Exploring the Utility of Memes for U.S. Government Influence Campaigns

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April 2018

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DRM-2018-U-017433-Final

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SPECIFIC AUTHORITY: N00014-16-D-5003 4/17/2018

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Approved by: **April 2018**

Dr. Jonathan Schroden, Director
Center for Stability and Development
Center for Strategic Studies

This work was performed under Federal Government Contract No. N00014-16-D-5003.
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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

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1. REPORT DATE *(DD-MM-YYYY)*
04-2018

2. REPORT TYPE
Final

3. DATES COVERED *(From - To)*

4. TITLE AND SUBTITLE
(U) Exploring the Utility of Memes for U.S. Government Influence Campaigns

5a. CONTRACT NUMBER
N00014-16-D-5003

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER
0605154N

6. AUTHOR(S)
Vera Zakem, Megan K. McBride, Kate Hammerberg

5d. PROJECT NUMBER
R0148

5e. TASK NUMBER
D103.00

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Center for Naval Analyses
3003 Washington Blvd
Arlington, VA 22201

8. PERFORMING ORGANIZATION REPORT NUMBER
DRM-2018-U-017433-Final

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Office of the Chief of Naval Operations
(OPNAV N81)
Navy Department Pentagon
Washington, DC 20350

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT

DISTRIBUTION STATEMENT A. Approved for public release: distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The term meme was coined in 1976 by Richard Dawkins to explore the ways in which ideas spread between people. With the introduction of the internet, the term has evolved to refer to culturally resonant material—a funny picture, an amusing video, a rallying hashtag—spread online, primarily via social media. This CNA self-initiated exploratory study examines memes and the role that memetic engagement can play in U.S. government (USG) influence campaigns. We define meme as "a culturally resonant item easily shared or spread online," and develop an epidemiological model of inoculate / infect / treat to classify and analyze ways in which memes have been effectively used in the online information environment. Further, drawing from our discussions with subject matter experts, we make preliminary observations and identify areas for future research on the ways that memes and memetic engagement may be used as part of USG influence campaigns.

15. SUBJECT TERMS
Meme, Memetic, Influence, Information, Media, Engagement

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
					Knowledge Center/Robert Richards
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. TELEPHONE NUMBER** *(include area code)*
U	U	U	SAR	84	703-824-2123

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

Abstract

The term *meme* was coined in 1976 by Richard Dawkins to explore the ways in which ideas spread between people. With the introduction of the internet, the term has evolved to refer to culturally resonant material—a funny picture, an amusing video, a rallying hashtag—spread online, primarily via social media. This CNA self-initiated exploratory study examines memes and the role that memetic engagement can play in U.S. government (USG) influence campaigns. We define *meme* as "a culturally resonant item easily shared or spread online," and develop an epidemiological model of inoculate / infect / treat to classify and analyze ways in which memes have been effectively used in the online information environment. Further, drawing from our discussions with subject matter experts, we make preliminary observations and identify areas for future research on the ways that memes and memetic engagement may be used as part of USG influence campaigns.

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Executive Summary

If you've spent any time online, you have probably encountered a meme. There are thousands of memes in circulation (with new ones being created regularly) on a variety of social media websites. The figure below represents one of the more popular memes, a riff on a scene from Peter Jackson's *Lord of the Rings* trilogy.

Figure. "One Does Not Simply Walk Into Mordor" (on memes)

Source: *imgflip Meme Generator*, https://imgflip.com/memegenerator, accessed March 24, 2018.

While images like the one above are popularly known today as "memes," a closer look at the concept reveals a nuanced and complex set of ideas worthy of further inquiry. The very concept of the term remains contested, and has evolved considerably since first introduced in 1976, but for the purposes of this report *we define* meme *as a culturally resonant item easily shared or spread online.*

While individual internet users have been using memes online for years, more recently there have been suggestions that memes might also have utility for the U.S. government (USG) as part of its information and influence campaigns to counter state actors such as Russia and non-state actors such as the Islamic State. However, the state of research on both memes and this type of activity—which we are referring to as memetic engagement—remains nascent.

To help address this, CNA initiated an exploratory study of the applicability, utility, and role of memes and memetic engagement within USG influence campaigns. *The purpose of this study is to further the conversation on memetic engagement within the*

USG influence community, as it considers novel approaches to countering state and non-state actors in the online information environment.

To do this, CNA reviewed the literature on the history of memes, memetic engagement, and so-called "memetic warfare," along with psychology and marketing literature that explores the role of virality and persuasion in changing people's attitudes and behaviors. Upon completion of the literature review, we conducted semi-structured conversations with multiple subject matter experts (SMEs) to better understand memes and memetic engagement. We used these insights, along with a selection of specific past examples, to develop an epidemiological framework to explore memetic engagement. Drawing on this literature, semi-structured conversations, and analysis of the meme examples, we developed a set of preliminary observations and concluding thoughts on the applicability of memes to influence campaigns and areas for further research.

Construct for analyzing memes

Borrowing from epidemiological models, we have identified three ways in which memes may be situated intentionally within information and influence campaigns: *to inoculate, to infect,* and *to treat.* We took this approach for two reasons: (1) in an effort to retain the original concept of memes by Richard Dawkins as a pseudo-biological concept; and (2) in order to reflect the epidemiological models applied to the study of radicalization and terrorism. The table below provides an overview of this construct.

Table. Overview of the "inoculate, infect, treat" construct

	Inoculate	Infect	Treat
Purpose	Prevent or minimize the effect of adversary messaging	Transmit messages in support of USG interests	Contain the effect of adversary messaging
Distribution	*Preventative* Anticipatory	*Offensive* Stand Alone Effort	*Defensive* Reactive
Message Disposition	Adversary	USG	Adversary

To illustrate the application of this framework, we include a set of 14 examples that show how visual memes have been intentionally used to *inoculate, infect,* or *treat* information in an influence campaign. While our data set is not exhaustive, this approach: describes and summarizes effective memetic campaigns; identifies approaches to memetic engagement that might be replicated or imitated; and engages with a wide variety of campaigns and actors.

The figure below highlights one example of what we would describe as effective memetic engagement. A pro-Russia media outlet falsely claimed that U.S. ambassador John Tefft had attended an opposition rally in Moscow, and supported this claim with a photograph of Tefft in attendance (see the figure below, left image). The U.S. embassy in Russia responded via memetic engagement—effectively *treating* the Russian attempt to *infect*—by turning Tefft's image into a meme. Specifically, the U.S. embassy identified the original source of the image, explicitly labeled it as fake news, and used Photoshop to create their own images of Tefft in a variety of locations (see the figure below, right image).

Figure. Example of U.S. Embassy memetic engagement in response to Russian disinformation regarding U.S. Ambassador Tefft

Observations from examples of memetic engagement

Looking across our data set of meme examples, we can draw a number of preliminary observations:

- **The effective use of visual memes is not limited to counter-radicalization efforts.** While memes certainly have utility in that area, they have also been deployed productively in response to terrorism more generally, to disinformation campaigns, and to government censorship.

- **The range of visual memes being deployed in memetic campaigns is far-reaching.** In some instances, the format is the familiar one of combining a well-known picture with words following an established grammar. Other

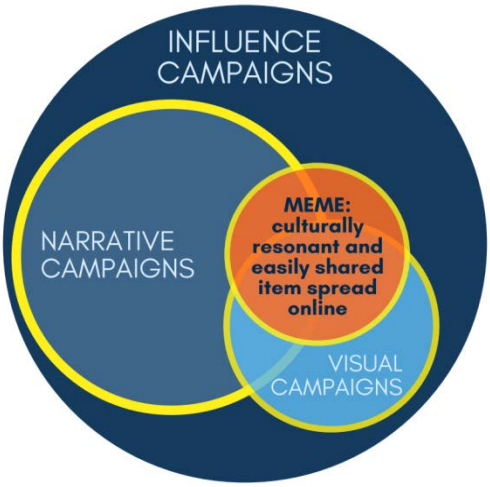
examples include doctoring situationally relevant images, creating brand new images with distinct messaging, and pairing images with common cultural references.

- **Visual memes often (though not always) use humor, irony, and sarcasm in order to resonate emotionally.**
- **Visual memes often transcend individual cultures and languages, and can reach broad communities of disparate actors in the online information environment.**
- **Well-targeted visual memes are culturally specific and situationally narrow.** This may seem to be a direct contradiction of the previous observation, but it is important to acknowledge that while memes may be understood across wide swaths of humanity, they will likely be *particularly* meaningful within specific cultures, languages, and situations.
- **Visual memes are utilized by all manner of online actors—governments, non-governmental organizations (NGOs), non-state actors, and individuals.**
- **Visual memes have been used effectively at the tactical level (e.g., combatting local government censorship) and the strategic level (e.g., against North Korean missile tests).**

Observations from discussions with SMEs

In examining the roles of memes and memetic engagement, we conducted semi-structured conversations with members of the USG influence community, as well as academic and private sector experts and practitioners in marketing, advertising, and psychology (to include a professional internet troll). Based on these conversations, we make several observations regarding the potential applicability of memes to influence campaigns. First, using memes effectively as part of such campaigns is neither predictable nor formulaic—significant cultural, contextual, and experiential knowledge is required, as is granular understanding of the intended audience. Second, contrary to popular belief, virality of a meme is not necessarily correlated with its persuasive power, and changes in people's attitudes do not necessarily correlate to changes in their behavior. As a result, while memes can be useful across the range of USG influence activities, they are likely to have the most effect when used as a complementary part of a broader campaign that includes other approaches to influence (e.g., diplomatic and face-to-face engagement). The figure below illustrates how memetic engagement fits within broader engagement activities.

Figure. How memes and memetic engagements fit into influence campaigns



In conclusion, we find that memes do have significant potential for enhancing USG influence campaigns but that additional research on memetic engagement can provide a better understanding of how to employ them most effectively. We suggest the following topics for additional research:

- What constitutes an effective memetic engagement? What type of visual, digital, and cultural information might one need to create an effective memetic engagement? How would this differ from the information needed to inform a traditional USG influence campaign?
- What can an effective memetic campaign accomplish? What makes a campaign effective? How can we assess and evaluate the use of memes?
- Who are the appropriate USG entities to lead the creation, dissemination, and evaluation of the use of memes?
- How much utility do memes have in shaping operations, in competition short of armed conflict, in irregular warfare, and in major combat operations? How and why might their utility and usage need to change across these activities?

We believe that visual memes and memetic engagement are tools with great potential for the USG as it looks to counter the information activities of state and non-state actors and more proactively engage audiences online. But we also believe that considerable additional research should be undertaken in order to ensure that the USG is maximally effective in the use of these tools.

Figure. Morpheus on the report following this executive summary

Source: *imgflip Meme Generator*, https://imgflip.com/memegenerator, accessed March 24, 2018.

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Glossary

CIA	Central Intelligence Agency
DOD	Department of Defense
DOS	Department of State
FBI	Federal Bureau of Investigations
GIF	Graphics Interchange Format
IC	Intelligence Community
ISIS	Islamic State of Iraq and Syria
NU	Nahdlatul Ulama
SME	Subject Matter Expert
USG	United States Government
VORTEX	Vienna Observatory for Applied Research on Radicalism and Extremism

Introduction

If you have been online in the past year—if you have connected to the internet via a desktop, laptop, tablet, or smartphone; if you have been on Facebook, Twitter, Tumblr, Instagram, or any social media platform; or if you have an email account and know someone inclined to pass along funny forwards—then you have almost certainly seen a meme. There are thousands in circulation (the website *Know Your Meme* lists over 4,000 "confirmed meme entries"), and new ones are being created weekly.[1] Some have been around for nearly a decade, while others have been around for a matter of days; some have broad appeal and can be found in relatively mainstream online communities, while others are relatively niche and might circulate only within closed online communities. One particularly popular example is that of Success Kid, depicted in Figure 1 and discussed in detail later in this report.

Figure 1. Success Kid on Memes

Source: *imgflip Meme Generator*, https://imgflip.com/memegenerator, accessed March 22, 2018

[1] "Meme Database," *Know Your Meme*, http://knowyourmeme.com/memes, accessed March 22, 2018.

While these images are popularly known as "memes," a closer look at the concept reveals a nuanced, contested, and complex set of ideas worthy of further inquiry. The term has multiple active definitions; it has been invoked for decades by analysts exploring its utility to the civilian and governmental influence communities; and it has been mentioned recently in the context of online radicalization campaigns by the Islamic State of Iraq and Syria (ISIS) and Russia's disinformation activities. In short, the very concept of *meme* remains contested and yet there is an increasingly long list of reasons compelling us to turn our attention to the role of memes in shaping public discourse, to the capacity of memes to affect individual attitudes and behaviors, and to the utility of memes as part of influence campaigns—which we are referring to as memetic engagement.

In light of these trends, CNA initiated an exploratory study on the applicability, utility, role, and value of memes and memetic engagement in USG influence campaigns. Our hope is that this study will further the conversation on memetic engagement within the U.S. government (USG) influence community, including policy-makers and military leaders, as they explore novel and innovative approaches to develop and employ strategies to counter state and non-state actors in the online information environment.

Specifically, this study addresses the following questions:

- What are memes? What is the history of memes?
- How and why do memes affect individual and organizational attitudes and behaviors? How and why do concepts such as virality and persuasion relate to communication via memes (i.e., "memetic communication")?
- Can memes and memetic engagement be useful in USG influence campaigns to counter state and non-state actors? Does memetic engagement fit into USG influence campaigns across the spectrum of conflict and range of activities?
- What type of framework can be used to design effective memetic engagement?

Research approach

This study was conducted in five steps:

1. We conducted a comprehensive literature review on the background and history of memes, memetic engagement, and memetic warfare, starting from the first articulation of the idea in 1976 and moving to the present. We used

this literature review to develop themes and insights that served as a foundation for the study.

2. We reviewed psychology and marketing literature to gain insights on whether memetic virality could be linked to changes in attitudes and behaviors, and whether memetic communication was well suited to the work of persuasion.

3. We conducted semi-structured conversations with subject matter experts (SMEs) across the influence community—to include the U.S. Departments of Defense and State (DOD and DOS, respectively), the intelligence community (IC), academia, marketing, and advertising—to further extrapolate, assess, and validate our preliminary insights on memes and memetic engagement, virality and persuasion, and the applicability and utility of memes and memetic engagement in USG influence campaigns.

