefs, social media offers a host of enabling technologies to discover other like-minded individuals, some of whom are recruiters, ready to respond quickly and even using the same discovery technologies to hunt for recruits. One of the few reliable indicators of who will become a violent extremist is who you know. The people most likely to become violent extremists are those who are friends of violent extremists.[26]

Social media makes it possible to know more people, to know people who are not in physical proximity, and to find and meet people who share your interests, no matter how fringe those interests might be.

In addition to organic factors that arise from information-sharing, machine mediation also plays a role in facilitating social contagion. Major social networks invest significant resources in facilitating connections among users. These can take different forms.

On Twitter, for instance, the "who to follow" function recommends accounts that are similar to accounts a user already follows. If a user follows some ISIS supporters, Twitter will recommend more.[27] Facebook offers lists of "people you may know." Both services will repeatedly recommend new accounts to connect with via email, unless that setting is explicitly disabled, and in sidebars on their respective web pages, which cannot be disabled.

As a result, users who react to online personalities or content may find themselves steered into more ideological social circles, even if that was not their original intent or interest. Tracked over time, the performance of Twitter recommendation algorithms was seen to decline as suspensions of extremist accounts and content increased. While relevant material was still recommended, it was less directly related to ISIS and included more noise. Similarly, on YouTube, related video recommendations were impacted significantly by the swift removal of ISIS propaganda. The risk of machine-mediated radicalization is mitigated by these steps, but not fully eliminated.[28]

Remote Intimacy

In the real world, the search for like-minded radicals is fraught with risks, from social and professional stigma to legal consequences to physical violence. Social media allows individuals to explore radical, extremist and apocalyptic ideas in a much safer environment through functional anonymity.[29] Aside from the well-known disinhibiting effects of anonymity online,[30] social media removes the imminent physical risk involved with speaking to a person who is potentially or proven violent, or who adheres to an extreme or violent ideology.

Despite the distance and lack of physical contact that create this safe zone for conversation, it is possible to forge very strong bonds of intimacy online. As the technology migrates from computers to phones, many social media users are "always on," a trait which ISIS courts with its overwhelmingly active online presence.

Users who interact every day or multiple times a day can develop a sense of "remote intimacy," even when separated by great distances.[31]

ISIS recruiters targeting the West exploit this dynamic aggressively with direct outreach by foreign fighters based in Syria. This personalized outreach can take on a very explicitly apocalyptic tenor.

Of particular interest to this conversation, one user tweeting in English and Arabic identifies his Twitter account using the name "End of Time Dreams" and serves as a broker between dreamers and allegedly authoritative third parties (more numerous and tweeting in Arabic) who interpret those dreams with a pro-ISIS bent.

Significantly, "End of Time Dreams" conversed over Twitter with Elton Simpson, one of two Americans who attacked a "Draw the Prophet Mohammed" contest in Garland, Texas. While a complete record of the exchange was unavailable, due to Simpson's account having been suspended, it appeared "End of Time

Dreams" arranged for a dream to be interpreted at Simpson's request several days before the attack took place.[32]

Immersion

> *Whoever controls the media, controls the mind.*
>
> — *Jim Morrison[33]*

The third major element in the activation of "apocalyptic time" is immersion, under which the "self-selecting group of strangers comes together in circumstances where all 'normal existence' ceases."[34]

High-volume social media activity and remote intimacy combine to create a dynamic in which immersion in apocalyptic time can occur. The final necessary component is content that depicts a virtual space (i.e., the caliphate) for adherents to share.

ISIS accomplishes this through the use of voluminous rich media, including photos and video. From April 24 to May 24, 2015, official ISIS sources disseminated at least 250 pieces of original media, including text, photos, audio and video, using a conservative methodology to identify content. Official images are also supplemented by photos uploaded by individual users or media workers in ISIS territory, who will at times provide additional details about the events depicted.

