

# #IranElection: Quantifying the Role of Social Media in 140 Characters or Less



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It is extremely difficult to contextualize and explain something as nebulous as the internet's effect on politics and society. It is much more difficult when it is unclear as to whether or not it is even a subject mature and accessible to the point where academic research can be conducted on it. Without any resources at my disposal, I met Andrea S. Kavanaugh, who assured me that the task could be completed, and provided me with the necessary contacts who, in time, have assured me that works such as this may have some value. Additional thanks go to the various resources willing to answer questions along the way: Jeff Crouse, Mansour Farhang, Jim Hendler, Andrew McIntyre, and Tim Hwang also have my sincere gratitude and sympathy for dealing with this work.

## **Abstract**

*In a retrospective analysis of the Iran national election protests, the meteoric rise of the Twitter platform as a purported tool of dissidence has become a subject of debate and importance in the burgeoning field of online activism. By using methods of data collection novel to Web 2.0 social media applications, can a finer granularity be achieved in directly measuring the impact of the internet on politics and society?*

## **Keywords**

Twitter, Online Activism, Iran Election 2009

## Introduction

*At night, every light that is on in Tehran shows that somebody is sitting behind a computer, driving through information roads; and that is in fact a storehouse of gunpowder that, if ignited, will start a great firework in the capital of the revolutionary Islam.*

- Iranian Dissident, 2003

In a June 2009 interview with TED, media analyst and internet pundit Clay Shirky announced “this is it. The big one,”<sup>1</sup> in reference to the apparent meteoric rise of social media technologies following Mir Hossein Mousavi’s repudiation of the Iranian national election results. As the story goes, when the Iranian government enacted a media blackout, nationals, news services, and the international audience turned towards non-traditional means of communication, most notably Twitter. In the immediate days following the blackout, articles with headlines such as CNN’s “Tear gas and Twitter: Iranians take their protests online” presumed the importance and touted the capabilities of services such as Twitter in allowing dissidents communicate not only to the international audience and news services, but amongst themselves in order to protest and organize effectively.<sup>2</sup>

Beyond traditional media, the US government was also drawn to the apocryphal Twitter-Iran connection; on June 16, the State Department requested that Twitter postpone updates to the service by “highlight[ing] to them that this was an important form of communication” both in terms of external information exchange as well as internal organization.<sup>3</sup>

As illustrated by Evgeny Morozov, “[i]t is easy to see why so many pundits accepted this narrative: they had seen something similar before. The exultant hordes of attractive, obstreperous young people, armed with fax machines and an occasional Xerox copier, taking on the brutal dictators” - in Morozov’s work, Shirky’s tweet analogizing Tehran 2009 to Leipzig 1989 is conjured.<sup>4</sup> Indeed, another similar event seems to bolster such a comparison: in Seattle

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<sup>1</sup> Anderson

<sup>2</sup> Nasr

<sup>3</sup> Fleming

<sup>4</sup> Morozov 10

1999, it was the cash-strapped, liberal, technologically savvy, globally aware citizenry - the self-described “electro-hippies” - that proved to leverage information and communications technologies (ICTs) for their own protests. Why would it not be assumed that a similarly liberal (or more accurately, pro-Western), technologically savvy and globalized portion of the population, unhappy with the results of the election, would turn to the unconventional online activist platform in the face of a government crackdown?

Sandor Vegh’s “Classifying Forms of Online Activism” provides a useful and spartan framework with which to analyze cases of online activism. In his study on the World Bank, Vegh identifies three distinct dimensions of online activism: awareness/advocacy, or the generation and dissemination of sympathetic information, organization/mobilization, or the planning and deliberation towards actions to be taken offline as a result of sympathetic information, and action/reaction, or the online actions as a result that are done more efficiently online, such as “writing one’s congressional representative”.<sup>5</sup> Although these dimensions necessarily assume a temporal progression of one after another, it is important to understand that in actuality many instances of each dimension could be occurring at once and at different speeds and magnitudes. In researching a given instance of online activism, we can determine both the role as well as the efficacy of the instance by evaluating it’s focus and resultant impact in each of Vegh’s three dimensions.

For Vegh, the case for cyber-protest against the World Bank, and subsequently, its adherence to his categorization scheme, is made from an analysis of specifically curated websites. This near-anthropological methodology is popular in internet studies,<sup>6</sup> and is fairly straightforward: by immersing oneself in a given instance of online activism, curating a catalog of websites representative of the overall environment in which the particular case occurs, then examining the qualitative nature of the content and utility of these sites, it is possible to identify particularly interesting occurrences, outline general themes, and, as in the case of Van Aelst and Walgrave,<sup>7</sup> illustrate a link topology within the catalog. We could characterize this method as a

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<sup>5</sup> Vegh 71-84

<sup>6</sup> See Smythe and Smith, Van Aelst and Walgrave, Pini, Brown, and Previte, and Edwards

<sup>7</sup> Van Aelst and Walgrave

Web 1.0 method, that is, a method without using any of the data creation/collection techniques that typify Web 2.0.

If Web 1.0 methodological approaches are based in anthropological study, then Web 2.0 methodological approaches are based in statistical computation. The social networks, blogs, commenting systems, RSS feeds, and similar technologies that typify Web 2.0 have changed the way actors engage the internet; the way in which research is conducted on the internet must reflect these changes. By leveraging these technologies, the very technologies such as RSS Feeds and APIs that define the new conventions on the internet, it is possible to collect data that accurately reflects the way actors engage with the internet; with a large corpus of machine-collected data, it is possible to gain novel insights as to the role they play in a given instance of online activism. In our case, this allows us to quantify and interpret the role of Twitter in the Iran election in a novel way, which may lead to entirely different conclusions and bring into question many of the rationalizations, frameworks, and assumptions that have been made in the way the internet is actually effecting politics and society.

In the paper that follows, the goal is then to identify particular subsets of a large corpus of tweets against Vegh's dimensional approach in order to better ascertain the utility, function, and purpose of using the social media platform in the instance of online activism. First, it is important to define the term "online activism" itself, as well as enumerate the limitations in causality and correlation particularly with respect to actions taken online and their affect in the offline world.

Then, having gained an appreciation for the term "online activism," it is similarly important to understand the particular political context in which the case occurred in: Iran is a unique situation politically, as the personal becomes political in the islamic state, where the governing ideology is predicated upon the exhibition of particular norms and values above others. This is distinct from any other nation, where personal decision making is distinct either implicitly or explicitly (as in the US constitution) from the political system. As such, an "ethereal" opposition based on the youth generation's cultural preferences exist, and provides much of the basis for understanding the current political atmosphere in the islamic republic.

Following this, a further distinction of the Web 1.0 versus the Web 2.0 methodology is made clear, and the collection process is described in detail so as not to leave the reader in any

ambiguity about the way in which this relatively novel “collect data, then run statistical analysis” process is used in the context of online activism.

Finally, findings will be shared from the three approaches employed in analyzing the data set. In each case, there are clearly more opportunities for research in this case, and by no means is this a complete analysis of the role of Twitter and the Iran Election - in all reality, there likely can't be “a” complete authoritative analysis, as more analysis can always be conducted. Instead, the findings are intended to provide insight into how the methodological approach can be employed for any case of online activism, and how for the case of the Iran Election, new understandings can be achieved.

From a histogram, or chart-based approach, we can identify outliers in the general attributes of the tweets and their users. From a network based approach, we can treat re-tweets as an atomic metric of influence, and use them to identify the most “influential” users (in at least the re-tweeting dimension). With this basic quantitative analysis, we can use a language approach to then look at the interesting subsets of information and the qualitative nature of the tweets from the “influentials.”

At this stage, a fair amount of energy is spent in discussing the findings from Iran election in comparison to an earlier study on the Seattle protests of 1999. By comparing it to an earlier and well-documented previous case in online activism, a comparative approach allows the assessment of the various conditions under which previous cases were deemed to be “successful,” which allows further refinement in understanding where the possible shortcomings of this case may lie. Ultimately, as it is commonly understood, the Iran election's protests led to no material change, and it is important to attempt to ascertain why this may have occurred in respect to the social media application being used.

Although there were no material changes in the political system in Iran, there were profound changes in the perception of the government. Although Ahmadinejad ultimately remained the president-elect, Mousavi's (or more accurately, the pro-Mousavi public's) challenge to the decision from the Guardian Council rocked the legitimacy of the regime to the core. Prior to this case, political opposition had always been fought through a cultural dimension - that is, culture was the battleground for those in opposition to the governing structure of Iran. In this case, there were clear, direct, popular challenges to the political system itself, which in turn clearly failed to quickly dispatch the issue - instead, it has become at this point (April 2010)

a protracted situation that has changed fundamental perceptions in the nation. Understanding how Twitter may have played a role in this is by no means the end of the question as to what has happened in Iran, it is only a small dimension of the larger complex issue that is being dealt with on all levels of human interaction - in the bedroom, on the computer, in the taxicab, on the street, in the market, and in the voting booth. It is hoped that through a careful analysis of the data set that some of the questions can begin to be answered.

## Defining Online Activism

That a revolution in ICTs necessarily augments the manner in which actors go about achieving their goals is relatively self-evident; perhaps one of the most dramatic realizations of this general idea by any actor was foreign minister Lord Palmerston's reaction to the reception of the first telegraph at the British foreign office: "My god, this is the end of diplomacy".<sup>8</sup> In attempting to provide any explanation or insight as to the nature of how the contemporary revolution in ICTs have altered the dynamics of politics and society, it is crucial to both precisely define the terms used in this discussion, as well as their scope, and identify a framework that can provide insight as to how these situations manifest and exist.

As with any relatively new field of study, the act of leveraging the internet for political or social goals could not be described without the terms that either specifically address one of its forms or attempt to define the general phenomenon as a whole. "Digital activism,"<sup>9</sup> "Internet activism,"<sup>10</sup> and "cyber activism,"<sup>11</sup> for example, all circle around the same general concept of

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<sup>8</sup> Quoted in Saddiki, 93

<sup>9</sup> Available at DigiActive's site, they define the term as "digital activism: the methods by which citizens use digital tools to effect social and political change" ("Our Mission | DigiActive.org").

<sup>10</sup> Sandor Vegh's piece is particularly instructive in outlining the existing lexicon: he defines "internet activism" as essentially interchangeable with online activism, although it strictly denotes the use of the internet, and not ICTs in general, as the difference between the two would suggest.

<sup>11</sup> Cyber-activism can be termed as "a means by which advanced information and communication technologies, e.g. e-mail, list-serv, and the www of the Internet, are used by individuals and groups to communicate with large audiences, galvanizing individuals around a specific issue or set of issues in an attempt to build solidarity towards meaningful collective actions" (See "about cyberactivism").



what Vegh defines as “online activism” and describes as “a politically motivated movement relying on the internet.” Vegh expands on this definition:

[activists] strategies are either Internet-enhanced or Internet-based. In the former case, the Internet is only used to enhance the traditional advocacy techniques, for example, as an additional communication channel, by raising awareness beyond the scope possible before the Internet, or by coordinating action more efficiently. In the latter case, the Internet is used for activities that are only possible online, like a virtual sit-in or hacking into target Web sites. Online activism is comprised of proactive actions to achieve a certain goal or of reactive actions against controls and the authorities imposing them.<sup>12</sup>

If we accept this general definition and Vegh’s framework as discussed earlier, then we can define our interpretation of the events in Iran as separating the different activities, actors, and actions that took place on the social media platform into the framework’s three dimensions, evaluating the efficacy of each dimension for this particular instance, and deriving conclusions as to the role Twitter played in the protests as well as the efficacy of the Twitter platform for online activism. In understanding how people leverage these new ICTs, and how, over time, their actions coalesce into a complete case of Vegh’s three dimensions, we can similarly re-approach the question entirely.

In order to answer this question, a fundamental tension in studying the efficacy of internet-based protest, particularly in this case given the vastly geographically separated nature, must be raised. At one end, there is great difficulty in causally proving how effective online activity is in creating physical action, or proving the identities, true intentions, or geographic locations associated with any content for that matter. In other words, there is an inherent, possibly quite profound, disconnect between what is said online and what is done offline. Therefore, we must not conflate the correlation of online and offline activities as a causal relationship, despite the apparent connection. As an example, on June 18, the National Iranian American Council (NIAC) published recommendations to the United States House of Representatives on their blog. Although the National Iranian American Council, ostensibly an influential agency, calls for specific points on their site, namely that:

**#1:** The US shouldn’t interfere.

**#2:** U.S. involvement would be counterproductive, but human rights violations must be condemned.

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<sup>12</sup> Vegh 71-2

#3: The US should voice its support for the demonstrators.<sup>13</sup>

It does not follow that the United States adopted these or any subset of these policies as a result of the recommendations; on the contrary, to make such a causal claim would seem rather ludicrous. Similarly, to claim that something as relatively insignificant as any random tweet was the cause for some groundbreaking results in the offline world is problematic. Most generally, the problem is a matter of linking online communication directly to offline action. Evgeny Morozov, who remains skeptical as the extent of social media's role in the Iranian election, explains,

Whether technology was actually driving the protests remains a big unknown. It is certainly a theory that many in the West find endearing: who would have expected that after decades of blasting propaganda from dedicated radio and television channels, Americans would be able to support democracy in Iran via blogs and social networks?<sup>14</sup>

For this reason, we must stay ultimately reserved about the extent to which the online communication impacts offline actions. Still, however, it is important not to completely discredit online activity entirely. As studies such as this are still in their infancy, it is just as problematic to entirely rule out actions simply because the evidence doesn't elucidate a direct or clear path between the two. As will be shown, the "green thumbnails" campaign, largely seen as an exemplary do-nothing activity that has become labeled "slacktivism," could actually have an impact on the overall perception of western citizens towards Iranian citizens and vice versa. Central to the label slacktivism is the lack of evidence to the contrary - if there is not a clear path between online communication and offline action, then the online communication has no appreciable impact on the offline action. In the aggregate, these various activities, taking place in parallel through a massive network, are incredibly hard to trace, which can lead to this failure in perception. Without advanced tools with which to analyze the data, it is equally problematic to even quantify the impact online of such a campaign in order to even provide a baseline of impact actions similar to this could have.

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<sup>13</sup> "Post-Election Iran as it Develops"

<sup>14</sup> Morozov, 10

As a result, we have a spectrum of assigning relevance of online communication to offline action and “real-world” impacts. At one end, as in the slacktivism argument, we cannot disregard online communication due to a lack of evidence towards direct, measurable results, if not for the fact that it may not be clear what the actual function of that online communication may serve. At the other end, simply because something happens online or is even stated online does not necessarily mean that the real-world significance may exist - as an example, even though thousands of people may post on their account about an upcoming protest, it does not mean that they (or even those who read that information) will actually be the persons present on the streets. For this reason, knowing that these tensions are inherently part of the discussion is of immense importance.

## **Iran’s Ethereal Opposition**

In order to understand the case at hand, it is important to understand the opposition movement both online as well as offline that preceded this particular case. Whereas in many other nations, the political and the cultural/civil/societal are clearly delineated, in the Islamic republic, there is no distinction - in order to be a successful member of the Islamic republic, one must adhere to the Islamic social mores in addition to the political institutions, as they are as much law as any other ordinance. Far from an active, engaged civil society and political party system, the Islamic republic’s political/civil opposition movement could best be described as something distinct from “resistance as a deliberate and organized response to state oppression,” namely “the practice of defiance as a spontaneous, uncoordinated everyday challenging of the social order”.<sup>15</sup> Central to the story of modern challenging of the social order is the impact of the internet, through its nature to provide an ethereal outlet both for identity construction and political discussion in venues such as the vast blogosphere as well as an input for global culture abroad.