4. We used these insights along with a set of epidemiological models to develop a framework to explore memetic engagement through a series of examples. Our framework classifies these examples into three categories: *inoculate, infect,* and *treat*. While additional models exist that explore memetic and online engagement, including the concept of memetic warfare as discussed in the appendix, our exploratory research suggests that epidemiological models prove a sound way to explore the utility of memes in influence campaigns.

5. Drawing on the literature review, semi-structured conversations, and analysis of these cases, we developed a set of preliminary observations from our interviews with subject matter experts, along with concluding thoughts on the applicability of memes to influence campaigns and ideas for further research.

Organization

This report is structured into six sections. First, we explore the concept of memes —examining original, current, and popular usages; offering our own definition of meme; and analyzing the relatively modest existing literature on the operationalization of memes. Second, we explore why memes are a useful tool for influence campaigns. Third, we present our concept for operationalizing memes through the epidemiological framework of *inoculate*, *infect*, and *treat* as depicted through select examples. Fifth, we offer preliminary observations from subject matter experts on memetic engagement. Sixth, we conclude with thoughts on the applicability of memes to influence campaigns and ideas for future research.

What are Memes?

Early definitions and theories

In 1976, evolutionary biologist Richard Dawkins suggested that ideas could be transmitted between people in much the same way that physical characteristics are transmitted between people. In this model, *memes*—small bits of cultural information, to include slogans, stories, fairytales, songs, jokes, beliefs, concepts, and worldviews—are transferred between people via interpersonal and social interactions. Importantly, Dawkins' model of idea transmission (i.e., memetic transmission) suggested that the persistence and spread of individual memes was the product of an evolutionary process. He asserted that memes are self-replicating in that the popularity or success of a meme ensures that it will be passed on in a process that sometimes involves evolution and mutation: "If a scientist hears, or reads about, a good idea, he passes it on to his colleagues and students. He mentions it in his articles and lectures. If the idea catches on, it can be said to propagate itself, spreading from brain to brain."[2] Additionally, he argued that memes are subject to copying error, variation, and mutation. In other words, memetic transmission involves some of the core components of Darwin's evolutionary process: variation, replication, and natural selection.

Since Dawkins' groundbreaking coining of the term, the concept of *meme* has evolved considerably. Early work began with the idea that a meme was a bit of cultural information that could be passed "from brain to brain," and the concept was used to explore how knowledge might be transmitted between individuals.[3] The discipline of memetics, which took shape in the mid-1980s, built directly on Dawkins' work to explore the idea that evolutionary models explained cultural information transfer between people and through generations. While some work on this topic emphasized that memes were passed via human imitation (and Dawkins' original definition emphasized this point), other scholarship posited that the transmission of ideas could be best understood via an epidemiological model that

[2] Richard Dawkins, *The Selfish Gene* (New York City, NY: Oxford University Press, 1989).

[3] Ibid.

foregrounded contagion. In this line of thinking, ideas could essentially "infect" individuals and societies in the same way that viruses infect a host. In short, two models took shape: one in which memes were passed via the act of human imitation, and one in which memes spread through a population as a contagion.[4]

More interesting than the imitation/contagion debate was work that focused on what made a specific meme successful. In other words, in an evolutionary environment shaped by natural selection ensuring the survival of the fittest, it was important to identify what made a meme fit. Different models were offered, but the same core themes emerged in each. One researcher argued, for example, that a successful meme went through four stages: assimilation, retention, expression, and transmission. In other words, a successful meme is:

- Assimilated: a person needs to notice the meme, understand the meme, and internalize the meme.
- Retained: a person needs to remember the meme (a process that is influenced by "the uniqueness of the meme, frequency of presentation, authority of the source, how easy it is to express, consistency with norms of a culture, and its usefulness to an individual").
- Expressed/Transmitted: a person needs to publicly express the meme so that it can be transmitted to another person.[5]

This early approach to meme fitness focused on the factors related to transmission of knowledge. Later research shifted the focus by exploring the work in cognitive psychology and information processing theory to ask "how [memes] leave lasting footprints."[6] One article concluded that meme fitness could be explained in terms of four criteria: "(1) In terms of a meme's compatibility with the brain's hardwiring (2)

[4] Additional work explored the role that memes played in human evolution, suggesting that a robust theory of memetic replication might account for human brain size or serve as an explanation for the development of human language. In this more aggressive framework, memes might be more important than genes: "Successful memes would begin dictating which genes would be most successful. The memes take hold of the leash." This theory is, however, neither prominent nor widely accepted. For an outline of this argument, and a series of counterarguments, see Susan Blackmore, "The Power of Memes," *Scientific American* 283, no. 4 (October 2000): 64-73.

[5] Francis Heylighen, "What makes a meme successful? Selection criteria for cultural evolution," paper presented at the 15th International Congress on Cybernetics, Namur, Belgium (1998, August), quoted in Gideon Mazambani et al., "Impact of Status and Meme Content on the Spread of Memes in Virtual Communities," *Human Technology* 11 (2015).

[6] Richard J. Pech, "Memes and cognitive hardwiring: Why are some memes more successful than others?" *European Journal of Innovation Management* 6.3 (2003): 174.

By the ease with which the meme can be replicated… (3) By a meme's ability to provide for or meet the needs of the people it encounters… (4) By an accidental or involuntary lodging of a meme or a part of a meme in the neural network."[7]

Modern interpretations

Little is published these days on the traditional understanding of memetics described above, and the term has evolved to such a degree that the mention of *meme* no longer brings to mind the work of Dawkins. Instead, the term has seen something of a rebirth in the age of the internet and, as Merriam-Webster notes, a meme is now popularly defined as "an amusing or interesting item or genre of items that is spread widely online especially through social media." As Dawkins himself noted in 2013:

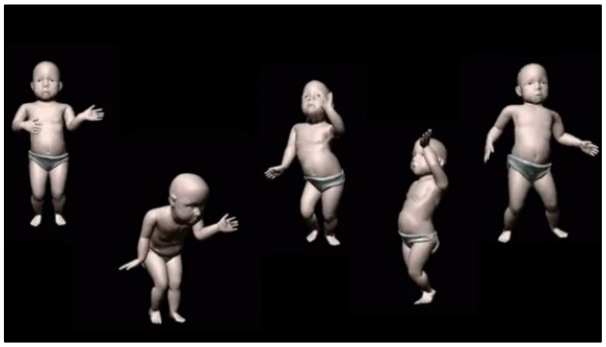
> The very idea of the meme, has itself mutated and evolved in a new direction. An internet meme is a hijacking of the original idea. Instead of mutating by random chance, before spreading by a form of Darwinian selection, internet memes are altered deliberately by human creativity. In the hijacked version, mutations are designed—not random—with the full knowledge of the person doing the mutating.[8]

Today the concept of *meme* is broadly understood to mean one of two things. In some instances, it might refer to a piece of cultural information that is shared or spread online: an image, video, hashtag, a Graphics Interchange Format (GIF) image, or textual statement. An early example would be Dancing Baby (1996), as shown in Figure 2.

[7] Richard J. Pech, "Memes and cognitive hardwiring: Why are some memes more successful than others?" *European Journal of Innovation Management* 6.3 (2003): 179.

[8] R. Dawkins (Performer) and Marshmallow Laser Feast (Director) (2013), *Just for Hits*. Available at: http://www.youtube.com/watch?v=GFn-ixX9edg, quoted in Bradley E. Wiggins and G. Bret Bowers, "Memes as Genre: A Structurational Analysis of the Memescape," *New Media & Society* 17.11 (2015): 1886-1906.

Figure 2. Dancing Baby meme



Source: Dancing Baby, *Know Your Meme*, accessed March 7, 2018, http://knowyourmeme.com/memes/dancing-baby.

More recent, but similarly popular examples, include those shown in Figure 3.

Figure 3. Some popular modern memes

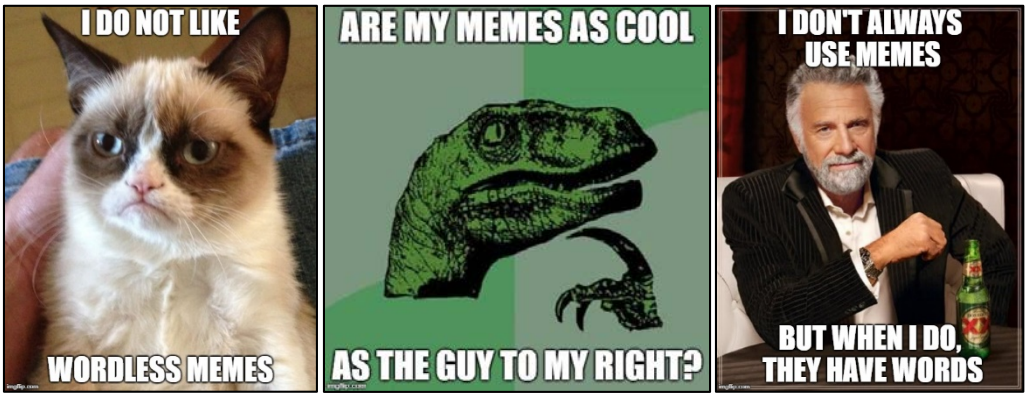
Note: Keyboard Cat (top left, 2007); Charlie Bit My Finger (top right, 2007), Kanye Interrupts (bottom left, 2009), Make A Wish's #SFBatkid (bottom right, 2013).

Source: *Know Your Meme*, http://knowyourmeme.com/memes, accessed March 7, 2018.

In other instances, and more commonly, the word *meme* doesn't refer to a "simple stand-alone artifact [but to] a full-fledged genre…with its own set of rules and

conventions."[9] In these cases, the meme—typically an image accompanied by text of some sort—develops its own grammar as it spreads: the image/meme conveys a specific message, and informal rules dictate what words/quotes can be meaningfully superimposed on the image. Such memes constitute a "shared cultural language" that often transcends the internet, ensuring that broad parts of the general population understand what is being communicated.[10] Examples of this type of meme abound and include those shown in Figure 4.

Figure 4. Memes combining images and text



Note: Grumpy Cat (left), Philosoraptor (center), The Most Interesting Man in the World (right).

Source: *Know Your Meme*, http://knowyourmeme.com/memes, accessed March 7, 2018; *imgflip Meme Generator*, https://imgflip.com/memegenerator, accessed March 22, 2018.

Critically, in each instance the core image is replicated by individuals who customize it to communicate distinct messages. Thus, these memes are not merely viral images shared online. They are, instead, *a type of communication*. These image-based expressions are persistent, in part due to the participatory nature of their construction.[11] A meme, in other words, has an organic lifestyle that approximately follows the progression described below.

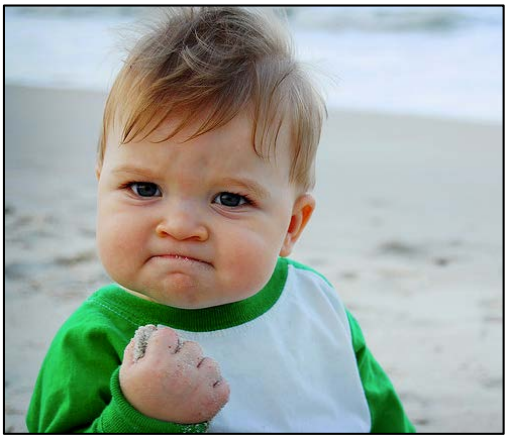
First, a single image is posted online. In the case of the Success Kid meme, the original was a 2007 photo of 11-month-old Sammy Griner, as shown in Figure 5:

[9] Bradley E. Wiggins and G. Bret Bowers, "Memes as Genre: A Structurational Analysis of the Memescape," *New Media & Society* 17.11 (2015): 1886-1906.

[10] Marion Provencher Langlois, "Making Sense of Memes: Where They Came From and Why We Keep Clicking Them," *Inquiries Journal* 6.03 (2014).

[11] Bradley E. Wiggins and G. Bret Bowers, "Memes as Genre: A Structurational Analysis of the Memescape," *New Media & Society* 17.11 (2015): 1886-1906.

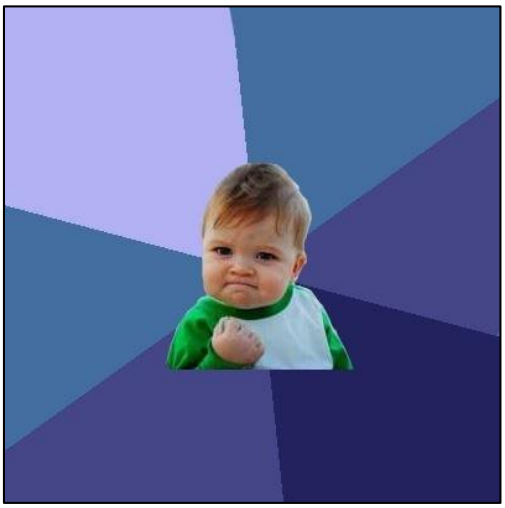
Figure 5. Success Kid, original



Source: Success Kid, *Know Your Meme*, http://knowyourmeme.com/memes/success-kid-i-hate-sandcastles, accessed March 7, 2018.

The image is then modified—in this instance, Sammy was photo-shopped onto a purple background, as shown in Figure 6.

Figure 6. Success Kid template



Source: Success Kid, *Know Your Meme*, http://knowyourmeme.com/memes/success-kid-i-hate-sandcastles, accessed March 7, 2018.

Finally, the meme was replicated extensively by a community that organically agreed upon a basic syntax, as shown in Figure 7.

Figure 7. Success Kid memes

Source: Success Kid, *Know Your Meme*, http://knowyourmeme.com/memes/success-kid-i-hate-sandcastles, accessed March 7, 2018.

In both contemporary cases—whether *meme* refers broadly to a piece of cultural information shared online, or narrowly to a specific image with accompanying text—the meme is culturally relevant, broadly resonant, organically developed, and voluntarily spread. These memes are, returning to the language of Dawkins, bits of cultural information that survive via replication, mutation, and natural selection. Thus, despite the significant shift away from early models and the language of Dawkins (i.e., models suggesting that memes mutated randomly), many of the core ideas developed by early thinkers remain relevant (i.e., questions about meme fitness and selection are still important). What makes these contemporary memes unique is simply that this process is intentional and purposeful, and that the memes themselves exist primarily in a virtual world.

