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Research Article

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Abstract

The goal of this article is to place the role that social media plays in collective action within a more general theoretical structure, using the events of the Arab Spring as a case study. The article presents two broad theoretical principles. The first is that one cannot understand the role of social media in collective action without first taking into account the political environment in which they operate. The second principle states that a significant increase in the use of the new media is much more likely to follow a significant amount of protest activity than to precede it. The study examines these two principles using political, media, and protest data from twenty Arab countries and the Palestinian Authority. The findings provide strong support for the validity of the claims.

Keywords

Arab Spring, PMP principle, new media, protest

An important debate among those who study political protest and violence concerns the role that social media plays in the ability of challengers to mobilize for collective action. It is difficult to deny that there have been significant developments in this regard in recent years. Millions of people around the world have become connected through social media, which has made it easier to mobilize for collective action. However, skeptics claim that the impact of these technological changes on the movements' success has been exaggerated. This debate became especially intense in the context of the dramatic events that have come to be known as the "Arab Spring." The goal of this

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article is to propose and empirically demonstrate two theoretical principles that are intended to move this discussion forward.

In keeping with the title—"politics comes first"—the article argues that when studying the role of the social media in collective action, politics comes first both analytically and chronologically. Politics comes first analytically, because it is a mistake to attempt to understand the role of any media in any political process without thinking about the surrounding political environment. Just as importantly, politics comes first chronologically, in that a rise in the number of extensive protests is more likely to precede changes in the use of social media than to follow it.

This underlying argument also shapes the structure of the literature review. The first section provides a brief look at the literature that deals with the relationship between political grievances and protest. The purpose of this section is not to delve into the myriad political and social causes of collective action; instead, the point is to focus on one major cause of collective action to demonstrate why the nature of the political environment is so critical. The second part of the literature review will look at the research that deals with the role social media can play in collective action. The third part reviews the recent studies that have looked specifically at the role of social media in the Arab Spring. One of the important conclusions that emerges from this last set of research is that the role of social media in these uprisings was far from uniform. The literature review sets the stage for the theoretical, methodological, and empirical sections of the essay.

Political Grievances and Protest

A vast amount of literature has been devoted to explaining the causes of political instability. Given the theoretical focus of this study, we confine ourselves here to the most obvious cause for dissent: political grievances. Although a number of studies deal with political grievances, they do not all use that specific term. One argument that may be relevant to many of the Arab countries is that institutions in anocracies (nondemocracies that are not full autocracies) are not capable of adjusting government policies to the demands of the people quickly enough, which increases the risk of instability (Gates et al. 2006; Hegre et al. 2001; Huntington 1968; Jaggers and Gurr 1995; King and Zeng 2001). Another approach to explaining instability is known as the cultural incongruence hypothesis, which focuses on the gap between the people's desired level of democratic values and the country's actual level of democracy; the larger the gap, the higher the potential for instability (Almond et al. 2000; Inglehart and Welzel 2005). Sheafer and Shenhav (forthcoming) measured the level of cultural incongruence in more than eighty countries and found that this gap is especially high when governments perform poorly in areas such as the standard of living and the control of corruption.

A related set of important political variables are those that explain the overall legitimacy of a particular state. Gilley (2006) collected data from seventy-two countries and found that the three variables that are especially helpful for explaining the level of legitimacy are good governance, democratic rights, and welfare gains.[1]

Social Media and Protest

The high level of interest and excitement about the potential impact of social media on collective action is unsurprising. At first glance, this new technology appears able to provide a movement with powerful, speedy, and relatively low-cost tools for recruitment, fund-raising, the distribution of information and images, collective discussions, and mobilization for action (Bennett 2006; Bimber et al. 2005, 2012; Earl and Kimport 2011). While much of this literature deals with the role of social media in Western democracies, the present article places more emphasis on the debate concerning less democratic environments.

Perhaps the first considerable level of public attention on this issue can be traced to what is often referred to as the "Twitter Revolution" that took place in Iran in June of 2009. The Western news media were filled with reports of tech-savvy protesters using Twitter and other forms of new media to organize and to get their message out. Although this was undoubtedly good for Twitter's brand, it is unlikely that this channel itself played a major role in those activities. As pointed out by Schectman (2009), only about 8,600 people in Iran were registered with Twitter at the time, out of a total population of seventy million.

Despite being an oversimplification, it is helpful to refer to the two sides in this debate as the "cyber-enthusiasts" and the "cyber-skeptics."[2] The cyber-enthusiasts express optimism about the ability of the new media to empower people living in nondemocratic societies and to allow insurgents to adopt new strategies (e.g., Gladwell and Shirky 2011; Shirky 2011). The cyber-skeptics downplay the significance of the new technology, arguing that using the Internet gives people a false sense of participation and keeps them from actual physical protesting. Some cyber-skeptics have even argued that the new media are tools of repression (He and Warren 2011; Morozov 2011; for an excellent review of this dispute, see Joseph 2011).

Two significant lacunas in the literature are relevant to the present article. The first is that very little of this research integrates political variables into its analysis. The nature of the political environment affects both the *ability* of citizens to gain access to social media and on their *motivation* to take to the streets. In societies where people have less access to social media or where there is a great deal of censorship and control, it is more difficult for dissidents to exploit these new technologies. Even in places that do have easy and ample access to the new media, many citizens may not be angry enough to endure the considerable costs associated with collective action.

A second and related lacuna concerns the lack of comparative studies of this issue. While some theorists have used anecdotal comparisons of specific countries, very few have systematically compared the role of social media in protest across a multitude of societies. As demonstrated below, such cross-cultural comparisons can lead to important theoretical insights about how the role of social media in collective action can vary.

The Role of Social Media in the Arab Spring

A number of studies have looked specifically at the role of social media in the uprisings that have become known as the Arab Spring. While popular commentators used terms such as the "Facebook Revolution," most of the social scientists who studied this issue were more circumspect. Examining this particular set of literature reinforces the importance of thinking about the surrounding political environment when attempting to assess the role of social media in collective action.