Content officially disseminated by ISIS during the period broke down into three roughly equal categories: 1) news and communiques, 2) reports on military operations, and 3) documentation of civil society in ISIS-controlled territories.[35]

The first category included messages from ISIS leadership, but the most frequent content consisted of regular audio news broadcasts, which were also broadcast over radio stations in ISIS-controlled territories. It should be noted that these were skewed toward military reporting.[36]

The second category, military operations, takes a variety of forms. While battle footage has long been part of jihadi propaganda, ISIS uses immersive techniques to draw viewers in, including digital enhancement of high-definition footage and first-person GoPro video filmed from behind the barrel of a gun, similar to highly immersive "first-person shooter" video games.[37]

Perhaps the most important content falls into the third category, depictions of civil society. Here, the millenarian aspect of the ISIS project can be seen in full flower, as it transmits carefully chosen images designed to depict a demented kind of utopia, where harsh, ultraviolent "justice" alternates with pastoral idylls and a full-service government.

These scenes included the hanging of flags around ISIS's Tigris province (located between Mosul and Anbar in Iraq), the presentation of a soccer ball to children in its Euphrates province (on the border between Iraq and Syria), and children at play in Kirkuk, among many others. Images of markets overflowing with food are also common. Photos of the ISIS black flag flying over a field of pink or purple flowers are particularly popular, with some Twitter users employing them on their profile pages.

Law and order features heavily in ISIS's civil society content, with images of police officers, traffic controllers and a significant number of public executions, including for sorcery, adultery and homosexuality.

In some ways, this virtual "caliphate" is arguably more compelling than living the real thing, since its auteurs have the option of staging its storyline carefully and omitting anything negative. A series of videos have

featured immigrants to the Islamic State testifying to the comfort and ease of their lives and urging viewers to join them.

Most apocalyptic cults only hope for the imminent arrival of their perfect, world-transforming society, although they will often attempt to model that society in their own closed communities. ISIS creates the impression it has already arrived, and adherents can immerse themselves in its details, thanks to these carefully mediated images and descriptions, which are broadcast around the world with little constraint.

Conclusion

While not the exclusive source of ISIS's appeal, the apocalyptic strain is an important one, repeatedly highlighted in its messaging and echoed by its adherents in interviews with the media.[38]

The chairman of the U.S. Joint Chiefs of Staff, Martin Dempsey, has characterized the group as employing "an apocalyptic, end-of-days strategic vision."[39] More on point, scholar Cole Bunzel, who has studied texts used by the explicitly apocalyptic Islamic movement responsible for the 1979 Meccan Rebellion, argues that ISIS draws inspiration from the same theological background. According to Bunzel, the leader of the 1979 movement, Juhayman al Otaibi, has been cited by ISIS scholars and is often referenced by ISIS adherents on social media.

Language used by ISIS to describe its caliphate also invokes hadith that make clear it sees the institution as the fulfilment of an eschatological prophecy regarding the state that will arise prior to the end of history.[40] Individual ISIS supporters online also quote prophecy in relation to strategic decisions made by ISIS.[41]

In a monitored list of 329 English-language accounts targeted by active ISIS recruiters, the "End of Times Dreams" account cited previously was the second-most influential, based on a weighted count of interactions, Although the sample may be influenced by the methods used to select members of the set, that method was based on observed interactions by users who took material steps to participate in ISIS activities.[42]

ISIS has developed a program on social media to advance its appeal as an apocalyptic millenarian movement, with the intention of furthering its objectives of increased migration to ISIS territories, foreign fighter recruitment and retention, and the inspiration of terrorist attacks outside the regions it controls.

Millenarian beliefs can take root in political situations that leave people socially unmoored, including local political or sectarian strife, economic displacement, humanitarian disaster, and other such disruptive social changes, as noted by Norman Cohn in his study of medieval Christian millenarian groups.[43] In this sense, ISIS's apocalyptic millenarian tendencies could be seen as a device (whether sincere or manipulative) to tap into diverse political and social streams of the 21st century, using a template that is not tied to a particular geographical or political situation, but rather to upheaval.

Social media may be particularly hospitable to the rise of millenarian and apocalyptic ideologies, given the traits discussed above, but ISIS's highly systematic presence online and large bricks-and-mortar establishment tend to obscure the picture. Some of the techniques ISIS employs have wider utility for extremist groups of all stripes. However, the combination of temporal acceleration, social contagion and immersion forms a powerful set of enabling mechanisms for its millenarian message.

