Given the hype associated with the role of social media in supporting groups who are working for democracy in authoritarian states, it is important to actually check the facts regarding its use in those states. In this study, I collect and analyze data from Twitter during the Iran Presidential Riots of 2009, and the race riots that occurred in Urumqi, China, in July of 2009. Using that data, I conclude that Twitter's use in political circumstances has been dominated by Western, particularly American, users, and that discussion of the “Twitter Revolution” was hyperbolic and media-created. I also note the importance of social media as a means of creating more witnesses within authoritarian societies. I conclude by raising questions for future exploration about the role of social media in producing a “boomerang effect” and the role of services like YouTube in providing contrary evidence to claims by propaganda instruments.

Much noise was made, in the aftermath of the June 2009 uprising in Iran, about the use of the social media service Twitter in the riots. The western media rapidly declared the social unrest to be the “Twitter Revolution”. Articles began to spring up across the news-spectrum trumpeting the role of Twitter. (Morosov; Drum; Grossman; Sullivan). By the time that the unrest died down, Twitter, and Iran, had made it firmly into the realm of public awareness. Concern over the role of Twitter ran so deep that the State Department requested that the service reschedule planned down-time for server maintenance so that it did not conflict with ongoing protests (Morosov).

The clarity of hindsight has produced a significant backlash towards the idea that the unrest was
predicated upon Twitter usage (Esfandiari [1], Esfandiari [2], Harkin, Weaver). Media sources now point out that Twitter usage is minimal in Iran, or that access to the service would have been very difficult, given the complete shut-down of mobile service\(^1\), and the significant slowing of internet service (Harkin, Esfandiari [1]). Very little attention has been paid to the publicly available archives of Twitter usage, however, which makes any commentary on the matter somewhat specious.

Suggestions that the internet is a powerful democratizing force are nothing new. In 1997, Christopher Kedzie argued that the inter-connectivity, low cost, and fast exchange of information provided by the internet made it a fundamentally democratic institution (Kedzie). Moreover, the use of the internet in political communication, campaigning, and organization has made it an integral part of the American political process. The transition to Web 2.0\(^2\), social media oriented, user-content centric internet services, seems to align with the democratic internet meme (O'Rielly). However, it is hard to balance the supposedly “democratic” nature of the internet with the fact that internet use has grown rapidly in authoritarian states like China and Iran.

Perhaps part of the problem is the practice of news media and scholars alike of lumping elements of the internet together in broad-brush analysis. As a result, the internet is either a force for democracy or a dramatic failure thereof, and social media is either the new civil society, or a terrible force of disassociation. These over-simplified views of digital politics lent themselves to the adulation and criticism leveled at Twitter for the Iran crisis. Ultimately, the binary view of politics on the internet is nonconstructive, and fails to account for important elements in the new-media equation which deserve attention.

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\(^1\) In the interest of ensuring clarity, Twitter is a tool that can be used either via mobile phone SMS or via the internet. Individual communications on twitter consist of 140 character or less text messages called “tweets” that are both archived on the website, and sent to and from user's cell-phones.

\(^2\) Web 2.0 is, for lack of a better definition, the generation of internet products which focus on user-oriented, community-empowering tools. They include sites like Facebook and Twitter, but also products like Wikipedia, the plethora of Google tools, Torrent technologies, and, of course, the ever-present weblog.
In order to better understand the role that Twitter has played in authoritarian states, I examined the role of Twitter in two very different incidents: the June 2009 riots in Iran, and the race-riots in Urumqi, China in July of 2009. In the case of the Iranian riots, I analyze the content of the #Iranelection hash-tag using simple quantitative tools. Using secondary data from the Iranian riots and the Urumqi riots, I discuss the role of Twitter and YouTube in creating evidence that authoritarian states have to contend with. Finally, I discuss continued usage of the #Iranelection hash-tag in June of 2010. Using this data, it is impossible to conclude anything except that Twitter is a tool used by consumers in western, advanced democracies, and its role in authoritarian states is fairly minimal.

A Brief History of Uprisings

Emerging communication technologies have been linked with anti-authoritarian uprisings throughout the second half of the 20th century. Authoritarian states exert significant pressure to limit the realm of political communication, for obvious reasons. While the liberating power of new communication technologies can be seen at least as far back as the role of the printing press in the Protestant Reformation, the explosion of new communication technologies in the last 50 years has provided a plethora of new cases to explore (Eisentein, 310). While the cases vary greatly in levels of success, instigating factors, and the strength of traditional organizing tools, all of them demonstrate a new communication technology in use. It is particularly important to remember that in all cases, instability was produced by much more than a new way of talking – Unions, student groups, and religious groups all had roles in these cases which far outstripped the power of new gadgetry.

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3 A hash-tag is a folk-taxonomy (folksonomy) used by Twitter users to indicate the topic of a tweet - the hash-tag is indicated by the presence of a # sign before the topic. Twitter then indexes tweets by these tags and tracks the popularity of these topics. #Iranelection was one of many hash-tags used during the June 2009 riots, but was the most popular by far.
The 1979 Islamic Revolution in Iran saw the use of the cassette tape as a tool for spreading the ideals of the revolution. Cassettes were smuggled into Iran, containing sermons from Ayatollah Khomeini on the topic of Islamic governance and revolution (Cole). Cassettes were a particularly valuable tool for Khomeini and other religious figures (in particular, Ali Shariati was Khomeini’s largest competition in the underground cassette market) because they could convey the words and symbolism of religious practice in a way that paper could not (Sreberny & Mohammadi, 121). Moreover, the ability to tape meant that exile, which would have once effectively cut Khomeini off from his base of support, was no longer as limiting. Instead, Iraq, and then Paris, became staging grounds for Khomeini’s propaganda machine (Sreberny & Mohammadi, 120). In this regard, tapes were an important tool in opening up political discussion in a nation that was very much under the thumb of the Shah and his SAVAK.

