

A Cultural Exploration of the Social Media Manipulators

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Abstract:

The widespread use of Internet social media sites for the production and dissemination of propaganda continues to grow and gather attention. Social media sites spread information faster and wider than those institutions and methods historically limited to state-affiliated organizations. There are several characteristics that are unique to virtual space and make the production and dissemination of propaganda different; they include the Internet's global reach, the recipient's apparent trust placed in information source as well as the information sources, and the low cost of participation. Thus, the use of social media as a method to spread misleading information exploits trust relationships between the reader and the source. Although propaganda is a weapon with a long history in war, in the 21st century, the delivery and distribution of propaganda through the trusted channel of social media is markedly different than what was historically observed.

We investigated the relationships among state-affiliated actors who use social media to produce and distribute propaganda along with their national cultural values. Prior research inferred a link between culture and social media usage (Hofstede et al., 2010; Sample & Karamanian 2014). Specifically, Hofstede et al. (2010) contended that cultures that are more masculine use the Internet for information seeking, whereas more feminine-oriented cultures use social media sites for sharing information, seeking to build better "trusting" relationships. We sought to explore whether masculine countries would leverage the trust relationships that are present with social media users to further the reach of state-affiliated propaganda.

We built upon Bradshaw & Howard's (2017) study on propaganda purveyors, which examined preferred social media deployment techniques across 29 different countries. Using previously published methods, we examined associations with culture using Hofstede's scale. Since masculine countries have previously been associated with information-seeking behaviors, we sought to explore the potential that more masculine cultural values are associated with greater information-shaping and -distributing behaviors compared with more feminine cultural values. The results showed a strong difference in distributions, countries that deployed fake news via social media tended to have more masculine cultural values. Moderate differences were observed in other cultural values, purveyors of social media propaganda exhibited more authoritarianism and uncertainty avoidance. These findings suggest that specific cultural values associate with the distribution of fake news, indicating that culturally aware responses may be more effective when responding to these events.

Keywords: propaganda, Hofstede, cultural values, social media, trust

1. Introduction

The political events of 2016 brought to the forefront concerns about campaigns of psychological operations campaigns and their effects, particularly the effects of propaganda. The use of social media to produce and deliver propaganda represents a new and more effective mechanism for furthering the goals of state actors engaged in persuasive acts. Lee & Kent (2017) noted that approximately one third of the US population received Russian propaganda on Facebook during the 2016 election cycle. Gottfried & Shearer (2016) found that in 2016, a majority of US citizens used social media sites as a news source.

Social media sites such as Facebook and Twitter were not initially designed or envisioned as primary news sources. An examination of their mission statements shows these sites envisioned as communications enabling. The original mission statement for Twitter read as follows: “To give everyone the power to create and share ideas and information instantly, without barriers” (Fox 2014). Facebook’s original mission statement said that “Facebook’s mission is to give people the power to share and make the world more open and connected” (www.facebook.com). In 2017, Facebook updated the mission statement to the following: “Give people the power to build community and bring the world closer together” (<https://investor.fb.com>, 2017). In each of these statements, the mission does not mention news sharing or, for that matter, information or knowledge sharing.

The social media environment as a news dissemination paradigm differs from the original news paradigm for print and broadcast, where control of production and dissemination of news was concentrated to a small group of broadcasters who were granted licenses to operate from their governments. However, social media sites with the ability to “like” and “share” information or stories creates an environment that appears as news, and is now able to spread without controls. This unconventional use of social media sites as primary news sites suggests that the adoption patterns associated with these information-shaping behaviors may differ from the adoption patterns associated with social media usage in general. Sample & Karamanian (2014) observed collectivism, indulgence, and short-term orientation with Facebook adoption rates, whereas Twitter adoption was associated with masculine and indulgent values.

Although social media sites may not have originally been envisioned as news media, the recognition of the value of social media sites (such as Twitter) as news sources grew during, and after the Arab spring (Howard & Hussain 2011; Comunello & Anzera 2012). During the Arab Spring, Twitter feeds produced a narrative that countered the official government version of events (Howard & Hussain 2011; Comunello & Anzera 2012), that provided accurate images of events that were officially unavailable. At this point in time, social media sites had grown from social conversation platforms viewed to trusted news sources.