While ISIS represents the first significant deployment of modern social media for this purpose, it surely will not be the last. Some movements may consciously emulate the ISIS model, but social media may also be organically suited to advancing extremist indoctrination among vulnerable audiences. Its format and

length limitations lend themselves structurally to the simplification of narratives, and the always-on mobile technology of the 21st century allows for a continuous connection to others who share the same extremist views, providing reinforcement and personal validation.

Adherents can, through self-selection and mediated selection, easily create and immerse in information streams that entirely reinforce their beliefs, organically excluding contradictory data and dissenting voices.

While social media use does seem to have a moderating effect on most people, by providing access to diverse communities and information sources, it also empowers self-segregation by those who are already vulnerable to extremist ideas and fringe beliefs.

Such movements can achieve critical mass by quickly attracting hundreds or thousands of adherents who can take part in coordinated action and may additionally avail themselves of easy transportation in order to congregate in physical spaces.

These factors empower such groups to have a disproportionate impact on national and global societies, far in excess of their relatively marginal numbers. Even ISIS, one of the largest extremist movements in recent memory, still commands a following that is only a fraction of 1 percent of the worldwide Muslim population it seeks to recruit. Yet ISIS has emerged as one of the most politically pressing problems of the day, in addition to its ability to wreak physical destruction and horrific violence in specific locales.

Social media analytics offer the opportunity for additional study that could shed light on the quantifiable utility of social media specifically to apocalyptic and millenarian strains; however, there are many challenges for such research. ISIS's systematic strategy online may not be usefully comparable to equivalent non-apocalyptic social movements that rely on more organic factors. And social movements are highly dependent on political and cultural factors that can complicate longitudinal study.

Nevertheless, preliminary approaches to this question could prove illuminating. By identifying online communities organized around ideologies or social movements, it is possible to measure the rate of transmission and pace of engagement, growth in the size of the network, network structural characteristics that aid or impede transmission, and other metrics that could be usefully compared.

Further research could shed light on both the fundamental qualities currently associated with apocalyptic movements (for instance, by quantifying contagion or disengagement rates) and the differences among various types of extremist groups and ideologies.

Perhaps more importantly, such research could highlight the differences between apocalyptic or extremist network activity and more mainstream social movements, such as the Arab Spring, which produced a massive and world-changing spike in activity online but largely failed to metastasize into durable institutions.

Ultimately, persistence is almost certainly key to exploiting the social media factors discussed herein, and this is an area in which ISIS excels, producing large volumes of content, at a consistent pace and over an extended period of time.

Fans of competing mainstream movements may not be able to tolerate the monomaniacal output necessary to activate temporal acceleration, social contagion and immersion, all of which inherently involve very high volumes of highly focused media consumption and social interaction. This has implications for analysis of efforts to counter violent extremism in the ISIS context, as pro-mainstream messaging and initiatives may be fundamentally incomparable to their extremist equivalents.

About the author: **J.M. Berger** *is a nonresident fellow in the Project on U.S. Relations with the Islamic World at the Brookings Institution.*

Notes

[1] Jessica Stern, "ISIS's Apocalyptic Vision," *Defining Ideas*, The Hoover Institution, February 25, 2015; Graeme Wood, "What ISIS Really Wants," *The Atlantic*, March 2015.

[2] Richard Landes, *Heaven on Earth: The Varieties of the Millennial Experience*, Oxford University Press (2011), 9, 55.

[3] Thomas Robbins and Susan J. Palmer, *Millennium, Messiahs, and Mayhem: Contemporary Apocalyptic Movements*, Psychology Press (1997), 16.

[4] Leon Festinger, Henry W. Riecken, Stanley Schachter, *When prophecy fails: a social and psychological study of a modern group that predicted the destruction of the world,* Harper Row (1964), 8.