Importantly, work on memes has consistently been somewhat controversial and contested. It has evolved considerably, from being articulated in models that foreground imitation, and in models that focus on contagion; to being applied to human biological evolution, and to the spread of information; to referencing all types of cultural information, and a narrow subset that appears online. And at times it has been taken up by thinkers that exist at the fringes of reputable science. One relatively recent article acknowledged this messy history quite clearly:

> Memetics, the study of meme theory and application, is a kind of grab bag of concepts and disciplines. It's part biology and neuroscience, part evolutionary psychology, part old fashioned propaganda, and

> part marketing campaign driven by the same thinking that goes into figuring out what makes a banner ad clickable. Though memetics currently exists somewhere between science, science fiction, and social science, some enthusiasts present it as a kind of hidden code that can be used to reprogram not only individual behaviors but entire societies.[12]

As this article notes, the question of how a meme functions—or what conceptual or practical value might come from the study of these processes—is not yet settled. Memes are, however, unquestionably ubiquitous and it thus seems clear that a robust engagement with the concept is critical. Understanding the history of the term informs this process, but the messy nature of the literature on memes makes it particularly important to accurately define and situate the concept.

Defining a meme

For the purpose of this exploratory study, we have adopted the following functional definition:

A meme is a culturally resonant item easily shared or spread online.

Of note, this definition is not *exclusively* visual, as memes can (and do) consist of non-visual items (e.g., a hashtag campaign). However, in the remainder of this paper we will focus on visual memes.[13] The decision to do this was motivated primarily by available resources. Defined most inclusively a meme is an idea, but an analysis of how ideas are important for influence campaigns was clearly too broad in scope. Additionally, we recognize that currently the term *meme* brings to mind funny images spread online (e.g., Grumpy Cat, Success Kid). This, combined with the shift (discussed in more detail below) to increasingly visual communication online, led us to focus our attention on the use of visual memes.

The reality that memes are ubiquitous does not, however, necessarily mean that they are an effective vehicle via which to engage in influence campaigns. As a result, it is necessary to consider both whether and how memes might be an important addition to activities and programs already underway. We do this in the sections that follow.

[12] Jacob Siegel, "Is American Prepared for Meme Warfare?" *Motherboard VICE* (Jan 2017), https://motherboard.vice.com/en_us/article/xyvwdk/meme-warfare.

[13] We are not, in other words, focused on memes that are textual (hashtags, slogans, etc.), musical (jingles, theme songs, pop hits, etc.), narrative (fairy tales, urban legends, etc.), and the like.

Why Visual Memes are Useful Tools for Influence

Across the fields of psychology, behavioral sciences, philosophy, and marketing, the literature agrees that images offer some advantages over text. These advantages—particularly those with respect to brevity and stickiness—make visual memes especially well-suited for influence campaigns. One advantage that memes have in influence campaigns is that they consist of perceptual information. In other words, they communicate information beyond the composition of the image itself. This intuited, or connotatively conveyed, information means that images take less time to consume than text and allow us to communicate complex concepts quickly.[14]

Further, advertising, marketing, and psychological research suggest that visual cues take advantage of heuristics, which enable our brains to retrieve information related to images more quickly than information related to text. Indeed, neurocognitive research confirms that the human brain is predominately an image processor whose sensory cortex is far larger than its word processing centers.[15] This reliance on heuristics is particularly acute for information presented online: technology increases reliance on heuristics, which reduces the likelihood that consumers will think deeply.[16] As a result, a rational discussion of an issue (e.g., an article exploring corruption in the upper tiers of the Islamic State) will be less effective than a visual campaign (e.g., a memetic engagement discrediting the group).

Finally, images tend to be emotionally evocative. In the visual domain, research has shown that emotional cues (both offensive and appetitive) are preferentially

[14] Peter J. Lang, *A Bio-Informational Theory of Emotional Imagery* (Madison, WI: Society for Psychophysiology, University of Wisconsin, September 1978), http://onlinelibrary.wiley.com/doi/10.1111/j.1469-8986.1979.tb01511.x/full; and David Kieras, "Beyond Pictures and Words: Alternative Information Processing Models for Imagery Effects in Verbal Memory," *Psychological Bulletin* 85, no. 3 (1978): 532-554.

[15] Haig Kouyoumhjian, "Learning through Visuals: Visual Imagery in the Classroom," *Psychology Today*, July 2012, https://www.psychologytoday.com/blog/get-psyched/201207/learning-through-visuals.

[16] Semi-Structured Discussion with Fellow, Social Innovation Lab, Stanford University, January 10, 2018.

processed in the brain.[17] Interestingly, research suggests that emotion can be elicited subliminally, suggesting that we do not need to be aware of *why* we feel a certain way for our attitudes and behaviors to be affected. The stickiness of emotionally evocative information and the effectiveness that images produce in eliciting these emotional responses creates a message efficacy that textual means of communication lack.[18] In combination, research exploring these ideas suggests that visual memes are particularly strong vehicles for communication.

While this behavioral science work is compelling, so is marketing research, which suggests that a failure to engage memetically effectively cedes a massive communications forum to those who are doing this work (e.g., state actors, non-state actors, citizens, etc.). To begin, the visual online arena is growing rapidly. A recent article in a marketing magazine suggests that over 80 percent of communications will soon be visual, and that visual content has overtaken textual content in terms of consumer engagement.[19] Additionally, a marketing website notes that readers engage with relevant infographics more than with the surrounding text (i.e., choosing the easily processed over the cognitively demanding).[20]

The same site also notes that images are liked and shared three times more frequently than other types of online content; that images radically increase the likelihood that someone will accurately follow instructions (people perform over 300 percent better with accompanying images); and that images significantly improve information retention (information paired with an image was retained for longer than information presented alone).[21] Data analysis also suggests that in some instances visual content has meaningfully influenced behavior as people were more likely to

[17] Antje BM Gerdes, Matthias J Wieser, and Georg W Aplers, "Emotional Pictures and Sounds: A Review of Multi Modal Interactions of Emotion Cues in Multiple Domains," *Frontiers in Psychology,* December 2014, https://www.frontiersin.org/articles/10.3389/fpsyg.2014.01351/full.

[18] Kirsten I. Ruys and Diederik A. Stapel, "The Secret Life of Emotions," *Psychological Science* 19 (4) (2008): 385; Association for Psychological Science, Cause and Affect: Emotions Can Be Unconsciously and Subliminally Evoked, *Science Daily Review* (April 2008), https://www.sciencedaily.com/releases/2008/04/080428155208.htm.

[19] Larry Kim, *16 Eye-Popping Statistics You Need to Know About Visual Content Marketing,* INC Online, November 2015, https://www.inc.com/larry-kim/visual-content-marketing-16-eye-popping-statistics-you-need-to-know.html.

[20] Jesse Mawhinney, *42 Visual Content Marketing Statistics You Should Know in 2017,* Hubspot Online, February 2018, https://blog.hubspot.com/marketing/visual-content-marketing-strategy

[21] Ibid.

purchase a product if the advertisement was a video.[22] In other words, online visual engagement is growing, and increasingly sophisticated tools and metrics for engaging in this forum now exist. Thus, it appears that there are considerable reasons for further exploration of the use of memes as part of influence campaigns.

In the next section, we will present a number of specific examples of the use of visual memes for various influence purposes.

[22] Larry Kim, *16 Eye-Popping Statistics You Need to Know About Visual Content Marketing,* INC Online, November 2015, https://www.inc.com/larry-kim/visual-content-marketing-16-eye-popping-statistics-you-need-to-know.html.

Examples of Visual Memes and Observations on their Use for Influence

Borrowing from epidemiological models, we have identified three ways in which memes may be situated intentionally within information and influence campaigns: *to inoculate, to infect,* and *to treat.* We have adopted this model for two reasons: first and foremost, we felt that applying an epidemiological model was in keeping with the original understanding of memes, as defined by Richard Dawkins, as a pseudo-biological concept; and second, this model is adapted from the existing body of literature related to radicalization and terrorism wherein epidemiological models have been applied in a number of studies to the transmission of radical and extremist narratives. In light of this study's limited scope, we synthesized and distilled the existing literature's concepts into *inoculate*, *infect*, and *treat* categories. Table 1 below provides a brief overview of this construct.

Table 1. Overview of the "inoculate, infect, treat" construct

	Inoculate	Infect	Treat
Purpose	Prevent or minimize the effect of adversary messaging	Transmit messages in support of USG interests	Contain the effect of adversary messaging
Distribution	*Preventative* Anticipatory	*Offensive* Stand Alone Effort	*Defensive* Reactive
Message Disposition	Adversary	USG	Adversary
Primary sources used to develop this concept below; additional sources in references section [23]			

[23] Kenrad E Nelson. *Epidemiology of Infectious Disease: Theory and Practice,* 3rd Edition (Burlington, MA: Jones and Bartlett Publishing, 2014); Mauricio Barreto, Maria Gloria Teixeira, and Eduardo Hage Carmo, "Infectious Diseases Epidemiology," *Journal of Epidemiology and Community Health* 60, No. 3 (March 2006): 192-195, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2465549

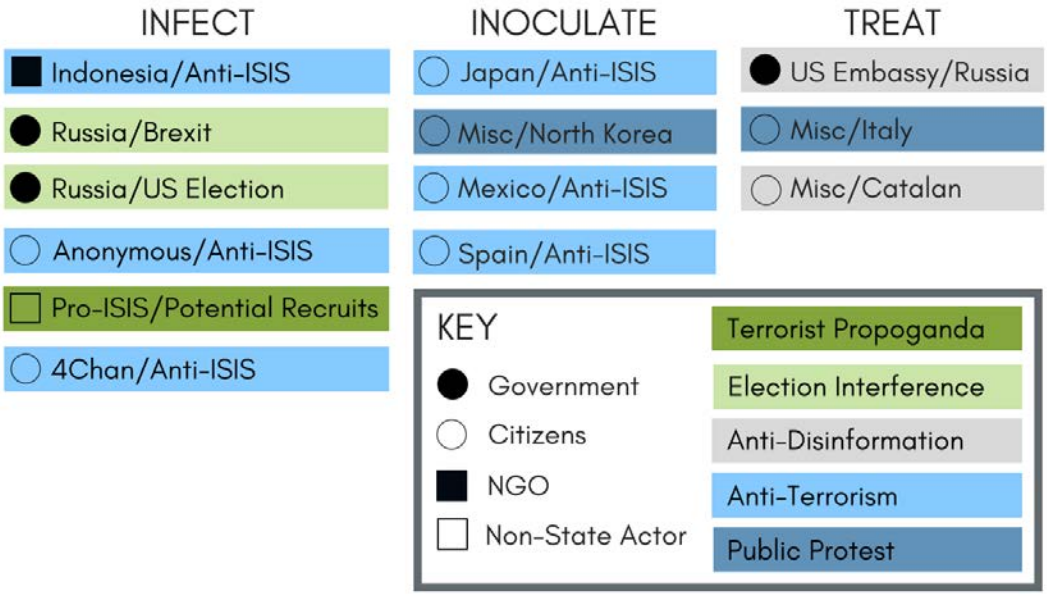
To highlight and illustrate the application of this framework, we include a set of examples below that show how visual memes have been used to *inoculate*, *infect*, or *treat* information in an influence campaign. These examples were identified as effective in part via an application of the concept of meme fitness (discussed above): they were assimilated (i.e., they were noticed and understood); they were retained (i.e., they were remembered enough to engender engagement); and they were expressed or transmitted (i.e., relevant images were shared and posted publicly).[24] In short, we take the examples below to be examples of effective memetic engagement for three reasons: (1) they were targeted to a specific issue, (2) they resonated with a relevant population, and (3) they were fit enough to gain traction (both in the form of memes posted, and in the form of mainstream media coverage). These examples are not exhaustive, but represent a sample of cases from which we can gain greater insights into the applicability and operationalization of memes in influence campaigns.

Our research suggests that the epidemiological approach has unique value because it is descriptive, prescriptive, and inclusive: this approach offers a clear summary of effective memetic campaigns; it identifies approaches to memetic engagement that might be replicated or imitated; and it capaciously engages with a wide variety of campaigns and actors. Figure 8 on the next page summarizes the examples we discuss—showing the range of issues and environments in which memetic engagement has been used.

Randy Borum, "Radicalization into Violent Extremism II: A Review of Conceptual Models and Empirical Research," *Journal of Strategic Security* 4, No. 4 (Winter 2011): 37-62, http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=1140&context=jss.

[24] Francis Heylighen, "What makes a meme successful? Selection criteria for cultural evolution," paper presented at the 15th International Congress on Cybernetics, Namur, Belgium (1998, August), quoted in Gideon Mazambani et al., "Impact of Status and Meme Content on the Spread of Memes in Virtual Communities," *Human Technology* 11 (2015).

Figure 8. Summary of examples



Source: CNA

Inoculate

> *To use a meme in an effort to protect against a threat or anticipated attack. Using memes to preemptively address—with an emphasis on delegitimizing or undermining—a message or attack expected from another actor.*

Exemplar: Japanese citizens respond to the Islamic State

Actor: Japanese citizens
Message: Anti-ISIS
Target Population: ISIS, Japanese people

On January 20, 2015, ISIS released a video featuring Japanese prisoners Kenji Goto and Haruna Yukawa. The video functioned as a ransom request: the militants demanded that the Japanese government pay $200 million in order to secure the hostages' release.[25] The video also included a message to the Japanese public:

> To the Japanese public, [..] you now have 72 hours to pressure your government into making a wise decision by paying $200 million to save the lives of your citizens.... Otherwise, this knife will become your nightmare.[26]

The Japanese public, however, did not cooperate with ISIS's request. Instead, they embraced a hashtag that translated to "ISIS Crappy Photoshop Grand Prix," and embarked upon an aggressive campaign mocking ISIS and the armed militant featured in the video.[27] Importantly, this hashtag campaign—which included a significant memetic engagement—aspired in part to *inoculate* the Japanese public against the expected horror of the hostages being executed.

The hashtag campaign was varied and far reaching, and included a significant number of memes. Many of these were iterations of a specific image (in this case, a screenshot of the hostages and militant taken from ISIS's video). Some of the responses were culturally specific, and referenced Japanese gaming, kawaii, and anime culture; and some were more universally accessible and referenced Star Wars, cats, and global politics.[28] Some sample memes are shown in Figure 9.