In 2017, Bradshaw & Howard compiled a list of countries where active engagement in propaganda spread using social media that occurred, and the methods of dissemination for each country. This list, consisting of 29 countries, discussed in the study (Ibid) provides the launching point for this study and analysis. When examining this list of 29 countries in the context of cultural observations on social media usage (see Hofstede et al., 2010; Sample & Karamanian 2014), the movement from information seeking to information shaping on social media appears to be a logical next step. This exploratory study was performed with the purpose of determining whether cultural values might be associated with some of the behaviors and trends associated with the use of social media sites for production and creation of propaganda.

2. Background

Propaganda and deception have a long history in warfare (Schultz 1989; Taylor 2013); however, in the past, the distribution or reach was limited (Crilley 2001) by the media (e.g., person-to-person, newspapers and other printed materials, radio, and television), therefore; less effective due to speed and cost. More recently, Commin & Filiol (2015) noted the breakdown of the traditional boundaries of war along with a movement away from the model of bending the enemy to one’s will (Chacon 2006) to a different goal of having the victim carry out the attack against themselves (Cybenko et al. 2002). In this new age of hybrid warfare propaganda, a form of deception, is a natural weapon for use the perception shaping, that is necessary for victims’ self-attack.

An important step in the process of having targeted audiences enact attacker goals relies on the message being able to reach the target. In the global virtual environment, much attention is given to the reachability and vulnerabilities of various technologies; however, the reachability and vulnerabilities of the human are equally important (Szfranski 1997; Franke 2015). Some countries

have mitigated this vulnerability by controlling the reachability of its citizens (Clayton et al. 2006; Aryan et al. 2013), but the directly reachable citizens of many Western democracies remain open to persuasion through propaganda.

Propaganda is information or ideas that are spread by an organized group or government to influence people's opinions, especially by not giving all the facts or by secretly emphasizing only one way of looking at the facts (adapted from dictionary.cambridge.org). Fake news is "false stories that appear to be news spread on the internet or using other media, usually created to influence political views or as a joke" (Ibid). Both definitions have overlapping features, most notably the goal of influencing or persuading and the use of the Internet as a distribution channel. The term "fake news" has become so common that the *Oxford Dictionary of English* 2017 word of the year is fake news (Meza 2017). The manner in which war is waged in the cyber domain challenges assumptions about cyber space, the entities in cyber space, and the relationship between those entities. Some countries' highly effective deployment of deception techniques, through the use of propaganda, challenges some traditionally held beliefs, while the sophistication also continues to grow.

There are several aspects to consider when discussing the role of social media in the production and spread of state-sponsored propaganda, and these range from technical to operational to behavioral. This study is focused on the behavioral aspects of propaganda, specifically trust-exploiting behaviors. Some societal values appear to encourage a degree of trust or openness (Hofstede et al. 2010). In 2017, ²Sample et al., observed specific societal values associated with a higher victimization rates through social engineering, suggesting that some cultures might be more trusting in the online environment than others. If cultural values associate with a willingness to trust online messages, then these same cultural values may also associate with the production and dissemination of the crafted messaging as a part of social media manipulation in support of propaganda.

2.1 Social Media Manipulation

The use of Facebook and Twitter for purposes not listed in the sites's mission statement illustrated the changing nature of social media sites. Facebook and Twitter became launching points and prominent spread sites for fake news. Cultural differences have been observed in societal use and interactions with technology (Elmasry et al. 2014). This variance appears to be consistent with previous research and observations (Hofstede et al., 2010; Sample & Karamanian, 2014; ¹Sample et al. 2017; ²Sample et al. 2017), suggesting that national cultural values may associate with propaganda production, spread, and even the spread method, when social media has been deployed.

Members of open societies that have a protected, independent press may be less familiar with media manipulation than those from closed societies with a long history of government-controlled messaging. Combining this background with the changing nature of social media sites as news sharing sites (Gottfried & Shearer 2016), the open society content readers have no reason to distrust the material that they are receiving. Furthermore, when social media sites became sources of truthful news, the subscribers could view the sites as credible sources of news stories, even after the quality of the content changed.