[5] Ely Brown and Martha Raddatz, "ISIS on a 'Different Level' Than al Qaeda, Says Retired General John Allen," ABC News, February 8, 2015, http://abcnews.go.com/International/isis-level-al-qaeda-retired-general-john-allen/story?id=28809710; J.M. Berger, "The Islamic State's Irregulars," *Foreign Policy*, December 23, 2014; Alexander Smith, "How ISIS Capitalizes on Lone Wolves to Spread Terror at 'No Cost,'" NBC News, May 5, 2015, http://www.nbcnews.com/news/us-news/how-isis-uses-twitter-lone-wolves-carry-out-attacks-free-n353996, Peter Bergen and Emily Schneider, "Why ISIS Is Spreading Across Muslim World," CNN, November 19, 2014, http://www.cnn.com/2014/11/19/opinion/bergen-isis-recruiting-success/.

[6] Landes, *Heaven on Earth*, 13, 15, 16; for a relevant discussion from a slightly different angle, see also Ron E. Hassner, "Sacred Time and Conflict Initiation," *Security Studies*, Vol. 20, Issue 4, 2011.

[7] Douglas Adams, "The Ultimate Hitchhiker's Guide to the Galaxy" (DelRay, 2002), 16

[8] Posts to ISIS website ISdarat.org, as recorded by J.M. Berger

[9] Aaron Y. Zelin, "ICSR Insight: The State of al Qaeda," The International Centre for the Study of Radicalisation," April 13, 2015, http://icsr.info/2015/04/icsr-insight-state-al-qaeda/.

[10] J.M. Berger and Jonathon Morgan, "The ISIS Twitter Census," The Brookings Project on U.S. Relations with the Islamic World, Analysis Paper No. 20, March 2015.

[11] https://twitter.com/TaifatulMansoor/status/602910059757178880, https://twitter.com/ibn_alkhelafa_1/status/594970161712594944 [retrieved May 3, 2015 and archived], among many others

[12] Berger and Morgan, "The ISIS Twitter Census"

[13] Tim Rice, "Jesus Christ Superstar," libretto, 1970

[14] Elaine Pagels, *Revelations: Visions, Prophecy, and Politics in the Book of Revelation*, Viking (March 2012), 170-175; Bart D. Ehrman, *Lost Christianities: The Battles for Scripture and the Faiths We Never Knew,* Oxford University Press (2005), 119-120.

[15] Michael Barkun, "Millenialism and Violence" (Routledge, 2012) pp 6-7

[16] Pliny's Epistle to Trajan (Circa 112 CE), reprinted at http://www.pbs.org/wgbh/pages/frontline/shows/religion/maps/primary/pliny.html.

[17] Levi Gilbert, "Will Jesus Return in the Flesh," *The Methodist Review*, Volume 99 (J. Soule and T. Mason., 1917)

[18] e.g., Sinan Aral, Dylan Walker, "Creating Social Contagion Through Viral Product Design: A Randomized Trial of Peer Influence in Networks," Management Science 201157:9 , 1623-1639; Marek Opuszko and Johannes Ruhland, "Effects of the Network Structure on the Dynamics of Viral Marketing," Information systems research 19, no. 3 (2008): 273-290.

[19] Landes, *Heaven on Earth*, 51.

[20] Michael Barkun, "Millenialism and Violence" (Routledge, 2012) pp 6-7

[21] Kristina Lerman and Rumi Ghosh, "Information Contagion: An Empirical Study of the Spread of News on Digg and Twitter Social Networks," ICWSM 10 (2010): 90-97; Eric Sun, Itamar Rosenn, Cameron Marlow, and Thomas M. Lento. "Gesundheit! Modeling Contagion through Facebook News Feed," ICWSM. 2009.

[22] Jennifer van Grove, "The Dress Color Controversy Sparks 10,000 Tweets Per Minute," The Street, February 27, 2015, http://www.thestreet.com/story/13061985/1/the-dress-color-controversy-sparks-10000-tweets-per-minute.html.

[23] Google Trends, interest over time, search phrases "where did ISIS come from" and "worried about ISIS," http://www.google.com/trends/explore#q=where%20did%20isis%20come%20from%2C%20worried%20about%20isis&date=today%2012-m&cmpt=q&tz=

[24] Landes, *Heaven on Earth*, 187, 417, 469; "Hard Right Conspiracism & Apocalyptic Millennialism," Political Research Associates, Undated, http://www.publiceye.org/media/hardrit.html.