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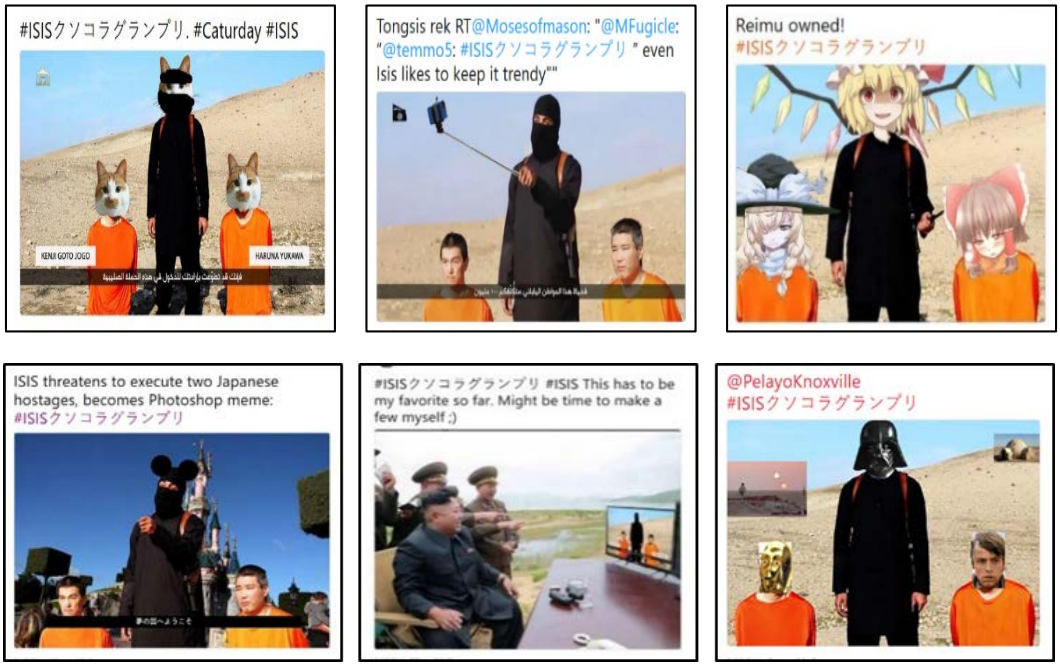
[25] Martin Fackler and Alan Cowell, "Hostage Crisis Challenges Pacific Japanese Public," *New York Times*, January 20, 2015, https://www.nytimes.com/2015/01/21/world/middleeast/video-isis-japanese-hostages.html?_r=0.

[26] Ibid.

[27] Alicia Lu, "Japan Trolls ISIS On Twitter With Memes In A Defiant, Passionate Show Of Resistance," *Bustle*, January 23, 2015, https://www.bustle.com/articles/60218-japan-trolls-isis-on-twitter-with-memes-in-a-defiant-passionate-show-of-resistance.

[28] @deepquest, "#ISISクソコラグランプリ. #Caturday #ISIS," January 24, 2015, https://twitter.com/deepquest/status/559015796127444994; @dedeyudistira, "Tongsis rek RT @Mosesofmason: '@MFugicle: '@temmo5: #ISISクソコラグランプリ 'even Isis likes to keep it trendy,'"" January 24, 2015, https://twitter.com/dedeyudistira/status/559054832661569536; @raktvru, "Reimu owned! #ISISクソコラグランプリ," January 21, 2015, https://twitter.com/raktvru/status/558025030710599680; @tokyoscum, "ISIS threatens to execute two Japanese hostages, becomes Photoshop meme: #ISISクソコラグランプリ," January 20, 2015, https://twitter.com/tokyoscum/status/557708538282512384; @Mitch_Hunter, "#ISISクソコラグランプリ #ISIS This has to be my favorite so far. Might be time to make a few myself ;)," January 22, 2015, https://twitter.com/Mitch__Hunter/status/558480504874598400; @Top_kek_3, "@PelayoKnoxville #ISISクソコラグランプリ," January 21, 2015, https://twitter.com/Top_kek_3/status/558038543222984704.

Figure 9. Examples of Japanese anti-ISIS memes



Source: See footnote 28.

Importantly, not all of the memes that circulated as part of this hashtag campaign were iterations of the original screenshot from the video. Some were simply tapping into the ethos of the campaign, but relying on other imagery. One such example of this was a meme that circulated under this hashtag, but which used alternative imagery, and was an iteration of a widely circulated American meme that dated to 2009. In the new meme, ISIS leader Abu Bakr al-Baghdadi was featured as "Chubby Bubbles Girl" and shown fleeing a tiger.[29] See Figure 10.

[29] Know Your Meme, "Chubby Bubbles Girl," http://knowyourmeme.com/memes/chubby-bubbles-girl; @sutesute60, "Baghdadi getaway バグダディ逃走中。 #ISIS #IS #ISISクソコラグランプリ #iraq #Syria #jihād," Febuary 18, 2015, https://twitter.com/sutesute60/status/568071190524227584.

Figure 10. Examples of Japanese anti-ISIS memes: al-Baghdadi as "Chubby Bubbles Girl"

Source: See footnote 29.

Ultimately, the fate of the hostages was not influenced by this memetic response. The Japanese government did not pay the ransom, and by the end of the month, ISIS had released videos showing the men being beheaded. Without minimizing this tragedy, it is possible to recognize that the memetic campaign surrounding it was incredibly effective. The hashtag was used more than 200,000 times in the days after the ISIS video was posted (and is, in fact, still in use in early 2018).[30] And while the campaign provoked controversy, it was effective in undermining the ultimate goal of the terrorist movement by casting them as preposterous rather than powerful and threatening. The campaign permitted the Japanese people to take control of the narrative and "[deflate] ISIS's formidable image."[31] As one Twitter user posted (with reference to the ransom deadline): "Tomorrow will be sad but it will pass and #ISIS will still be a big joke. You can't break our spirit."[32] In short, the memetic response—inspired by screenshots from ISIS's own video—effectively *inoculated* the Japanese people. While it did not change the outcome of the beheadings, it may have helped undermine the impact by delegitimizing ISIS and its actions.

[30] "Japan Is Fighting ISIS With Super-Kawaii Tweets," *Vice*, January 23, 2015, https://www.vice.com/en_us/article/8gdpvb/japan-is-fighting-isis-with-super-kawaii-tweets.

[31] Alicia Lu, "Japan Trolls ISIS On Twitter With Memes In A Defiant, Passionate Show Of Resistance," *Bustle*, January 23, 2015, https://www.bustle.com/articles/60218-japan-trolls-isis-on-twitter-with-memes-in-a-defiant-passionate-show-of-resistance.

[32] Ibid.; @djvjgrrl, "Tomorrow will be sad but it will pass and #ISIS will still be a big joke. You can't break our spirit #ISISクソコラグランプリ," January 22, 2015, https://twitter.com/djvjgrrl/status/558451972102045696.

Supporting example: North Korean nuclear program

Actor: Miscellaneous
Message: Mocking Kim Jung Un and North Korea
Target Population: Miscellaneous

In September 2016, the online community responded to North Korea's fifth successful nuclear test with a variety of memes mocking both the country and its leader. The effort was not organized, and primarily relied on the somewhat generic hashtag #NorthKorea. That said, this organic online movement appears to have been an effort to *inoculate* against North Korea's belligerent posturing and increasing threat by delegitimizing the fear that the North Korean regime attempted to sow.[33] Images circulated online in response to North Korea's nuclear test included screen shots of leader Kim Jong Un, cartoons, and preexisting memes adapted to the moment (see examples in Figure 11).

Figure 11. Examples of responses to North Korean missile launch

Source: See Footnote 33.

The effect of this memetic effort was observed through news coverage of the hashtag campaign that poked fun at Kim Jong Un, and it drew attention to North Korea's limited missile capabilities. This effort, coordinated by a disparate community of social media users, served to effectively undermine the threat that the North Korean regime wished to convey.

[33] Rory Tingle, "Kim Jong Fun! Internet Reacts to Tubby North Korean Dictator's Latest Nuke Test by Mocking Him with Hilarious Memes," *Daily Mail,* September 9, 2015, http://www.dailymail.co.uk/news/article-3782305/Internet-reacts-tubby-North-Korean-dictator-s-latest-nuke-test-mocking-hilarious-memes.html.

Supporting example: Mexico responds to ISIS threat

Actor: Mexican citizens
Message: Anti-ISIS
Target Population: ISIS, Mexican people

In 2015, ISIS released a video erroneously naming Mexico as a member of the coalition fighting the terrorist movement and issuing a threat against the country and its citizens. The Mexican people responded via a meme campaign—using the hashtag #IsisEnMexico—and *inoculated* themselves against the group by posting a variety of memes mocking the movement and making light of the threat. The theme of the messages shared in response to ISIS's threat was humorous and self-deprecating, with many of the memes invoking Mexican cultural ideas to comment on the nation's preparedness, as the examples in Figure 12 illustrate.[34]

Figure 12. Example of Mexico's response to ISIS threats

Translation (right): We are ready.

Translation (left): I'm buying nuclear weapons because ISIS is in Mexico and we must defend the motherland."

Source: See Footnote 34.

[34] *Latin Times*, "ISIS in Mexico Memes: Twitter Reacts to Threat from Terrorist Group," *Latin Times*, November 25, 2015, http://www.latintimes.com/isis-mexico-memes-twitter-reacts-threat-terrorist-group-355911; Rafa Fernandez de Castro, "Mexican Mock ISIS Terrorist Threat With Memes and Humor," *Splinter*, November 27, 2015, https://splinternews.com/mexicans-mock-isis-terrorist-threat-with-memes-and-humo-1793853226.

In short, by deriding ISIS's mistake and by making light of the threat that the group poses to Mexico, Mexican citizens effectively *inoculated* themselves against the group's fearmongering.[35]

Supporting example: Spain responds to ISIS threat

Actor: Spanish citizens
Meme Message: anti-ISIS
Target Population: ISIS, Spanish people

In August 2017, shortly after its attacks in Barcelona, ISIS released a video featuring a Spanish-speaking extremist threatening violence against the country and promising to avenge the deaths of Muslims killed during the 15th-century Spanish Inquisition. The Spanish people responded promptly—demonstrating considerable resilience given the recent attacks—by using memes to both undermine the threat levied against them and to *inoculate* themselves against future violence. The campaign featured a series of images mocking the movement and turning the extremist into something of a laughingstock, as illustrated in Figure 13.[36]

[35] *Latin Times*, "ISIS in Mexico Memes: Twitter Reacts to Threat from Terrorist Group," *Latin Times*, November 25, 2015, http://www.latintimes.com/isis-mexico-memes-twitter-reacts-threat-terrorist-group-355911; Rafa Fernandez de Castro, "Mexican Mock ISIS Terrorist Threat With Memes and Humor," *Splinter*, November 27, 2015, https://splinternews.com/mexicans-mock-isis-terrorist-threat-with-memes-and-humo-1793853226 and Rafa Fernandez de Castro, "Mexican Mock ISIS Terrorist Threat With Memes and Humor," *Splinter*, November 27, 2015, https://splinternews.com/mexicans-mock-isis-terrorist-threat-with-memes-and-humo-1793853226.

[36] Lucy Pasha Robinson, "ISIS Fighter Relentlessly Mocked On Spanish Twitter After Threatening Further Violence," *Independent*, August 26, 2017, http://www.independent.co.uk/news/world/europe/islamic-state-fighter-el-cordobes-mocked-spanish-twitter-violence-barcelona-attacks-muhammad-yasin-a7914366.html; Tom O'Connor, "ISIS Calls On Muslims to Attack Spain, Becomes Top Twitter Meme," *Newsweek*, August 25, 2017, http://www.newsweek.com/twitter-blows-isis-militant-promising-more-attacks-spain-655242; Emily Lupton, "ISIS Fighters Hilariously Mocked by Spanish Social-Media Users," *Business Insider*, August 25, 2017, http://www.businessinsider.com/r-islamic-state-fighter-mocked-on-spanish-twitter-2017-8.

Figure 13. Example of Spanish reponse to ISIS threats

Source: See Footnote 36.

Infect

> *To use a meme to spread a specific message. To use memes in order to articulate a message—either positive (e.g., defending a value) or negative (i.e., disparaging an institution)—that aligns with broader mission objectives.*

Exemplar: Nahdlatul Ulama Responds to ISIS

Actor: Indonesian non-profit Nahdlatul Ulama
Message: Anti-ISIS, Anti-violent Islam, Pro-moderate Islam
Target Population: Indonesian people

In 2015, the *New York Times* reported that Nahdlatul Ulama (NU)—an Indonesian Muslim organization with 40-50 million members—was poised to embark upon a campaign to counter ISIS's extremism.[37] NU was working with the University of Vienna in Austria (via a program called VORTEX, the Vienna Observatory for Applied Research on Radicalism and Extremism) to prepare effective responses to ISIS's online propaganda. It was poised to open a "prevention center" where NU would train "male and female Arabic-speaking students to engage with jihadist ideology and

[37] Joe Cochrane, "From Indonesia, a Muslim Challenge to the Ideology of the Islamic State," *New York Times*, November 25, 2016, https://www.nytimes.com/2015/11/27/world/asia/indonesia-islam-nahdlatul-ulama.html.

messaging under the guidance of NU theologians who are consulting Western academia."[38]

The movement's approach, importantly, was not simply ideological whack-a-mole (e.g., an ISIS message is posted, and an NU representative responds). NU has a distinct and clear religious message. As one of the group's leaders claimed: "According to the Sunni view of Islam every aspect and expression of religion should be imbued with love and compassion, and foster the perfection of human nature."[39] More pointedly, according to the article, NU "promotes a spiritual interpretation of Islam that stresses nonviolence, inclusiveness and acceptance of other religions."[40]

These values were to be at the center of NU's campaign. In short, the group would aspire to *infect* the population with a positive, pro-social, and moderate conceptualization of Islam that would be inimical to ISIS's violent extremism.

Less than a year later, in 2016, reporting indicated that NU's social media work was underway.[41] Nearly 500 NU "cyber warriors" were actively attempting to counter ISIS's online propaganda.[42] As one cyber warrior commented, "We try to make the image of Islam as fun as possible. That's why memes and tweets are the best way to spread our ideas."[43] He went on to note that he typically posted "silly memes that poke fun at extremists as well as earnest text posts that extol moderate Islam."[44]

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[38] Krithika Varagur, "World's Largest Islamic Organization Tells ISIS To Get Lost," *The Huffington Post*, December 3, 2015, https://www.huffingtonpost.com/entry/indonesian-muslims-counter-isis_us_565c737ae4b072e9d1c26bda; Joe Cochrane, "From Indonesia, a Muslim Challenge to the Ideology of the Islamic State," *New York Times*, November 25, 2016, https://www.nytimes.com/2015/11/27/world/asia/indonesia-islam-nahdlatul-ulama.html.