As Farivar states, “the complex online conflict [that unfolded] in Iran is a direct result of the maturity of Iran’s Internet infrastructure and history”.<sup>16</sup> As one of the most developed

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<sup>15</sup> Khosravi 2008 2-3

<sup>16</sup> Farivar

nations (among the developing nations) in terms of telecommunications infrastructure, Iran has a complicated past with ICT's, one that could be characterized best as one of discord. That the internet would eventually play a pivotal role in Iranian politics is not a new concept; the argument that "the world wide web and e-mail have consistently proven themselves as powerful means of communication to oppose autocratic rule" is as old as the medium, and has been applied to Iran specifically.<sup>17</sup>

Perhaps Shahram Sharif of ITIran explicated the nature of regulation on ICTs: "If you look at all the technology that's come into Iran, there's always been some sort of struggle towards it. When the telegraph entered Iran, it was against the law; you couldn't use it. Later, its use became OK. And then the fax, no one could fax anything. Then video cameras were against the law, and then they became available."<sup>18</sup> The systematic pattern of restriction and eventual (if not legal then practical) acceptance of any particular technology shows the two diametrically opposed goals that are faced when dealing with technology in the Islamic republic: while providing economic advancement, they also inseparably advance a political commons and cultural access point otherwise stifled in physical manifestations. Following the revolution, the new government

"was meant to put into practice the supposed affinity between scientific technology and faith. The Islamic revolution was, as the 1979 Iranian revolutionaries recognized, an unprecedented event in modern history in that it emphasized the significance of faith in the scientific pursuit of knowledge, and use of the internet fit this self-image"<sup>19</sup>

Beyond any ideological justification for the advancement of technology, the practical purposes for scientific development is clear: with advancement comes gains for the government in economic activity, the ability to better monitor the population, and the more general ability to raise regional prestige as a leader in innovation, among other benefits. At the same time, however, technological advancement, specifically the advancement of communications technology, provides for inroads for, as the establishment perceives, the

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<sup>17</sup> Rahimi 101

<sup>18</sup> Farivar

<sup>19</sup> Rahimi 102

[a]udio and visual waves that are worse than warships and warplanes[,] used to disseminate a rogue culture aimed at reasserting the domination of the enemies of Islam. They have paved the way for the imposition of unethical values and Westernized ideas in order to captivate and humiliate Muslims.<sup>20</sup>

The reactionary fear of “cultural invasion” is pervasive throughout Iranian politics and society; by embracing the Islamic ideology, the government politicizes otherwise completely unrelated, generally benign or banal social mores such as the decision to wear the *chador* or listen to heavy metal music. Whereas decisions such as these are largely personal cultural decisions, they are a source of political tension within the context of an Islamic state, analogous in severity to fascistic allegations in a capitalist state. As the physical representation (or misrepresentation) of particular social desires are rigidly enforced, they manifest in places where the government’s reach is much less practical, which leads to concerns about the allowance of ICTs in the republic. Although many in society, both vertically and horizontally, actively engage in the online activities that may be deemed subversive or inflammatory, it is the “3rd Generation,” those born after the revolution and raised after the war with Iraq, that are of particular interest due to their large numbers and comparably globalized attitude.<sup>21</sup>

Beyond this challenging of the social order in general, the direct impact of the medium on politics specifically is profound. In Khosravi’s section on “Virtual Iran,”

[T]he most subversive feature of cybertechnology for Iranian youth is the new and simple form of homepage known as a blog. There are up to 700,000 blogs in Persian - the fourth most used language among bloggers in the world. These blogs are a free space where Iranian youngsters write mainly personal diaries, but also about a wide range of topics, ranging from pornography to political issues.<sup>22</sup>

By harnessing the ability to discuss politics and society openly through a medium that is “more or less uncontrollable,” citizens are able to engage in “un-Islamic” acts which in turn antagonize the state.<sup>23</sup> The effect of this is a nominally open atmosphere in which to discuss politics openly; in daily Iranian life, there are isolated physical dimensions in which this activity can take place - in a public taxi, within one’s own home - but the scale and pervasiveness of

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<sup>20</sup> IRNA, December 15, 1999, in Khosravi 2008, 22

<sup>21</sup> Khosravi 2008, 5

<sup>22</sup> Khosravi 2008, 157

<sup>23</sup> Khosravi 2008, 157

online activity far outweighs these isolated incidences. Equally important in the cultural invasion via the internet is the role of “Los Tehrangeles” or “Irangeles,” which Khosravi discusses at length - in short, the avidly interested diasporic community actively participates in the blogosphere as well as the pop culture of Iran, and in turn, the youth of Iran, particularly those in communities such as Shahrak-e Gharb, where a historical western influence pervades, eagerly consume the material.<sup>24</sup>

In physical space, this influence plays itself out in very subtle forms - Khosravi’s analysis of the social interactions in the Golestan shopping center are of particular interest in this regard:

For these young people, shopping is not a backstage activity undertaken in order to prepare for a performance on the stage. Rather it is itself a front-stage act. They dress up and go to *passazhs* to be seen...Tehrani boys are experts at whispering their phone numbers in a few seconds as they pass by girls, who in turn are skilled in memorizing the numbers. Such interaction takes place under the disguise of doing something else.<sup>25</sup>

In this ethnographic portrait of the atmosphere, it is clear that although the physical space may be highly regulated, there are ways to subtly skirt “below-the-radar,” and communicate at greater length through the very communications channels that are seen to be both agents of great advancement and cultural invasion. Combined with the outlet of digital space, this subtle cultural defiance is more blatantly manifested via blog posting, communications between and amongst youths, and in the television and other media they consume. In this way, the political environment that is imposed actually exacerbates the adoption of ICTs and promotes their use, both within (for Iranians consuming and creating uncensored content) and from outside (for diasporic actors doing the same amongst themselves and with Iranians).

In many ways, this framework of subtle physical interactions coupled with robust online activities plays an integral role in conceptualizing the atmosphere in which the election results arrived. Beyond any question of Twitter, it was clear from at least some first-hand accounts that the prevailing methods of information dissemination were taking place; according to one witness in Tehran during the election, information about the time, location, and size of protests was spread via public taxis carrying anonymous sets of passengers; in effect, this activity mimics the

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<sup>24</sup> Khosravi 2008, 66-7

<sup>25</sup> Khosravi 2008, 112

behavior of online interaction; information is passed from one source to another via a central hub of information where it is safer to discuss politics.<sup>26</sup>

Similarly, it would be naïve to think that the internet did not provide this same dynamic during the election. As of 2006, despite being the 26th largest internet population by country,<sup>27</sup> it was 4th in the blogosphere.<sup>28</sup> Clearly, the use and utility of the internet, both in network spread as well as adoption, is unique in the case of the Iranian population. Although being physically restricted to a nearly complete level, in anonymous situations where relative safety can be achieved, information passes through the society, and citizens, particularly the youth, actively engage in subversive acts. As opposed to direct confrontation with a seemingly overwhelming governmental force, subtle approaches that leverage both public spaces and private mediums is employed. It is in this way that online communication and “below-the-radar” public acts can eventually reach a phase shift and spill over into outright and widespread public defiance, such as the notable exception of relatively pro-American (if not in terms of the government, certainly the culture) youth culture managing to “spontaneously gather at Mohseni Square in north Tehran, with candles in their hands... demonstrat[ing] their sympathy for the American people” following the September 11th attacks.<sup>29</sup> Certainly, something like this could not be achieved without that subtle organizational nature, the ethereal opposition that is pervasive in Iran in places where the government cannot necessarily reach. Technology has only furthered this to new heights, and the qualitative work done by Khosravi, as well as the general data about the vitality of the internet-enabled opposition, seems to bear that out.

## **Web 1.0’s “manual curation” versus Web 2.0’s “automatic collection”**

Essentially, we can call the Web 1.0 nearly anthropological methodology of becoming a part of an online community/familiarizing oneself with the network of websites/users/groups, then analyzing some subset of that a method of “manual curation.” In the Web 1.0 environment,

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<sup>26</sup> The eye-witness wished to remain anonymous in any form of publication of the conversation

<sup>27</sup> See “Rank Order - Internet users.”

<sup>28</sup> Khosravi 2008, 157.

<sup>29</sup> Khosravi 2008, 127.

this system is reasonable: publishing one's own content generally took the form of a personal/group website, and conversations took place in forums or via e-mail. In both cases, one could have automated the collection and analysis of such data, but a simple system of manual detection/selection/analysis seemed to be sufficient to make a point. Similarly, communication took place on a website-to-website basis, which made an analogy to communities and therefore to anthropological approaches for those communities more manageable.

As the web grows and communication throughput increases both in terms of actors as well as messages, however, the amount of primary data collection, knowledge of both the pre-existing environment as well as the boundaries of that environment, and possibility for omissions of perhaps influential yet unreferenced or under-represented, and sources of primary data increases as well. Traditionally, internet studies has been plagued with the problem of a lack of discrete data, or more accurately, a lack of knowledge about the entire ecosystem which provides the discretion of that data. Simply put, it's hard to quantify an ever-increasing data set of unknown size and boundaries, particularly when the only methods that can be employed are cumbersome and require a "manual curation" process when collecting.

When talking about web-based studies, it is technically impossible to ensure that "all" related data sources are included in any particular study, or all relevant communications are included. Ultimately, this can lead to a problem of not being able to accurately portray the environment and context in which a given instance of online activism occurs. Although no particular methodology may completely mitigate this, some may do better than others. In many ways, the "manual curation" process may be less efficacious than other ways when approaching a case such as the current one.

However, in many rights, the manual curation method is still preferable for certain situations and contexts; in trying to understand the support network for patients of a particular disease, it would likely make sense to employ this method. This does not, however, mean that it should be the only methodology, or even be the predominant methodology for studying the internet. Additionally, the methodology should reflect the case being studied. If this is accepted, "manual curation" likely can't be applied to the Iran election (where we are instead interested in a network structure and the passage of information through it as opposed to the nature of a community within the network), and indeed, it is either too cumbersome or not wide-reaching enough to cover the vast amount of data in a study such as this at any practical level.



In Web 1.0 studies such as Smith and Smythe’s analysis of the “Battle of Seattle”, emphasis was placed on groups, websites, and entire entities, which abstracted the subject to a manageable level, but didn’t allow for a very fine granularity. Similarly, most early papers seem distanced from the subject being discussed, and as a result, cannot derive specific conclusions or propose clear models for exactly how the internet augments political and societal processes on a network level. In Web 2.0, data has become largely machine-accessible; Twitter is a perfect example. Through the application programming interface (API) Twitter employs, data can efficiently be queried. By storing this data, it is possible to avoid the practical limitations of the Twitter API (most notably, data is not accessible through the Search API<sup>30</sup> after a matter of days), and lock the information in stasis for in-depth analysis. By the very nature of the ad-hod Twitter “hashtag” system (wherein users append “#IranElection” to tweets they deem relevant to the conversation), we can quickly identify exact messages of interest, and analyze them accordingly. As such, the level of abstraction inherent in group-based anthropological or “manual curation” approaches from our actual subject does not need to exist; we can collect the actual piece-by-piece conversation, and analyze how actors use the technology and how successful that use is on an actor-to-actor level, not a qualitative, abstract basis.

In other words, whereas Web 1.0’s “manual curation” method allows for an abstracted look at communication, Web 2.0’s “automatic collection” method allows for direct analysis of that communication. In a situation such as the Iran election, one is obviously drawn to understand the case through the social networking sites that were so emblematic of it; if this is the case, then we must leverage the existing tools, namely the Twitter API, in order to collect more data and therefore have a broader base of understanding what actually happened, who specifically made it happen, and why it went as far as it did. The Web 1.0 method in many respects and for many cases no longer applies; people simply have shifted to the web-application as communications medium over the past decade. These applications employ APIs, RSS feeds,

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<sup>30</sup> The Search API allows for the searching of messages based on their content. In our case, the Search API allows us to access a machine-readable format for the Twitter messages that include the term “#IranElection.” This data is limited to anywhere from 10-14 days - after that, it can only be accessed through user pages, where knowledge of the user is required beforehand (which implies much greater difficulty - the programmer would have to access a user account, then grab relevant messages from that account. In the Twitter system, access to the user pages is limited on a request-per-hour basis, which makes this more inefficient system untenable in the long term. For further information, consult the documentation on the Search API specifications:

<http://apiwiki.Twitter.com/Twitter-API-Documentation>

and tagging systems to organize their information; by using automatic collection techniques, we can collect discrete messages in their entirety, more of the data set as a whole, and with more efficiency than a single researcher manually curating.

In short, the primary difference is that the Web 2.0 “automatic collection” method leverages the very technologies that typify Web 2.0 as the data source, and collects the information via web-ready programming interfaces such as Ruby on Rails. In many ways, the approach is favorable due to the mirroring of actual data in an environment, the much larger data set availability, and the ability to translate the information into a locked database for long-term in-depth quantitative analysis. Then, an anthropological approach can still be employed, and many “manual curation” techniques can still be employed - essentially, it is about approaching it from a statistical model first, then using other forms of analysis as necessary. In what follows, the methodological distinction should become more clear, and the benefits should be clearly shown.

## **Technical overview of the social network collection methodology**

With this comparison of manual curation/automatic collection in mind, and with the new approaches at hand, it is important to talk about the scope of the current work, as well as the specific methodology in collecting the data. In attempting to understand the role of Twitter in the Iran election, the most straightforward approach was to collect tweets carrying the most seemingly popular “hashtag,” in this case, #iranElection, and store the basic metadata associated

with the tweet: the time it was posted, the user who posted it and their basic information such as the number of friends and followers, their stated location, and so forth.<sup>31</sup>

Immediately upon realizing the research potential of a data set consisting of a representative amount of “#IranElection tweets,” a simple scraping program was written in Ruby to query the Twitter Search API and store the results. The scraping began on June 16, and was able to capture tweets posted after midnight (Iran local time) the day of the election. This program was run consistently for two weeks, then was sporadically turned on with new features to collect previous tweets missed in initial queries, verify that certain sets were being collected, and so forth. By October 24, the program had collected 766,263 tweets across 73,693 users.

After converting the raw data into a database, analysis was conducted on an array of characteristics. These characteristics fell into three different categories: histogram-based analysis of the basic attributes of users and tweets (such as the publish time of tweets, the date a user account was created, and so forth), network-based analysis of the re-tweets,<sup>32</sup> tentatively called “re-tweet influence maps”, and simple language based analysis such as word frequency charts.

In previous Web 1.0-era manual curation methods, if this type of analysis were to be conducted, it would have been infinitely trickier, for a multitude of reasons. With Web 2.0 applications and norms, however, the task of generating such information is rather

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<sup>31</sup> In doing such a data collection, there is a significant question left unanswered in this paper primarily due to its complicated nature: ethics. As of now, there seems to be some controversy over whether or not it is ethical to collect tweets and associated user information. In conducting this research, the ethics discussion was guided by Twitter’s terms of service. Simply put, Twitter informs its users that “What you say on Twitter may be viewed all around the world instantly. You are what you tweet!” In more legalistic terms, Twitter clearly states in the first paragraph that “The Content you submit, post, or display will be able to be viewed by other users of the Services and through third party services and websites. You should only provide Content that you are comfortable sharing with others under these Terms.” Additionally, Twitter provides robust privacy features that disallow any data collection via the API for users who have made their accounts private. With this in mind, it is still a controversial subject, however, as Morozov clearly points out the political and possibly life-threatening conditions under which this particular event took place: “As it happens, both Twitter and Facebook give Iran’s secret services superb platforms for gathering open source intelligence about the future revolutionaries, revealing how they are connected to each other. These details are now being shared voluntarily, without any external pressure. Once regimes used torture to get this kind of data; now it’s freely available on Facebook.”

<sup>32</sup> A re-tweet, was defined strictly: a re-tweet was counted if it followed the case-insensitive syntax of “rt @{user\_name}.” If multiple re-tweets were detected in a given message, it was treated as two re-tweets. For example “rt @{user\_1} rt @{user\_2} test message” would count as two re-tweets, one referencing user\_1 and another referencing user\_2.

straightforward; once the data is pulled from the API, we can create simple programs to query the stored data and create analytical tools to elucidate the points of interest. As an example, by converting the entire data set into a re-tweet influence map we see the signal, which any researcher could find with enough effort, but we also are able to look at the noise that contextualizes the signal, and allows us to see if the user base tends to uniformly follow the signal, or actually operates tangential to the signal as would be expected.

It should be stated that this is not the first time such an analysis has been proposed. Indeed, the Web Ecology Project's laconic analysis of 2,042,166 tweets containing relevant Iran election search terms revealed interesting and novel results that could not have been captured in any traditional manual curation method.<sup>33</sup> By analyzing the data at a much finer granularity and separating the process into three categories of analysis, however, this study goes beyond any of the Web Ecology Project's cursory results. As such, it is important to share this deeper analysis in the hopes that it will allow for new insight.