In Poland, the Solidarity movement made significant use of underground publishing operations which were similar in structure (if not name) to the *samizdat* (lit. Self Published) of the rest of the USSR. Underground publishing was massive in Poland, compared to the rest of the Soviet Union (Machovec, 5). In part because of the increased availability of printing technologies in Poland, print runs for underground publications were able to reach into the thousands of copies (Machovec, 5). During the Gdansk shipyard strike of 1980, the Worker's Defense Committee (KOR), produced an underground newsletter, entitled *Solidarnosc* which reached a print run of 30,000 (Barker). Underground newsletters were nothing new, but the availability of the photocopier was – and it allowed underground printers to challenge the state's monopoly on the printed word (Brennan-Bernatt). By 1989, the fax machine would outstrip the photocopier in importance to Polish nationalists, but in 1980, the photocopier was king (Brennan-Bernatt).
International television coverage in the run-up to the 1988 Olympic Games helped democratic agitators in South Korea to force the government's hand. By 1988, the amount of broadcast technology in Seoul had increased to the point that it outstripped the broadcast technology in Los Angeles for the 1984 Olympics (Larson and Park, 142). International media was in no way controlled by, or used by the South Korean opposition. Rather, it made it impossible for Chun Doo Hwan to crack down on the protesters who took to the streets in 1987 (Larson and Park, 161). The June 29 declaration, wherein the government called for democratization, was a direct response to the concerns of the IOC over the possibility of having images of a brutal crackdown in their host city broadcast world-wide (Larson and Park, 161). Unlike the other technologies discussed, the primary impact of television was not that it allowed for inter-protester communication, but, rather, that it allowed for proof of guilt to be transmitted world-wide, if the government set a foot out of line. Ultimately, the South Korean government was unable to accept that threat – in part because of the risk of losing the Olympics. Obviously, the threat was significantly less deterring to other states, since the CCP had no problem cracking down on dissidents in the summer of 1989.

During the Beijing uprising in May of 1989, student protesters made use of fax machines to communicate both in and outside of China. Faxes with news from the protests were sent out of Beijing to Chinese students who were studying in America, who would then send those faxes back into China, in an attempt to counter the state's media monopoly (“Fax”). The fax machine was a wonderful example of a critical communication technology that ended up having political externalities. In 1989, the fax machine was still very new, but it had become a critical tool in people's offices, and, thus, was broadly available (Houle; May). As a result, it was possible for students to program fax machines with a list of other machines, and transmit information in and out that completely obviated the Communist Party's media monopoly.
The cases of the June Iran riots and July Urumqi riots offer a unique opportunity to observe the impact of a new communication technology in action. Twitter archives all tweets that a user sends out, meaning that there is a massive wealth of primary documentation available for analysis. Unlike faxes in Beijing or cassettes in Tehran, we can use hard data to determine the usage, scope, and significance of Twitter in Iran and China. In so doing, we have an opportunity to separate fact from fiction that is not available in other cases.

**Methodology**

The primary element of this study focuses on two data sets collected from the Twitter archives of the hash-tag #Iranection. The first set (henceforth, Set A) consisted of 1000 tweets from between June 17th and June 29th of 2009, collected in 50 sets of 20 tweets. The tweets were collected from the archives produced by TwapperKeeper, a Twitter API extension which produces and sorts archives of hash-tags, keywords, or user-posts. I randomly selected 50 sets of 20 tweets from the data, and analyzed each tweet and each tweet-set. TwapperKeeper had a significant downside from the data collection method I used for Set B, in that it did not provide me with a link to the User Profile of the twitterer for each tweet, but it provided sorted archives which I was incapable of producing myself.

The second set (Set B) consisted of 700 tweets drawn from the #iranection hash-tag from June 1st, 2009 to June 30th, 2009, but no tweets appeared in the Hashtag before June 17th, and randomization meant that my last set of tweets came from June 29th as density of use fell off dramatically towards the end of the month. This collection method was useful for two reasons: first, it allowed me to create set averages, which allowed me to better track change over time and density of use; second, since the second set was collected from immediate archives during June of 2010, it was less feasible to pick each data point individually. That problem was not present with the 2009 data, but it was important to maintain similar, if not identical, data collection techniques, to allow for comparability.

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4 The filters applied to the archive I used specified a range between June 1st, 2009 and June 30th, 2009, but no tweets appeared in the Hashtag before June 17th, and randomization meant that my last set of tweets came from June 29th as density of use fell off dramatically towards the end of the month.

5 This collection method was useful for two reasons: first, it allowed me to create set averages, which allowed me to better track change over time and density of use; second, since the second set was collected from immediate archives during June of 2010, it was less feasible to pick each data point individually. That problem was not present with the 2009 data, but it was important to maintain similar, if not identical, data collection techniques, to allow for comparability.

6 I made use of an internet random number generator to select the entry-point for each set. The randomization was not complete, as I had 49 “fragments” of the archive (chronologically spaced, each 10,000 tweets long), which I drew one set out of at random, and then randomly selected a fragment to draw two sets from. This had the added benefit of creating a guarantee of chronological spacing throughout the set, but does mean that the set is not perfectly random.
between June 10th and June 22nd, 2010. Like Set A, they were drawn in 35 sets of 20. Unlike Set A, they were produced by generating three random times for each day in the set, and finding the 20 most recent tweets to that entry time in the hash-tag. Set B has the advantage of recording the claimed location of each twitterer within the set, since it was performed entirely on the Twitter website.

Each individual tweet within the sets was analyzed for the time it was posted, the claimed location of the poster, whether or not it was a retweet, the general topic of the tweet, and the time since the “epoch” of the first tweet. In general, my strategy in analyzing the tweets was to be mostly credulous about each claim a tweet made. If a tweet said it was a retweet, I recorded it as such – the first time I saw something in a given set, if it was not marked as a retweet, I did not record it as such (if I saw it again, however, I did). If a twitterer claimed to be from Germany, I recorded their location as “Germany”. Similarly, if a twitterer claimed to be providing a link to news article that I was unable to follow because of the link-stripping of the archive, I took them at their word, unless there was obvious counter-evidence.