[39] Joe Cochrane, "From Indonesia, a Muslim Challenge to the Ideology of the Islamic State," *New York Times*, November 25, 2016, https://www.nytimes.com/2015/11/27/world/asia/indonesia-islam-nahdlatul-ulama.html.

[40] Ibid.

[41] In fact, NU's social media efforts were just one facet of a broader campaign that included a documentary film, several websites, an Android app, TV broadcasts, and conferences.

[42] "Indonesia's Muslim Cyber Warriors Take On ISIS," *The Strait Times*, May 8, 2016, http://www.straitstimes.com/asia/se-asia/indonesias-muslim-cyber-warriors-take-on-isis.

[43] Krithika Varagur, "Indonesia's Cyber Warriors Battle ISIS With Memes, Tweets and WhatsApp," *The Huffington Post*, June 9, 2016, https://www.huffingtonpost.com/entry/indonesia-isis-cyber-warriors_us_5750779ae4b0eb20fa0d2684?ir=Technology&section=us_technology&utm_hp_ref=technology.

[44] Ibid.

Examples of NU postings are difficult to identify as the group is still modestly sized and operating almost entirely in the Indonesian language. Some example posts have, however, been reported in the Western media, as illustrated in Figure 14.

Figure 14. Examples of NU responses to ISIS

Translation (center): "Keep your worship secret the same way you conceal your abominations."

Translation (left): "It's not important what your religion is…if you do something good for all mankind, people will never ask you." And "Yes, religion keeps us away from sin, but how many sins do we commit in the name of religion?"

Source: Krithika Varagur, "Indonesia's Cyber Warriors Battle ISIS With Memes, Tweets and WhatsApp," *The Huffington Post*, June 9, 2016, https://www.huffingtonpost.com/entry/indonesia-isis-cyber-warriors_us_5750779ae4b0eb20fa0d2684?ir=Technology&section=us_technology&utm_hp_ref=technology.

The NU movement remains small compared to the sophisticated social media campaign being coordinated by ISIS itself.[45] That said, as a terrorism expert from the Indonesian Muslim Crisis Center noted, "It's a good strategy to make Google searches fill up with moderate Islamic content…The battleground for Islamic ideology has moved to the Internet, and by producing as many moderate websites as they can, they can keep more minds healthy."[46] In short, NU aims to "set a 'perimeter' around aggressive Islam so that it doesn't spread beyond those who are already radicalized."[47] Its goal is to articulate a moderate Islamic message, or, in other words,

[45] "Indonesia's Muslim Cyber Warriors Take On ISIS," *The Strait Times*, May 8, 2016, http://www.straitstimes.com/asia/se-asia/indonesias-muslim-cyber-warriors-take-on-isis.

[46] Ibid.

[47] Krithika Varagur, "Indonesia's Cyber Warriors Battle ISIS With Memes, Tweets and WhatsApp," *The Huffington Post*, June 9, 2016, https://www.huffingtonpost.com/entry/indonesia-isis-cyber-warriors_us_5750779ae4b0eb20fa0d2684?ir=Technology&section=us_technology&utm_hp_ref=technology.

to *infect* the wider population with an understanding of Islam that is tolerant and non-violent—in part because the organization believes that its understanding of Islam can serve as an exemplar for the Muslim world, and in part to prevent the spread of extremism.

Supporting example: Russian interference in Brexit

Actor: Russian troll farms
Message: Pro-Brexit, Pro-leave
Target Population: British people

On June 23, 2016—the day of the Brexit vote—over "150,000 Russian-language Twitter accounts posted tens of thousands of messages in English" advocating for a leave vote in the referendum.[48] The campaign was relatively short-lived but still robust. The implicated accounts had been mostly silent on the issue of Brexit in the month leading up to the referendum, but became active as the vote approached. One set of researchers found, for example, that the pace increased from "about 1,000 a day two weeks before the vote to 45,000 in the last 48 hours."[49] Another study found that 38 accounts that Twitter had identified as Kremlin-linked had tweeted 400 times on the day of the vote. A third analysis found that 29 of the Russian accounts identified to Congress had "also tweeted 139 times about Britain or Europe."[50] And a fourth found that "a network of more than 13,000 suspected bots" tweeted pro-Brexit messages.[51] Importantly, though, much of this early analysis focused on Twitter accounts linked to the Internet Research Agency and so doesn't necessarily offer a comprehensive overview of Russian activity as the vote approached.

This campaign relied on a number of tactics. First, the Twitter accounts were linked to a variety of profiles and "people purporting to be a U.S. Navy veteran, a Tennessee Republican and a Texan patriot—all [tweeted] in favour of Brexit."[52] The tweets

[48] David D. Kirkpatrick, "Signs of Russian Meddling in Brexit Referendum," *New York Times*, November 15, 2017, https://www.nytimes.com/2017/11/15/world/europe/russia-brexit-twitter-facebook.html.

[49] Ibid.

[50] Ibid.

[51] James Ball, "A Suspected Network Of 13,000 Twitter Bots Pumped Out Pro-Brexit Messages In The Run-Up To The EU Vote," *Buzzfeed*, October 20, 2017, https://www.buzzfeed.com/jamesball/a-suspected-network-of-13000-twitter-bots-pumped-out-pro?utm_term=.wwnGyBKKP#.iiBXNkMMY.

[52] Robert Booth et al., "Russia Used Hundreds of Fake Accounts to Tweet About Brexit, Data Shows," *Guardian*, November 14, 2017, https://www.theguardian.com/world/2017/nov/14/how-400-russia-run-fake-accounts-posted-bogus-brexit-tweets.

invoked hashtags such as #EUref, #BrexitInOut, #BritainInOut and #BrexitOrNot in order to connect to a broader discourse.[53] In some instances, they deployed anti-Muslim language and stoked fears about immigrants. As one analyst noted: "Many of these accounts strongly pushed the narrative that all Muslims should be equated with terrorists and made the case that Muslims should be banned from Europe."[54] As one example, a Twitter user tweeted: "I hope UK after #BrexitVote will start to clean their land from muslim invasion!"[55] The account went on to post a widely shared photo—captioned to deliver an anti-Islamic message—taken during the attack on the Westminster Bridge.[56] This image can be seen in Figure 15.

Figure 15. Examples of responses to Russian interference in Brexit

Source: See Footnote 55.

Importantly, the campaign wasn't nearly as extensive as the similarly structured and themed campaign to interfere in the 2016 U.S. presidential election (discussed below). Nor is it entirely clear what this campaign was attempting to accomplish. As one analyst noted, "We cannot say whether [these accounts] were primarily trying to influence Brexit or whether it was a side effect of them trying to wreak discord

[53] Caroline Mortimer, "If You Saw These Tweets, You Were Targeted By Russian Brexit Propaganda," *Independent*, November 12, 2017, https://www.independent.co.uk/life-style/gadgets-and-tech/news/brexit-russia-troll-factory-propaganda-fake-news-twitter-facebook-a8050866.html.

[54] David D. Kirkpatrick, "Signs of Russian Meddling in Brexit Referendum," *New York Times*, November 15, 2017, https://www.nytimes.com/2017/11/15/world/europe/russia-brexit-twitter-facebook.html.

[55] Robert Booth et al., "Russia Used Hundreds of Fake Accounts to Tweet About Brexit, Data Shows," *Guardian*, November 14, 2017, https://www.theguardian.com/world/2017/nov/14/how-400-russia-run-fake-accounts-posted-bogus-brexit-tweets.

[56] Ibid.

generally."[57] The content was "quite chaotic" and perhaps "aimed at wider disruption."[58] And yet despite this ambiguity, it seems clear that these Kremlin-linked accounts were aspiring to *infect* a portion of the population with a clearly pro-Brexit message.

Supporting example: Russian interference in U.S. presidential election

Actor: Russian troll farms
Message: Pro-Trump, Anti-Clinton, Pro-civil discord
Target Population: American people

In 2016, a series of Russian-linked social media accounts—primarily on Twitter and Facebook, but also on YouTube, Tumblr, and Pokémon Go—shared a number of memes designed to influence the outcome of the American election. The ultimate goal of these Russian actors remains unclear. The Central Intelligence Agency (CIA) asserted that they aspired to aid then-candidate Trump, and the Federal Bureau of Investigations (FBI) asserted that there was no firm evidence to support this conclusion. Minimally, though, the activity seems to have been designed to disrupt the American political process by *infecting* the public discourse. As Facebook itself noted, the ads purchased on its website "appeared to focus on amplifying divisive social and political messages across the ideological spectrum."[59] An investigation into the activity continues, and indictments accusing 13 individual Russian citizens of interfering in the election came down in early 2018.[60] An example of some memes that were used as part of this campaign are shown in Figure 16.

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[57] David D. Kirkpatrick, "Signs of Russian Meddling in Brexit Referendum," *New York Times*, November 15, 2017, https://www.nytimes.com/2017/11/15/world/europe/russia-brexit-twitter-facebook.html.

[58] Robert Booth et al., "Russia Used Hundreds of Fake Accounts to Tweet About Brexit, Data Shows," *Guardian*, November 14, 2017, https://www.theguardian.com/world/2017/nov/14/how-400-russia-run-fake-accounts-posted-bogus-brexit-tweets.

[59] Alex Stamos, "An Update On Information Operations On Facebook," *Facebook Newsroom*, September 6, 2017, https://newsroom.fb.com/news/2017/09/information-operations-update/.

[60] Donie O'Sullivan and Dylan Byers, "Exclusive: Even Pokeman Go Used By Extensive Russian-Linked Meddling Effort," *CNN*, October 13, 2017, http://money.cnn.com/2017/10/12/media/dont-shoot-us-russia-pokemon-go/index.html; Alex Stamos, "An Update On Information Operations On Facebook," *Facebook Newsroom*, September 6, 2017, https://newsroom.fb.com/news/2017/09/information-operations-update/; *CNN Library*, "2016 Presidential Campaign Hacking Fun Facts," *CNN*, February 21, 2018, https://www.cnn.com/2016/12/26/us/2016-presidential-campaign-hacking-fast-facts/index.html; Jon Swaine and Marc Bennetts, "Mueller Charges 13 Russians With Interfering

Figure 16. Examples of Russian memes used to disrupt the U.S. Presidential election

Source: See Footnote 60.

Supporting example: ISIS spreads brand via @ISILCats

Actor: ISIS
Message: Pro-ISIS
Target population: Potential recruits and sympathizers

In 2014, ISIS sympathizers launched a new Twitter account—Islamic State of Cats, @ISILcats—that attempted to take advantage of the internet's preexisting obsession with cat images. Beginning on July 25, the account posted images of ISIS fighters playing with kittens and cats, of kittens and cats playing with the paraphernalia of

in US Election to Help Trump," *Guardian*, February 17, 2018, https://www.theguardian.com/us-news/2018/feb/16/robert-mueller-russians-charged-election; Scott Shane, "These Are the Ads Russia Bought on Facebook in 2016," *New York Times*, November 1, 2017, https://www.nytimes.com/2017/11/01/us/politics/russia-2016-election-facebook.html.

jihadi life (e.g., guns, ammunition), and of domestic life within the Islamic State. (See examples in Figure 17.)

The account referred to the kittens and cats as mewjahid (a pun on *mujhideen*), and functioned primarily to *infect* the public discourse with a softer image of the Islamic State. Analysts noted that the audience for such a campaign was relatively limited, and there was considerable debate in the U.S. media about the idea that ISIS might actually be recruiting via this account. CNN aired a segment sensationally claiming that ISIS was recruiting with kittens and Nutella, and other outlets pushed back to note that such a framework infantilized women and that the reasons women joined ISIS were varied and complex. Whether the campaign resulted in successfully attracting new recruits may miss the point, though, as its core objective might have been simply to normalize the group and its members.[61]

Figure 17. Examples of "mewjahid" memes

Source: See Footnote 61.

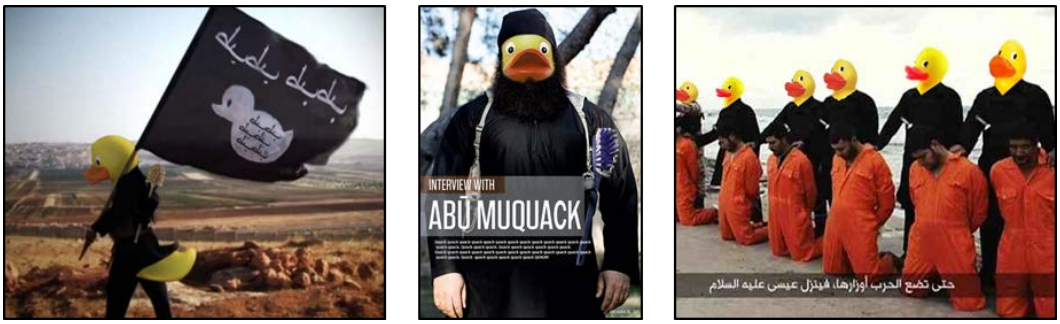
[61] James Vincent, "'I Can Haz Islamic State Plz': ISIS Propaganda on Twitter Turns to Kittens and LOLSpeak," *Independent*, August 21, 2014, https://www.independent.co.uk/life-style/gadgets-and-tech/isis-propaganda-on-twitter-turns-to-kittens-and-lolspeak-i-can-haz-islamic-state-plz-9683736.html; Emily Lodish, "ISIL Loves Terrorism and Kittens," *PRI*, June 25, 2014, https://www.pri.org/stories/2014-06-25/isil-loves-terrorism-and-kitties; Katie Sanders, "The Truth About ISIS Using Nutella, Kittens, and Emoji to 'Lure' Western Women," *Politifact*, February 19, 2015, http://www.politifact.com/punditfact/statements/2015/feb/19/cnn/truth-about-isis-using-nutella-kittens-and-emoji-l/; Amanda Taub, "No, CNN, Women Are Not Joining ISIS Because of "Kittens and Nutella," *Vox*, February 18, 2015, https://www.vox.com/2014/10/20/6987673/isis-women; Tom Whitehead, "Islamic State Using Kittens to Lure Jihadists to Fight," *Telegraph*, May 25, 2016, https://www.telegraph.co.uk/news/2016/05/25/isil-using-kittens-to-lure-jihadists-to-fight/.