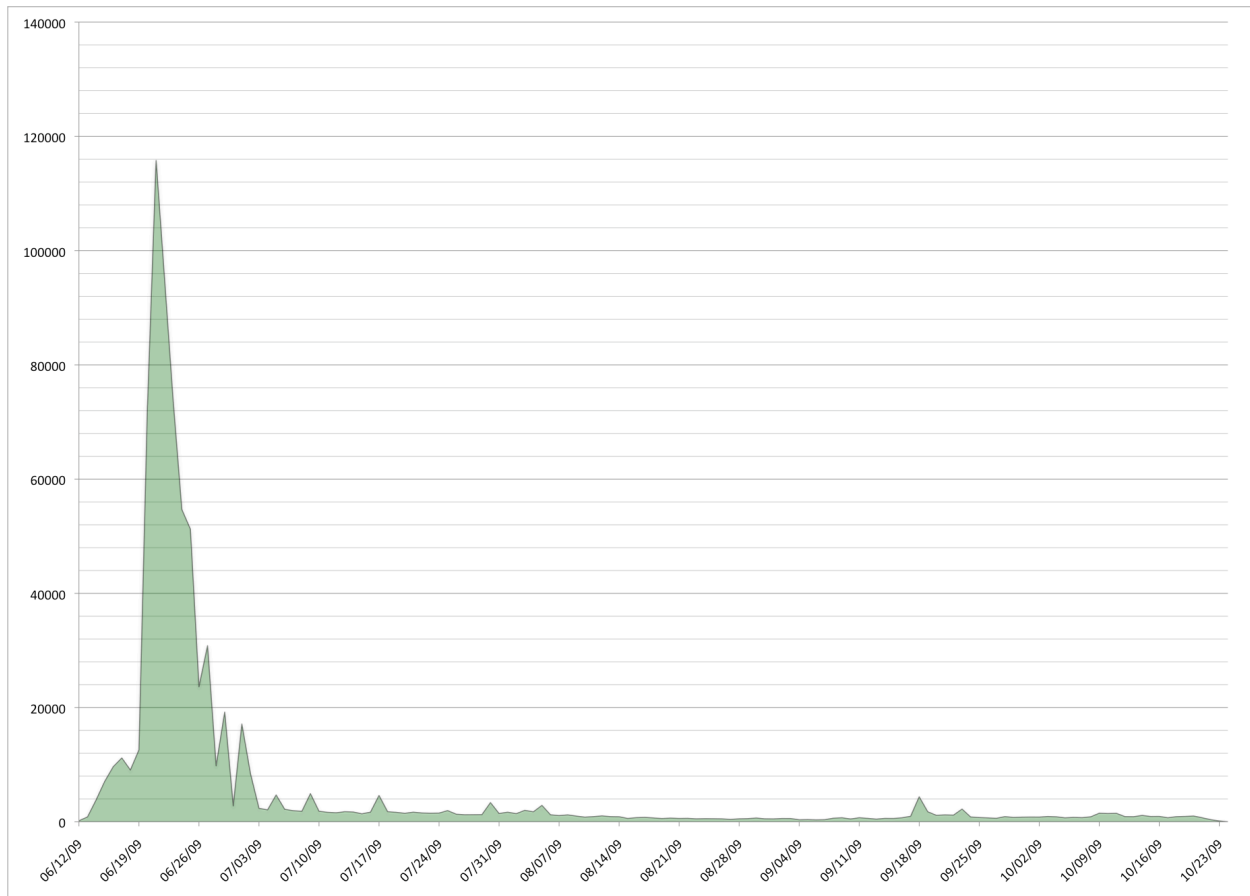
Finally, as a tangential note to the findings, it should be said that the methodology above has been re-factored into a general-purpose utility that uses a distributed-computing approach to manage and collect data requests from researchers with similar data needs in their own studies on the impact of social networks, specifically Twitter, on politics and society. Without going into too much detail, a user-friendly web interface will soon allow researchers to initialize new data requests or "scrapes," select different methods and depths of analysis, and retrieve analytical findings as well as raw data sets for more specific questions they may have. In short, by abstracting the process used to collect this particular data set, we can generalize a toolkit for conducting these types of studies with relative ease. As work is ongoing, it is premature to release specific details concerning the functionality as of now, but the source code is licensed under creative commons and is freely available as the project continues.<sup>34</sup>

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<sup>33</sup> Hwang

<sup>34</sup> To download the source code and learn more about this portion of the current work, please visit <http://github.com/DGaffney/TwitterGrab>

## Findings: Histogram-Based Analysis

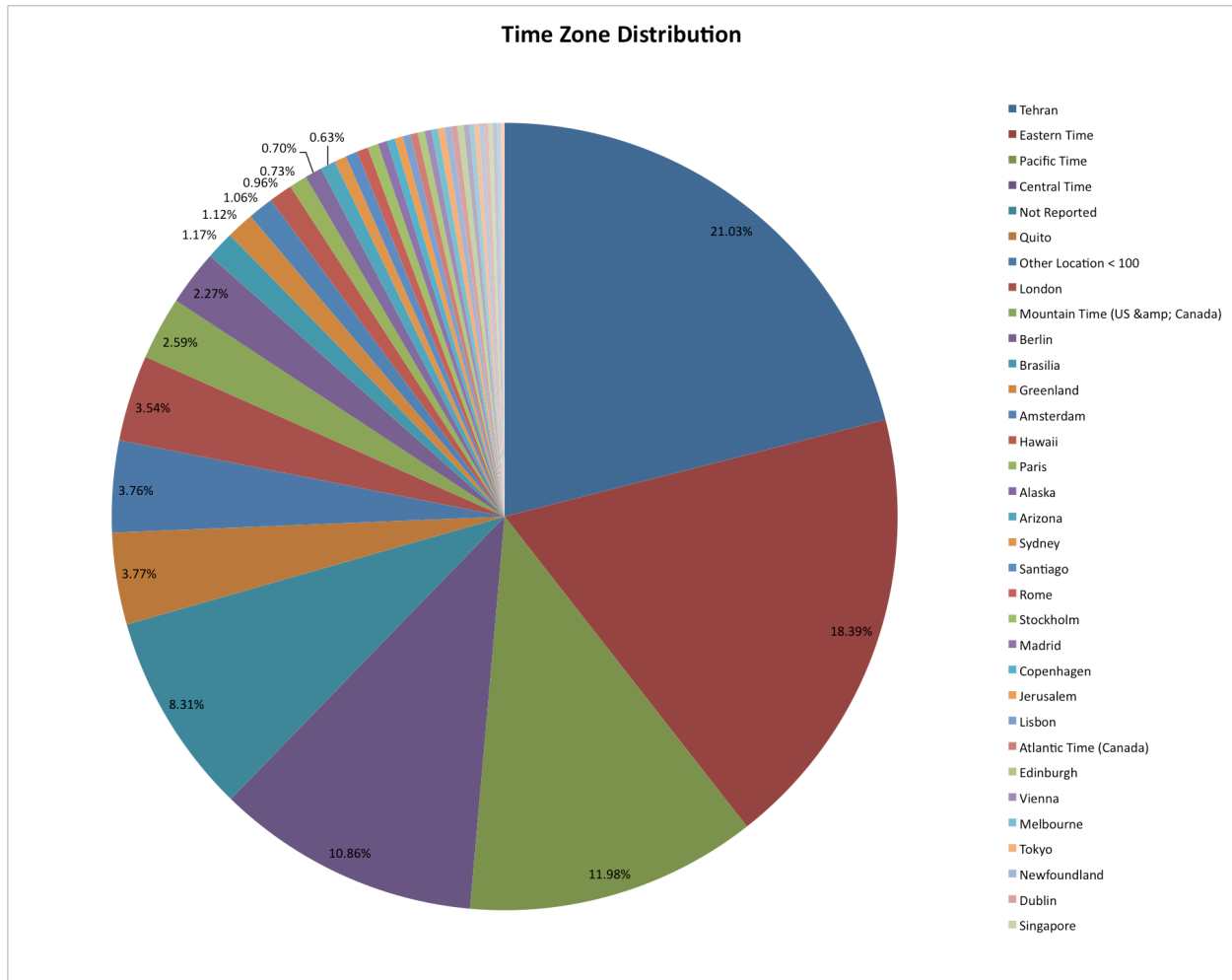


**Figure 1: Tweet volume per day.** *The x-axis represents a given date, the y axis is the number of tweets in the data set that occurred on the given date.*

First, a high-level overview of the data is appropriate. As Figure 1 shows, the vast majority of tweets collected in the data set were posted within the few weeks following the election itself. There are interesting outliers, notably the slight spike in traffic on September 18th, 2009, which corresponded with Quds day. For clarification, Quds day, a national holiday proclaimed by Ayatollah Khomeini in 1979 in order to “demonstrat[e] the solidarity of Muslims world-wide, [and] announce their support for the legitimate rights of the Muslim people,”<sup>35</sup> has become an institutionalized propagandistic tool to both bolster political support from muslim masses both domestic and abroad as well as assert the predominance of the Islamic Republic

<sup>35</sup> “Imam’s message announcing Quds Day from Sahifa-yi Nur”

over its neighbors in middle eastern affairs. In the 2009 Quds day demonstrations, a number of election protests were held throughout the country as well as abroad.<sup>36</sup> Another interesting point is the apparent drop in traffic on June 30th, 2009. With this graph alone, and from reading a random sampling of messages from that particular date, a possible cause of this is it is not immediately clear.



**Figure 2:** Breakdown of self-reported locations. It should be noted that one form of slacktivism employed was changing one’s location information to Tehran in order to “confuse” the Basij and assorted pro-government forces.

The data at this high level does seem to confirm popularly assumed notions, however, and this quantitative proof allows a level of certainty to be applied to the argument that would not be

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<sup>36</sup> Worth

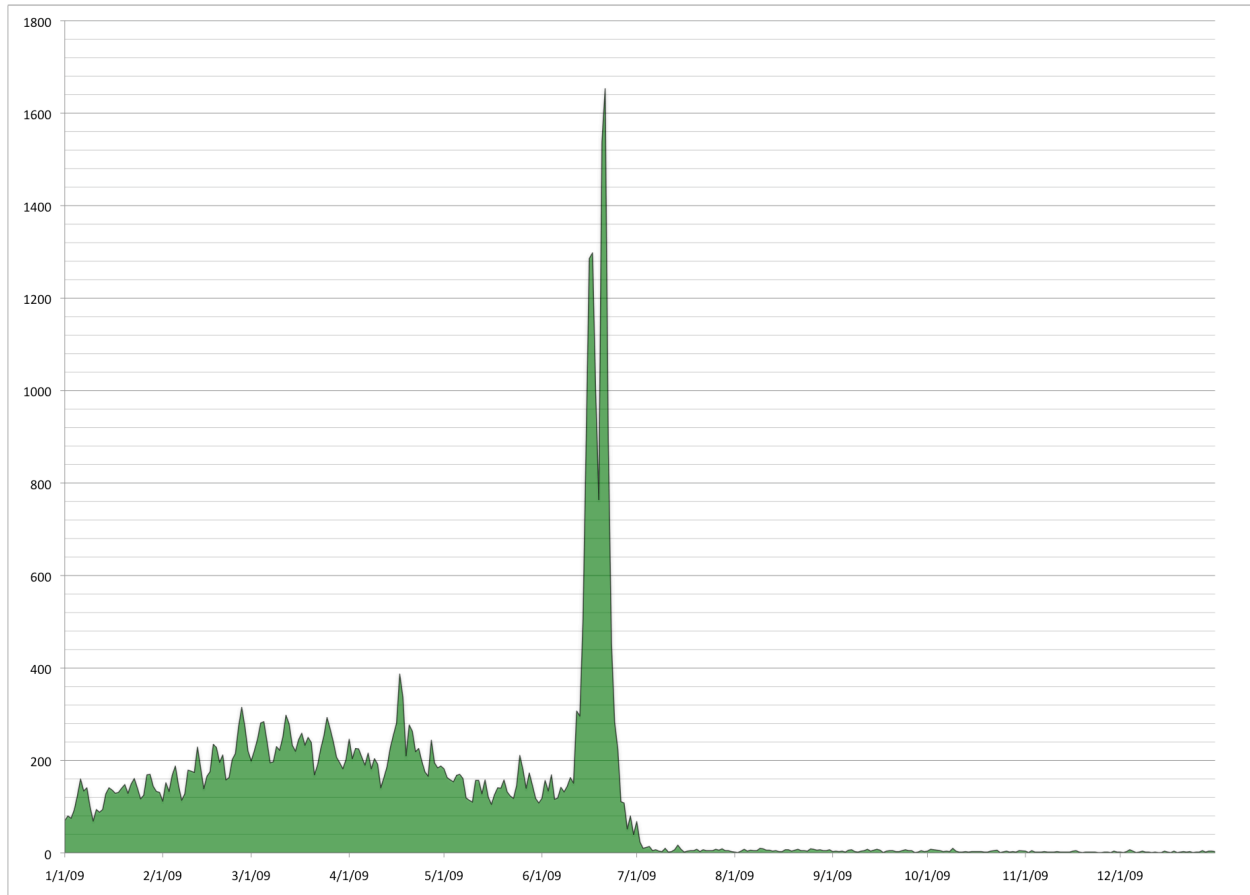
possible with manual curation: most traffic occurred in the immediate aftermath of the election results, and rapidly decreased. It is likely that a possible cause of the astronomic June 21, 2009 spike was a result of what could be called a “Twitter storm”: as users tag tweets with a particular tag, those users followers become aware of the term (as they likely view their tweets in the aggregate), which in turn pushes them to tweet or re-tweet, and so forth - in other words, a positive feedback loop is created in the network. As such, isolating much of the study to the few weeks immediately following the election is reasonable.

Figure 2 shows the breakdown of self-reported locations. Of particular importance in this data set is the fact that “further complexity comes from those outside Iran changing the location on their *Twitter* profiles to Tehran or time zone to +3:30 in an attempt to create cover for those tweeting in Iran.”<sup>37</sup> Indeed, it is hard to tell how many people changed their information precisely because so many may have. Conversely, it is more likely users *within* Tehran could have changed their own location, as their motivation to not be found by pro-government supporters would be much stronger. For these complicated reasons, the location-breakdown can’t be fully reliable. In and of itself, however, we can identify this activity as action/reaction, and then discuss to what extent this is actually a useful form of online activism. Whereas Morozov may rightly conclude that “slacktivism” has no utility, with the actual data sets available, we can determine what would constitute efficacious online activism, and conclusively label an act like this “slacktivism” if it does indeed seem to have no reasonable impact proportional to the level of attention devoted to it.

At the same time, we can now assume some things in the aggregate: aside from the Tehran anomaly, the vast majority of self-selected locations are firmly located in economically developed, generally European or North American, locations. From this, we can begin to shape a general demographic: people who would be likely to use Twitter already, or a population already well-connected to the internet (and to the offline social network Twitter tends to attract), and likely urban (due to the frequency of major city self-selections) likely contribute the majority of content, if not the majority of the user-base.

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<sup>37</sup> Fisher



**Figure 3:** Account birth creation. The x-axis represents the day the particular user account was registered, the y-axis represents the number of users registering that day

The next chart, Figure 3, is perhaps the most intriguing initial finding for this tweet data. Burns and Eltham argue that a “surge in users meant that the network was available to significant numbers of people for the first time, allowing these users to mobilise the social media platform to attempt to influence international events.”<sup>38</sup> This “surge” seems to be corroborated by the data; from June 12th to June 25th, or the first two weeks following the election, 11,384, or 16.8%, of the users in the data set,<sup>39</sup> joined Twitter with new accounts. Within those days, the number of account creations increased an order of magnitude, and clearly shows a correlation with the actual content of the conversation (as we are already only including users who tweeted at least

<sup>38</sup> Burns and Eltham 303

<sup>39</sup> There is an appreciable drop in new users being added to the system after this spike - this is a statistical anomaly due to failures with the collection algorithm - even so, the pre-existing data still shows a comparably major spike in user creation.



one message with the term “#IranElection”). From this, we can safely posit that these were not necessarily pre-existing users that switched conversation to the hot-button political issue of the month, but may have been actively joining the network in order to participate. Similarly, we can posit that in this case, online activism was not necessarily a primary method of activism until traditional media was broken down; the spike in account creation began the day reporters started being arrested, as the data shows.<sup>40</sup>

Julian Bajkowski’s article cites Al-Jazeera’s Head of New Media, Moeed Ahmad, as only attributing 60 user accounts to Tehran proper.<sup>41</sup> This number, according to Ahmad, dropped to only 6 “active” accounts when communications were cut. In other words, if this surge in account creation was not caused by Tehranians, who else could have caused it? A safe assumption would be that the new users had a strong opinion on the matter, and wanted to become involved in the conversation, but this does not provide us with their demographics or their actual efficacy/role in altering the outcome of the Iranian election. Similarly, the fact that this is a geographically specific situation does not necessarily mean that the interested parties themselves are in that geographically specific region; it could be that the vast Iranian diaspora of southern California is partially responsible for this surge in account creation, for example.