If there is one single theme that runs through this literature, it would be the varying role of social media in protests among the different Arab countries (e.g., Howard and Parks 2012). Anderson (2011) concluded that the key to the protests was not technology but how the technology resonated in the various local contexts. Hussain and Howard (2012) made a similar point using the example of the Gulf states, which exhibited high levels of social media and low levels of protest (see also Khamis et al. 2012; Samin 2012). Bellin (2012) also took a more context-based approach to this issue, noting four important explanatory factors in Egypt and Tunisia: long-standing grievances, an emotional trigger, a sense of impunity, and access to new social media. Likewise, Comunello and Anzera (2012) argued that Internet scholars cannot understand the full picture of what happened during the Arab Spring without some knowledge of international relations theory.

Norris (2012) reminds us that social networking was important long before the invention of the Internet. According to Norris, social media

> may function to sustain and facilitate collective action, but this is only one channel of communications amongst many, and processes of political communications cannot be regarded as a fundamental driver of unrest compared with many other structural factors, such as corruption, hardship, and repression. (p. 5)

This set of research tells us that there is a need to move beyond the assumptions of the enthusiasts and the skeptics concerning the role of social media in collective action toward a third approach that can be labeled *contextualism*.[3] Contextualists, who almost invariably use a comparative approach, emphasize the impact that political, social, and economic variations have on the role of the social media in collective action. The present study falls squarely into this category.

Two Theoretical Principles

The goal of this study is to propose two theoretical principles to explain the role of the social media in political conflicts. Each of these propositions is rooted in Wolfsfeld's (1997, 2004, 2011) political contest model. To date, this model has only been applied to the role of the traditional news media in conflicts, but there is reason to believe that it can also prove useful for understanding the role of the new media.

Both arguments are intentionally formulated as broad principles rather than narrow hypotheses. There are two reasons for this approach. First, starting with more general principles should make it easier to integrate with the existing knowledge in political communication. Second, the use of broad principles has the potential to generate multiple hypotheses and make a meaningful contribution to the field.

Principle 1: Politics Comes First Analytically

The first theoretical principle states: *One cannot understand the role of social media in collective action without first taking into account the political environment in which they operate*. In the context of the present study, two aspects of this principle are especially important when thinking about social media and protest. One is related to the extent to which people have free and uncensored access to social media, while the other concerns their level of motivation to take to the streets.

Citizens who live in poorer, more repressive regimes are less likely to have access to the Internet, and even when they do gain access, they are much more likely to be monitored, harassed, and censored (Herkenrath and Knoll 2011; van Dalen 2011). Consequently, it is precisely those populations that have the greatest *need* to mobilize against their governments that find it most difficult to exploit the new media.

This Catch-22 situation has also been studied with regard to the relative ability of protest groups to gain access to the traditional media. This concept, which is also rooted in the political contest model, has been referred to as "the principle of cumulative inequality" (Gamson and Wolfsfeld 1993; Wolfsfeld 1997, 2011), states that the citizens who most need the media are the ones who have the most difficulty exploiting it.

A second reason why it is important to consider the surrounding political environment concerns people's *motivation* to protest. For example, citizens who live in wealthier environments and have relatively easy and uncensored access to the Internet and social media are likely to have lower levels of political discontent or interest in politics. Citizens in such settings are more likely to use the social media for entertainment and for keeping in touch with their friends.

This dynamic leads to a somewhat surprising hypothesis. When looking at the issue cross-nationally, there is likely to be a *negative* correlation between the level of communication technology available in a particular country and the level of protest. The very different political environments mean that the greater the level of Internet and social media penetration, the lower the level of protest.

So what is the role of new media in such uprisings? We argue that they should be considered important tools for protest *if and when* there is sufficient access and motivation (Comunello and Anzera 2012; Norris 2012; Papic and Noonan 2011). Social media are important because they can provide information and images that motivate people, they allow groups to organize and mobilize much more efficiently than in the past, and they allow protesters to convey messages to the outside world—all of which have the potential to mobilize third parties into the conflict (Bennett 2006; Earl and

Kimport 2011; Hussain and Howard 2012; Shirky 2011; Tufekci and Wilson 2012). Social media should be seen as facilitators of protest rather than causes.

A metaphor for this process is the impact that wind has on fire. When a fire breaks out, the strength and direction of the wind can have a major effect on how the fire develops, the direction it takes, and its overall impact. Similarly, in societies with a relatively low level of discontent and violence, the extent to which people use social media is unlikely to have an impact on political protest. When the level of anger and violence rises, all forms of media can serve as accelerators for increasing the speed and intensity of protests.

This raises the question of whether it makes theoretical sense to lump the traditional media together with social media when thinking about these issues. There are clear differences between the two, including ease of access, gatekeeping, and the level of interactiveness between users. These factors are important when examining how these different types of media are used by protesters and the effect they have on other activists, potential protesters, and the general public. Researchers should also examine the differences among the various traditional media (such as print vs. electronic) and digital media (e.g., Facebook vs. cell phones).

Such distinctions are less important in the present study. We argue that, when it comes to the impact of the various political environments, there are more similarities than differences between the two types of media.[4] As noted above, the two theoretical principles are firmly rooted in a more general theory in political communication and are considered applicable to both the traditional and new media.

Principle 2: Politics Comes First Chronologically

The second theoretical principle states: *A significant increase in the use of the new media is much more likely to follow a significant amount of protest activity than to precede it*. When a significant political event takes place, people turn to a variety of media to find out what is happening. This has always been the case with the traditional news media (see, for example, Carey 2002) and the same is probably true for social media. This dynamic is likely to be especially prevalent in nondemocratic states, where citizens have less faith in their domestic media. They are likely to turn to their social media contacts, blogs, and the foreign news media to find out what is happening, especially when such events can have a major impact on their lives.