Supporting example: 4Chan mocks ISIS with rubber ducks

Actor: 4Chan, miscellaneous
Message: Anti-ISIS
Target population: Miscellaneous

In November 2015, a community on the website 4Chan spontaneously started an anti-ISIS online memetic campaign relying on rubber ducks. The idea, as one 4Chan community member argued, was to "[castrate] the image of ISIS by replacing the faces on ALL the propaganda photos with bath ducks." In short, this online community aspired to *infect* the public discourse with a decidedly anti-ISIS image that undermined the movement's own propaganda efforts. Images were posted using the hashtag #AllahuQuackbar, and an album collecting just a few of the photos was posted to website Imgur and had been viewed nearly 450,000 times by early 2018. (See examples in Figure 18.)[62]

Figure 18. Example of 4Chan anti-ISIS ducks



Source: See Footnote 62.

[62] Joel Gunter, "ISIS Mocked With Rubber Ducks as Internet Fights Terror with Humour," *Guardian*, November 28, 2015, https://www.theguardian.com/world/2015/nov/28/isis-fighters-rubber-ducks-reddit-4chan; Mark Molloy, "Why the Internet is Putting Rubber Ducks on Heads of ISIL Fighters," *Telegraph*, November 28, 2015, https://www.telegraph.co.uk/news/worldnews/islamic-state/12022424/Islamic-State-4Chan-puts-rubbers-ducks-on-Isil-heads.html; James Bullen, "4Chan Are Replacing Islamic State Figures with Ducks to Fight ISIS," *Huffington Post*, November 29, 2015, https://www.huffingtonpost.com.au/2015/11/29/4chan-isis-ducks_n_8674076.html; UhUhUhU, "creates the duck state," *Imgur* gallery, November 24, 2015, https://imgur.com/gallery/RvqlI.

Supporting example : #DAESHbags anti-ISIS campaign

Actor: Anonymous
Message: Anti-ISIS
Target population: ISIS Social Media Accounts

In 2015, following the Charlie Hebdo attacks, the hacktivist movement Anonymous began targeting ISIS's online operations. The movement's efforts were relatively diffuse as those within Anonymous disagreed about which direction the campaign should take and/or whether or not it should continue. That said, while much of the work was focused on identifying ISIS-linked accounts on Twitter, Anonymous declared December 11, 2015, to be "ISIS Trolling Day" and encouraged those online to post mocking images using the hashtag #DAESHbags. The group even posted detailed instructions online offering suggestions for how to mock ISIS on Twitter, Instagram, Facebook and Youtube (as well as in "Real Life"). In short, Anonymous attempted to spread the message that ISIS was absurd by *infecting* the public discourse with a decidedly counter-ISIS message (see examples in Figure 19).[63]

[63] Abby Ohlheiser, "What You Need to Know About Anonymous's 'War' on the Islamic State," *Washington Post*, November 17, 2015, https://www.washingtonpost.com/news/the-intersect/wp/2015/11/17/what-you-need-to-know-about-anonymouss-war-on-the-islamic-state/?utm_term=.16fb280bc9e6; Barbara Speed, "#Daeshbags: Anonymous Is Attacking ISIS's Brand of Toxic Masculinity Using Memes," *New Statesman*, December 11, 2015, https://www.newstatesman.com/world/middle-east/2015/12/daeshbags-anonymous-attacking-isis-s-brand-toxic-masculinity-using-memes; Andrew Griffin, "Anonymous 'Trolling Day' Against ISIS Begins, with Group's 'Day of Rage' Mostly Consisting of Posting Mocking Memes," *Independent*, December 11, 2015, https://www.independent.co.uk/life-style/gadgets-and-tech/news/anonymous-trolling-day-against-isis-begins-with-group-s-day-of-rage-mostly-consisting-of-posting-a6769261.html; Andrew Griffin, "Anonymous 'ISIS Trolling Day': Online Activist Group Asks Public to Help Mock ISIS on 11 December," *Independent*, December 7, 2015, https://www.independent.co.uk/life-style/gadgets-and-tech/news/anonymous-isis-trolling-day-online-activist-group-asks-public-to-help-mock-isis-on-11-december-a6763076.html; @AnonyOpNews, "Reports of #Daeshbags targeting Anons due to ISIS memes. Make them more mad by joining us on Dec 11 #TrollingDay," December 8, 2015, https://twitter.com/AnonyOpNews/status/674202475109351425.

Figure 19. Examples of # Daeshbags campaign

Source: See Footnote 65.

Treat

> *To use a meme to treat an already circulating message. To respond memetically—by mocking, disproving, or otherwise countering—to a message that has been spread by another actor.*

Exemplar: U.S. Embassy Response to Russian Disinformation

Actor: U.S. Embassy in Russia
Meme message: News report circulating disinformation; anti-fake news
Target population: Russian people, REN TV, @rentvchannel and @USEmbRU followers

On September 20, 2015, pro-Russia media outlet REN TV falsely claimed that U.S. ambassador John Tefft had attended an opposition rally in Moscow earlier in the day.[64] The charge was significant both because it affiliated Tefft with the opposition

[64] Посла США в России Джона Ф. Теффта отправили на митинг оппозиции в Марьине, *REN TV*, September 20, 2015, http://ren.tv/novosti/2015-09-20/posla-ssha-v-rossii-dzhona-f-teffta-otpravili-na-miting-oppozicii-v-marine.

movement, and because it aligned with Russian pro-government media claims that opposition actors are puppets of the U.S. government.[65]

The report claimed: "The meeting of the opposition in [the district of] Marino was memorable not only for the small number of people who came to support the opposition, but also for the appearance of the U.S. Ambassador in Russia, John F. Tefft."[66] It then went on to say that Tefft, when asked about his presence at the rally, indicated that he had attended in order to assess the "caliber" of Russian democracy.[67]

In order to substantiate this claim, the report included a photograph of Tefft standing in front of a bank of reporters, with the opposition rally clearly visible in the background. REN TV even tweeted the photo with a link to the (now edited) report, saying "US Ambassador to Russia John Tefft strolled at an opposition rally in Marino" (see Figure 21).[68]

[65] Max Seddon, "This Is The Best Photoshop The U.S. Government Has Ever Produced," *Buzzfeed News*, September 21, 2015, https://www.buzzfeed.com/maxseddon/the-state-department-has-finally-learned-how-to-use-twitter?utm_term=.dcmdJ21xXv#.npDeW1Olyx.

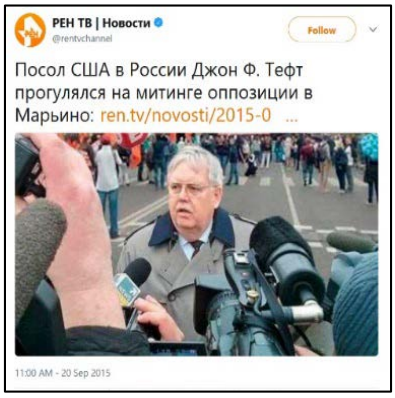
[66] "Pro-Kremlin Media Share Fake Image of U.S. Ambassador at Opposition Rally," *The Moscow Times*, September 21, 2015, https://themoscowtimes.com/news/pro-kremlin-media-share-fake-image-of-us-ambassador-at-opposition-rally-49694.

[67] Ibid. Similar reporting came from other sites, with *Radio Free Europe / Radio Liberty* reporting that the original report said: "No matter how hard the American diplomat tried to get lost in the crowd, the media asked him why he showed up to this event. The short answer: He came to look at the development of democracy in Russia and judge its scale."

[67] Some of this language remains in the REN TV article. Carl Schreck, "Photoshop Wars: U.S. Ambassador 'Attends' Russian Opposition Rally…And The Moon Landing," *Radio Free Europe / Radio Liberty*, September 21, 2015, https://www.rferl.org/a/russia-photoshop-us-ambassador-tefft-opposition-rally-ren-tv/27260885.html.

[68] This report was later edited to note that while photos of Tefft attending the rally were available on social media networks, it wasn't clear whether they were accurate. Reporting at the time, however, relied on cached versions of the website (no longer available) to demonstrate that these additions were made after the fact. Carl Schreck, "Photoshop Wars: U.S. Ambassador 'Attends' Russian Opposition Rally…And The Moon Landing," *Radio Free Europe / Radio Liberty*, September 21, 2015, https://www.rferl.org/a/russia-photoshop-us-ambassador-tefft-opposition-rally-ren-tv/27260885.html; Посла США в России Джона Ф. Теффта отправили на митинг оппозиции в Марьине, *REN TV*, September 20, 2015, http://ren.tv/novosti/2015-09-20/posla-ssha-v-rossii-dzhona-f-teffta-otpravili-na-miting-oppozicii-v-marine@rentvchannel; "Посол США в России Джон Ф. Тефт прогулялся на митинге оппозиции в Марьино," September 20, 2015, https://twitter.com/rentvchannel/status/645658877426593792.

Figure 20. Example of Russian disinformation regarding U.S. Ambassador Tefft



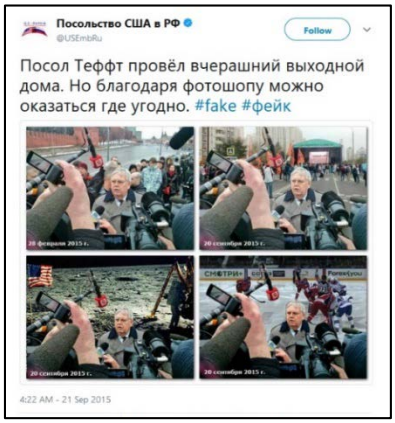
Source: See Footnote 68.

The U.S. embassy chose to respond memetically—effectively *treating* the Russian attempt to infect—by turning Tefft's image into a meme. They identified the original source of the image (a February 28 interview at a site near the Kremlin), explicitly labeled it as fake news and an act of photoshopping, and created their own photoshopped images to mock the fake story.[69] Just a few hours after the REN TV tweet, the U.S. embassy in Russia responded with the tweet shown in Figure 21.[70]

[69] Carl Schreck, "Photoshop Wars: U.S. Ambassador 'Attends' Russian Opposition Rally…And The Moon Landing," *Radio Free Europe / Radio Liberty*, September 21, 2015, https://www.rferl.org/a/russia-photoshop-us-ambassador-tefft-opposition-rally-ren-tv/27260885.html.

[70] @USEmbRu, "Посол Тефт провёл вчерашний выходной дома. Но благодаря фотошопу можно оказаться где угодно. #fake #фейк," September 21, 2015, https://twitter.com/USEmbRu/status/645921015613276160.

Figure 21. U.S. embassy response to Russian disinformation



Translation: Ambassador Tefft spent yesterday's weekend at home. But thanks to Photoshop you can be anywhere. #fake #fake

Images: The original image (upper left); the photoshopped image that REN TV tweeted (upper right); Tefft at the moon landing (lower left); Tefft at a hockey game (lower right).

Source: See Footnote 70.

The U.S. embassy continued with a series of three additional tweets placing Tefft at the moon landing (a repeat), with Douglas MacArthur in the Philippines in 1945, and at a hockey game (also a repeat), as shown in Figure 22.[71]

Figure 22. More examples of U.S. embassy response to Russian disinformation

Source: See Footnote 71.

[71] @USEmbRu, "@rentvchannel," September 21, 2015, https://twitter.com/USEmbRu/status/645922652096475136; @USEmbRu, "@rentvchannel," September 21, 2015, https://twitter.com/USEmbRu/status/645922554318856192; @USEmbRu, "@rentvchannel," September 21, 2015, https://twitter.com/USEmbRu/status/645922378527166464.

Reporting also indicated that in the hours after the U.S. embassy tweets, other Russian Twitter users tweeted similarly doctored images showing Ambassador Tefft attending Russian weddings and (in one particularly amusing instance) surrounded by cats, as shown in Figure 23.[72]

Figure 23. Russian Twitter users' response to Russian disinformation

Source: See Footnote 72.

REN TV initially responded by editing its original article to reflect the possibility that the image it had posted had been doctored, and ultimately followed up with an acknowledgment that the image was fake.[73] The real victory, though, was that the U.S. embassy tweets had been retweeted nearly 1,000 times while the initial REN TV tweet was retweeted less than 100 times. Additionally, the memetic exchange generated widespread media coverage with news articles—clearly identifying the Russian story as fake—appearing in Russia, the United States, and Europe.

[72] Max Seddon, "This Is The Best Photoshop The U.S. Government Has Ever Produced," *Buzzfeed News*, September 21, 2015, https://www.buzzfeed.com/maxseddon/the-state-department-has-finally-learned-how-to-use-twitter?utm_term=.dcmdJ21xXv#.npDeW1Olyx; @valery7matveev, "@rentvchannel Да ладно пиздеz, он у Пескова на свадьбе был," September 21, 2015, https://twitter.com/valery7matveev/status/645924593144852480; "Fake: REN-TV Shows U.S. Ambassador at Opposition Rally," *Stop Fake*, September 24, 2015, https://www.stopfake.org/en/fake-ren-tv-shows-u-s-ambassador-at-opposition-rally/.

[73] Carl Schreck, "Photoshop Wars: U.S. Ambassador 'Attends' Russian Opposition Rally…And The Moon Landing," *Radio Free Europe / Radio Liberty*, September 21, 2015, https://www.rferl.org/a/russia-photoshop-us-ambassador-tefft-opposition-rally-ren-tv/27260885.html.

Supporting example: Response to Italian government's censorship

Actor: Italian citizens
Message: anti-censorship
Target population: Italian government, Italian people

In January 2016, in preparation for the visit of Iranian President Hassan Rouhani, Italian authorities chose to cover up a series of nude statues in the Capitoline Museum (the planned site of the meeting). The decision attracted considerable attention, and reporting on the topic indicated that Rouhani had not requested the accommodation. Moreover, the Italian Culture Minister called the act "incomprehensible" and noted that neither he nor the Italian Premier had been consulted about the decision.[74]

The online response was, however, less concerned with *who* made the decision than with the fact that it had been made. As a result, in the wake of the news breaking a somewhat spontaneous memetic response from both Italians and Iranians took shape. Despite its organic and unorganized nature, the effort was a clear rejection and condemnation of the Italian government's decision to censor. It was, in other words, an effort to *treat* an existing social ill (or, what one Twitter user described as "cultural suicide").[75] The response was, importantly, incredibly varied.