The one exception to the credulous recording I chose to follow was in the location category for people claiming to be from Iran. During the initial tweet-storm following the elections, twitterers began

7 In truth, the odd date-range reflects failed opportunism on my part – there was some sense that there would be significant protests on the anniversary of the election riots. As it became increasingly clear that there would not be any significant civil unrest, I turned my attention to producing data related to June of 2009, and discontinued the set. Nevertheless, it does do an interesting job of providing a snapshot of how the hash-tag has changed as international interest has waned.
8 I was only able to produce this information in Set B, due to the above-discussed limitations of the method I used to acquire Set A.
9 Retweets are repeat postings of a tweet someone else has posted. The are indicated with the text RT followed by @(x) where (x) is the user-name of the previous poster, normally (there are other methods for doing so, but they are much more rare – when they were present, they were taken into account in the set). I collected this stat, because it shows the amount of information flowing – whether it is newly created or mostly recycled.
10 This differs in Set A and Set B – in Set A, the epoch was the exact time of the first tweet, since the exact numbers were provided by the archives. Because I was analyzing data as it was created for Set B, the epoch was my entry time, and the times were less specific, since Twitter does not provide specific times for a post until at least a day has passed. As a result, I used the specified time since for each tweet as an absolute value, which almost certainly inflated values slightly. However, given the scale of difference between the two sets, I am confident that any significant change found between the two is still demonstrably significant.
a campaign to change their locations to Tehran in order to make it more difficult for regime supporters to find and identify twitterers actually present in Iran (Terdiman). As a result, I knew there were a large number of people who claimed to be from Tehran who were not. To provide some level of clarification, I created two categories for twitterers who listed their location as 'Iran'. Within Iran-credulous (Coded as Iran-1), I placed twitterers who had not used any Persian language within their last 100 tweets, or who used Persian, but had tweeted information from another location (example: “The weather in Chicago has been fine, this week”). My Iran-Skeptic category (coded as Iran-2) contained the remaining twitterers. The filter is obviously not perfect: there may have been Iranians who did not use any Persian on Twitter, but I feel fairly comfortable in presuming, given the number of people who were using Persian within Set B, that if they spoke it, they would not have been uncomfortable using their native tongue.

In recording the subject of each individual tweet, I categorized them into one broad set each. Those sets were International Activism, News, Report, Meta (which had a sub-category for discussion of Neda Soltan, during Set B, because of the prevalence of the topic), Advertisement, Organizing, and Safety. During my recording of Set A, I changed Advertisement into two categories: Advertisement, and Spam. While there was some limited overlap between each category, most tweets tended to fall strongly into one category.

I assigned International Activism to tweets calling for action from westerners to provide assistance to Iranians. These tended to span a fairly large area of discussion, and varied greatly in their relevance. The two major sub-categories within this set were calls to protest and petitions. Calls to protest tended to call for protests outside of Iran to pressure outside governments to respond to the situation. Petitions tended to either focus inside Iran, or on services that might aid Iranians. One particular petition that showed up repeatedly in my data called for Google Maps to provide live updates
of the satellite photos of Tehran (First occurrence: Index 3O). While many of these calls to action were, at least seemingly, of some importance, there were also calls to turn all social media sites green in support of the protesters, and to turn avatars\(^{11}\) green to show support.

News as a category referred to discussion of news provided by major news outlets. Much of this discussion was under the auspices of the secondary #CNNfail hash-tag, which critiqued the western media for its handling of the ongoing protests. The category also included links to external news sources' reporting on the protests. An example of a news tweet is Set A Index 1A, which reads: “#iranelection Dish: Why The Election Was Stolen http://tinyurl.com/lypsp6\(^{12}\)”. 

In contrast to the News category, Report dealt with on the ground news in either primary or secondary format. It dealt with reports of movements of the Basij, videos of protests or of police behavior, and reports of the number of protesters on the streets. As a result, it is the category most directly linked to the participation of Iranians, and the category wherein the most exaggeration occurred. The first report in Set A was Index 1F: “News: Blvd Keshavarz, Valiasr Sq, ppl everywhere in Tehran now. Quiet protest #gr88 #iranelection (via @StopAhmadi)”. StopAhmadi was one of the major sources of information coming out of Tehran – the other major source was Persiankiwi, who provided video and reports.

The Meta category was by far the broadest and most prevalent category in both sets. Meta included slogans, conversation about the future of the movement, conversation about what should be done by the movement, random personal statements, and discussions of the coverage of Twitter by

\(^{11}\) The pictures associated with Twitter accounts.
\(^{12}\) This is a condensed link, a service which allows twitterers to spend fewer of their 140 characters on URLs. The links were stripped of their URL associations by the time that I got them, so I cannot follow them to confirm that they went where they say they went, but this one appears to go to Andrew Sullivan's Daily Dish, a blog he publishes for the Atlantic magazine online. His blog was one of the first news outlets to pick up the protests, and he had a large hand in creating the myth of a Twitter Revolution.
other twitterers and the mass media. It was, in short, an amalgamation of the most irrelevant discussions going on on Twitter. A good example of this can be found in Set A, Index 1C: “@stevewhitaker some of the most interesting tweets are at #IranElection. Amazing what is going on because of Twitter.” This tended to represent how the Meta category was used, but the other major use was in sloganeering. To call sloganeering completely useless would be unfair, since symbolism is an important part of revolutionary movements.

Advertisement was a category that underwent some changes between the two sets. In Set B, it contained all advertisements for any product or service. That meant that it included advertisements for furniture shopping websites, and advertisements for blogs covering the protests. For Set A, I changed the formulation to include a new category: Spam. Spam consisted of all malicious or misleading uses of the hash-tag, while Advertisement dealt with specific advertisements for sites related to the protests. This was important, because there was a fair bit of malicious spam during Set A, including reports that Mousavi had been shot (Index 1D), confusing and inarticulate calls for action mixed with conspiracy theory (Index 2T), false news claims designed to get clicks on a link to inappropriate material (Index 5L), and purposefully offensive statements about actions taken against protesters (Index 28N). I grouped them all together to measure the abuse of the attention that the Twitter hash-tag had acquired during the protests.