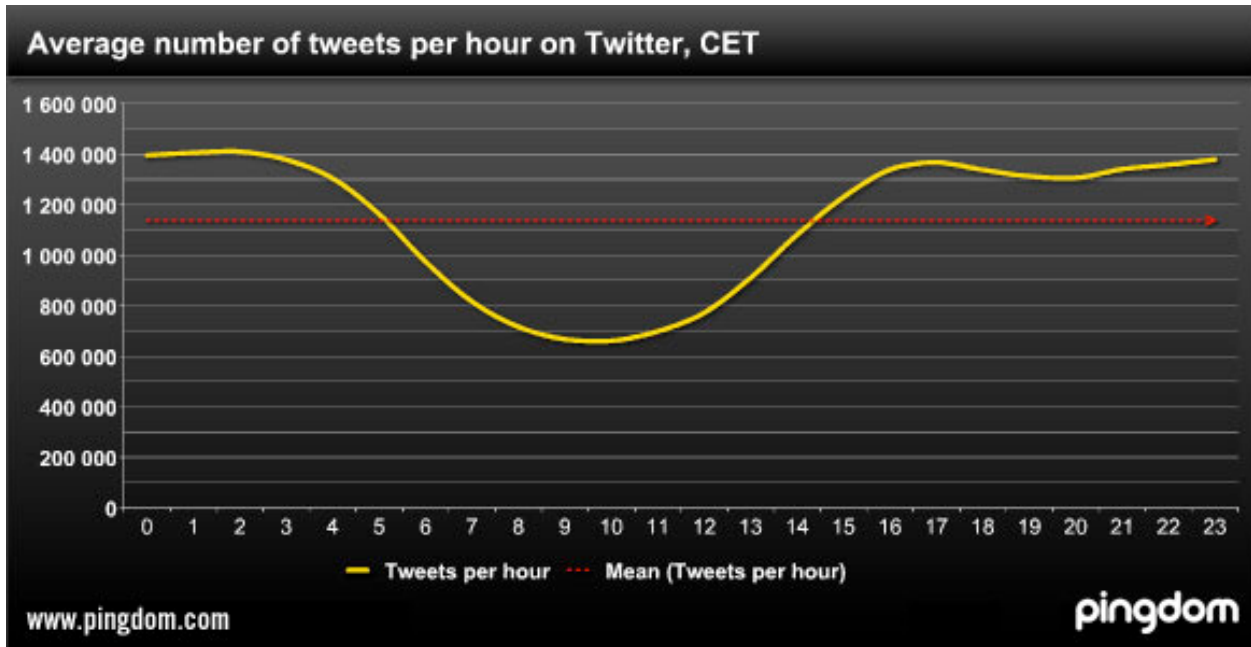
Figures 4 and 5 show the general traffic trends on Twitter as of late 2009 against the data in this set. The first graph, from Pingdom.com, a data aggregation service, shows the general traffic from a sample data set collected from October 21, 2009 to November 11, 2009.<sup>42</sup> Some of the results are clear: The traffic is in phase with the average North American’s sleep and wake schedule, and traffic from other nations does not adequately mitigate that impact. From this, we may draw two conclusions: the impact of North American influence is so considerable to any Twitter data set so that it may be exceedingly rare to see any significant phase shifting, and that any change from the “average” traffic pattern is likely due to either a new user base or a major event that occurs at a specific time frame.

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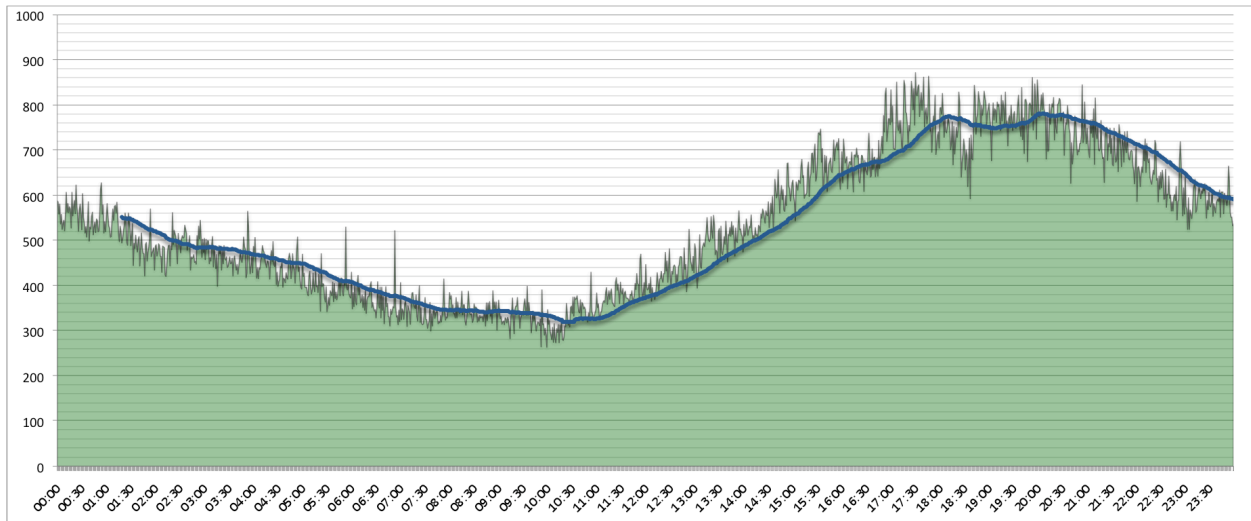
<sup>40</sup> “Post-election clampdown in Iran”

<sup>41</sup> Bajkowski

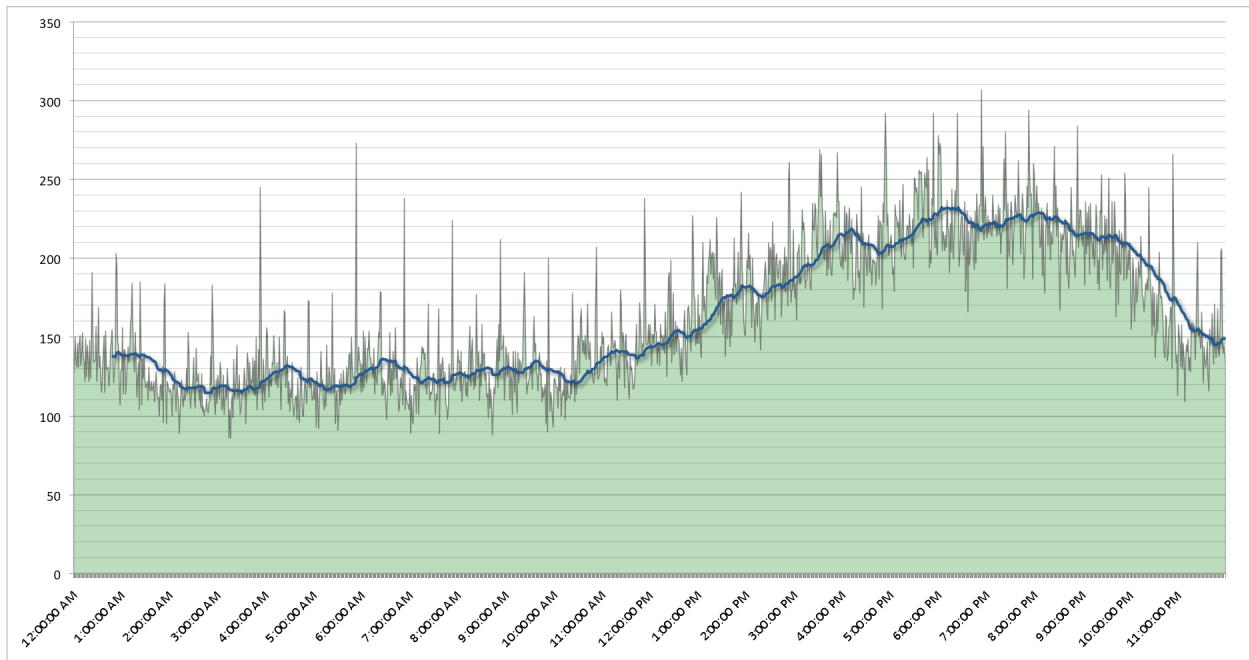
<sup>42</sup> “In-depth study of Twitter: How much we tweet, and when.”



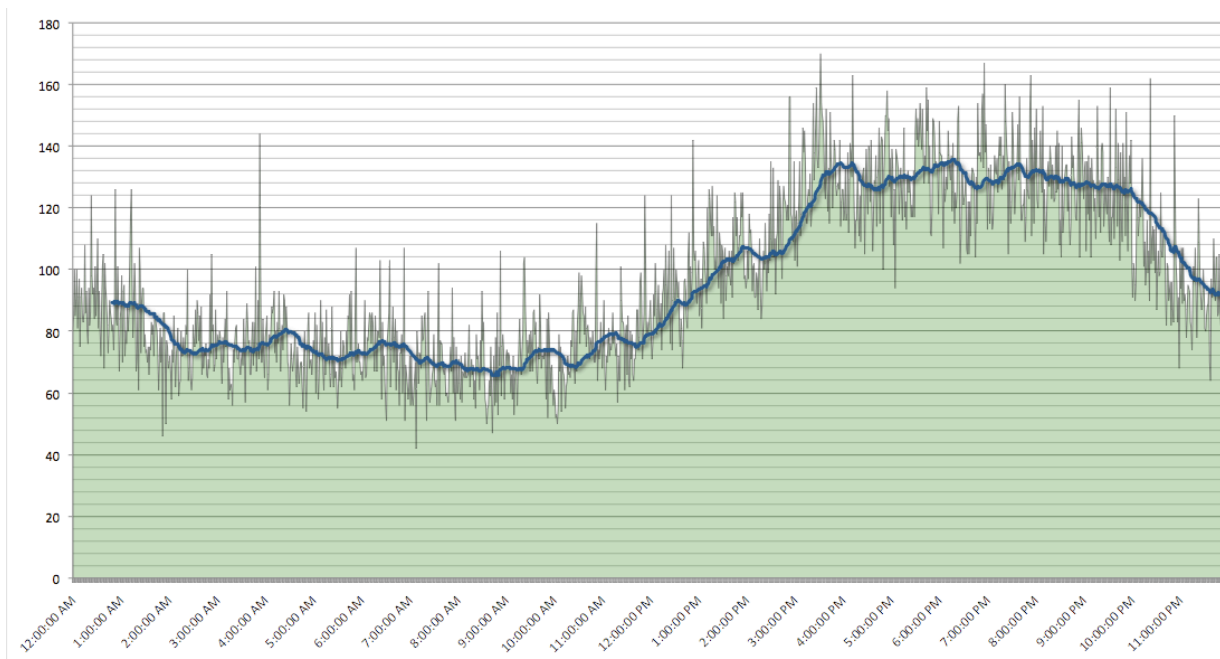
**Figure 4:** Simplified curve illustrating general traffic trends for Twitter as of November 11th, 2009. Set at Central European Time, the data in this graph is offset against the data in our own graph by one hour (Our data is set at UTC). Note the significant dip in the morning (or the American late evening).



**Figure 5:** Traffic for data set as compared against general traffic trends; note that the curve, beyond the one hour offset, is very similar to general traffic, suggesting that a representative user base employed the #iranElection hashtag



**Figure 6:** Traffic for tweets from users who created accounts from Jun 12 - Jun 25. This period is directly after the election, and would correspond to users likely joining Twitter in response to the election. Notice that the dip in evening activity is much less pronounced than in the previous two graphs



**Figure 7:** Traffic for tweets from users who created accounts from Jun 12 - Jun 25 and selected Tehran as their location. Although less of a pronounced dip would be expected, the opposite is found, which opens the question for more efficacious forms of analysis for demographic determinations.

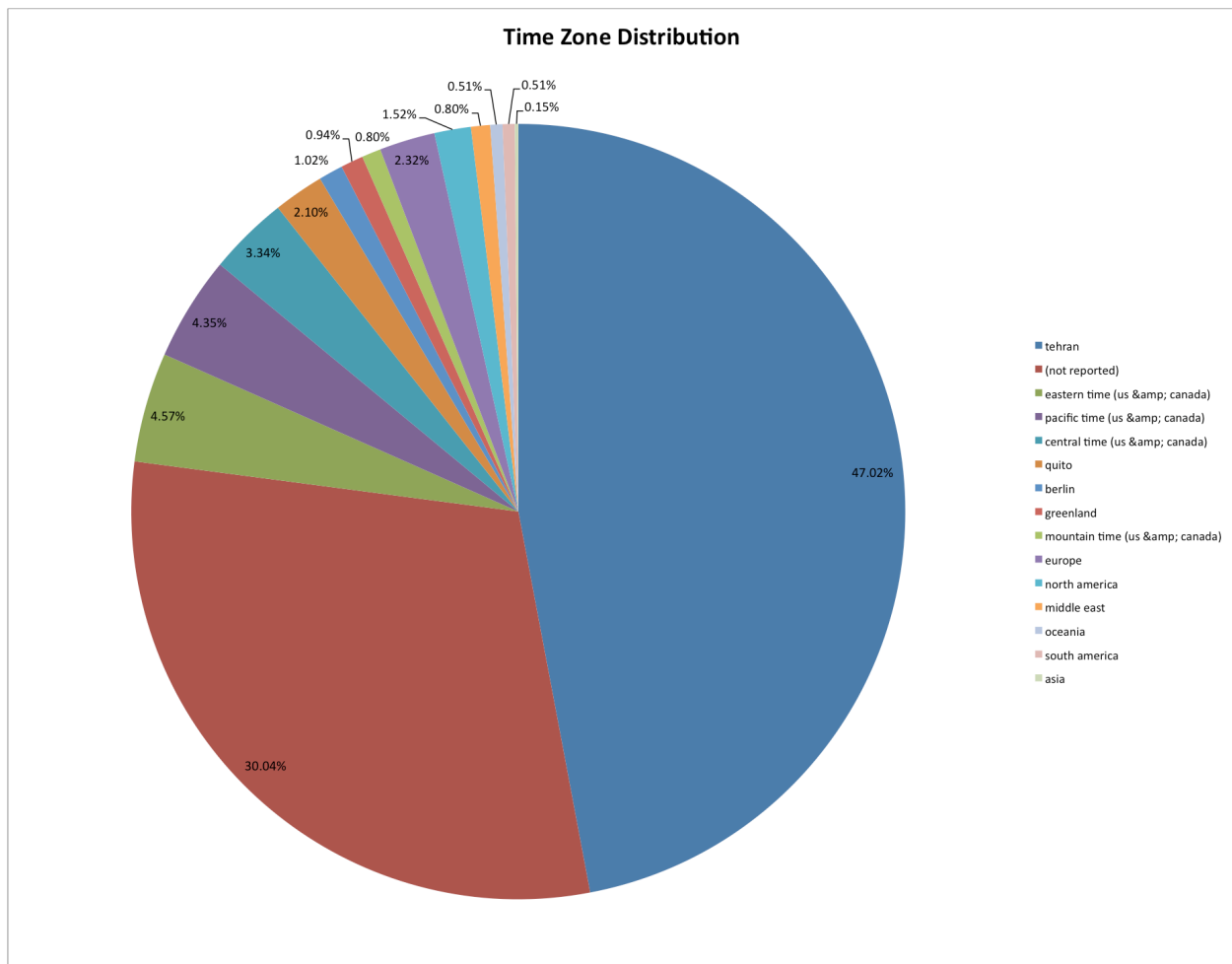
If we accept that in the aggregate, tweet traffic patterns will reveal general demographics (since it would be highly unusual for large groups of people to not be posting in the times it is convenient to, namely during daylight-hour downtimes, and maintain a normal schedule in their respective region), we can begin to isolate likely Tehran based accounts based off of the account date creation and the self reported locations to get a better sense of the actual locations of users. In other words, does the traffic pattern change for specific subsets of users?

Figure 6 shows the general traffic trends for users who created their accounts between June 12th and June 25th. As is clear, the dip corresponding to the North American late evening/early morning (and the Middle East's afternoon) is appreciably less pronounced. Figure 7, the general traffic trends for users who created their accounts between June 12th and June 25th, and selected their account location as Tehran, however, provides little in the way of a definite conclusion about actual demographics. Ultimately, the challenge of determining actual locations based off of aggregate traffic patterns is inconclusive, but does not necessarily rule out the presence of a definite user presence in locations other than North America. In this effort, a departure for further analytical improvements would be to, assuming that the general rules of tweet posting patterns hold for most users, develop an algorithm that estimates time zone locations based on the temporal distribution of all tweets created by an account in a cumulative 24 hour scope.

With further analysis, it is possible to address specific questions about participation; for instance, the case of the large number of account creations on or around June 21 is of particular interest. By analyzing attributes of the accounts created in this time frame, the demographic represented by this new surge of users can be refined. By querying their subsequent tweets attached to the account via the tweet's `user_id` variable (which is collected automatically via the API), we can look at the specific messages of these accounts, and then graph out the nature of this specific subset of tweets.

In this particular set of users who created accounts on June 21, 2009, the group of 1,378 accounts collectively generated 15,164 tweets throughout the data set. In looking at their particular behavior, a few things are clearly of note almost instantly: a very small portion of the messages posted, 1,439 of the total, were re-tweets. Compared to the proportion in the entire set, where 168,077 of the total tweets, or 21.9% of the content, was re-tweets, only 9.5% of the content created by this subset of users was re-tweeted content. Initially, we may suspect that,

given the auspicious creation date and the comparably low degree of re-tweets, that perhaps these are actually 1,378 users with novel material related to the actual election, perhaps ranging from new images to spread through the network or even news about protests, jointly for the purposes of Vegh's awareness/advocacy and organization/mobilization dimensions. As will be discussed below, by using basic word frequency language analysis, we can begin to interpret the qualitative nature of these users' tweets.