In one image, a photograph of the statues was modified to suggest that they had been covered with the same banner that Iranians see when a website has been banned by the government (see left image in Figure 24).[76] In other instances, the images attempted to offer alternative means of covering the allegedly offensive nudity (see center image in Figure 25).[77] And in some instances, the images gestured

[74] Golnaz Esfandiari, "Memes Circulate After Italy Hides Nude Statues for Rohani Visit," *Radio Free Europe*, January 27, 2016, https://www.rferl.org/a/italy-hides-nudes-for-iranian-visit/27515457.html; "Critics Assail Italy for Hiding Nude Statues During Rouhani Visit," *Voice of America*, January 28, 2016, https://www.voanews.com/a/criticism-memes-circulate-after-italy-hides-nude-statues-for-rouhani-visit/3166200.html.

[75] BBC Trending, "Covering Up Nude Statues: Iranians Say Thanks But No Thanks to Italy," *BBC*, January 27, 2016, http://www.bbc.com/news/blogs-trending-35423028.

[76] "Critics Assail Italy for Hiding Nude Statues During Rouhani Visit," *Voice of America*, January 28, 2016, https://www.voanews.com/a/criticism-memes-circulate-after-italy-hides-nude-statues-for-rouhani-visit/3166200.html.

[77] BBC Trending, "Covering Up Nude Statues: Iranians Say Thanks But No Thanks to Italy," *BBC*, January 27, 2016, http://www.bbc.com/news/blogs-trending-35423028.

at the fact that Rouhani was scheduled to visit France after departing Italy (see right image in Figure 24).[78]

Figure 24. Examples of Italian response to censorship

Source: See Footnotes 76 and 77.

Others images mocked Rouhani by photo-shopping an image to suggest that he had met with the Pope beneath a prominently displayed painting of nudes (see left image in Figure 25).[79] And some were effectively targeted efforts to send nude images to Rouhani himself via the use of hashtags #Rouhani and #Statuenude (see center and right images in Figure 25).[80]

[78] "Critics Assail Italy for Hiding Nude Statues During Rouhani Visit," *Voice of America*, January 28, 2016, https://www.voanews.com/a/criticism-memes-circulate-after-italy-hides-nude-statues-for-rouhani-visit/3166200.html.

[79] Ibid.

Golnaz Esfandiari, "Memes Circulate After Italy Hides Nude Statues for Rohani Visit," *Radio Free Europe*, January 27, 2016, https://www.rferl.org/a/italy-hides-nudes-for-iranian-visit/27515457.html.

[80] BBC Trending, "Covering Up Nude Statues: Iranians Say Thanks But No Thanks to Italy," *BBC*, January 27, 2016, http://www.bbc.com/news/blogs-trending-35423028.

Figure 25. More examples of Italian response to censorship

Source: See Footnotes 79 and 80.

The campaign was relatively short lived and somewhat scattered, but it was nonetheless a clear refutation of what had happened. It was also, importantly, an attempt to *treat* the harm done by this event: it worked to shape the public discourse so as to prevent the widespread acceptance and normalization of such censorship, and/or reduce the potential that it might occur again.

Supporting example: Response to Catalan government's disinformation

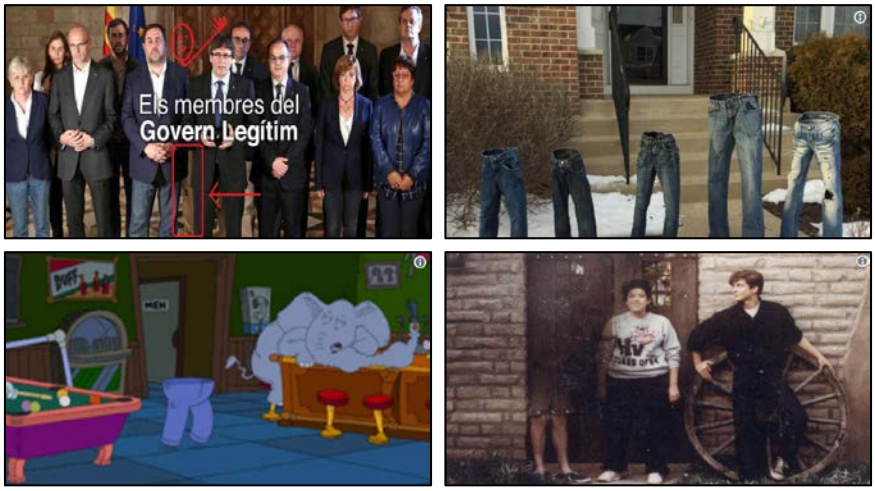
Actor: Spanish citizens
Meme message: Anti-Catalan leaders
Target population: Spanish people

In October 2017, a controversial referendum was held on the question of Catalan independence.[81] While the results suggested strong support for the move, accusations of police pressure, voter suppression, and voter corruption were also rampant. Following a series of political steps—by the local Catalan government and the larger Spanish government—the local government was dismissed. Additionally, the Spanish government indicated that it intended to charge the Catalan president and his cabinet with rebellion and embezzlement. In response, the Catalan president and a few advisors fled the country.

[81] Catalonia is an autonomous community—a political and administrative region with its own elected government—consisting of four provinces located in the northeastern corner of the country.

A few weeks later, these now deposed government leaders launched a new website for the "legitimate government" of Catalan. On the main page, they included a photograph of the government's leaders. The image they used, however, was a picture edited to remove one individual. The photoshopping effort was botched, though, and the removed individual's pants were still visible. This resulted in a series of memes (some invoking the TV show *The Simpsons* and the film *Back to the Future*) responding to the event. (See examples in Figure 26.) These memes were essentially *treating* the issue by calling attention to incompetence (i.e., in this particular case the issue was not disinformation, but the incompetent and untrustworthy nature of the Catalan leadership).[82]

Figure 26. Example of response to Catalan disinformation



Source: See Footnote 82.

Preliminary observations

This wide-reading and compelling dataset of examples is not—due to the exploratory and preliminary nature of this study—empirically robust enough, in terms of collection technique or analytic assessment, to justify strong conclusive statements

[82] "Deposed Catalan Government's Botched Photoshop Job Sparks Memes," *The Local*, November 20, 2017, https://www.thelocal.es/20171120/deposed-catalan-governments-botched-photoshop-job-sparks-memes.

"Airbrush Fail: Deposed Catalonian Govt Post Bizarre Photoshop Image," *RT*, November 20, 2017, https://www.rt.com/news/410432-catalan-government-photo-fail/.

regarding the nature or utility of memetic engagement. It is possible, though, to articulate a number of preliminary observations that stem from an examination of the examples explored above:

- **The effective use of visual memes is not limited to counter-radicalization efforts.** While memes certainly have utility in that area, they have also been deployed productively in response to terrorism more generally, disinformation campaigns, and government censorship.

- **The range of visual memes being deployed in memetic campaigns is far reaching.** In some instances the format is the familiar one of combining a well-known picture with words following an established grammar. Other examples include doctoring situationally relevant images (e.g., a screenshot taken from an ISIS video), creating brand new images with distinct messaging, and pairing images with common cultural references.

- **Visual memes often (though not always) make use of humor, irony, and sarcasm in order to resonate emotionally.**

- **Visual memes often transcend individual cultures and languages, and can reach broad communities of disparate actors in the online information environment.** For example, the images edited to mock ISIS's threat to execute Japanese hostages are widely recognizable as anti-ISIS images and do not depend on an understanding of Japanese culture or language.

- **Well-targeted visual memes are culturally specific and situationally narrow.** This may seem to be a direct contradiction of the previous observation, but it is important to acknowledge that the images edited to mock ISIS's threat to execute the Japanese hostages are *particularly* effective in context (i.e., as part of the relevant hashtag campaign and in direct response to ISIS's threat) and *particularly* meaningful with an understanding of Japanese culture and language.

- **Visual memes are utilized by all manner of online actors—governments, NGOs, non-state actors, and individuals.** Most frequently, though, they take shape organically and are created by a civilian population.

- **Visual memes have been used effectively at tactical level (e.g., combatting local government censorship) and strategic level (e.g., against North Korean missile tests).**

Observations from Subject Matter Expert Discussions

In addition to our review of relevant literature and examples of visual memes, we conducted semi-structured discussions with a number of subject matter experts from the USG, as well as academic and private sector experts and practitioners in marketing, advertising, and psychology (to include a professional internet troll). We did this to help draw preliminary observations on the applicability of memes to USG influence campaigns. Given the exploratory nature of this study, this list of observations is not conclusive, but is designed to elicit follow-on dialogue:

- **Using memes well is neither predictable nor formulaic.** Across the board, the SMEs we spoke with suggested that the art of using digital content to influence people is largely uncharted territory. Experts emphasized that messages should be crafted with care—rejecting conventional wisdom that it might be best to simply attempt a variety of options—in order to increase the likelihood of effective engagement, increase the likelihood of message integrity being maintained, and protect against unforeseen consequences. That said, some of the most popular online campaigns develop through organic, community driven engagement in which this type of control is impossible. There will, as a result, continue to be a steep learning curve as government and the private sector begin to understand how to use memes as part of a coherent narrative arc.

- **Viral content is not analogous to persuasive content.** Experts challenged the tyranny of quantitative metrics repeatedly by noting that clicks and likes do not translate into activity by content viewers. Indeed, motivating offline behavior was earmarked as one of the toughest problems to tackle. This reflection is bolstered by a body of existing academic research which suggests that spreading content is not reliably correlated to active behavioral outcomes.[83] While viral content may be useful when used as a way to increase

[83] Evgeny Morozov. *The Net Delusion: the Dark Side of Internet Freedom*; pp.180. Public Affairs Books, New York, NY – 2012; Malcolm Gladwell. *Small Change: Why the Revolution Will not be Retweeted;* New Yorker Magazine, October 2010, https://www.newyorker.com/magazine/

message repetition, quantitative metrics do not generate enough data from which to draw meaningful conclusions with respect to message impact or effect. As a result, understanding the impact of information or influence campaigns remains a challenge.

- **Changes in attitude do not necessarily correlate to changes in behavior.** This observation, driven by our literature review, was echoed in conversations with SMEs in both psychology and advocacy. Indeed, the behavioral psychology literature is clear that changes in attitudes may not produce changes in behavior. With this in mind, experts suggested that consideration should be given to achieving behavioral outcomes by examining influence vectors in the offline environment in addition to those used online.[84]

- **Audience granularity is essential to generating desired effects in memetic engagement.** Through conversations with government practitioners, particularly those who work as information and psychological operations tacticians, we learned that gaps exist between teams responsible for identifying audiences and those producing content. This disconnect contributes to an environment in which audiences are treated monolithically. These SMEs, as well as those who practice grassroots advocacy, suggested that greater specificity relative to audience demography will enhance message penetration and audience consumption as part of influence campaigns.

- **Memes can play a role across the spectrum of USG activities and conflict.** A number of SMEs from the USG influence community noted that memes can play a role in messaging, shaping counter-narratives, and broader online engagement at strategic, operational, and tactical levels as part of whole-of-government influence campaigns for countering both state and non-state adversaries. Further, integrating memetic engagement with other USG tools, including diplomacy, development, and defense, may be fruitful in achieving the desired effects in countering adversaries.

2010/10/04/small-change-malcolm-gladwell; Clay Shirky, "The Political Power of Social Media: Technology, the Public Sphere, and Political Change," *Foreign Affairs* (as published by the Council on Foreign Relations, January/February 2011), https://www.cc.gatech.edu/~beki/cs4001/Shirky.pdf; and semi-structured discussion with advocacy expert at George Washington University, February 2018.

[84] Min-Sun Kim and John E Hunter, "Attitude-Behavior Relations: A Meta-Analysis of Attitudinal Relevance and Topic," *Journal of Communication* 43, No. 1 (1993): 101-142; and Duane F. Alwin, "Making Inferences from Attitude-Behavior Correlations," Sociometry (American Sociological Association) 36, no. 2(1973): 253-278.

- **It is helpful for memetic engagement to be reinforced with face-to-face engagement.** Numerous SMEs from the USG influence community noted that face-to-face and on the ground engagement serve as critical components to influence campaigns, and are used as tools to promote Western values, build personal connections, and affect stability in countries of interest. Many noted that it is useful to think about combining memetic engagement online with face-to-face engagement to counter the influence of state and non-state actors in the information environment. Such a combined approach can serve as a force multiplier in persistent military and diplomatic engagement, which serve as critical components of influence campaigns.

Conclusion

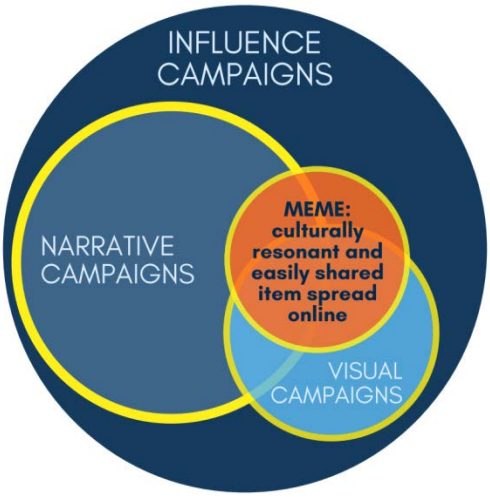
This exploratory study was structured to serve as a foundation for analyzing the applicability, utility, and role of memes in USG influence campaigns. We approached the concept of memes from a historically informed perspective, and we reviewed literature on the topic ranging from Richard Dawkins' 1976 definition to recent internet-era innovations. In light of this analysis, we concluded that a meme was most productively and accurately defined as *a culturally resonant piece of information that is easily shared or spread online*. We then shifted our focus to visual memes, and developed an epidemiologically inspired rubric to classify cases of memetic engagement, and identify the ways in which memes might be effective tools in influence operations.

Our preliminary observations—based on our comprehensive review of the literature on the operationalization of memes, exploration of these example cases, and discussions with a wide range of subject matter experts—suggest that ***memetic engagement is a potentially effective, but currently underexplored, vector via which to counter state and non-state actors, and further USG policy goals via the online information environment***.

Our discussions with subject matter experts across the USG and other expert communities indicated that memetic engagement can be integrated into USG influence campaigns as part of a broader influence strategy. The largely unchecked (or imperfectly checked) spread of information online allows memes, a complement and supplement to existing narrative and visual campaigns, to move across cultures and countries and to serve as a "force multiplier" for diplomatic and military face-to-face engagement.