Organizing posts dealt specifically with organizing behavior inside Iran. They did not deal with organization outside of Iran, which fell in the category of International Activism. Organizing posts included calls for specific locations or times for protests, or news on who would be present at those protests. It was also closely linked to the assumption that there were Iranians providing information to be passed along to other Iranians on Twitter.
Safety tweets were concerned with protecting Iranians from government reprisals. They dealt with both digital, and physical security. Discussions of digital security included how to send encrypted emails, calls for the provision of more TOR servers\textsuperscript{13}, and information on how to browse the internet without being caught. Discussions of physical security included how to avoid Basij bikes, how to avoid tear gas exposure, and which hospitals were safe to take the wounded to and which were turning injured protesters over to the government. Safety tweets also dealt with what could be done to keep Iranian twitterers safe. One of the biggest elements of this was the aforementioned call to change location to Tehran.

After collecting the data, I logged it in two different ways. First, I logged each set as a list of indexed tweets with specific data and coded variables. Second, I recorded each set of 20 by its means, to allow for easier analysis. Having done that, I had the most flexibility to perform complex and simple regression. It turned out, in the end, however, that the most important data was in the second index of data, and not in the longer lists.

**Twitter Use in June of 2009**

The first information that I looked at was the information provided in Set A, which was the set drawn from June of 2009. My collected set of data represented the 483,841 Tweets archived under the hash-tag \#Iranelection during the month of June. My goal was to determine the amount of Twitter use coming out of Iran. To do this, I looked at language and subject across my set. I also used secondary tools, including Google Trends, which allowed me to examine individual web traffic.

\textsuperscript{13} TOR is an anonymity protecting service which provides security for internet users who do not wish to be identified by observers. It was used extensively to provide protesters with a means of bypassing internet censorship in Iran, and there were regular calls for more people to provide TOR support from their computers.
First and foremost, I found that 97.1%\(^\text{14}\) of my set was in English, and a mere 2.2% (95% MoE 6.78%) of tweets were in Persian\(^\text{15}\). Insofar as Persian speakers make up a tiny portion of internet users, this number doesn't say much\(^\text{16}\) – however, one would assume that if Twitter were being used by protesters to organize, or even merely to communicate, that more than 10,645 tweets over 12 days (on the order of 887 a day) would have been made.

It is worth noting that there certainly are Iranians who speak English. It is entirely possible that the majority of Iranians on Twitter were speaking English, not Persian, but that, too, begs a very important question. Why would Iranians speak English to other Iranians? That would make as little sense as Americans using Twitter to speak French to other Americans. If the majority of Iranian users on Twitter were using English, that says something about who their intended audience was.

The tradition of using protest coverage to speak to the world is certainly well established. English language signs appeared during the Tiananmen square protests in 1989 (“demo 004”). Reaching out to try and garner the world's sympathy via Twitter would have been well within this tradition. However, doing so would also demonstrate that Twitter was a tool of the West in watching the protests, and not a tool of Iranians.

More convincing evidence can be found by looking at the density of use in regard to the time in

\(^{14}\) Well in excess of internet usage of English, which makes up 27.7% of total internet users.
\(^{15}\) This is slightly complicated, because the TwapperKeeper program did not strip out the characters – it merely gave me ascii gibberish, which meant that I had to guess whether the post was in Persian. I presumed that any character-based language was probably Persian or Arabic, and categorized them as Persian. This means that the results are not perfect, unlike in Set B, where I was able to identify Persian specifically. However, I feel fairly confident in this measure, not least of which because the number cannot be any higher than 2.2%, and can therefore only demonstrate less interest.
\(^{16}\) Indeed – Persian language internet use makes up less than a percent of total internet use – but the numbers in the set were not representative of any of the languages used world-wide, so that doesn't really say much. The more important point in this is that the number of overall tweets in Persian were very low, suggesting that it is unlikely that Twitter was being used to co-ordinate, or even really discuss.
Iran and the time in the United States. Prime usage for Twitter occurs between 13:00 and 18:00 EDT, during the work-day in the United States (“FeedTwit”). To measure density of use, I used the measure of the average time since the “epoch” of the first tweet in each set, and plotted it against the time of day, in GMT. The results can be found in Figure One.

(Figure One - Plotting Density of Use Against Time of Day)

The figure shows clearly that the peak in usage for #Iranelection occurred around 12:00 EDT, with relatively low usage around noon in Iran. That means that the peak of usage occurred between 8:00pm and midnight in Iran, both well after protests had ended for the day, and during the America-centric prime-time. In particular, it would be odd for twitterers to be tweeting reports or organizing information after the protests for the day had ended. You would expect to see a peak of usage around 17:00 to 22:00 GMT, or 20:30 to 00:30 in Iran.

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17 I use the time in the United States, because Americans make up the majority of Twitter users (around 50.88% of users – more than 6x the next largest nation, Brazil). In 2009, the numbers were even more skewed, with Americans making up 62.14% of users (“Exploring”). This all coincides with my belief, given the languages used and the overall tone of discussion, that most users watching #Iranelection were Americans.

18 17:00 to 22:00 GMT, or 20:30 to 00:30 in Iran.
the time of the protests, if they were being used to co-ordinate the crowds. Instead, you see a drop off in usage. These facts alone would not be much in the way of proof (after all, 8:00pm isn't so late for people to be using Twitter), but in combination with other pieces of evidence, they create a good case that Iranians were not using Twitter during the protests.

Further proof of disuse can be found by looking at what Twitter was being used for amongst English speakers. If it were the case that Iranians were using Twitter in English for some strange reason, it would seem that use in the Report or Organizing categories explained above would indicate that Twitter was being used as a tool by protesters. A focus on News, Meta, or International Organizing would tend to suggest that it was the rest of the world, not Iran, which was using #Iranelection. Meta discussion made up 44.7% (MoE 28.53%) of all discussion across the hash-tag. Conversely, reports made up only 8.6% (MoE 17.22%) of the discussion. In total, discussion of News, Meta-topics, and International Organization made up 72.9% (MoE 25.92%) of all use of the hash-tag. 6.8% (MoE 13.11) of discussion was made up of Spam or Advertising, and 9.8% (MoE 19.98%) of discussion was in the Safety category. In short, less than 10% of discussion was clearly in the realm of protester-oriented discussion. Again, on its own, this would mean little, particularly given the large margins of error present for most of the statistics, but in combination with other evidence, it is fairly conclusive.