**Figure 8:** Breakdown of self-reported locations for users who created accounts on Jun 21st. As is clear, the proportion of users selecting Tehran as their location increased appreciably when narrowing the view to specific dates of interest.

A possible argument for why so much of the content was ostensibly original may be that it was simply spam accounts; given the time frame, it would be reasonable to suspect that the accounts may have been generated for spam activity. When a term is trending on Twitter, many spam accounts tend to copy the trending terms in order to appear in the public trending topic timelines. As the logic goes, the more people view these accounts, the more likely they are to engage with whatever the spam accounts are advertising.

In order to eliminate this possibility, every account was referenced against Twitter on March 24th, 2010 in order to see the current standing of the account; when an account is deleted or suspended, Twitter notifies the program making an API request with an HTTP 404 error, noting whether the “user has been suspended.” (suspensions) or “Not found” (deletions). Of the 1,378 users in this particular subset, only 19 were ultimately suspended; 21 were deleted. For this reason, we can reasonably assume that the accounts are operating within legitimate use cases for Twitter.

Although, as addressed above, there are some inherent problems in judging users demographics by their self-reported locations, it remains a metric worth noting. As figure 8 shows, in this particular set, the users reporting their location as Tehran is dramatically higher than the full data set; 648, or 47.02% of the group of 1,378. The second most reported value is, similar to the full data set, the eastern seaboard of the United States. In total, 201 users reported locations within North America, 59 in Europe, 36 In South America, 11 in the Middle East (other than Iran), 7 in Oceania and 2 in Asia. This data is clearly a deviation from the full data set results; the fact that so many are from Tehran is of particular interest, given the other facts already known: these are, after all, users that joined on a particularly crucial day for the post election protests, were using Twitter legitimately, and reported their location as Tehran. Although they certainly do not all represent “on-the-ground” persons, certainly some are; by looking at *their* specific content, it may be possible to get a further refined view of this smaller portion.

## Findings: Network-Based Analysis



**Figure 9:** GUESS visualization generated from #iranElection-hour\_date-2009.06.20\_17.graphml, or June 20, 2009, at 17, or 5pm UTC (1pm EST, 11:30pm IRST). The listed users, from top to bottom, are persiankiwi, mousavi1388, tedchris, and stopahmadi. Persiankiwi, tedchris, and stopahmadi are well-known “hub” accounts for tweets, and mousavi1388 is Mir Hossein Mousavi’s official Twitter presence.

The network analysis is more difficult work, as it currently requires manual analysis after the actual networks are generated. Very briefly, the network maps intended to measure the influence of particular users in the network, and thus, reflected all re-tweets contained in the data set. When a user (or “node,” in network language) created a re-tweet (or “edge”), the connection between that user making the re-tweet and the user who’s original content was being re-tweeted. When combined, the cumulative re-tweets and connections they created illustrate a network of re-tweets, where the users being highly re-tweeted (a high out-degree) are more influential, and the users that re-tweet other users content are highly connected (a high in-degree). A more in-depth explanation is provided in the appendix. With the current data set, the network mapping process generated 61,838 GraphML files: 135 day-do-day graphs, 24 combined hour graphs,

3,143 hour-to-date graphs, and 58,536 minute-to-minute graphs. In general, it is difficult to work with large network data, and further work is necessary to streamline the analytical process on the information. In its current implementation, however, interesting results can be yielded.

For analysis, GraphML files are loaded into Network Workbench.<sup>43</sup> Within the environment, the GUESS visualization is initialized, which includes a Python-based interpreter for querying specific nodes and edges. As figure 9 shows, the tool is invaluable in quickly identifying the most influential “hubs” of communication for a given timeframe. In this particular set, June 20th, 5pm UTC, we can quickly identify persiankiwi, tedchris, stopahmadi, and mousavi1388 as high-degree nodes. Persiankiwi, tedchris, and stopahmadi are well-known “hub” accounts that were influential and pervasive throughout the Twitter re-tweet conversation, and mousavi1388 is Mir Hossein Mousavi’s official Twitter presence. By using basic querying, we can identify the specific tweets being re-tweeted; for instance, one of the highly re-tweeted messages from mousavi1388 by another user was “RT @mousavi1388 I am prepared For martyrdom, go on strike if I am arrested #IranElection”.<sup>44</sup>

In Vegh’s classification, a tweet such as this would likely be considered one of mobilization; by calling for actions to be taken, Mousavi is leveraging the communications platform to quickly and efficiently direct the justifications and basis for action. If, in the process of analyzing the data set, large amounts of this type of signaling is present, then it is reasonable to assume that this case of online activism had a basis of organization/mobilization; the reasons for why it was or was not efficacious becomes the debatable subject.

Interestingly enough, we can also begin to identify different groups of users: namely, re-tweet-ed’s, or users who tend to have much of their content re-tweeted throughout the network, and re-tweet-ing’s, or users who tend to re-tweet other’s content often. In this particular case, we are identifying persiankiwi, tedchris, stopahmadi, and mousavi1388 as re-tweet-ed’s, with an out-degree (number of messages that re-tweet their content) of 50, 86, 68, and 114, respectively. The emblematic example of the re-tweet-ing type is the user edwand, which re-tweeted 2,262

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<sup>43</sup> Network Workbench is an invaluable resource for network-based querying of large data sets. In its own words, it is “[a] Large-Scale Network Analysis, Modeling and Visualization Toolkit for Biomedical, Social Science and Physics Research.” See NWB Team 2006

<sup>44</sup> The source for this tweet is located at <http://Twitter.com/mousavi1388/status/2254485463>. The re-tweeting user, who has since privatized their account, could not be seen.



tweets from other accounts. In the scope of this work, it would be interesting to see if users can gain importance by essentially becoming their own RSS feed, curating a collection of tweets. In the case of edward, despite the frequent re-tweeting, the account only managed to be re-tweeted 83 times over the data set (solidly in the long tail), zero of which occurred at this particular hour.

Without context, these figures may be of little use, but in the wider spectrum of the whole data-set, we can begin to understand what this implies; for persiankiwi, this particular hour's 50 re-tweets represents a small fraction of the account's total re-tweets, 5,917. From this context, we can begin to talk about order of importance for a particular tweet or timeframe, and identify the relative significance of specific users and their content, which allows us to say with a fair degree of certainty what the users' effects were in using the social media platform.

Currently, this method of investigating "re-tweets of interest" via querying is sufficient for attempting to understand the qualitative nature of tweets for a given time. In analyzing a representative amount of tweets in this form, we can generate a rough qualitative understanding of both the demographics as well as the content of the messages, and approach a case study of online activism from a radically novel approach with perhaps surprising results. In the aggregate, however, more research into this network-based analysis and extensions on the current analytical toolset needs to be conducted to properly streamline both the querying and identification process that is generally used in determining "what matters."

Far from being a method of simply mapping relationships between re-tweets, the re-tweet influence map level of analysis can be used to detect previously undetectable users of interest. It is clear that the tweet volume histogram generated showed us a particular week-long period of high volume, June 17-June 24. Additionally, from our own empirical knowledge of the politics surrounding the case, it is clear that this time period also included the bulk of protests and news data. In this right, we could label this period of activity as the primary focus of research, and then analyze the corresponding automatically generated GraphML files for that time period.

Although the date-hour level of granularity (as well as date-hour-minute) is available for re-tweet influences maps in this time period, it is most reasonable to begin with the larger, more general files that are at the date level. Eight files<sup>45</sup> were loaded into Gephi<sup>46</sup> and analyzed on a

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<sup>45</sup> Jun-17.graphml, Jun-18.graphml, Jun-19.graphml, Jun-20.graphml, Jun-21.graphml, Jun-22.graphml, Jun-23.graphml, Jun-24.graphml,

<sup>46</sup> Available at <http://www.gephi.org>

DATE	NODES	EDGES	TOP USER IN	IN VAL	CLUSTER COEFF
12	39	43	Elizrael	12	0
13	259	313	persianq	25	0.007
14	1044	1312	persianq	43	0.003
15	1684	2101	magnolia_tree	62	0.005
16	1864	2010	RoSiTa08	47	0.001
17	1547	1584	JamesPatronNL	13	0
18	1203	1226	m47713	44	0.004
19	1310	1498	m47713	78	0.009
20	8738	12996	m47713	97	0
21	12469	16765	m47713	91	0.008
22	9707	11543	montrealblogger	101	0.008
23	7166	8198	pudgeling	36	0.01
24	5850	6914	montrealblogger	52	0.008

DATE	TOP USER OUT	OUT VAL	TOP HUB	HUB VAL	DIAMETER
12	Shahrzadmo	6	Elizrael	0.232	6
13	mousavi1388	27	vitruvius	0.013	10
14	stopahmadi	60	persianq	0.027	11
15	PersianKiwi	135	magnolia_tree	0.024	12
16	PersianKiwi	81	metabolica	0.003	14
17	PersianKiwi	18	CaraEllison	0.003	13
18	PersianKiwi	75	VanHavaris	0.005	15
19	OxfordGirl	74	m47713	0.011	12
20	TehranBureau	339	m47713	0.006	x
21	cnnbrk	439	m47713	0.004	x
22	PersianKiwi	649	thefatherland	0.002	x
23	PersianKiwi	547	sarahinaz	0.003	x
24	PersianKiwi	380	m47713	0.004	x

DATE	TOP AUTH	AUTH VAL	TOP PAGERANK	PR VAL	AVG Path Length
12	meedan	0.038	Elizrael	0.124	2.062
13	persianq	0.064	persianq	0.034	2.718
14	jeanrem	0.005	davenp35	0.015	2.653
15	guardianangel08	0.002	magnolia_tree	0.012	2.669
16	RoSiTa08	0.018	jkslouth	0.02	3.074
17	TajaVioletta	0.031	JamesPatronNL	0.057	1.525
18	m47713	0.027	m47713	0.022	2.973
19	m47713	0.04	m47713	0.221	2.694
20	m47713	0.005	m47713	0.006	x
21	m47713	0.004	m47713	0.004	x
22	montrealblogger	0.006	montrealblogger	0.005	x
23	pudgeling	0.003	rishaholmes	0.004	x
24	montrealblogger	0.005	pudgeling	0.005	x

**EXTRACTED RETWEET-EDS:** Shahrzadmo,mousavi1388,stopahmadi,PersianKiwi,oxfordgirl,TehranBureau,cnnbrk

**EXTRACTED RETWEET-ERS:** Elizrael,persianq,davenp35,magnolia\_tree,jkslouth,JamesPatronNL,m47713,montrealblogger,rishaholmes,pudgeling,RoSiTa08,TajaVioletta,meedan,jeanrem,thefatherland,VanHavaris,sarahinaz,CaraEllison,metabolica

Figure 10: Summary chart of network analysis, Graphml day-to-day data June 12th - June 24th.

few basic network metrics in order to determine interesting outliers. Figure 10 shows the table of results for these tests. Broken into three columns is one wide array of data for June 12th through June 24th. First, edge and node counts were found in order to provide a rough size comparison, followed by the top in-degree and corresponding node for the top in-degree (where an in-degree denotes a user re-tweeting another user's content), the clustering coefficient for the network, the top out-degree and corresponding node for the top out-degree (where an out-degree denotes a user having their content retweeted), the HITS algorithm results for Hub and Authority, with their corresponding top values and nodes, the diameter of the network, the PageRank algorithm results and corresponding PageRank values for the top nodes, and finally, average path length. The average path length and diameter were not calculated for June 20th through June 24th, as the computational power required to calculate the values was not readily available.

One of the first noticeable characteristics of the results is that generally, a re-tweet influence network is not highly connected - the number of edges is only marginally higher than the number of nodes in each case, by an average over all sets of just 18.67%. For reference, a random graph with a connection probability of only 1% generally yields 143.15% more edges than nodes. The clustering coefficient, an important metric for evaluating the connectedness of a graph, is equally telling; it is an order of magnitude lower than an average random graph, and in some cases is so low that the computation is insignificantly low to the point of the algorithm returning a value of 0. In other words, re-tweet network graphs could be more closely related to a tree-network than it is to a viral network. Of course, this is only a sampling of tweets, and is therefore likely not completely accurate to all actual tweets that occurred - at the same time, however, the number of nodes is large and the collection method representative enough that we could likely expect a similar branching network map to be a result of any re-tweet influence network, particularly in the case of the Iran election.

As for the actual case study, this cursory analysis is very telling: whereas one may describe a Twitter network as "viral," one of the buzz words of the Web 2.0 world, it actually could be a misnomer; the data suggest something much more tree-like. This suggests that instead of a close, random network of associates and a short path between one major user and minor users via highly connected clusters, it could be much more likely to see long distances between one node and another. Additionally, the network diameter for the network graphs that did have a calculated value suggests that instead of Twitter being a "thinly-spread" network.

Investigating the tree-like nature of re-tweets as opposed to the assumed viral nature is in and of itself a paper; in our case study, it means that data does not spread as directly through the network as would be assumed. If, for instance, an unknown user with valuable information tweeted something, the basic dynamics of the network structure would make it highly unlikely to reach one of the high-degree nodes simply by community election and filtering; different types of factors, such as the distance from a central node and the speed at which the information is sent back through the chain, would have to be at work in order to transmit the information. This likely affects all three of Vegh's classifications to varying degrees.

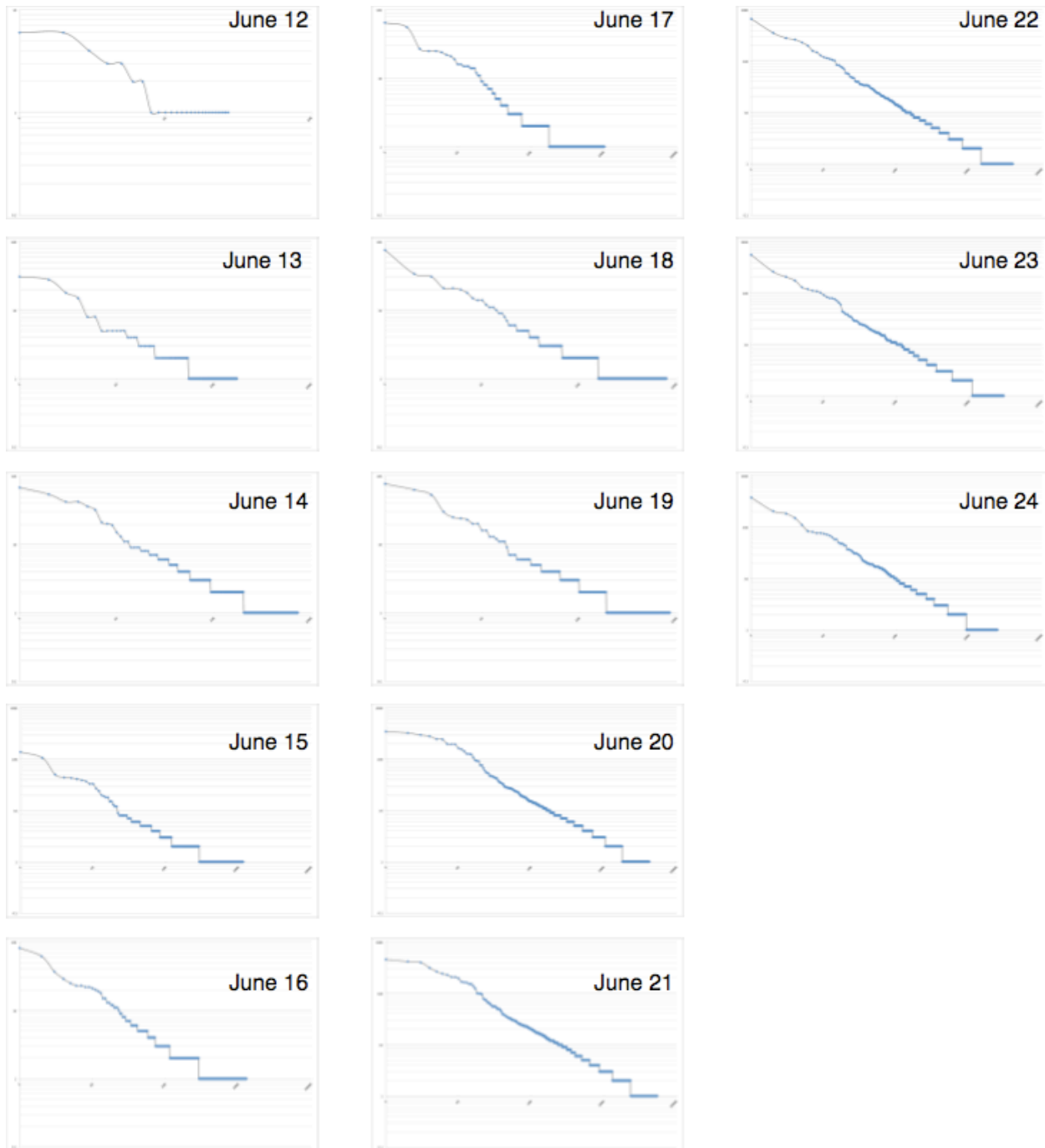
Looking at the figures, another fact becomes apparent: the different classification of users as re-tweet-er's and re-tweet-ed's continues to hold in closer inspections of the high traffic section of data. The HITS and PageRank algorithms, used to detect high value nodes which may not be otherwise apparent, are particularly useful in detecting the re-tweet-er's, which may be useful in understanding the passage of data through the network. In other words, to put it simply, suppose we had some content from a given user; the high value user may not necessarily be that original source of data, but may instead be the bridge between that data and the larger audience, which in turn has a large impact. In networks, the connective nodes matter much more than the actual "valuable information" or "critical" nodes, which is why we may see less conspicuous users being reported.