The idea that media changes follow political changes is part of another general principle, the politics-media-politics (PMP) principle, which is also rooted in the political contest model. This principle states that the role of the media in a political process is best seen as a cycle in which changes in the political environment lead to changes in media performance, which leads to further political changes in the political environment (Rahat and Sheafer 2007; Sheafer and Wolfsfeld 2009; Wolfsfeld 2004, 2011). The idea is that the news media are much more likely to react to changes in the political environment than to initiate them. The response itself, such as increased emphasis on a particular candidate or issue, will often have a subsequent influence on the political environment.

This claim should also apply to social media, although instead of talking about the behavior of journalists, it would refer to the behavior of media *users*. The argument we are making here is that political change (such as the initial protests associated with the Arab Spring) leads to changes in the use of the social media (e.g., more people signing up and using social media for political content), which can lead to further changes in the political environment (such as more people participating in protests).

The focus of this study is restricted to examining the first half of the PMP cycle. We intend to show that the increase in social media use is more likely to occur after the outbreak of protest than before. Nevertheless, almost all of the above-cited studies suggest that increased use of social media in a number of Arab countries also contributed to increased protest. If true, this would provide useful evidence in support of the PMP principle.

In some ways, this claim contradicts arguments put forth by Howard et al.'s (2011) study of the role of social media in the Arab Spring. They argued that "a spike in revolutionary conversations often preceded major events on the ground" (p. 3). However, it is important to bear in mind two important differences between this and that study. The first is that the vast majority of Howard et al.'s analysis examined what happened in the midst of the Arab Spring. In the present study, the analysis compares the level of social media use before and after the outbreak of initial protests. Combining the results from our study with those of Howard et al. about what happened *after* the protests broke out provides strong support for the PMP cycle. A second difference is that Howard et al. looked at activists' use of social media. The analysis presented below focuses on the use of the social media by the broader public.

We offer no position on questions regarding the longer term impact of social media on democratic processes (Howard 2011; Sakbani 2011). If we did, however, it would be extremely surprising if we did not find that both of these two principles remained valid. We expect that such changes could only be understood by first looking at variations in the political environments, and that some type of political change would be likely to precede any change in the level of Internet penetration.

Method

We collected data that examined the political situation and extent of digital, broadcast, and social media penetration in twenty Arab countries and the Palestinian Authority: Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates (UAE), and Yemen. Certain data in some of the analyses are not available for all countries.

The major dependent variable is the *protest index*, which indicates the extent of protest in each country (we did not have protest data for Mauritania, Somalia, Sudan, and the Palestinian Authority). The idea was to construct the best possible measure with which to determine the level of *significant protests* in each country during the most important weeks of the Arab Spring. After considering a number of options, we decided to focus on the most active week of protests in each country and on protests

that involved at least one thousand participants. Given that protests in the Arab world sometimes take place on a weekly basis (especially Fridays), we decided to examine a total of eight days from the first significant protest of the chosen week. We focused on eight days of activity to examine the *initial mobilization for collective action* in each country. A longer time period may have made it difficult to control for the myriad factors that could have a major impact on whether the protests continued or ended and, especially, how each government responded.

We searched for the amount and size of the protests in each country in a number of stages. The first stage involved looking at three available "timelines" regarding the Arab Spring to determine the most intensive period of protest in each country. The timelines were produced by the British newspaper *The Guardian* (2011) by The Department of Peace and Conflict Research at Uppsala University (2012) and by Wikipedia (2012).[5]

The second stage was to perform a Google search by entering the name of the country, the key words "protest," "demonstration," or "riot," and the dates in question. We then looked at two pages of results for every search to determine whether any significant protests took place on that day.[6] Although the majority of articles provided details of the approximate number of protesters, it was necessary in some cases to decide whether the protest was significant based on the terminology used (such as "sporadic" or "massive"). Where doubt remained regarding the number of protesters, we decided that any protest recorded in three or more news media would be considered significant. Once a significant protest had been recorded in a particular country on a particular date, the search for that date was considered complete. The third and final stage was to perform a second Google search using the same parameters based on sources in Arabic.

Although it is impossible to know whether this procedure found every date of significant protest in every country, the scale certainly provided a reasonable measure of the differences in protest activities in the various countries. The final scale ranged from 0 to 8, indicating the number of days on which significant protests took place during the most intense week in each country.[7]

All of the political variables were taken from well-known sources. The level of democracy, the control of corruption, and per-capita gross domestic product (GDP) all partially indicate the extent of political grievances in each country. The *Democracy Index* of 2010, which is based on the Economist Intelligence Unit's annual survey,[8] comprises five indicators—electoral process and pluralism, civil liberties, the functioning of government, political participation, and political culture—on a scale from 0 (*nondemocratic*) to 10 (*fully democratic*). The second measure of the level of democracy was the *disrespect for human-rights* index, which is based on the Global Peace Index 2010 report and uses a scale of 1 to 5.[9] The *Control of Corruption* index from the 2009 Worldwide Governance Indicators published by the World Bank (Kaufmann et al. 2010) uses a scale from −2.5 (*no control*) to 2.5 (*full control over corruption*). *GDP per capita*, which is widely considered to be the best measure of economic prosperity, is calculated in U.S. dollars and is based on the data provided by the International Monetary Fund.[10]

Internet penetration is the percentage of Internet users in a country based on 2011 Internet World Stats.[11] *Facebook penetration* and *Twitter penetration* are the percentages of Facebook and Twitter users, respectively, out of a country's entire population. These variables are based on reports published by the Dubai School of Government (Salem and Mourtada 2011). Al Jazeera's audience in the various Arab countries is based on data available from Allied Media Corporation.[12]

The second principle makes claims regarding the amount of social media use before and after significant political events. Unfortunately, no direct measure of social media use is available. However, we were able to assemble three reasonable proxies. The first looked at the growth rate of Facebook registration in various Arab countries (Salem and Mourtada 2011), which was divided into three periods. The "early" period, from August 1, 2009 to April 30, 2010, represents a considerable period of time prior to the start of the protests. The "proximate" period, which is intended to represent the time immediately prior to the outbreak of the protests, runs from May 1, 2010 to November 30, 2010. The "protest" period, from December 1, 2010 to April 30, 2011, refers to the time during which most of the protests occurred.