Perhaps the most conclusive point of data I found was the Google Trends hit-count for Twitter from Iranian users. Trends provides two types of data – hit-count for individual sites and search density for a topic. In this case, I was more interested in the direct hit-count, rather than search density, since

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19 Mea Culpa – I'd rather be able to look at Persian speakers, too, but the ascii gibberish produced by the archiving tool made it impossible for me to attempt even clumsy translations. In Set B, I was able to do so, and found relatively insignificant differences – although a year had passed and the streets were not restive, so I would not expect to see a significant amount of reporting.

20 A sizable value – partially because there were only 50 points in the data set. I think a more extensive exploration would likely be able to produce a better Margin of Error which would confirm these findings.
the search density function is more inscrutable. Looking at the hit-count chart, we can see two things very quickly: first, there was a spike in Twitter usage in Iran during June of 2009, and second, the total number of Twitter users never exceeded 20,000 (Figure Two). In 2008, the number of internet users in Iran was 23,000,000 – and it is highly likely that number has continued to rise, given that the value nearly doubled between 2007 and 2008 (“public data”). In short, despite the apparent spike in usage, the total use of Twitter amongst Iranian internet users never exceeded .087% of Iran's internet community. In contrast, blogfa.com, an Iranian weblog management service, maintained nearly 300,000 users from Iran at the same time (“Trends”). Youtube hit nearly 100,000 users, prior to government censorship and Facebook was at nearly 200,000 prior to censorship (“Trends”). Internet users in Poland used Twitter at the same rate as internet users in Iran, even though there were fewer total internet users in Poland (“Trends” & “public data”). Looking at the search-density chart for people searching for Twitter, we see further confirmation of a spike in usage (Figure 2). However, as I mentioned above, the volume index is somewhat inscrutable, and the pure number of users says more. Spike of interest or not, the simple fact of the matter is that the vast majority of Iranians were not using Twitter.

While Google Trends is fairly transparent about how they do their calculations, the density function depends on a lot of standard values which were not available to me, so I could not decode exactly what the numbers meant. I will discuss the search density chart more below, but its limitations mean that I value its data less than the hit-count chart.

There was no sudden peak in usage in Poland (nor should there have been), and so the comparison isn't entirely apt, but if interest in Iran was no greater than interest in Poland, where the civil unrest didn't really matter, that says something about the use of Twitter in Iran.
It is clear that there is a preponderance of evidence against a “Twitter Revolution” in June of 2009. There was very little use of the Persian language, the peak times of use occurred at the wrong hours, the topics under discussion didn't lend themselves to organization or the interests of Iranian protesters, and there were at most 20,000 users of the service. In that regard, it's a rather open and shut case, in terms of the role Twitter played. That said, to shut the book on the case here would be to fail to ask other important questions. Among the important questions are questions about the role of social media in allowing for reporting, the change in the roll of social media over the last year, and, of course, the case in Urumqi.

**Urumqi Riots and Twitter**

To start with, the Urumqi riots are nothing like the case of the Iranian riots. The riots in Urumqi were short-lived race riots which were not well organized or designed to destabilize the state – simply put, they were a spontaneous outburst of violence, and thus, examining the role of Twitter in this case
requires a different set of tools (Ramzy). Microblogging\textsuperscript{23} is widely available in China, which also has significant other forms of social media, particularly in the form of QQ, an online chat service (Hartley). However, these services are strongly controlled by the Chinese government, wherever possible, in the name of maintaining the “great firewall”\textsuperscript{24} of China (“Great Firewall”).

To begin with, it is important to understand the media climate in China. Aside from access censorship and highly restrictive laws on allowable content, the CCP has flooded the internet with “acceptable” news sites, which push the view of the Party (Zhao, 223). As a result, the state maintains a monopoly on what news is available. Any news website must be registered with the government and must have its material approved (CECC (2000.11.1)). Non-news websites may carry news, but only after it has been posted by an approved news source (ibid). As a result, undesirable news can be entirely erased from existence by the state – at least in theory.

The role that Twitter played in Urumqi was not that of a social organizer or even that of a tool for western observation. Instead, Twitter played the role of story-breaker. The first reports of violence in the streets of Urumqi began to circulate through Twitter, before the Chinese media could create a “spin” on the unrest (Doran). Moreover, Twitter and YouTube were subsequently used to distribute footage of the unrest which differed from the official reports of state media (“China riots”). In particular, these videos showed peaceful marches and protests, which differed from the narrative offered by the Chinese government, which was presenting the ongoing violence and pure race riots (“China riots”). Shortly after the riots began, internet access was cut off to all of Xinjiang province, and then Twitter and YouTube were blocked from the Chinese internet (“China riots”).

\textsuperscript{23} Short, often 140 character, blogging services. Twitter is the prime example thereof.

\textsuperscript{24} It is possible, if not particularly easy, to “jump the wall” and get outside of the censorship environment in China – but doing so requires some technical know-how. We can presume that most “netizens” are incapable of doing so -and probably not particularly interested in learning to.
Micro-bloggers, like all other bloggers, create an inherent challenge to the complete control model of censorship that the CCP has chosen to embrace. As this case shows, it is much more difficult to have a monopoly on public dialog when there are websites that allow any user to publish material. There is no question that the CCP has tools to combat these – whether they be the process of “harmonization”\(^{25}\) that was used on some weblogs during the riots, or the act of banishing Twitter from the Chinese internet (“China riots”). The fact is, however, that with micro-blogging and blogging services growing more popular, the censor cannot be everywhere at once, and these forms of social media will inherently create evidence the state would rather not have published in the first place – and once the evidence is out there, its spread will be difficult to stop. The Chinese government depends on the creation of a panopticon\(^{26}\) mindset on the internet, but the sense of observation cannot hold if there is just too much material for the censor to keep up with.