In a network that is not highly connected, the value of such a user obviously increases - with less avenues/pathways to major distributors, the users that transmit the messages from one section of the network to another, or nominally play the role as the connector between groups or legs of re-tweeted content, become more important. In our case, users that fit this role of "connectors" are people such as Elizrael, persianq, m47713, and montrealblogger. These accounts, each with high in-degrees throughout the set, are useful in network spread. Similar to the case of branch-like connections, this reveals less about the efficacy or nature of any particular classification in Vegh's model, and more about the system's nature as a whole. From this, we would be able to start investigating long term infrastructural users in re-tweet networks, which may prove to be the actually important connections - those that aid in spreading content provide the crucial hopping steps in the network. After all, without the ability to reach an audience, the heavy-hitting accounts like PersianKiwi, OxfordGiral, CNNBRK, etc..., would not be read. Without being able to hop around the network, their content would be transmitted,

contextualized, and focused on so heavily. In turn, this can affect all three sections significantly. As will be seen in a previous case study on the Seattle WTO protests of 1999, the role of influential users, either in a structured (in the case of Seattle) or unstructured (in this case), is paramount: they are able to single-handedly steer people towards decisions, and, eventually, actions.

On the subject of leadership, however, it is important to determine the nature, if any, of the generative process of “leadership emergence” in a re-tweet network. Certainly, before the #iranElection hashtag rose to prominence, there were conversations on Twitter about the political event, but there likely was no clear organization and intense scrutiny at the levels seen in the weeks following the election. With so much attention from traditional media, casual users, active participants, and others, there was clearly an increasing chance for basic network dynamics to come into play; more often than not, in a large network such as this, certain nodes have much higher out-degrees than others - in many cases, it’s not unusual to see one node have an order of magnitude more out-degrees than the average out-degree. Simply put, as a network grows, such as a re-tweet network, there is a certain probability involved with linking one piece of content to another person; as that linkage spreads to another person, the probability that it will be linked again increases by two, whereas all other pieces of content still have the same probability. Over time, it would be reasonable to expect that the probabilities stacking on top of one another would lead to a situation where leaders, or highly-re-tweeted users, would emerge.

In the case of our data set, we can look at out-degree distribution charts on a logarithmic-linear (the out-degree being logarithmic, the array of users represented being linear) scale to see what level of cohesion around particular users is achieved in a re-tweet network. Ostensibly, in a network where fewer than (as an arbitrary example) 5 users account for the bulk of information, there is a level of narrative achieved. Readers need only focus their attention on a few of the crucial accounts; in the aggregate, many users receiving this information from few sources allows for quicker group cohesion, since all readers are acting based on the same data.



**Figure 11:** Re-tweet out-degree (number of times a user was re-tweeted by other users) distribution charts, logarithmic scale. Notice that as the graph continues, there is no appreciable phase shift (say, from a noticeable linear regression towards a logarithmic regression).

To address this question, 12 graphs were derived from the out-degree network data sets. The day-to-day networks for June 12th through June 24th were charted out in terms of the

distribution of out-degrees in the logarithmic-linear scale. If the theory of “leadership emergence” were to hold, it would be reasonable to expect the compaction of the out-degree graph; as time (and increased activity/attention/etc) progressed, we would expect to see fewer and fewer users with higher and higher out-degrees, and less users with lower out-degrees. As figure 11 shows, there seems to either be a critical structure achieved on the first day, or no phase shift ever occurs to a point where there is clear “leadership emergence”. That is to say, we do not see any appreciable increase in the decay rate of the out-degree distribution - as time goes forward, the concentration of re-tweets does not collapse to just a few users in any meaningful sense. In this case, we can start to make some assumptions about the efficacy of the Twitter platform - an ad-hoc network may simply stay ad-hoc. Although some users may generate more useful information than others, they are still in a sea of other users, and are unable to capture enough “market-share” to become the predominant or sole proprietors of content in the network. In turn, this may reveal important facts about a network such as Twitter in online activism studies: simply put, the users that are the most influential stay too numerous to reach any solid level of cohesion. In Vegh’s classification, this may mean that without any level of cohesion for information sources in the three classifications, it becomes increasingly unlikely for any meaningful organization/mobilization or action/reaction, more particularly organization/mobilization, which require deliberative processes in order to reach a conclusion (and therefore direct a critical mass of attention towards that result of deliberation). In the case of awareness/advocacy or action/reaction, although a single or few monopolistic narratives may be of particular use for contextualizing the instance of online activism, they are perhaps unnecessary - links to content that is compelling is likely to emerge from anywhere, and given the Iran election statistics, as well as the plethora of imagery and video content linked through the network, the provenance, as well as the domination of a few sets, of the data is likely immaterial. In the case of organization/mobilization, however, there does appear to be a necessary deliberative process, where an action is decided, and it requires real planning and decision making on a grand scale for any protest or real-life action to have any efficacious result.

## Findings: Language-Based Analysis

basij	13604
protest	10437
iran's	10215
#gr88	9476
being	9385
ahmadinejad	9330
using	9057
@	8864
police	8792
khamenei	8763
over	8235
how	7836
going	7823
says	7704
use	7586
should	7038
streets	6718
anonymous	6447

در	6315
sea	6308
@oxfordgirl	6209
government	6133
#mousavi	6085
و	5884
new	5783
به	5598
day	5482
right	5330
very	5210
forces	5100
injured	5087
video	4954
confirmed	4944
<a href="http://iran.greenthumbnails.com">http://iran.greenthumbnails.com</a>	4874
از	4812

embassy	4553
gov	4494
@persiankiwi	4468
media	4033
why	3973
own	3909
july	3876
send	3836
outside	3827
under	3809
front	3789
come	3753
kill	3708
gas	3683
!	3676
taking	3619

**Figure 12:** Top 50 words, stop-words excluded, present across all tweets in entire data set.



If we exclude stop words (such as “is”, “it”, “he”, “she”, etc...), we can begin to analyze the qualitative nature of all tweets through a simple word frequency qualitative analysis, as figure 12 shows. Although it may not clearly demonstrate a particular leaning to any of Vegh’s three areas of online activism classification, it does begin to illustrate exactly what was being said. For instance, by and large, the top word is “basij”, or the Basij paramilitary organization that are, translated, the “volunteers” that are vehemently, sometimes violently, opposed to anti-government protests. Interestingly, Neda,<sup>47</sup> which seemed to be a large topic of discussion, is much lower on the list, and does not appear in the top 50. We could then begin to surmise that perhaps the impact of her death may not have been as significant a bolstering for online activists on Twitter as would have been thought; perhaps the fact that it is not as high on the list speaks volumes towards who is actually speaking on the social network.

Another interesting approach in processing actual tweet content is to focus solely on hashtags. In contrast to the process of selecting the total word frequency chart, then eliminating all stop words, this process explicitly restricts all results to those that are specifically categorizations of the tweets. As stated previously, the hashtag is an ad-hoc categorization scheme on Twitter; by prepending a “#” to a term, the word becomes a term specifically denoting a dimension; in this way, we can isolate all the categories employed across the data set in order to get a better idea of the substance of the tweets at large. As figure 13 shows, the top 100 terms in the data set were very closely related to the election to the point of being cognates to the term more generally used; #gr88, for example, is short hand for Green Revolution 1388, where 1388 is the year in the Iranian islamic calendar. Notably, #CNNfail was a major tag; all others until this point are directly related to the election protests in some way, either being a cognate or being an easily identifiable relation (for example, #neda and #tehran). #CNNfail suggests a clear aversion to the coverage demonstrated by the news agency in particular (as it relied heavily on tweets during its coverage) and likely the traditional media outlets more generally.

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<sup>47</sup> Neda is a reference to Neda Agha Soltan, a 27 year old woman whose death was captured by video and broadcast by youtube, and then by traditional media. Her death, widely viewed as a result of basij militia, was a rallying cry for protesters. For more information, see “A Death in Tehran” 2009.

#iranelection	1E+06	#IRAN	3164	#deathtothedictator	1042
#gr88	251852	#obama	3158	#DeathToTheDictator	1041
#neda	233244	#news	2861	#greenrevolution	1033
#IranElection	221163	#humanrights	2802	#khamenei	1021
#iran	172853	#greeny	2691	#iranfreedom	1010
#Iraelection	116166	#michaeljackson	2389	#prayforthem	1006
#tehran	104544	#CNN	2068	#nomaintenance	982
#Neda	43881	#Basij	2050	#sgp	981
#Iran	42062	#persiankiwi	2018	#Iraelections	944
#Tehran	38435	#hhrs	1957	#g88	906
#mousavi	20296	#musicmonday	1931	#SOG	902
#GR88	15438	#iranian	1715	#ir	896
#iranelections	14827	#tabriz	1655	#canadafail	896
#tcot	14279	#sog	1630	#FirstAid	882
#iranElection	10616	#shiraz	1622	#green	867
#Mousavi	10088	#sohrab	1528	#greenscream	819
#iran09	7123	#IranRevolution	1507	#GreenNY	817
#basij	6015	#freedom	1489	#ahmadinejad	814
#cnn	6005	#greenNY	1428	#Obama	805
#iranrevolution	5819	#oxfordgirl	1427	#CNNfail	803
#IRANELECTION	5403	#esfahan	1409	#un	799
#cnnfail	4473	#FreeIran	1357	#medical	796
#iran9	4455	#qom	1353	#iran_unrest	785
#iranians	4171	#firstaid	1348	#rafsanjani	783
#freeiran	4102	#spam	1342	#bbc	777
#politics	3734	#Iranians	1340	#qd	771
#nir	3465	#azadi	1334	#obamafail	771
#p2	3444	#twitter	1255	#twitition	768
#NEDA	3438	#1600	1182	#Twitition	765
#fb	3331	#moonfruit	1159	#rasht	738
#twitspam	3273	#IranElections	1149	#Ahmadinejad	737
#revolution	3245	#united4iran	1143	#ashraf	729
#tlot	3181	#TEHRAN	1087	#irannews	726
		#honduras	1059		

**Figure 13:** Top 100 Hashtags across entire data set

Let us briefly return to the case of the subset of users whose accounts were created on June 21, 2009. Figure 14 shows the word frequencies for the top 50 words used across all tweets for this subset of users. The data shows marked differences from the overall word frequencies for the entire data set. Most notably, we can clearly see keywords that specifically address the awareness/advocacy question: the words “support”, “video”, “images”, and “satellite” all appear in this particular set relatively frequently, whereas in the general data set, “video” is the only one that appears that could be closely linked in this way to Vegh’s dimension of advocacy/awareness.

Additionally, this particular subset’s word frequency chart includes the URL <http://twitition.com/csfeo>. By including URLs in tweets, the user is clearly inciting some call to action; in this case, the URL resolves to an online petition to Google to update their images of Iran on Google maps “Since the Iranian government is blocking internet access Google should update the satellite images so people can follow the movement of protesters.”<sup>48</sup> In Vegh’s categorization scheme, this URL represents an action/reaction; online activity taken in direct response to the online activists’ campaign. Simultaneously, it can also be seen as a form of awareness/advocacy, since it spreads the content and establishes practices and norms of information distribution - by using an online petition, it establishes that system as a mode of action/reaction.

As alluded above in histogram-based analysis, we can gain further granularity within this subset of users. In particular, it was apparent that an interesting subset would be those users that reported themselves as being located in Tehran. Out of the entire user base for this subset, 648 users reported as such; by collecting their combined messages, we can interpret the meaning of their tweets, and perhaps postulate a likely demographic for the users. In a simple word-frequency analysis, we can see results similar to the larger subset of word frequencies: for instance, “video” and “help” (as a cognate of support) appear in the set. From the terms, it would seem that this particular subset is more directly engaged in the conversation: evocative, abstract words like “help”, “freedom”, “change”, and “free” appear frequently, and other words directly related to the subject matter seem to constitute the vast majority of frequent words, as figure 12 shows.

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<sup>48</sup> "Google Earth to update satellite images of Tehran #Irenelection."

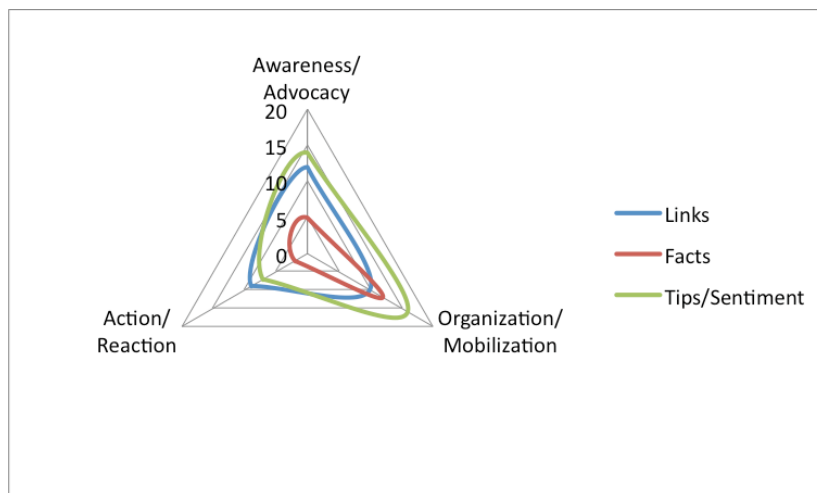
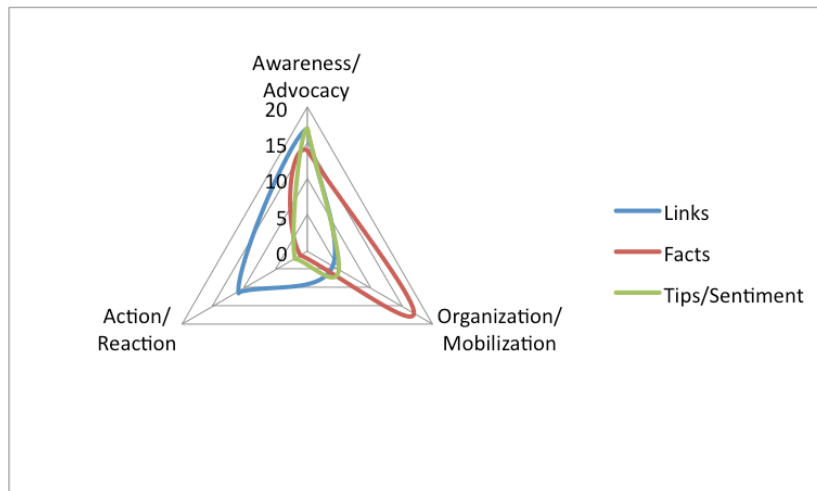
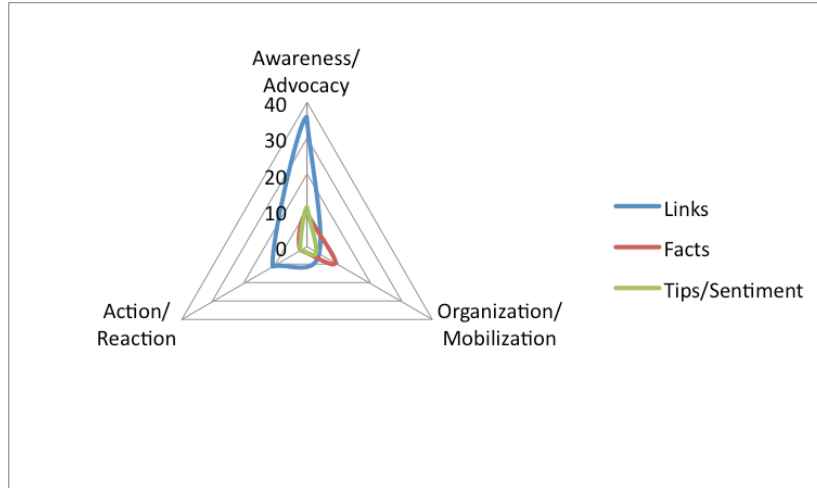
#iranelection	14932
rt	5316
#neda	4126
iran	2513
#gr88	2339
#iran	2238
#tehran	2033
tehran	1602
please	1322
your	1228
people	1218
iranian	973
neda	752
support	715
basij	651
rt:	605
protest	594

video	435
world	429
green	427
mousavi	425
dont	406
help	400
twitter	387
iranians	386
freedom	373
google	372
update	353
images	346
about	340
free	331
satellite	330
iran:	329
earth	327

<a href="http://twitition.com">http://twitition.com</a>	316
show	315
#mousavi	310
@patrickaltoft	307
protesters	306
iran.	306
police	300
twitition:	290
ppl	286
new	283
<a href="http://iran.greenthu">http://iran.greenthu</a>	281
make	281
today	281
down	277
change	273
government	263

**Figure 14:** Top 50 words across all tweets from users with accounts created Jun 21

At this point, as Natural Language Processing is beyond the reasonable scope of work for this analytical engine in its current iteration, a manual analysis was conducted. A random sampling of tweets from these three sets (the entire data set, the set of only users that created accounts on June 21st, the subset of users that self-reported a location of Tehran and created accounts on June 21st) were selected, and then measured against a basic matrix of possible categorizations of the tweets. Tweets could be categorized by comparing their likely goals or overall utility against their actual content. On one axis, Vegh's dimensions, awareness/advocacy, organization/mobilization, and action/reaction, were placed. A tweet could then be considered to fall primarily into one of these dimensions. From here, the opposite axis considered the actual content within the message: although many tweets may not solely consist of one dimension on



**Figures 14-16:** Qualitative tweet sampling results. From top to bottom, the samples are from the entire data set, the subset of users that created accounts on June 21st, 2009, and the sub-subset of users that created accounts on June 21st and reported their location as Tehran.

this axis, one was selected as the primary content for the message: either largely links, facts, or tips/sentiment.