[25] Pablo, Barberá, "How Social Media Reduces Mass Political Polarization. Evidence from Germany, Spain, and the US," working paper, 2014.

[26] Carolin Goerzig and Khaled Al-Hashimi, *Radicalization in Western Europe: Integration, Public Discourse and Loss of Identity Among Muslim Communities*, Routledge (September 15, 2014), 18.

[27] J.M. Berger, "Zero Degrees of al Qaeda," *Foreign Policy*, August 13, 2013, http://foreignpolicy.com/2013/08/14/zero-degrees-of-al-qaeda/. The experiment described in the article has been replicated periodically since the initial publication. Twitter recommendations continue to identify related accounts to follow, however it appears the algorithm is less efficient in light of heavy suspensions of ISIS supporters by the social media service.

[28] Recommendations tracked over time using Twitter account created August 2013 and Facebook account created January 2013. YouTube recommendations examined based on upload of official ISIS communique on June 23, 2015.

[29] Online anonymity has limits, in the cases of criminal activity subject to surveillance warrants, hacking attacks designed to identify users, or open-source intelligence mining, but such intrusions tend to present themselves relatively late in the radicalization life cycle.

[30] John Suler, "The online disinhibition effect," *Cyberpsychology & Behavior,* 7, no. 3 (2004): 321-326.

[31] Samantha Henderson and Michael Gilding, "'I've never clicked this much with anyone in my life': trust and hyperpersonal communication in online friendships." New Media & Society 6, no. 4 (2004): 487-506.

[32] https://twitter.com/entimdrms/status/593175693720211457, https://twitter.com/entimdrms/status/593171926492827649, https://twitter.com/entimdrms/status/593171984713961472

[33] James Riordan and Jerry Prochnicky, "Break on Through: The Life and Death of Jim Morrison" (Harper Collins 1992), 20

[34] Landes, op. cit.

[35] Analysis of posts to isdarat.org, an online repository of propaganda maintained by ISIS members.

[36] e.g., https://isdarat.org/10711

[37] Jay Caspian King, "ISIS's Call of Duty," *The New Yorker*, September 18, 2014. ISIS has repeatedly used the technique since this article was written, including in a video released during May 2015, titled "Windows Upon the Land of Yemen."

[38] Wood, "What ISIS Really Wants," op. cit.; Mariam Karouny, "Apocalyptic prophecies drive both sides to Syrian battle for end of time," Reuters, April 1, 2014, http://www.reuters.com/article/2014/04/01/us-syria-crisis-prophecy-insight-idUSBREA3013420140401; David D. Kirkpatrick, "New Freedoms in Tunisia Drive Support for ISIS," New York Times, October 21, 2014, http://www.nytimes.com/2014/10/22/world/africa/new-freedoms-in-tunisia-drive-support-for-isis.html?_r=0.

[39] Spencer Ackerman, "'Apocalyptic' Isis beyond anything we've seen, say US defence chiefs," The Guardian, August 21, 2014, http://www.theguardian.com/world/2014/aug/21/isis-us-military-iraq-strikes-threat-apocalyptic

[40] Cole Bunzel, May 3, 2015, lecture at Boston University, posted online at https://www.youtube.com/watch?v=Rs4omAypK9s

[41] William McCants, "ISIS Fantasies of an Apocalyptic Showdown in Northern Syria," The Brookings Institution, October 3, 2014, http://www.brookings.edu/blogs/markaz/posts/2014/10/03-isis-apocalyptic-showdown-syria-mccants;

[42] Data collected from Twitter May 31, 2015, using methods detailed in the ISIS Twitter Census report, available online here www.brookings.edu/research/papers/2015/03/isis-twitter-census-berger-morgan.

[43] Norman Cohn, "The Pursuit of the Millennium: Revolutionary Millenarians and Mystical Anarchists of the Middle Ages," (Revised and Expanded Kindle Edition, Random House, 2011), Location 5282