**YouTube: Reporters Without Borders**

One of the core things we see in the Urumqi case is that the internet also allows for the easy distribution of video. Although there has not been nearly as much hype about it, YouTube might be a far more important medium than Twitter, when it comes to addressing authoritarianism. YouTube allows any person with a cell phone and an internet connection to become a reporter – and more importantly, a witness. As above, the State no longer has a monopoly on what information is transmitted. This isn't a panacea – YouTube can be blocked\(^{27}\), and the internet can be cut off to troubled

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\(^{25}\) A euphemistic phrase used to indicate the censorship of the web. It refers to the “harmonious society” principal, which was advanced by Hu Jintao.

\(^{26}\) From Bentham (or Focault) – a prison in which all prisoners could, in theory, be being watched at all times, and thus, must always act as though they are being watched (Bentham).

\(^{27}\) A dangerous decision, perhaps, because most YouTube users are visiting for videos of cats playing pianos, not for political news, and you will be invading their personal, non-political lives in a way that will make them resent you – something an authoritarian state must be careful of doing.
regions\textsuperscript{28}, but doing so has its own costs. Looking at the Iranian case alone, we can already see multiple cases of YouTube usage (often coupled with Twitter links) to create an international audience of witnesses.

The most dramatic example of YouTube creating an audience of witnesses is the video taken of the death of Neda Agha Soltan. Soltan was a protester who was shot during the election unrest in 2009\textsuperscript{29}. Video of her gruesome death quickly became viral. A year later, in my data collected from 2010, discussion of Neda and her death still made up 3.6% of all discussion. A quick perusal of YouTube finds millions of hits on videos of Neda's death. By June 21, 2009, CNN was running news stories showing a version of the video ("Her Name"). In short order, the entire world had been made witnesses to her killing. One the one hand, level-headed experts will point out that symbolic video does not make up for the power and organization to face an authoritarian state. Certainly, Tank Man did not create a democratic China, despite the millions of witnesses to his dramatic confrontation. On the other hand, symbols have been massively important to successful pro-democracy movements in the past. In Poland and South Korea, martyrs played an important role in mobilizing the populace ("Gdansk"; "The Demise"). In Shia Islam, martyrs are incredibly important, reaching back to the martyrdom of Hussein ibn Ali, making the symbolism of a martyr even more potent ("Battle of"). There is no question that the Iranian Government felt that the video presented a threat to them. They quickly began to fabricate excuses, which pinned the blame for Soltan's death on the CIA, or on terrorist groups ("Iranian Envoy"; "Iran Says").

\textsuperscript{28} For how much longer, though? Increasingly, there are means of getting internet through cell-towers and satellite systems. If that trend continues, blacking out a region will become harder and harder to accomplish.

\textsuperscript{29} Witnesses claim that Soltan was shot by a sniper employed by the government – the government claims that she was shot in some bizarre BBC-CIA conspiracy designed to discredit the government and support the (supposedly) American-lead coup. While the issue has never and may never have definitive proof, it seems highly likely that she was another victim of the government crackdown, and not merely a random victim or planned death to inconvenience the Islamic Republic.
Another prime example is the use of videos taken in Tehran to prove that the Basij was running protesters over with trucks. During the protests that occurred in Tehran around Ashura, videos showing the Basij running protesters over with police trucks were collected and posted on YouTube by activist Mehdi Saharkiz (FiveYear 1:00-1:10). The Iranian government was quickly forced to backpedal from assertions that the claims were faked as 3 different angles showed the same incident occurring (FiveYear; “Iranian Police”). Saharkiz's video had accumulated more than 130,000 views on YouTube by July of 2010 (“onlymehdi”). Within 3 days of the incident, CNN and the Huffington Post had picked up the video and were running it on their websites (“Video Purportedly”; “Iranian Police Vehicle”). Again, YouTube served as a means of storing and spreading evidence to the rest of the world. In particular, it is interesting that YouTube served as a gateway to the mass media – effectively giving observers of the event the power of reporters.

YouTube has also been used in other settings. During the recent political unrest in Kyrgyzstan, YouTube was used to broadcast images of the violence, the military response, and the damage done by the riots (Mackey [1] and [2]). The videos include images of security forces opening fire on protesters, and of the damage done by race riots in June (Mackey). These videos were quickly rendered moot, however, as the opposition was able to storm a broadcast center and take it over (Mackey). In China, YouTube has been used to spread information about protests as well. In 2008, China shut down YouTube, to prevent the spread of information about riots in Tibet (Mook). As discussed above, video was taken and posted to YouTube during the Urumqi riots, in an attempt to counter the government's claims. YouTube has also been used by members of the Han majority to transmit protest images – Videos from June of 2009 show civil unrest in the city of Shishou, with citizens fighting riot police over concerns that a murder investigation was being carried out poorly (Lam). Those videos had

30 Instead, of course, they found a different excuse, turning from the assertion that the CIA had fabricated the tapes to the assertion that the hit-and-run had been a crime committed by a private security vehicle, and not an attack on protesters by the Basij (“Iranian Police”).
accumulated over 200,000 hits by July of 2010. While none of these cases are as dramatic as the cases above, they still show the role of YouTube in turning protesters into journalists, and the rest of the world into witnesses.

If it is true that YouTube turns observers into reporters, and the uninvolved into witnesses, it could be far more important than Twitter when it comes to anti-authoritarian movements. Any state which knows its atrocities can be filmed and posted by anyone will have to show a little more caution. There are limitations to such a guarantee – first and foremost, only more developed nations will have broad access to either cell phones or YouTube, but given the strong correlation between development and democratization, the point may be partially moot. Of course, more work needs to be done to investigate what role YouTube plays, if any strong conclusions can be drawn, but it would seem that it may be more beneficial to explore the role of YouTube than the role of Twitter.

A Boomerang Effect?