By sampling the data in this small subset, we could then compare the results to both a sample of the larger set of users who created accounts on June 21st (but may not necessarily have reported their location as Tehran), and further reference the results against a random sample of the entire data set. In other words, we can test whether or not there is any marked content difference between general users and users who would likely be more invested in the outcome of the protests.

As Figures 14, 15, and 16 show, there are indeed some marked differences in the data; the subset of users that reported June 21st are distinct from the general user base; whereas the plurality of sampled users' tweets were primarily of an awareness/advocacy nature and contained links, the other samples were, in general, geared towards other categories as well. Specifically, the tweets of the June 21st subset tended to be of an awareness/advocacy or organization/mobilization nature, and tended to be fact-heavy; an example of a fact-based tweet would be one such as "RT.Its been confirmed by multiple rpts: chemicals being dropped on ppl. @ Enghelab Sq. #iranelection #iran #neda".<sup>49</sup> Although the actual veracity of the fact may be of dispute, the assertion itself establishes the notion of a fact-based tweet.

Additionally, we can see a more general difference between the data set at large and the two samples of the June 21st subset: the general data set is much more oriented solely around links. Perhaps the logic for this could be that most users simply don't have enough of an understanding or position on the nuances of the situation; more likely, they are simply interested in the content represented by the link, and find it to be of more use in terms of their effort and their "readers" time than creating their own content.

Another interesting point is the correlation between links and action/reaction content, facts and organization/mobilization content, and tips/sentiment and awareness/advocacy, particularly in the graph of the June 21st set. Perhaps this correlation implies the difficulty in attaching some forms of tweets to Vegh's dimensions; in the case of action/reaction, for example, it would make little sense to not pass a link to the site or online activity being referenced in the

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<sup>49</sup> <http://Twitter.com/supporterPMOI/status/2328230981>

tweet. Conversely, it is likely of little use to pass links for organization/mobilization tweets. As they are largely concerned with the facts, status, and planning of a particular offline event, the room for opinions or outside information is much less, and the tweet is more of a fact based blip of information.

Looking at the further subset of users who reported their location as Tehran (and created their accounts on June 21st), one can see a shift away from awareness/advocacy and towards organization/mobilization. This shows a trend when narrowing our data view to a particular scope: these users are of a demographic with the most vested interest; regardless of whether or not they actually are in Tehran, they are clearly identifying their account with the Iran Election. Furthermore, they created their accounts on a day of fever-pitched activity on the social media platform, which suggests an adoption of the platform as a result of increased awareness of its utility in the particular case.

For the same reason, it may make sense that a shift towards tips/sentiment is seen, as the more invested a user is, the more likely a defined opinion exists. Additionally, a uniform correlation between the content types and Vegh's dimensions seems to exist. Whereas there seemed to be a specific content type geared for a specific dimension, when considering this specific subset of users, the tweets focus on one particular dimension, and the nature of the messages, be it links, facts, or tips/sentiment, tend to be equally in service of that dimension. In this way, it is possible to assign these users to a demographic which is a top tier or bellwether users, akin to the NGO or non-profit leadership present in the "Battle of Seattle" case, which is discussed below in a comparative approach. It is likely that with further inspection, we would find that leader accounts such as OxfordGirl, PersianKiwi, and StopAhmadi were shown to have similar traits in their tweets.

In manually interpreting the language of these tweets, perhaps an efficacious room for growth in such a study is precisely this process; by automating the process of analyzing the tweets against a matrix of principles such as Vegh's framework, it would be possible to understand exact differences between user sets and online activist situations, and is discussed at greater length in the "Data Analysis" section of the appendix.

## The Effect Of Diasporic Actors on The Iran Election

*“If u have any news, new pics or videos from the protests - pls @ me with CAPS [#iranelection](#)”*

-StopAhmadi, largely considered to be one of the “top tweeters”<sup>50</sup> during the protests after the Iran Election of June 12th, 2009

The psychological impact of knowing one is not alone is immense. In an atmosphere where dissent is delegitimized, the ability to discover that far from being on the fringe, there is popular support for one’s political stance inherently bolsters it. Prior to the revolution in ICTs primarily over the past two decades, it would have been relatively difficult for dissidents to produce awareness raising media themselves and publish content advocating for political policies considered illegitimate (or worse, illicit) by a regime. In contemporary times, however, this ability has proliferated to a point where no regime can reasonably control communication flows either within their own borders or outside of them.

It is also beyond any reasonable debate that the Iranian Diaspora abroad is both aware and interested about the goings-on within Iran proper, in terms of politics, culture, governance, and the like, and that this expatriate voice can provide that psychological bolstering and legitimization of otherwise internally suppressed opposition. It is similarly beyond any reasonable debate that the Persian-speaking world, both internally as well as abroad, leverages the power of modern ICTs, where its adoption has spawned “a large discourse network, incredibly rich in the types of discussions taking place and the different groups of Iranians who are blogging”.<sup>51</sup>

The primacy of a diaspora in domestic politics and society bolstered by ICTs is not a new concept. According to Graham and Khosravi,

Diasporas are an increasingly salient feature of the globalizing tendencies of the contemporary world. The presence of diasporas in cyberspace enables them to contribute to the accelerating development of online culture (Jones 1997, Shields 1996), language, new forms of communication (Sardar and Ravetz 1996, Strate et al. 1996), identity, community (Rheingold 2000; Turkle 1995), and political debate and participation (Appadurai 1996: 147; Hague and Loader 1999; Tsagarousianou et al. 1998). By annihilating distance the Internet links diaspora communities around the world, and in the process, transcends

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<sup>50</sup> By “top tweeters,” it is meant that in terms of followers, media coverage, and overall data penetration, this use was one of the most central user accounts during the election. See WEP data set for more information that concurs with this general conclusion about the user “StopAhmadi”.

<sup>51</sup> Kelly, and Etling 24



established boundaries between classes, genders, sexualities, work, and leisure... It is the capacity of cyberspace to bypass some of the spatial divisions that underpin social divisions of inequality that endows it with political significance.<sup>52</sup>

If we accept the reasonable assumption, then, that diasporas have the *potential* ability to affect the political and social discourse of their native countries via the equalizing, geographically agnostic internet, what can we learn from the case of the potential Iranian diasporic influence in the 2009 election? In other words, what is the extent to which the Iranian diaspora augmented the debate over the election, and ultimately, what were the methods employed in attempting to achieve this augmentation? In this section, Vegh's framework is largely omitted, and the case of the diasporic actor is considered as its own component question to the larger case of Twitter's role in the election.

That being said, there are two essential services that any diaspora seems to serve in influencing the politics of their former state. These services can be termed as the diasporic actor as advocate and as intermediary. By looking into these two roles, as they pertain to the Iran election, the extent to which the Iranian diaspora was influential can begin to be seen. In these capacities, the collective diaspora is able to lobby, raise funds, raise awareness, and galvanize support as an *advocate*; and contextualize, or make familiar an otherwise foreign experience in their adoptive state as an *intermediary* between the two cultures.<sup>53</sup>

The diasporic actor as advocate is clear; ethnically, socially, culturally, and politically bound to their native country, the general diaspora is interested in engaging on these levels. Graham and Khosravi illustrate this capacity quite clearly in one given instance:

A group called "Iranians for International Cooperation" tried to initiate a dialogue between the USA and Iran in the hope of improving relations between the two countries. They drafted a petition in which the US government was urged to lift sanctions against Iran and begin discussions. The petition was published in *TheIranian.com*, and readers were asked to fill it in and send it to the US Congress. The co-ordinating group for the protest was comprised of Iranians resident in the USA, Canada, Sweden, and Australia.<sup>54</sup>

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<sup>52</sup> Graham, and Khosravi 2002, 219

<sup>53</sup> Shain 450

<sup>54</sup> Graham, and Khosravi 2002, 232

Lobbying the US government, the ethnically similar expatriate Iranians across various countries are able to coordinate, through the use of a central, geographically agnostic website, and are able to react to the proposal, as well as act upon it.

Similar events have been seen in the case of the 2009 election. In analyzing one of the earliest, most comprehensive databases collected from Twitter during the election, the Web Ecology Project's data set,<sup>55</sup> the vast majority of the most re-tweeted hyperlinks are to websites relatively consistent with what Graham and Khosravi noted as indicative of the Iranian diaspora's *modus operandi* in distributing advocacy information online. Specifically, they noticed that "[t]he language of many online magazines is English. This makes it easier for second generation Iranians, whose Persian is not always fluent, to engage in open dialogue with the first generation... But the magazines do not only target young Iranians, they also seek to reach non-Iranians. The editors of *PersianOutpost.com* are themselves an Iranian-American couple, who believe that: "There is a need for a dynamic and evolving information source addressing the needs of English speakers who need to connect with the Iranian culture and the Persian traditions."<sup>56</sup>

From the Web Ecology Project data set, 5 out of the 20 most popular links between users (<http://helpiranelection.com/> (229,486 times), <http://gr88.tumblr.com> (2,059 times), <http://301.to/2iu> (7,995 times), <http://iran.greenthumbnails.com> (5,976 times), <http://digg.com/d1uPU9> (1,509 times)) comfortably fit the description of being a call to action.<sup>57</sup> Notably, the "green thumbnail" campaign, however much being a case of Morozov's "slacktivism," clearly shows some engagement with the non-diasporic Twitter users to become involved with the protests post-election.

Whether or not these sites advertising the service to show solidarity by essentially marking one's Twitter identity with a symbol originates from the Iranian diaspora, however, is essentially unknowable. Here, we see an inherent difficulty with measuring the direct effect of the diaspora. Nevertheless, this type of activity is very much so in line with the actions that

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<sup>55</sup> The data set contains 2,024,166 "relevant" (relevancy was determined by the inclusion of certain keywords common among the Twitter posts, also know as tags, such as #iranElection, #gr88, #basij, and so forth) tweets over approximately 480,000 user accounts.

<sup>56</sup> Graham, and Khosravi 2003, 231

<sup>57</sup> Hwang et al. 5

would be taken by such actors, and indeed, the interspersing of the Persian language, the active engagement of English speaking audiences, and the high occurrence (but not necessarily majority or plurality) of users attached to these websites with names of Iranian descent. This last point is a bit contentious; just because a name “sounds” Iranian, it does not logically follow that it is Iranian in any way, just as a person with an American “sounding” name may actually be of Iranian descent and part of the diaspora. However, as noted above, there is very little else to go on; the internet is largely anonymous, and the ability to completely determine a question relating to true identities is profoundly difficult; we are thus left with what little evidence there is, and have to infer whatever possible, within reasonable limits (and not be conservative to the point that there is no room for understanding the case at hand).

As an example, and at the risk of sounding perhaps stereotypical, on the second most popular link, <http://301.to/2iu>, which is a url shortener that redirects to <http://www.petitionspot.com/petitions/omidadvocatescom/>, a page that advocates the signing of a petition to the UN Human Rights Council to “address the ongoing human rights violations against Iranians concerning their right to life and freedom of expression and assembly”, users with names such as AsgharGhatel, Human^Behrawan, PedramVaezi, and azad903 are all creators of separate discussion boards discussing the matter.<sup>58</sup>

By qualitatively analyzing specific tweets from one user, we can also get some insight as to how the diasporic actor functions online as an advocate on a primary level. The Twitter user StopAhmadi, also ostensibly known as Raymond Jahan, had a fair amount of influence during the election. Again, as it is profoundly difficult to determine anything in particular about a user’s actual life simply through their online identities, it is hard to say with completely certainty that Mr. Jahan is part of the diaspora, but his full name, as well as his posts, rife with English as a first language colloquial terms “hitting the streets,” and domestic US political references such as “freedom fighters,” seem to suggest that he is a likely member of the larger Iranian diaspora.<sup>59</sup>

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<sup>58</sup> Omid Advocates

<sup>59</sup> To place these assertions in context, on November 3rd, 6:39PM EST (although this does not mean the message originated in the Eastern time zone), StopAhmadi tweeted: “...and once again we've seen Iranian people hitting the streets to protest - several months after [#IranElection](https://twitter.com/StopAhmadi/status/5405339865)” ([http://Twitter.com/StopAhmadi/status/5405339865](https://twitter.com/StopAhmadi/status/5405339865)). The second post mentioned was tweeted at 11:43AM EST on September 21st: “Today is the International Peace Day. One silent minute for the green freedom fighters in Iran. [#IranElection](https://twitter.com/StopAhmadi/status/4148648707)” ([http://Twitter.com/StopAhmadi/status/4148648707](https://twitter.com/StopAhmadi/status/4148648707)).

Additionally, he has considerable influence on the discussion over the #iranelection topic on Twitter; he has been “re-tweeted” 127,771 times according to a popular analytical tool, and currently has 12,856 followers, while belonging to 262 lists, or collections of tweets that users follow as a group.<sup>60</sup>

StopAhmadi’s advocate quality can clearly be seen during the fallout of the Iran Election. Creating the user account on June 13th, StopAhmadi quickly became one of the most influential users in the network, to the point that by June 16th, the New York Times had written an article quoting the account.<sup>61</sup> Soon into the election, StopAhmadi’s account was rife with calls to “Support Mousavi on his Facebook page,” asking other users to diffuse information throughout the network by saying “In case our connection or Twitter goes down, plz retweet my past tweets,” and polling people reading the tweets for proxy server’s to publicize in order to ensure that activists within the country stayed online: “@persiankiwi FAST PROXY OK WITH YOUTUBE: 114.127.246.36 Port 80 #IranElection”.<sup>62</sup>

By simultaneously announcing calls to action through his account and spreading information useful to people within Iran, as a diasporic actor, StopAhmadi is able to exert a certain degree of efficacy in assisting the domestic opposition within Iran. The extent to which these tweets were available in Iran is not clearly known, and the fact that the tweets are in English certainly does not help lend as much ease to portability directly within the nation (although many do speak English fluently). Additionally, Morozov’s accusation against “slacktivism” clearly has a valid justification in this particular case; just because someone joins a base of support for Moussavi on Facebook’s “fan pages” system does not mean that it actually benefits any real world situation in any way, and this must be remembered when we are looking at online advocacy.

Even still, the case is clear that these tweets are potentially critically important in assisting the domestic situation, as well as creating pressure from abroad through simple awareness-raising campaigns as a Facebook “fan page.” The case, in qualitative terms, of the

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<sup>60</sup> “Raymond Jahan's Profile”

<sup>61</sup> Landler, Mark, and Stelter

<sup>62</sup> The data collected for these quotes is available at <http://Twitter.com/StopAhmadi>.

diasporic actor as advocate is well-founded, and in StopAhmadi, we can gain insight as to how the diaspora directly advocated for their own positions in the election.