For the second and third proxies, we used *Google Trends*,[13] a tool that makes it possible to explore changes in the share of searches for specific terms, as well as to identify the most popular searches in a given country and period. Previous studies found that Google searches are strongly correlated with real-world data. For example, Choi and Varian (2009) found that seasonal data, such as the number of visitors to a country or sales numbers, have a strong correlation to Google searches for the same data. Similarly, Ginsberg et al. (2009) found a strong correlation between Google searches for influenza-related terms and the spread of the disease in the population. In other words, previous research shows that searches provide a good indication for actions.

Therefore, given that changes in searches for new media can provide a good proxy for their uses, our second proxy involved analyzing weekly searches for the term "Facebook" during the nine months from September 2010 to May 2011 based on Google Trends. We chose this term in English rather than its Arabic spelling because it constantly appeared in the list of the top ten most frequent searches in Google in all Arab countries. We conducted this analysis in the two countries with the highest levels of protests (Egypt and Syria) and the two with the lowest levels of protests (Oman and UAE). This provided us with a data set that includes thirty-nine weekly data points in each country, a number that allows some form of time-series analysis. More specifically, we conducted ordinary least squares (OLS) regressions with two independent variables: week (representing time) and pre–post revolution. The inclusion of the dichotomous pre–post revolution variable makes it a regression discontinuity analysis (or a quasiexperiment analysis), which is "one of the most powerful designs for detecting causal effects in nonexperimental studies" (McCartney et al. 2006, p. 120; see also Cook and Campbell 1979). By controlling for time, this analysis makes it possible to demonstrate whether an increase in searches for Facebook occurred before or after the outbreak of the Arab Spring, and whether this change can be attributed to the Arab Spring.

Finally, our third proxy looked more generally at the most frequently searched terms in Google in each country and tracked their changes during the three periods defined above, plus another period called the "after" period, which runs from May 1, 2011 to December 31, 2011. Our underlying assumption was that we would find relatively fewer searches for political and current event terms before the outbreak of protests, and relatively more after the protests started. We also assumed that this would be especially true for countries with higher levels of protest, and that such changes in search patterns would last longer in those countries.

Results and Discussion

Principle 1: Politics Comes First Analytically

The first theoretical principle claims that the role of the social media in collective action cannot be understood without first taking into account the political environment in which these media operate. The first way to demonstrate this principle is by looking at the simple correlation between the level of social media penetration and the amount of protest in the various countries. The reason for starting with this analysis is to show what happens when political variables are omitted. It was also suggested that if the principle of cumulative inequality is accurate, we would expect to find a negative correlation between the penetration of social media and protest. This is exactly what we see in Figure 1.

These findings should put to rest the suggestion that social media penetration should be seen as cause for political protest (as claimed, for example, in Howard et al. 2011).[14] Social media skeptics might even see these findings as "proof" of what Morozov (2011) has called authoritarian deliberation. These skeptics would say that this negative correlation shows that allowing people to express themselves in social media reduces their need and/or motivation to take to the streets. A more likely and convincing explanation emerges when one takes a step back and examines the differences in the various political environments (see Figure 2).

The left-hand side of Figure 2 provides strong evidence for the principle of cumulative inequality. In those countries in which citizens suffer the greatest hardships, the citizens also have less access to the Internet (data not shown) and social media, as represented by the penetration of Facebook. These are the same societies in which the traditional media are most closely controlled, which means that these are the citizens who have the greatest need for alternative channels of communication.

The right-hand side of Figure 2 shows that the higher the level of political grievances, the higher the level of protest. The four political factors are the level of disrespect for human rights, the extent to which the various countries have control over corruption, the per-capita GDP of each country, and the level of democracy. With the exception of the democracy index, the correlations are again quite strong: The more difficult the political environment is in a country, the higher the protest index. Admittedly, there is nothing very surprising about these results, which reinforce the