Given the popularity of the #Iranelection hash-tag amongst westerners, another important question to ask is whether Twitter reports on foreign instability help to create a boomerang effect amongst westerners. Keck and Sikkink define the boomerang effect as a political group denied redress in one state sending information to NGOs in other states, who in turn push their government to pressure the original state to comply with the first group (12-13). In this case, a boomerang effect would be activists within Iran sending information to activists outside Iran, using Twitter or other social media sites, and thus moving those activists to push their own governments (particularly the government of

31 To be fair, there are ways around this – promoting self-censorship (where that works), cutting internet connections to unstable regions (which carries its own costs), or, in extreme cases, banning video-taking phones from the market (or, in cases of more impoverished states - simply not having them available).
32 YouTube, again, may be more important here, since videos are capable of producing strong emotional reactions in a way text is not.
the United States) to pressure the Islamic Republic.

There are a number of problems with trying to measure the boomerang effect in Iran. First and foremost is the fact that public opinion polling in the United States has not really explored the domestic impact of the June protests – most of the polls are more concerned with public support for military or diplomatic efforts dealing with Iran's nuclear program. Another significant stumbling block is in Iran's status as a rogue state. There is no particular reason to believe that Iran will respond strongly to external pressure, particularly from the United States. As a result, the “boomerang” of the boomerang effect may well be intercepted before it impacts the domestic politics of Iran.

That said, it is possible to use some of the data I gathered to explore whether Twitter activity translated to pressure on the government of the US to act on behalf of the protesters. Similarly, we can certainly see lesser impact of international pressure on the Iranian government – we need only look at its attempts to save face in the cases of Neda and the Ashura protest videos that we saw above. The desire to save face would produce a reaction, if not necessarily a desirable one, if the US used its diplomatic tools, including UN pressure and Radio Free Europe, to shame the Iranian state for its actions.

As noted before, 7.2% (MoE 15.5%) of tweets during the June protests fell in the category of International Activism. No few of those tweets were organizing, promoting, or calling for protests at Iranian and American government buildings in America. Public response to the election results did result in protests in Washington DC, Los Angeles, New York, Miami, Chicago, Seattle, San Francisco,

33 Particularly when that pressure is existential in nature. Granting redress to the protesters would likely have included the collapse of the Islamic Republic model. No state, regardless of the non-military pressure put on it, will surrender its existence for the cessation of pressure.
and other cities around the world\textsuperscript{34} (Estevez; “Iranian-Americans”; “Iranian-Americans protest”; Milburn; Guzman; Cote). Many of those protests were organized by Iranian expatriates, a fact that might indicate that the internet had less to do with the protests than traditional networks between expatriates and friends and family in Iran. Measuring the impact of social media on those protests would require polling information that I do not have\textsuperscript{35}.

The US government did not respond to domestic pressure by bringing direct pressure against Iran. President Obama did release a statement questioning the legitimacy of the elections, but also made it very clear that he intended to respect the sovereignty of Iran (Solomon and Spiegel). In part, this is because the US was balancing its own international focus on Iran's nuclear program against a general pro-democracy bias, and in part it was because the President did not want the United States to become the topic of discussion in Iran\textsuperscript{36} (Solomon and Spiegel). Similarly, the United Nations has yet to produce a resolution directly dealing with the election. Radio Free Europe and BBC Persia continue to broadcast, but their individual capacities to influence Iran are relatively limited.

It is difficult, given the limited information available on American public opinion, to say whether social media produced a swell of public support for Iranian democracy. What can be said is that there were a number of protests in the United States which aimed to direct pressure at Iran, and that the US government did little to put pressure on Iran. This would tend to indicate that there was not significant enough support to create a boomerang effect, but there are confounding elements in

\textsuperscript{34} The organizing group claims that there were protests in 105 cities around the world (Cote).

\textsuperscript{35} I can, however, say that Twitter has increasingly become host to an international network of Iranian expatriates, as my June 2010 data shows. Perhaps this indicates that, in contrast to the dichotomy I presented, social media and traditional expatriate networks mesh, as internet interaction begins to replace phone and letters. Again, it would take data I just don't have to answer that question.

\textsuperscript{36} The United States has an at-best-mixed record as a patron of democratic movements. In South Korea, democracy developed hand-in-hand with opposition to American foreign policy. It is quite possible that a direct statement of support by the US might do more harm than good in a region where the US is not particularly popular, particularly in Iran, which feels threatened by American international policy.
American foreign policy which make it difficult to say. There is also the question of whether, in an increasingly connected world, states are the only medium through which external NGOs can bring pressure to bear against Iran. Perhaps the ability to shame with information might be sufficient in and of itself. While there does not appear to have been a strong boomerang effect in Iran, more research will need to be done before strong conclusions can be drawn.

**Twitter Today: #Iranelection in June, 2010**

The #Iranelection hash-tag has changed significantly since June of 2009. The topic is no longer a trending topic on Twitter\(^{37}\). Use has declined to nearly six times lower than in June of 2009. In large part, this is because there is little activity going on right now in Iran. Discussions are pre-occupied with the execution of protesters and discussion of what drips and drabs of news have come out of Iran recently. Most significantly, however, Persian language use has increased to 10 times what it was in 2009. Looking at the other data, it appears that Iranian expatriates have become a significant portion of the hash-tag users.

In June of 2009, there was an average of a tweet every 1.14 seconds in the hash-tag. In 2010, that value had risen to a tweet every 6.22 seconds. This increase reflects the relative inactivity of the situation in Iran. Despite the anniversary of the election and protests falling within the set, there was no significant protest activity to mark them. As a result, despite a sense of expectation around the anniversary, Twitter remained largely quiet.

The dominant topics of discussion had also changed significantly by the one year anniversary.

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\(^{37}\) Trending topics are topics which have high density of use, and are thus listed for all Twitter readers to see, on the Twitter homepage. #Iranelection no longer trends because of lower density of use, and because Twitter has changed its algorithms to prefer more recent topics to topics which have trended for a long time.
The dominant topic in 2009 was Meta discussion, which made up a plurality of discussion. By 2010, the News category had become dominant, making up a very slight majority of all discussion, at 50.6% (MoE 37.2%\(^{38}\)). In 2009, news made up only 21% of discussion. News discussion in 2010 focused on media reports about executions, crackdowns, and the ongoing political situation within Iran. There was also significant attention given to the enactment of UN sanctions against Iran, which fell within the time of the set. Most of the remainder of discussion was Meta oriented, at 31.3% (MoE 29.8%). Meta discussion tended to be sloganeering, with the occasional discussion of where the movement ought to go. Reports, organizing, international activism, advertisement, and the occasional World Cup discussion made up the remaining 18.1% of the set.