One reason for this unanticipated use of social media for fake news activities may be explained by behavioral traits or cultural values associated with the actors in this arena. The willingness of the target actors to trust both users and computers as sources of information requires a deeper understanding of the nature of online trust relationships. Trusting behavior entails the individual surrendering control over valuable outcomes, with the expectation that the other will reciprocate. Furthermore, a shared social group identity is a strong predictor of trusting behavior between individuals (Tanis & Postmes 2005). With online trust, Friedman et al. (2000) highlighted that, regarding technology, the term "trust" is often broadly used to refer to expectations, rather than a considered trusting behavior as described above. They concluded that people trust other people, not technology (Ibid). Context is also significant: people are less trusting of situations

involving their financial information than other personal information. This disclosure suggests that the potential manipulation of individuals may be easier when finances are not involved. The existence of cognitive biases may further influence the degree that people believe and trust fake news. Exploitation of these biases, allows fake news creators to optimize the target and subsequent spread of the fake news item. People are likely to deem reliable and trustworthy information that confirms their pre-existing beliefs: also known as the confirmation bias (Kahneman et al. 1982).

Once the trust relationship between the reader and the content provider is in place, information shaping and distribution are possible. Considering the competitive nature of masculine societies along with the unrestricted boundaries of hybrid warfare, social media sites that act as news sources are reasonable targets. According to Hofstede et al. (2010), the competitive, masculine societies will use social media sites for news information seeking, as a way to gain a competitive advantage, whereas feminine societies will use social media sites for social information sharing (Sample & Karamanian, 2014). The migration of social media sites from information seeking to information shaping represents the next frontier and is now known as the fifth domain of war (Lynn 2010). Lee & Kent (2017) showed Facebook's manipulation. Facebook discovered that 120 fake, Russian-backed pages made 80,000 posts that went directly to 29 million Facebook users who "liked" and "shared" information with 126M users (Ibid). Twitter was also used in the same manner (Booth et al. 2017).

Another new aspect is the automated distribution channel or the reliance on bots. The use of bots as an automated distribution channel is unique to war in the cyber domain. Considering that bots are a relatively young technology (Stinson & Mitchell 2008), their usage can also be considered as a form of technology adoption. Bot usage also represents an example of the 21st century adaptation to the delivery of the fake news payload that was deemed trustworthy by the recipients that reached a large population.

2.2 Values

Cultural values as defined by Hofstede are decomposed into 6 dimensions: power distance index (PDI), individualism versus collectivism (IvC), feminine versus masculine (FvM), uncertainty avoidance (UAI), long-term versus short-term orientation (LvS), and indulgence versus restraint (IvR). A brief discussion of each of these dimensions follows.

- PDI – This dimension details an authoritarian or egalitarian society's ideals. Power in the high PDI society originates at the top, suggesting that trust relationships may occur among peers or when lower societal members rely on higher members, previous observations noted that senior members provide protection to the junior members of their group (Hofstede et al. 2010; Nisbett 2010). In egalitarian societies where "truth is spoken to power" (Hofstede et al. 2010), trust may likely be more easily granted across a wider population where the "in group" and "out group" are perceived as being closer in the low PDI societies (Nisbett 2010). In low PDI societies, risks tend to be rewarded (Guess 2004; Hofstede et al. 2010). Propaganda emanating from high authoritarian groups should contain a disciplined message that is supported at all levels of society. The spread of fake news within low versus high PDI cultures may also be determined by how secret that information is. This refers to the secrecy heuristic, where the tendency to perceive information as being more credible if that information is framed as being something that the individual is not meant to know (Travers et al. 2014). The revelation of "shocking" information is often times the basis of fake news stories, such as those stories claiming during the 2016 US presidential election that candidate Clinton had suffered a heart attack (Gillan 2017). In high PDI cultures, this secrecy heuristic effect could be enhanced, because there may be a greater assumption that those in power are privy to information that is unknown to the general public.
- IvC – This dimension defines the view individual's self-view as related to the larger society. Collectivist societies view the individual as an important link in a larger chain (Nisbett 2010).

The implication for social media manipulation being that collectivist values might result in greater consistency, whereas individualist societies might exhibit less consistency but greater breadth in the spread mechanisms.