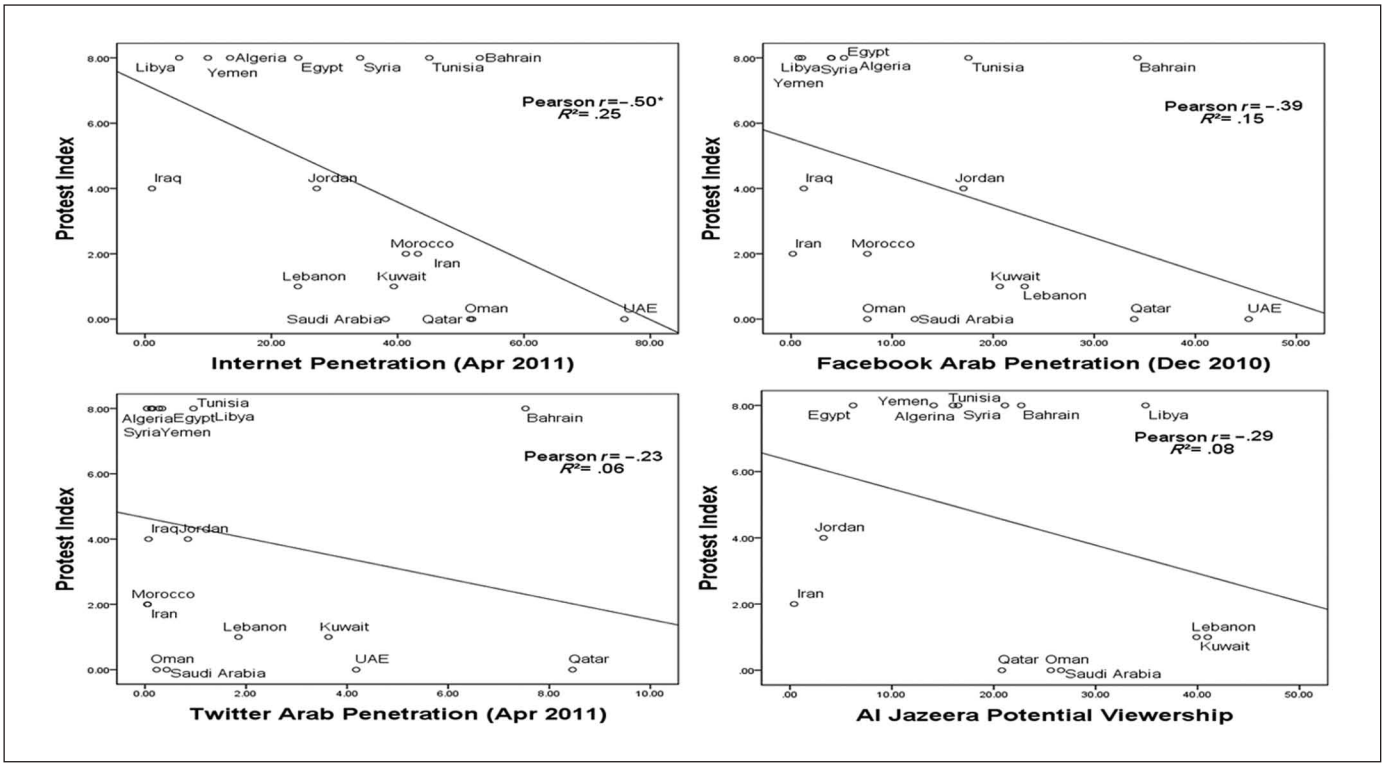
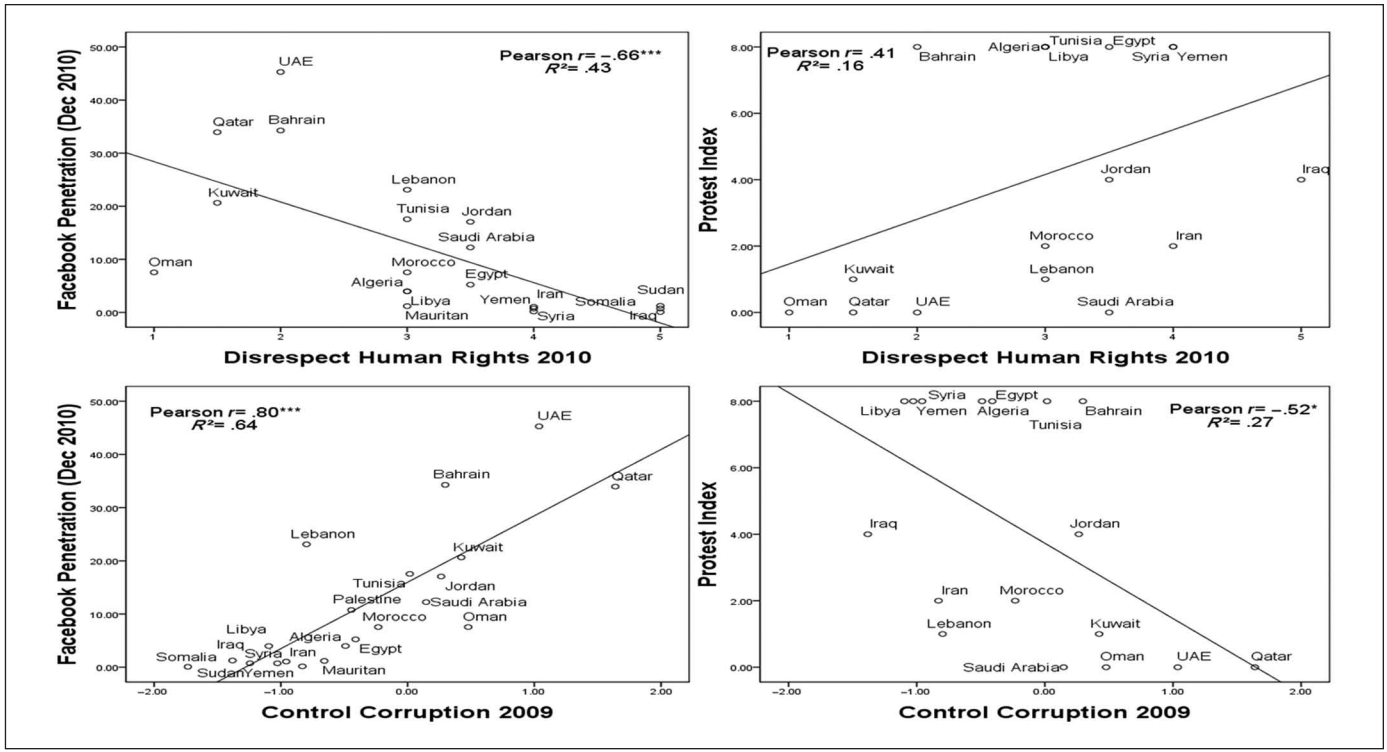


Figure 1. Number of events in the first month of the Arab Spring in each country as a function of social media (and Al Jazeera) penetration.
Note: UAE = United Arab Emirates. Solid lines represent regressions' fit line.
*$p < .05$.