In short, our discussions with subject matter experts emphasized that memetic engagement should be undertaken as part of broader USG influence campaigns with clearly defined objectives. The porous borders of the online information environment mean that a meme posted to an account on one continent can go viral on another continent 20 minutes later and with a potentially very different outcome. Thus as depicted in Figure 27, memetic campaigns should be positioned *within* existing influence campaigns. They may fit within more narrow category of narrative engagements or may fall broadly within influence campaigns writ large; and they may be visual initiatives or they may be non-visual efforts (though our focus has been on visual memes). In each instance, though, overarching consistency—and the recognition that memetic engagement is one part of a larger influence initiative—is critical to success.

Figure 27. How memes and memetic engagements fit into influence campaigns



Source: CNA

Suggestions for further research

Given our conclusion that memes and memetic engagement hold promise as a component of USG influence campaigns, we strongly believe that additional research on the use of memes and memetic engagement should be undertaken. Suggested topics for additional research include:

- What constitutes an effective memetic engagement? What type of visual, digital, and cultural information might one need to create an effective memetic engagement? How would this differ from the information needed to inform a traditional USG influence campaign?

- When are memes and memetic engagement effective? What can an effective memetic campaign accomplish? What makes a campaign effective? How can we assess and evaluate their use in a way comparable to that in which we assess and evaluate the use of other forms of communication and messaging?

- Who should hold authorities for memetic engagement? Who are the appropriate USG entities to lead the creation, dissemination, and evaluation of the use of memes?

- Where are memes most useful in USG operations (e.g., at the strategic, operational, and tactical military levels, as part of diplomatic engagements,

etc.)? How much utility do they have in shaping operations, competition short of armed conflict, irregular warfare, and in major combat operations? How and why might their utility and usage need to change across these activities?

In closing, we believe that visual memes and memetic engagement are tools with great potential for the USG as it looks to counter the information activities of state and non-state actors and more proactively engage audiences online. But we also believe that considerable additional research should be undertaken in order to ensure that the USG is maximally effective in the use of these tools.

Figure 28. Leonardo DiCaprio meme on the end of this report

Source: *imgflip Meme Generator*, https://imgflip.com/memegenerator, accessed March 26, 2018.

Appendix: A History of "Memetic Warfare"

One of the concepts that initially led to our interest in the topic of memes was that of "memetic warfare." Ultimately, for reasons we discuss below, we decided not to pursue this concept as the framework for thinking about the use of memes (preferring instead the epidemiological model presented above). But it is worth including a brief discussion of this concept here both for the sake of completeness and to make the reader aware of its shortcomings.

In an unsurprising way, the discussion on "memetic warfare" closely followed the discussion on memes, in that early work focused on the transmission of ideas, and later work focused on the transmission of ideas on the internet.

The first school of thought on memetic warfare referred primarily to an effort to win a broadly construed battle of ideas. One articulation of this position came in Edmund Glabus's 1998 "Metaphors and Modern Threats: Biological, Computer, and Cognitive Viruses." Clearly inspired by the work of Dawkins, and by epidemiological approaches to meme transmission (i.e., those in which memes are understood to be passed from brain to brain via a process that mimics contagion), Glabus argued that "cognitive viruses by our definition infect people with a meme, a unit of information in a mind whose existence influences events such that more copies of itself get created in other minds."[85] He went on to argue that these memes—which might include rumors of U.S. involvement in germ warfare, conspiracy theories about U.S. complicity in spreading the AIDS virus, etc.—were particularly problematic for the U.S. government because they "spread so well and are so durable."[86] Memetic warfare, as Glabus framed it, was conceptually closest to perception management, which he defined, in part, as "actions taken to convey and/or deny selected information and indicators to foreign audiences to influence their emotions, motives and objective

[85] Edmund Glabus, "Metaphors and Modern Threats: Biological, Computer, and Cognitive Viruses," in *Challenging the United States Symmetrically and Asymmetrically: Can America Be Saved?"* edited by Lloyd J. Matthews (Carlisle Barracks, PA: U.S. Army War College Strategic Studies Institute, 1998): 206.

[86] Ibid.

reasoning."[87] Citing a short paper that was published on information warfare, Glabus suggested that the objective of memetic warfare would be to "insert new memes into the mind of the adversary," taking advantage of the fact that they were likely to self-replicate, spread, and infect a growing population.[88] Memetic warfare was, in other words, an advancement of work on information warfare, and an effort to infect a population with a viral idea that was beneficial to the U.S. government.

A more thorough exploration of the idea came a few years later with Richard Pech's "Inhibiting Imitative Terrorism Through Memetic Engineering." Pech acknowledged that a meme might convey a core message, but emphasized that there would be considerable variation in how these messages were received by different listeners. He then argued that this mechanism—the spread of memes via the media, the embedding of a core message, and the interpretability of the message—had significance for those hoping to combat violence:

> Certain violent behaviours labeled under such terms as terrorist, sniper, and gunman, become immortalised in history and…a small minority of individuals justify their violent behaviours by projecting themselves into the role and circumstances of their hero predecessor. They choose to do this because certain violent acts have become memes with which they find identification and through which they find justification. Some of these violent memes project an image depicting a macho, freedom fighting, minority rights, and/or wronged individual redressing balance of power theme.[89]

These terrorism and violence memes are, in other words, appealing to a vulnerable subset of the population. Thus, one easy response to the challenge of reducing terrorism might be "in the elimination" of such memes.[90] Unfortunately, terrorism and violence memes are also appealing to the media because they make good headlines and increase sales. As a result, it is difficult to imagine that the media will

[87] Ibid., 205.

[88] George Stein and Richard Szafranski, "The Memetic Warfare Model," *U.S. Information Warfare*, Jane's Special Report (Alexandria, VA: Jane's Information Group, 1996): 145-147, in Edmund Glabus, "Metaphors and Modern Threats: Biological, Computer, and Cognitive Viruses," quoted in *Challenging the United States Symmetrically and Asymmetrically: Can America Be Saved?"* edited by Lloyd J. Matthews (Carlisle Barracks, PA: U.S. Army War College Strategic Studies Institute, 1998): 206.

[89] Richard J. Pech, "Inhibiting Imitative Terrorism Through Memetic Engineering," *Journal of Contingencies and Crisis Management* 11, no. 2 (June 2003): 62.

[90] Ibid., 64.

voluntarily stop reducing the spread of these memes. Pech went on to argue that one viable response to this conundrum—a response he refers to as *memetic engineering*—might be to edit the meme's encoded information. He argued, "Changes to the terrorism meme will alter the information that is received by an individual in a state of disidentification, possibly removing the stimulus that could have led to an act of terrorism, and in the event of an act of terrorism, changes in its reporting may inhibit copying behaviours by re-engineering the contents of the terrorist meme."[91] In other words, purposefully editing the meme—perhaps by always describing terrorists as "cowardly, insecure, weak, malicious, gutless, pointless, mentally unstable, spineless, puny, pathetic, despicable, and loathsome"—might diminish its appeal, slow its replication, and (most optimistically) decrease the number of terrorist acts.[92] As Pech noted, it is even possible that "a deliberate mutation [of the meme] will be lethal to the meme's level of fitness, contributing to a failure to replicate and ultimately, being a causal factor in its death."[93]

The second school of thought on memetic warfare built on this early work (i.e., framing memetic warfare as an effort to shape the information environment) but recognized that the battle of memes would largely be waged online. Some of this work was focused, for example, on the challenge of maintaining message integrity in the Wild West of the global internet. Thus one article, on memetic warfare within domestic American politics, acknowledged the struggle to find a balance between facilitating and constraining mutation: "We, the virus designers, wanted participants to take the core idea and make it their own—to 'run with it'—but we also wanted to control the degree and kinds of mutation."[94] Done successfully, the meme would evolve such that "the mutations that developed in the field generally tended to be extensions of, rather than departures from the basic framework."[95] Done unsuccessfully, the meme might evolve in ways that conflicted with the original message and agenda.

[91] Ibid.

[92] Ibid., 65.

[93] Ibid., 64. One frequently cited article on the topic is "Memetics: A Growth Industry in US Military Operations," which was published in 2005 by Major Michael Prosser during his tenure as a student at the United States Marine Corps School of Advanced Warfighting. Prosser, now a lieutenant colonel in the Marine Corps, briefly summarized the literature on memetic warfare, argued for the creation of a "Meme Warfare Center" to take up this work, and outlined the hypothetical organizational structure/location of such a center.

[94] Andrew Boyd, "Truth is a Virus: Meme Warfare and the Billionaire for Bush (and Gore)" (2002), http://andrewboyd.com/truth-is-a-virus-meme-warfare-and-the-billionaires-for-bush-or-gore/.

[95] Ibid.

Other articles took the additional step of attempting to offer concrete ideas for countering ISIS's presence online. One author suggested, for example, that we might undermine ISIS's efforts to dominate the information space by recruiting "a few good internet trolls" to engage in campaigns such as "[flooding] the online environment with an overwhelming volume of counter-narratives," or spreading fake material so as to "drown legitimate videos in a sea of fake ones."[96] Another article argued for an even more aggressive engagement including controversial actions such as catfishing (i.e., luring and deceiving someone online via a fraudulent account), doxing and harassing the family member of ISIS affiliates (i.e., publishing the personal contact information of family members and encouraging online harassment), spreading misinformation, and/or launching delegitimizing social media campaigns that link ISIS with ideas it finds abhorrent.[97]

Perhaps not surprisingly, much of this internet-era work has been driven by a concern about ISIS's online social media success and the USG's struggle to successfully counter the movement's messaging. As a result, memetic warfare is being proposed as a non-kinetic means of undermining ISIS's online presence (and thus an approach that risks fewer civilian casualties than, for example, bombing ISIS's media infrastructure). One particularly comprehensive treatment of the topic comes in Jeff Giesea's 2015 "It's Time to Embrace Memetic Warfare." The article begins with the idea that "it seems obvious that more aggressive communication tactics and broader warfare through trolling and memes is a necessary, inexpensive, and easy way to help destroy the appeal and morale of our common enemies."[98] Importantly, the article goes on to offer a relatively robust definition of memetic warfare:

> Memetic warfare, as I define it, is competition over narrative, ideas, and social control in a social-media battlefield. One might think of it as a subset of 'information operations' tailored to social media…Memetic warfare could also be viewed as a 'digital native' version of psychological warfare, more commonly known as propaganda. If propaganda and public diplomacy are conventional

[96] Kalev Leetaru, "A Few Good Internet Trolls," *Foreign Policy* (July 14, 2015), http://foreignpolicy.com/2015/07/14/ islamic-state-twitter-recruiting/. This article also argues that this effort should be located in the Department of Defense as tasking State Department representatives with the work of responding to ISIS might inadvertently validate ISIS.

[97] Jeff Giesea, "It's Time to Embrace Memetic Warfare," *Defense Strategic Communications: The Official Journal of the NATO Strategic Communications Centre of Excellence* 1, no. 1 (Winter 2015): 71.

[98] Ibid., 69.

> forms of memetic warfare, then trolling and PSYOPs are guerrilla versions.[99]

In addition to locating memetic warfare very firmly in the "communications battlespace," Giesea also frames the tactic as an aggressive form of the more "tepid, timid, and stale" PSYOPS and military information operations.[100] It is "weaponized trolling," which is "the social media equivalent of guerrilla warfare."[101]

In theory, of course, memetic warfare needn't be as aggressive as it is in the model that Giesea outlines. That said, most contemporary work frames memetic warfare in decidedly aggressive terms. It is understood to be an inherently disruptive process, and the tools of such an approach—ranging from the creation of a new meme, to the doxing of an enemy, to wide-ranging social media guerilla operations—are theorized to be best suited to only certain types of engagement. In other words, despite early work suggesting that memetic warfare might be understood as a form of "perception management," contemporary approaches consistently frame it as something more like guerilla social media use.

This work is, in all likelihood, a direct response to the reality of the online environment in which internet memes exist. As one article noted, successful memes are necessarily simplistic and they "thrive on a lack of information—the faster you can grasp the point, the higher the chance it will spread."[102] Memes effectively provide information that is over-distilled, over-simplified, and under-evidenced (and in some cases, patently false). The same article noted that successful memes tend to articulate extreme positions, and cited research demonstrating that socially isolated individuals who might be described as "on the fringe" were more likely to create successful memes.[103] Another article argued that memes "function like the IEDs of information warfare…great for blowing things up, but likely to sabotage the desired effects when handled by the larger actor in an asymmetric conflict."[104] In other words, memes are typically understood to be an effective tool for insurgencies striving to disrupt the status quo, but they are not typically framed as effective tools

[99] Ibid., 70.

[100] Ibid.

[101] Ibid.

[102] Douglas Haddow, "Meme warfare: how the power of mass replication has poisoned the US election," *The Guardian* (Nov 2016), https://www.theguardian.com/us-news/2016/nov/04/political-memes-2016-election-hillary-clinton-donald-trump.

[103] Ibid.

[104] Jacob Siegel, "Is American Prepared for Meme Warfare?" *Motherboard VICE* (Jan 2017), https://motherboard.vice.com/en_us/article/xyvwdk/meme-warfare.

for established powers looking to foster stability.[105] Memes are, in short, typically understood to be inherently destabilizing and not well suited to the articulation of a cultivated, managed message or program.

Our analysis recognizes the rich history of the concept of "memetic warfare," and we do not deny that this type of disruptive engagement (i.e., guerilla social media use) has value. The very crisis that provoked this recent spate of writing on memetic warfare—ISIS's online social media success and effective messaging—is one that could be productively mitigated with a careful and thoughtfully disruptive effort. That said, our analysis suggests that memes have utility far beyond the types of engagements that fall under the narrow rubric of "memetic warfare." As a result, we recommend that practitioners in the influence community instead seek to explore the role of memes within the broader and more inclusive category of influence campaigns.

[105] Ibid.

Appendix B: Organizations and Individuals Contacted

Comedian, Professional internet troll

George Washington University

Intelligence Community Consultant

National Counterterrorism Center

Social Media Consultant

Stanford University, Peace Innovation Lab

University at Buffalo, The State University of New York

U.S. Army Special Operations Command

U.S. Department of Defense, Joint Information Operations Warfare Center

U.S. Department of Defense, Joint Staff

U.S. Department of State, Global Engagement Center

U.S. Navy Office of Naval Research

U.S. Special Operations Command

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DRM-2018-U-017433-Final -2

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