- FvM – This dimension defines the manner in which a society deals with conflict, with masculine societies dealing directly and seeking a solution when winners and losers are present, whereas feminine societies seek to negotiate so that each side wins.
- UAI – This dimension focuses on how a society deals with the unknown. The high UAI society needs assurance in order to accept what was unknown, whereas in the low UAI society curiosity overrules fear. This relates to predictability of the environment. A culture with low UAI may be less likely to pay attention to a fake news story that depicts a deviation from a social norm. On the other hand, cultures with high UAI may be especially sensitive to any fake news story that indicates a breach of a social norm, because this in turn suggests greater uncertainty. This is in keeping with psychological research that suggests people are particularly influenced by information that does not match their preconceptions (Hemsley & Marmurek 1982). The high UAI societies may be drawn to shape information with precision and consistency.
- LvS – This dimension defines a societal preference for immediate rewards versus waiting for gratification. This relates to trust as a long-term culture relies upon ongoing, harmonious relationships between individuals if the culture is to survive into the future, meaning that agreement between and trust of others is encouraged (Hofstede et al. 2008).
- IvR – This dimension defines how societal members express themselves and ranges from stoic with little to no shows of emotion to large celebrations.

3. Method

The examination of culture creates challenges due to the existence of unconscious social and cultural biases that everyone possess (Nosek et al. 2011; Fiske & Taylor 2013). Objectivity, although difficult to attain, is still a primary goal; thus, quantitative analysis is preferred. Furthermore, observation of behavior in a natural setting is ideal. In this particular case, the observable data were collected and analyzed for a different study, the researchers for this study are re-purposing the collected data to determine whether common cultural values can be observed. The research questions we will evaluate are listed below.

- **R1: Use of Social Media by Propaganda Purveyors?** Do the purveyors of propaganda who use social media sites differ culturally from those who do not? Evaluate of results relies on using the full set of countries that Hofstede defined, and dividing the countries into two groups: those who use social media sites to deliver propaganda and the remaining countries from the Hofstede pool of countries. The two groups will be compared to determine how similar or dissimilar they are in terms of distributions using the Mann-Whitney-Wilcoxon (MWW) test (Hollander et al. 2013). The researchers are testing against the null hypothesis that states H_0 : There are no differences in the distribution cultural values among the purveyors and the non-purveyors. Thus, H_1 represents the alternative hypothesis that must be considered if $p \leq 0.01$, after adjusting for multiple comparisons using a Bonferroni adjustment ($\alpha/\text{comparisons} = 0.05/5 \text{ comparisons}$) (Ibid).
- **R2: Cultural Values over a period of time for Countries With Social Media Propaganda Purveyors and Without?** Are there any cultural value trends that can be observed on the social media site propaganda purveyors? The second research question can be answered by evaluating the median value each purveyor over the 7-year time interval. The median values for each year will be paired with the year and a Spearman correlation will be run (Hollander et al. 2013). H_2 : There are no associations between the cultural values and social media propaganda distributors vs. non-distributors. H_3 : represents the alternative hypothesis that must be considered; an inferred relationship between cultural values and propaganda distributors who use social media.

- **R3: Cultural Values and Methods for Social Media Propaganda Delivery?** Do any cultural values associate with the method of propaganda delivery? For this set of data, the groups are small so that the standard tests of MWW and Spearman are not appropriate (Hollander et al. 2013). The median values are descriptively examined and compared against the overall Hofstede median values, and significant differences (greater than 10) will be discussed along with the importance of the result.

Of the 29 countries listed in the Bradshaw & Howard (2017) study, 24 of the countries were found in Hofstede's data (<http://geerthofstede.com/>); however, countries that were not found in Hofstede's data were excluded. In some cases, the social media methods were not identified, whereas those countries were excluded in the methods portion of the study (R3), but they are included in the processing for R1 and R2. Table 1 provides the listing of countries, their Hofstede cultural values, the number of years in the Bradshaw and Howard (2017) study, and the methods (A for automated, H for human, and B for both human and automated) used to disseminate propaganda. Since the focus of this study is on cultural values, the country names are not listed, but the reader can determine the country names through examination of the cultural values provided by Hofstede (<http://geerthofstede.com>). The data used in this study can be found at <https://sites.google.com/site/cyberbehaviors/study-data>.

The hypotheses tested are decomposed into six sub-hypotheses for each dimension. Evaluation of the overall findings relies on "or" processing of a truth table. A single positive or "1" entry in the truth table is sufficient to accept the alternative hypothesis.