(continued)

Figure 2. (continued)

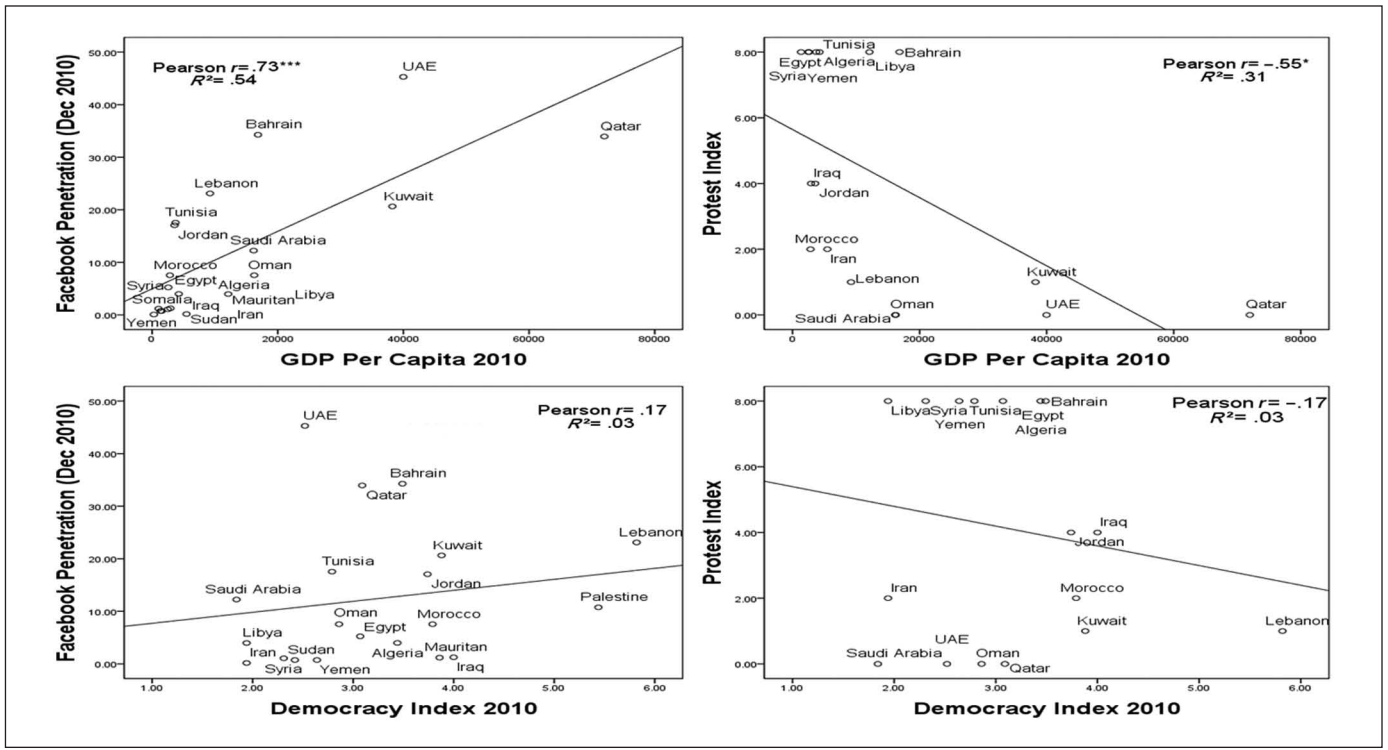


Figure 2. The role of the political environment.
Note: UAE = United Arab Emirates. Solid lines represent regressions' fit line.
*$p < .05$. ***$p < .001$.

findings from other studies. However, the results are included as a reminder that it is a mistake to omit political variables from such analyses.

Again, it is important to stress that these cross-country findings do not contradict claims that social media were important tools for helping Arab protesters. One cannot draw conclusions about individual- or group-level differences based on country-level comparisons; this is what is referred to as an "ecological fallacy" (Freedman 2004). Looking at the changes over time in each of these countries would probably reveal that many groups found it much easier to protest after the advent of the Internet and social media.

Principle 2: Political Events Precede Social Media Use

The second principle states that a significant increase in the use of the new media is much more likely to *follow* a significant amount of protest activity than to precede it. The fact that an increase in the availability of social media does not necessarily lead to protest should be clear from the negative correlation between the amount of media penetration and the number of protests.

As discussed, we used three different proxies to test this proposition. The first looked at the correlations between the outbreak of protests and the rate of Facebook registrations before and after the eruption of violence. The second involves looking at the changes in the share of Google searches for "Facebook." The third and final examination of Principle 2 was based on an examination of the most frequent keyword searches in Google during different historical periods.

Starting with the rate of Facebook registrations, we looked at data from three different periods, which we labeled as the "Early" period (August 2009 through April 2010), the "Proximate" period (May 2010 through November 2010), and the "Protest" period (December 2010 through April 2011). In the Protest period, we have excluded Egypt, Iran, Libya, and Syria from the analysis because the governments of these countries actively blocked Internet access during the Arab Spring events.[15] We did this because we were interested in how users behaved when they were given the freedom to choose.

If social media use had preceded the outbreak of protest, we would expect there to have been a rise in Facebook registrations as we moved from the early period to the proximate period. In fact, the growth in Facebook penetration actually *slowed* between the early period (M growth = 2.03 percent) and the proximate period (M growth = 1.49 percent; paired sample t-test = 3.05, $p = .01$). During the protest period, there was a statistically significant *increase* in the rate of Facebook registration (M growth = 2.78 percent) compared with the proximate period (paired sample t-test = −2.554, $p = .03$).[16] This indicates that the increase in Facebook registration clearly took place *after* the outbreak of violence in these countries, not before it.

Further evidence on this point comes from a study conducted by the Dubai School of Government (Salem and Mourtada 2011), which also showed a rapid growth in the number of users and uses of Facebook and Twitter during the first four months of

2011—*after* the onset of the Arab Spring. In many of the countries that experienced uprisings, such as Tunisia, Egypt, Yemen, and Bahrain, the growth rate of Facebook users was *twice as high* as the growth rate a year earlier.