The most significant change in 2010 was the massive increase in the use of Persian within the hashtag. In 2009, Persian language tweets made up 2.2% of the set. In 2010, they had risen to 20.3% (MoE 30.1%\(^{39}\)) of the set. One of the reasons for this is that there were news groups who were using Twitter to spread their reporting in Persian. The other reason seems to have been an increase in use by the diaspora community. The primary evidence that the increase in Persian users was from outside of Iran can be found by looking at the times of peak usage, which look surprisingly familiar (Figure 3).

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38 There were only 35 entrees in the cumulative data here, representing 700 Tweets – but the small cumulative set size meant large margins of error.
39 Which means there is no statistically significant proof of the increase, since the increase is within the margin of error – that said, my anecdotal experience confirms this increase, as news groups using Persian, and individuals who used both Persian and English had become more common.
June 2010, the pattern of usage was practically identical to the pattern of usage in 2009 (see Figure 1), indicating a similar focus of usage in the United States. We can confirm this by looking back to Figure 2, and seeing that usage of Twitter was immeasurably low amongst Iranians in June of 2010. By putting all of this data together, it seems as though usage by diaspora Iranians has increased over the last year—which raises some interesting questions about the power of social media in replacing older means of expatriate community organizing.

(Figure Three – Plotting Density of Usage Against Time (GMT))

Another interesting test I was able to perform with the June 2010 data, that I was unable to perform with the 2009 data was recording the stated location of each Twitterer. This test was somewhat limited because of the tendency of users within the #Iranelection hash-tag to lie about their location, and list themselves as being from Iran. As discussed above, I listed two categories of people who said they were from Iran—a credulous and a skeptical category. My skeptical category found that as many as 6.3% (MoE 12.6%) of tweets could have been from Iranians who were living in Iran (In contrast, 37.7% of tweets were from people claiming to be from Iran who either never used Persian or actively stated that they were from somewhere else in their recent tweets). This lends further credit to the theory that the majority of Persian users who were using the hash-tag were members of the expatriate community.

Conclusions

The most important conclusion that we can draw from this data is that Twitter was not used by Iranians during the June 2009 election protests. Usage appears to have been dominated by Americans,
who focused their discussion on largely Meta topics. The “Twitter Revolution” was a revolution of spectators, who were using a new tool to observe the ongoing civil unrest in Iran. There was some interest in Twitter in Iran during the protests, but it was not particularly significant to the structure of the protests. As a panacea for authoritarian control of political communications, Twitter seems to have little to offer.

In China, on the other hand, Twitter was very successful in performing a much more limited role. Local activists were able to get news of the Urumqi riots out around the press blanket created by the CCP. This allowed them both to beat the CCP to the international press, thus forcing the Party's hand, and allowed them to offer a counter-narrative to the narrative being offered by the government press. It seems more likely that social media can play a constructive role in authoritarian states in such a limited role.

That said, my findings need both sharpening and review to be properly conclusive. Before anything else, the margins of error in my statistics are far too large to be viable. Processing more sets of data is necessary to create statistically significant results. A more skilled computer programmer could probably produce code which could process most of the data quickly and provide better language, location, and use-density statistics. Analyzing topic will require more hours of hands-on work, however. Ultimately, I found less value in the topic statistics, and so that work would be less important than looking at language use and stated location.

There are a few interesting questions raised by this work which bear further exploration. While Twitter may not be the protest-organizing center that it was cast as, there are other areas in which it and other versions of social media may play significant roles. A quantitative and qualitative exploration of YouTube's use as a disseminator of videos and citizen-reporting might reveal much of interest. Such an
exploration could look at the impact of more wide-spread videos, like the Neda video, track the transition of videos from YouTube to mainstream press, and also look at government response to the new means of “witnessing” state wrongs.

Another area with potential for further exploration is the way in which international social media impacts the traditional boomerang effect. I do not see strong evidence for a boomerang effect in the case of Iran, but there were externalities in US foreign policy which made the situation more difficult. It might be worth looking at a number of cases where international activists tried to use social media as a means of bringing pressure on a restrictive state from the outside to see whether it changes the dynamic.

Finally, it is worth exploring whether expatriate networks have changed in the face of social networking. My results indicate that an expatriate network of Iranians has begun to use Twitter as a communication point, but it may well be more of an exception than a rule. Further exploration on the topic might include looking at expatriate networks from other authoritarian states (China, Vietnam, Belarus, and Zimbabwe, for example) and their traditional and modern means of communications. By tracking changes in self-identification, awareness of events at home, and international social capital, it should be possible to see if different levels of community connection correlate with social media use.

The sense that the internet is a powerful tool for democracy needs to be carefully evaluated. The simple fact is that during the age of the internet, authoritarianism has not seemed to dissipate significantly. This is not a damning fact – the internet has had significant (and in my opinion, positive) impacts on domestic politics in the democratic world. Nor is it a reason to give up on the possibility of

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41 To be fair – it is increasingly the case that the most extreme authoritarian states are also rogue states, which makes this sort of externality more common.
the internet becoming a tool which empowers people to take on authoritarianism. What we must do is honestly evaluate the tools that the internet provides – not in the form of media hype, nor in the form of cynical dismissal. Twitter did very little to impact the situation in Iran last year – my work merely confirms what a lot of experts were saying already. However, to close the book there would be to ignore the changes within the #Iranelection hash-tag over the last year, the role of YouTube in creating witnesses, and the possibility of a domestic impact of international events through social networking. In the internet era there are at least two things which have not changed no matter how hard we wish they might – first, there is no magic bullet for any problem, and second, nothing is ever as simple as an at-face dismissal.
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