Table 1: List of Countries Who Use Social Media to Spread Propaganda

Hofstede Cultural Values								Social Media
Country	PDI	IvC	FvM	UAI	LvS	IvR	Years	Methods
1	49	46	56	86	20	62	5	A
2	36	90	61	51	21	71	4	A
3	69	38	49	76	44	59	7	B
4	80	20	66	30	87	24	6	H
5	57	58	57	74	70	29	0+	Unlisted
6	78	8	63	67	N/A	N/A	3	B
7	35	67	66	65	83	40	1	A
8	77	48	56	40	51	26	4	Unlisted
9	58	41	43	59	14	40	5	A
10	13	54	47	81	38	N/A	4	Unlisted
11	81	30	69	82	24	97	0+	B
12	94	32	64	44	27	42	1	A
13	68	60	64	93	38	29	2	H
14	93	39	36	95	81	20	5	B
15	95	25	60	80	36	52	4	A
16	86	25	43	92	52	28	0+	H
17	60	18	39	85	100	29	4	B
18	80	35	52	60	30	N/A	6	A
19	58	17	45	69	93	49	7	B
20	66	37	45	85	49	49	4	B
21	35	89	66	35	51	69	3	H
22	40	91	62	46	26	68	6	B
23	81	12	73	76	16	100	2	B
24	70	20	40	30	57	35	4	H
Manipulators (median)	68	37	57	74	41	45.5	N/A	N/A
Control group (median)	69	30	42.5	60	35	47	N/A	N/A

Hofstede	68	30	46	64	38	47	N/A	N/A
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4. Results

The results of the MWW test were used to evaluate R1: H_0 , H_1 can be viewed in Table 2, the main finding is shown graphical in Figure 1, and the corresponding truth table results are shown in Table 3. Significant findings are shown in **red**, and interesting findings are shown in **blue**. Tables 4 and 5 contain the findings related to R2: H_2 , H_3 . Table 6 contains the findings for median value analysis to address R3. This section simply lists the results, interpretation and further analysis can be found in Section 5.

Table 2: MWW Results H_0 , H_1

Dimension	PDI	IvC	FvM	UAI	LvS	IvR
p value	0.7944	0.4515	0.0078	0.4978	0.235	0.940

* $p < 0.05$: Conventional significance level, not corrected for multiple comparisons.

** $p \leq 0.01$: Conventional level for statistical significance after adjusting for multiple comparisons.

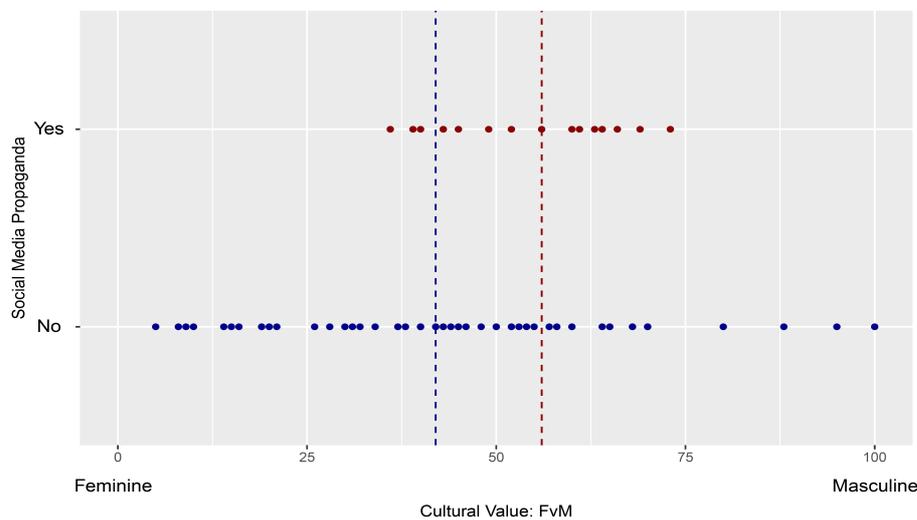


Figure 1: The x-axis depicts the feminine (0) to masculine (100) cultural value. The y-axis shows whether or not the country was a purveyor of social media propaganda (Yes is represented by dark red, No by dark blue). The dotted lines indicate the median values.