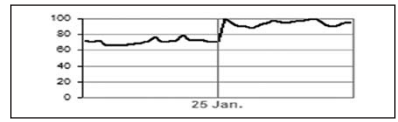
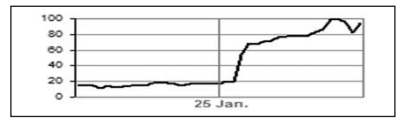
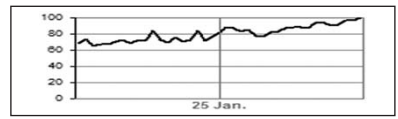
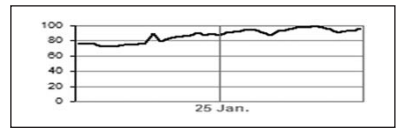
The second test involved looking at changes in Google searches for the query "Facebook" over time. Table 1 presents four countries, the two with the highest protest index scores (Egypt and Syria) and the two with the lowest scores (UAE and Oman). The figures show a sharp *rise* in searches for Facebook in Egypt and Syria only after January 25, which marks the beginning of the Egyptian revolution. In the UAE and Oman, however, searches for Facebook grew steadily and there were no particular changes during the Arab Spring. To find out whether the Arab Spring caused a significant change in the usage of social media, we conducted a regression discontinuity analysis with two independent variables: *week* (representing time) and *pre–post* revolution. As Table 1 shows, when controlling for time, the increase in the usage of social media was found to be highly significant in the high-conflict environments (Egypt and Syria) but insignificant in the low-conflict environments. These results demonstrate that while the increase in social media usage in low-protest environments (measured by the proxy we used) simply rose over time, the start of the protests was the deciding factor in the high-protest environments.

The third approach to examining the second principle involved looking at the ways in which the most frequent Google searches changed during the four different periods. We assumed that there would be relatively fewer searches for social media and current event terms before the outbreak of protest, and more such searches once the protests broke out. We also assumed that the search patterns in countries that experienced a high level of protest (Egypt and Syria) would be different from those with a low level of protest (Oman and UAE). In keeping with what has been said about politicized and nonpoliticized environments, we expected the changes in searches to be more intense and long-lasting in the high-protest countries. The most frequent searches were mainly in Arabic but in some cases also in English (e.g., "Facebook" was mostly searched for in English rather than in Arabic).

Table 2 presents the English translations of the top ten search terms for two high-protest countries (Egypt and Syria) and two low-protest countries (Oman and UAE). Search terms that were most closely related to current events have been highlighted. Some of the search terms (such as YouTube and Google) are somewhat ambiguous in that they could be linked to either political or nonpolitical searches. However, we decided to focus on the terms that were more directly linked to social media and politics.[17]

The findings provide clear support for our second principle. In the early and proximate periods, there are relatively few searches for media and current events in any of the four countries. It is noteworthy that at the same time as Egypt was on the verge of exploding, the most popular search term was "Games" (although Facebook does come in second). Using survey data, Norris (2012) reached a similar conclusion about this preprotest period, finding no indication that the culture of social media was particularly conducive toward dissatisfaction or discontent.

Table 1. Regression Discontinuity Analysis for the Search Query "Facebook" (in English) in Egypt, Syria, Oman, and the UAE.

Country	*b*	*SE*	Search Trends
Egypt			
Week	0.2	0.1	
Pre–post	20.9***	2.2	
Constant	69.1***	1.3	
Adjusted R^2	.93		
Syria			
Week	1.7***	0.4	
Pre–post	25.5**	8.0	
Constant	−1.7	4.7	
Adjusted R^2	.86		
Oman			
Week	0.7***	0.1	
Pre–post	1.4	2.7	
Constant	65.5***	1.6	
Adjusted R^2	.81		
UAE			
Week	0.6***	0.1	
Pre–post	1.9	2.5	
Constant	74.5***	1.5	
Adjusted R^2	.78		

Notes: UAE = United Arab Emirates. The dependent variable in the regression analyses and the figures is the trend of searches for the term "Facebook" in Google (spelled in English) during the nine months from September 2010 to May 2011, based on *Google Trends*. The independent variable *week* represents time, which is measured by weeks starting from September 5, 2010. The independent variable *pre–post* is a dichotomous variable that represents either the period before the beginning of the Egyptian revolution (January 25, 2011; coded as 0) or the period following the beginning of that revolution (coded as 1). There are twenty weeks in the prerevolution period and nineteen weeks in the postrevolution period.
$^{**}p < .01$. $^{***}p < .001$.

In the "protest" period and especially the "after" period, a growing gap emerges between the number of current event searches in the two high-protest countries and the two low-protest countries. The top searches of high-protest countries (Egypt and Syria) include more queries related to news and social media during the protest period than do those of low-protest countries (Oman and UAE). While the top searches in low-protest countries did not show different patterns over time, the top searches in high-protest countries, particularly in Yemen and Libya (data not shown), focused more on social media and news during and after the protests.

It is worth reiterating that none of these proxies are perfect. It would have been helpful to have survey data that more directly examined how people's use of various

Table 2. The Ten Most Popular Search Queries (Translated into English) in Egypt, Syria, Oman, and the UAE in Four Different Periods.