Table 3: Truth Table Evaluation for H_0 , H_1

Dimension	PDI	IvC	FvM	UAI	LvS	IvR
T/F	0	0	1	0	0	0

Table 4: Trended Median Values H_2 , H_3

Dimension	PDI	IvC	FvM	UAI	LvS	IvR
r	0.333	0.142	0.5714**	0.3333	-0.119	0.071

Table 5: Truth Table Evaluation for H_2 , H_3

Dimension	PDI	IvC	FvM	UAI	LvS	IvR
T/F	1+	0	1+	1+	0	0

Table 6: Median Values for Delivery Method Groups

Dimension/Delivery	PDI	IvC	FvM	UAI	LvS	IvR
Automated	58	41	60	60	27	47
Human	70	25	64	35	52	29
Both	73.5	24	47	79	49	49
Hofstede	68	30	46	64	38	47

5. Discussion

Findings for each of the research questions provided evidence that inferred a relationship between cultural values and the use of social media to disseminate propaganda. Masculine values were observed in response to each of the research questions. This finding suggests that, in addition to using social media for information seeking, masculine values may play a role in the use of social media for information shaping. A breakdown of the findings for each research question follows.

R1 involved examination of the propaganda purveyors who used social media. The difference between the disseminators and the non-disseminators in FvM dimension is similar to the observation of social engineering attackers by ²Sample et al. (2017), where self-identified attackers who deployed social engineering as an attack vector tended to nationally possess masculine values compared to the non-attackers suggesting that masculine cultural values may consider data as a tool that can be weaponized and that truthful data might be less valued in these competitive, aggressive societies than in societies with nurturing values. A second finding of interest in the data was the difference between the UAI values. Although not statistically significant, this again supports the findings of the aforementioned study (Ibid) where the social engineering attackers had significantly higher UAI values than their non-attacking counterparts. In high UAI societies, propaganda may represent an additional method to assure mission success.

R2 involved examining the median values of the countries that use social media to disseminate propaganda over time. The trend line for masculine values over the 7-year period shows an increase.

These two dimensions are singled out for two reasons. (1) The high FvM associates with information seeking and suggests that information shaping may also be a behavior to associate with this dimension. (2) The masculine trend, while significant, is not overtly masculine, rather the results are centered with a gradual increase reflecting an increasingly masculine trend. This finding suggests that over time, these same countries that have historically exhibited information seeking behaviors (Hofstede et al., 2010) are also increasingly information shaping. Sample & Karamanian (2014) noted the masculine tendency toward information dissemination with masculine countries' adoption rates with Twitter usage. However, the movement into information shaping, particularly with the use of Facebook, that appears reflects the evolution of the social media site.

The PDI value increase is relevant because successful, propaganda requires consistency and repetition (Gambrill, 2010), behaviors that can be more easily supported in a high PDI society where orders are passed down from leadership (Hofstede et al. 2010). In the low PDI countries where messages emanate from multiple sources, the content is more likely to vary due to individual preferences, which results in message variation. Nonetheless, some message variation may be acceptable, in order to make the message appear authentic and the spread appear organic. The core message must be consistent, and this consistency fits well in a society where permission for all actions are strongly controlled.

6. Conclusion

The Bradshaw & Howard (2017) report provided an inventory of state-sponsored propaganda producers and distributors who used social media to further their goals. Since propaganda is designed for cognitive hacking, the attackers' and targets' values and beliefs should

be understood. These values and beliefs may provide the insights necessary to make the message believable or trustworthy to the intended recipient.

In the physical world, cultural values factor into believability and authenticity (Minkov 2013); therefore, cultural values should similarly occur when evaluating messages in the virtual world. A central goal of propaganda is to persuade the target. Thus, the message sent in support of propaganda must resonate with the intended recipient's cultural values.

Once propaganda has been successfully identified, effective countermeasures should be deployed. However, psychologically countering recipients of misinformation is challenging although there are evidence-based recommendations (decrease the number of arguments supporting the misinformation, create scrutiny and counter-arguments, and provide detailed corrections to misinformation) (Chan et al. 2017). Another approach is countermeasures must be carefully constructed to manipulate the purveyors. These responses will require an understanding of online trust relationships and cultural values in order to be effective. This study contributes to the overall process by focusing on the cultural values of countries who produce and disseminate propaganda. The three cultural dimensions that were identified suggest that a direct response will be needed, but the response will likely require detailed, consistent, and inconspicuous and culturally tailored responses.

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