Early (August 2009–April 2010)[a]	Proximate (May 2010–November 2010)	Protest (December 2010–April 2011)	After (May 2011–December 2011)
Egypt			
Games	Games	Facebook	Facebook
Movies	Facebook	The Seventh Day (news)	Egypt Today (news)
Egypt Today (news)	Picture	Games	Games
Picture	Movies	Egypt Today (news)	Picture
Download	Download	Picture	The Seventh Day (news)
Music	YouTube	Movies	YouTube
Facebook	Music	YouTube	Movies
YouTube	MP3	News	Music
MyEgy (entertainment portal)	MyEgy (entertainment portal)	MyEgy (entertainment portal)	News
Chat	Egypt Today (news)	MP3	Download
Syria			
Syria Today (news)	Syria Today (news)	Syria Today (news)	Syria Today (news)
Picture	Picture	Picture	Picture
Download	Download	Facebook	Facebook
Music	Ministry of Higher Education	Download	Download
Chat	Music	Al Jazeera	Hotmail
Hotmail	Girls	Hotmail	Ministry of Higher Education
Forums	Hotmail	Aks Alser (news)	Al Jazeera
Games	Games	Al Arabiya (news)	Games
Yahoo	Chat	Music	4Shared (file sharing)
Al Arabiya (news)	Aleppo	YouTube	Al Arabiya (news)
Oman			
Oman Daily (news)	Oman Daily (news)	Oman Daily (news)	Oman Daily (news)
Picture	Picture	Picture	Picture
Games	Download	S-Oman (news)	Facebook
Forums	Forums	Download	Download
Google	YouTube	YouTube	YouTube
YouTube	Google	Forums	Forums
Music	Hotmail	Facebook	Hotmail
Video	Facebook	Hotmail	Google
Hotmail	Games	Google	Games
Muscat	Video	Games	Muscat
UAE			
Dubai	Dubai	Dubai	Dubai
YouTube	Facebook	Facebook	Facebook
Facebook	YouTube	Download	Download
Yahoo	Yahoo	YouTube	YouTube
Games	Games	Yahoo	Yahoo
Google	Google	Google	Google
Video	Emirates	Abu Dhabi	News
Emirates	Hotmail	Games	Movies
Hotmail	Nokia	Emirates	Games
Music	Gulf News	Video	Abu Dhabi

Note: UAE = United Arab Emirates.
a. The period runs from the first day of the first month to the last day of the last month.

media changed over time and among the different countries. The fact that all three proxies point in the same direction provides evidence supporting the validity of our second principle, as do the statistically significant differences in the two measures where such tests were possible.

Conclusions and Perspectives

Our final remarks suggest four ways in which this study can contribute to a better understanding of the role of social media in collective action. First, the results should persuade researchers in this field of the critical importance of considering political context before attempting to analyze the role of social media. Wherever possible, researchers should try to fully integrate political variables into their analyses.

A second contribution is related more to the novel insights provided by the cross-national perspective. While studies that look at this issue using individual- or group-level analyses are critical, cross-national research provides a completely different perspective on this issue. This point is demonstrated by the fact that we found a consistently negative correlation between the extent of social media penetration and the amount of protests. The long-term goal of research in this area should be to integrate these various perspectives into a more cohesive whole.

A third contribution would be to convince researchers, and perhaps even popular commentators, to move toward what we called a contextualist approach to this issue. While few serious scholars in this field can be considered pure enthusiasts or skeptics, many do seem to overemphasize the centrality of social media in protest. As always, the "real" question is not whether this or that type of media plays a major role but how that role varies over time and circumstance.

The fourth potential contribution of this study is its attempt to link the two principles to a more general theory in political communication. We made a link to the political contest model and to the PMP principle, but this was not meant to suggest that other theoretical frameworks could not be found that are equally or even more useful. Instead, to build theory in this field, we need to think about both the similarities and the differences in the role different media play in different political processes.

When looking at what has transpired since the start of the Arab Spring, it is hard to avoid the conclusion that politics not only came first but also last. The case of Egypt is instructive in this regard. The Muslim Brotherhood had little to do with initiating the initial protests and they were probably not the most frequent users of social media. However, they did have the best political organization available and were ultimately able to win both the parliamentary and presidential elections. Politics, it would seem, is important in the beginning, in the middle, and at the end.

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Notes

1. Another important set of political variables that is worth mentioning, even though it cannot be tested in this macro-oriented study, is political opportunities. The notion of political opportunities refers to the extent to which political dissidents believe that their actions have at least some chance of succeeding (see, for example, Alimi 2007; Gamson and Meyer 1996; Tarrow 2011).
2. Comunello and Anzera (2012) refer to the two camps as "digital evangelists" and "techno-realists."
3. This approach can be linked to the similarly named viewpoint in philosophy (DeRose 2009). Revealingly, contextualism was partly developed in reaction to another philosophical approach known as "skepticism."
4. Our empirical analyses support this point. Although we do not show all of these results here, we found no differences when we included Al Jazeera as one of the media studied.
5. Many researchers are understandably skeptical about any data emanating from Wikipedia. It is worth noting, however, that of all the different data sources on this topic, Wikipedia provided the most details of the daily events in each country. The entries for each country concerning the Arab Spring were based on an extremely large number of independent sources.
6. It was important to always focus on the day the protest took place and not when it was reported.
7. An alternative measure of protest that was considered was the Kansas Event Data Systems (KEDS). Unfortunately, the data set (which is now housed at Penn State University) was only updated until 2010. For more information, see http://eventdata.psu.edu.
8. The full 2010 *Index of Democracy*, published by the Economist Intelligence Unit, can be found at http://graphics.eiu.com/PDF/Democracy_Index_2010_web.pdf.
9. Available at www.visionofhumanity.org.
10. The World Economic Outlook Database from April 2011 is available at http://www.imf.org.
11. http://www.internetworldstats.com/stats5.htm.
12. Available at http://www.allied-media.com/aljazeera/al_jazeera_viewers_demographics.html.
13. Data provided by *Google Trends* should be treated with caution. It cannot indicate *why* people search for each term or how they eventually used the information they obtained. Similarly, as the data Google publishes are standardized, it can only be used to analyze the relative changes in the share of searches in each country separately. See Segev and Baram-Tsabari (2012) for the validity and limitations of this method.
14. Readers should also take note that as suggested the correlation with Al Jazeera penetration is very similar to all the social media.
15. As obtained from OpenNet Initiative (2012, http://opennet.net), Reporters Without Borders (http://en.rsf.org), and Stepanova (2011).

16. It is also worth noting that Norris (2012), who based her findings on survey data, found no indication that the culture of social media was particularly conducive to dissatisfaction or discontent.
17. The same argument could be made about searching for the term "Facebook." People could certainly be attempting to connect with friends to talk about issues that are unrelated to the protests. However, when one looks at the increase in news-related searches and the figures concerning the dramatic rise in people registering for Facebook, there is a good reason to believe that these changes are part of the more general trend.

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