The second, less contentious role an expatriate can perform, as was seen in this case, is the actor as intermediary between cultures. That a diasporic actor serves as an intermediary between adoptive and original state is not a new concept:

In their studies among migrants from the Caribbean and the Philippines living in the USA, Basch et al. describe how the migrants' social, economic, political and cultural networks involve both society of origin and society of settlement. These processes are described using the notion of transnationalism:

We define "transnationalism" as the processes by which immigrants forge and sustain multi-stranded social relations that link together their societies of origin and settlement. We call these processes transnationalism to emphasize that many immigrants today build social fields that cross geographic, cultural, and political borders (Basch et al. 1994: 7).<sup>63</sup>

It should be no surprise, then, to find instances of the role of the intermediary throughout the case of the Iran election of 2009. Indeed, there are widespread cases of the Iranian diaspora ostensibly receiving information from within Iran, then rapidly disseminating it, via the internet, to both the public as well as the traditional media.

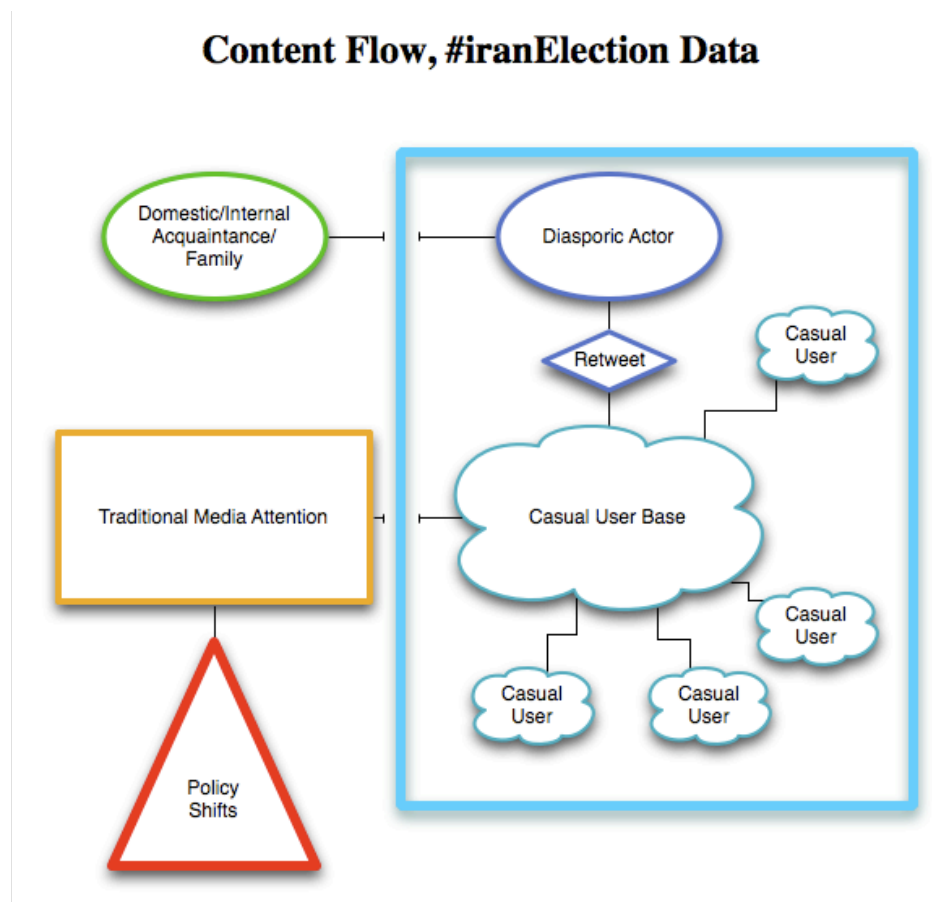
Revisiting the case of StopAhmadi, we can see just as many cases for the diasporic actor as intermediary as we did for the advocate. One particular tweet comes to mind when discussing the potential power a diasporic actor has over real forms of intermediary communication: in reference to the mobile network being down throughout Tehran, StopAhmadi directed a message at Jim Sciutto, a reporter with ABC, who himself tweeted that "[#iranelection](#) Cellphones and text messaging still down here," that read as follows: "@jimsciuttoABC no it's working! which one u using?". Although Sciutto apparently never replied to this message, the point is clear: there is a direct contact between members of traditional press and these elite, top-tier online diasporic actors. In fact, Sciutto has "re-tweeted" StopAhmadi in his own tweets on four separate occasions as of November 18th at 12:24PM (for reference, the other time stamps associated with these particular re-tweets were July 13th at 9:25AM, July 3rd at 6:26AM, and June 30th at 7:25AM).

Additionally, the diasporic actor as intermediary is perhaps clearest in the sheer multitude of tweets involving imagery or video directly from the streets of Tehran. Regardless of whether or not StopAhmadi was the direct originator of photographs from the protests (and for that

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<sup>63</sup> Wahlbeck 223

matter, whether or not the user was actually located in Tehran at the time), by sheer volume, by his own influence, and the ability to diffuse the information throughout the network, the user became the virtual publisher of content, and had a direct connection to traditional media outlets. As for some basic quantitative factors, 74 images were passed through the account via the website <http://twitpic.com>, where Twitter users are able to directly upload photographs from mobile devices; the vast majority of these images were such cases. Perhaps more revealing, 426 tweets that StopAhmadi made included links through another URL-shortening website, <http://bit.ly>, where users can link to any online content. As further research, a study of these links would be instructive.



**Figure 17:** Theoretical Content Flows, Iran Election Data. As argued in the section concerning Diasporic actors, they may serve as the lynchpin between on-the-ground facts and the rest of society: from their content, casual users generate conversation, which in turn increases the likelihood of media attention. In gaining media attention, domestic policy can then be altered as the mass population is now aware of the content that originally disseminated from Domestic sources.

By first receiving information directly from Iran (or creating them oneself within the borders), the Iranian diasporic actor in these cases creates a transnational narrative with which to explain the particular piece of information. Converted to a different audience and sourced directly from a diasporic actor, the information both carries the gravity of an inherent, if not journalistically verified, authority on the subject, and by virtue of its direct nature, is up-to-date, and at temporal parity with many other traditional forms of communication, ready for rapid dissemination. Indeed, the ad-hoc, social-media driven nature of much of the information surrounding the election was so current and numerous (ostensibly coming from the loud voice of multiple actors, many of which likely were of the diaspora) that traditional media began to rely on it, as journalist access to the countries population was sharply curbed when protests mounted. Figure 17 illustrates the flow of this potential model for media dissemination for the diasporic actor as intermediary.

Clearly, a framework of the diasporic actor as advocate/intermediary is useful for determining the level to which it is efficacious in a given situation. Additionally, we can argue convincingly that, some fundamental problems with internet studies aside, this framework quantitatively and qualitatively holds in the case of the Iranian diaspora's reaction to the 2009 election. A question that cannot be answered, however, is the extent to which the diaspora's actions actually created change, either in policy in their adoptive nation, or in Iran itself.

Fundamentally, there is no way to determine identity online; at best, the tools allowed to the researcher are difficult to employ in any sort of retrospective study. In technical terms, IP addresses, while they reveal specific information, must be captured during the transmission of data or stored into activity logs. Even then, the IP could be from a proxy address. Regardless, the IP only tells us location, not necessarily identity. Additionally, we do not necessarily know the proportion of total online activity for a given subject; there is no single record of total transmissions per day, or worldwide internet activity, or even a record of all websites across the internet in any centralized manner. As far as the social sciences go, there have been attempts at research standardization, but the question is far from closed or permanent.<sup>64</sup>

Despite these profound issues, understanding the nature of how the Iranian diaspora used the internet during the 2009 election is clearly of paramount importance in determining the

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<sup>64</sup> Thelwall 3-5

extent to which they had an effect on the actual outcomes. For this reason, we can look at qualitative evidence, as well as some quantitative evidence from Twitter (which, as it houses all its information in one database, can be examined as a complete data set, and quantitatively measured) to inform us to a certain extent. Additionally, by using an advocate/intermediary framework with which to judge the efficacy of online activity, we can determine, at the very least, the general techniques employed by the diaspora in attempting to influence Iran's domestic politics.

Although there remain inherent problems with understanding the efficacy of the diaspora in augmenting domestic Iranian politics, there are some clear conclusions that can be gleaned from such a study: there is strong evidence that suggests that the diaspora both serves as an advocate and an intermediary, and, given their unique position as a transnational actor, are given preferential treatment in the traditional media, which certainly has an effect on public opinion. On the internet, clear evidence indicates that information disseminated during the election, both as advocate as well as intermediary, originated from likely diasporic sources, and proved to shape news. Whether or not this actually shapes policy, however, is an open question.

## **Slacktivism: Passive noise or active opposition?**

In analyzing previous works on the Iran election, the word "slacktivism" seems to appear everywhere; within Morozov's opinion article in *Dissent*<sup>65</sup> or Burns and Eltham's analysis, the term is thrown about as often as "Twitter revolution." Interestingly, instead of evoking aggrandizing notions about the power of the internet, which seems to be more commonplace, this term derides the impact of the casual observer/participant. Slacktivism, as it is understood, is the act of acting without impact: when a user flags or otherwise identifies their support of something online, there is clearly no real-world or direct impact; the logical conclusion that follows is that it has the same effect as doing nothing. In Morozov's opinion, it is "a catchy new word that describes such feel-good but useless Internet activism... Slacktivists may successfully grapple

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<sup>65</sup> Morozov



with corporate PR outfits that have increasingly grown fond of polluting and astroturfing cyberspace; whether they will be able to topple authoritarian governments is less obvious”.<sup>66</sup>



*Figure 18: Example Avatars for Twitter Users engaging in the “Green Thumbnails” campaign. Although there are slight differences, each one features some type of Green watermarking either in the form of an icon (top left and bottom right) or a simple green transparent overlay altogether (top right and bottom left)*

More specifically, one of the most emblematic examples of online activity during the Iran Election labeled as slacktivism was the <http://iran.greenthumbnails.com> campaign. Essentially, in this case (combined in this quote with the changing of one’s self-selected location to Tehran, as was discussed earlier), “Well-meaning Americans tinted their avatars green and changed their location, to show support and keep Iran's security service from tracking activists online.”<sup>67</sup> By visiting the website, a user with an active Twitter account could automatically flag their account image, or avatar,<sup>68</sup> as being in support of the “green movement” occurring in Iran, as figure 18 shows. Ostensibly, the purpose was to inform other users, upon seeing the green-tinted image, that the user had a level of political awareness concerning the protests; in turn, this social signaling would increase the likelihood that these users, upon seeing the green avatar, would

<sup>66</sup> Morozov

<sup>67</sup> “The revolution that wasn't - Bogus Stories of the Year 2009”

<sup>68</sup> An Avatar is typically the image associated with a given user account on a website; for Facebook, it would be the “profile picture,” for instance.

alter their own avatar, which would signal their associated users, and so forth. In this way, the campaign worked its way through the network.

In both the Web Ecology Project data set as well as the current data set being studied, the most trafficked link over all tweets was a direct URL for either <http://iran.greenthumbnails.com>, or a website offering an identical service such as <http://helpiranelection.com>. As for actual numbers of Twitter users who engaged in the act, Arik Fraimovich, responsible for the <http://helpiranelection.com> incarnation of the concept, reported 160,000 users as altering their avatars on the site.<sup>69</sup> It would be exceedingly difficult to determine the number of users in the current data set who engaged in the act, if not for the fact that thumbnails were logged then for the fact that image processing would have to be employed in order to determine if the account avatar had been overlaid or not. The fact that so many messages were created including the URL in two data sets collected in different ways should make the point clear, however: many users were interested and likely engaged in the “green thumbnail” campaign.

In many ways, slacktivism can be described as an ingenuine form of activism that requires no work on the part of the user, yet provides them with the sense of complacency that would follow active participation in activist operations. As a less serious, yet still relevant, example, the recent firing of the late night talk show host Conan O’Brien and re-hiring of Jay Leno in his place was subject to staggering amounts of “slacktivism.” Briefly, the facts of the case were as such: NBC, upset with ratings for Jay Leno’s new talk show following his long post as the late night host on their channel, decided to re-instate Leno’s contract with the late show time slot and move O’Brien’s show to a later time slot. Within days, Facebook, Twitter, and the rest of the Web 2.0 world was ablaze with conversation about the change in scheduling, and very public and bitter bickering between the two hosts (as well as their cognates on other networks) ensued. As of the first week of Leno’s re-instatement into the late night time slot, the “I’m with Coco/Conan O’Brien” Facebook.com group boasted 965,578 members.<sup>70</sup> Ostensibly, this group’s stated goal was to reverse the decision and allow O’Brien to keep the time slot in question. As the current population of Facebook.com is around 400 million users, the fact that nearly 0.25% of the entire population joined this single group shows a profound penetration of the cause

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<sup>69</sup> Fraimovich

<sup>70</sup> Observed on the “I’m with Coco/Conan O’Brien” Facebook Group Page, <http://www.facebook.com/imwithcoco>, March 10, 2010.

through the network.<sup>71</sup> On this social media platform, when a user joins a group, all of their “friends” are notified of this action, which in turn may raise awareness for others to join the group. In this way, the number of members can, and in this case has, grown rapidly and exponentially.

Despite all of this internet communication, NBC continued with their plans and Leno was re-instated. At this stage of an online activist instance, the act of slacktivism as efficacious online activism argument begins to lose credence; if there was no clear result from the group, how could we go about measuring its impact, much less the general efficacy of such an act? Simply put, it is reasonable to accept the argument that if the action requires no commitment, and has the only immediate effect of self-satisfaction, it likely does little to help the overall situation, and does not necessarily signal any deep commitment to the cause. Certainly, it would be reasonable to assume that NBC executives likely thought similar things when seeing the news of this Facebook protest.

It is very simple to analogize a relatively frivolous case like this to the much more substantial case study at hand; as the popular Internet news blog<sup>72</sup> Mashable reported on the “I’m with Coco” case, “Facebookers are showing their support for the late-night funny man by changing their pictures to the COCO image. [Group creator] [Mike] Mitchell encourages this communal display of solidarity, which is becoming quite the trend on Facebook and other social networks.”<sup>73</sup> Mashable’s report places the more recent “I’m with Coco” case firmly within the quantum of previous online activity by framing the act of changing one’s avatar to flag support for something as a trend or fad, not necessarily an efficacious act. In doing so, an implicit analogy is made between this act concerning the relatively banal topic of late night television drama and the topic at hand, the Iran Election. In short, situations like the “I’m with Coco” campaign are implicitly associated to the “Green Thumbnail” campaign, and the lack of efficacy of the former affects the perception of the latter.

Beyond being associated with ineffective cases of slacktivism, the “Green Thumbnail” campaign suffers from a basic moral accusation against someone participating in it: If it is only

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<sup>71</sup> “Statistics”

<sup>72</sup> That is to say, a blog concerned with news about Internet matters, rather than a news blog on the Internet

<sup>73</sup> “I’m With COCO: Conan O’Brien Tribute Takes Over Facebook”

for the user's social benefit (i.e. flagging to the user's immediate network that the user is interested in or in support of a particular campaign), and takes little commitment from the user themselves, how can it benefit the movement as a whole? At its core, this type of campaign is an awareness-raising act. In participating, the user prioritizes the campaign and incorporates it into their online identity, which in turn is incorporated as a fraction of the identity of the users that are connected to that user in the social network. As more users participate then, the users who have not joined become more aware of the act. It would be reasonable to expect, then, at some point, users who were connected to many participants but not participating themselves would begin to become increasingly aware to a point that the likelihood that they would participate increases. Essentially, this is the basic dynamic of a network; as more nodes are engaged in a particular act, their neighbors may inevitably engage in the act as well. The "infectiousness" of the particular act determines the rate and breadth of the spread; in this case, it was moderately infectious, so many people had participated by the end of the high-traffic #iranElection data cycle.

If we assume that the core utility of a slacktivist campaign is awareness-raising, then, we can frame it within Vegh's framework. In Vegh's work, a slacktivist campaign would likely fit the second role that awareness/advocacy plays: "(internet-based information-distribution networks) provide a forum for open discussion on censorship or human rights violations occurring within closed authoritarian regimes".<sup>74</sup> Within this scope, we could view the "Green Thumbnail" campaign as an entryway to that forum for open discussion; in order to discuss the censorship or human rights violations occurring within closed authoritarian regimes, the information-distribution network must spread some sort of contextualizing information. In that right, slacktivist campaigns, which are largely viewed as ineffective, play a clear role in familiarizing a particular user-base with a given instance of online activism.

Beyond serving as a gateway for awareness about activist campaigns, one must consider the context of the online activism as well: if it is argued that a slacktivist campaign is primarily an exercise in awareness raising, then the subject at hand must suffer from a lack of awareness in order to be efficacious. In a case such as the "I'm with Coco" slacktivism via Facebook group membership (or to target another commonly described slacktivist campaign, the Lance Armstrong "live strong" bracelets for cancer research, for that matter), the vast American and

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<sup>74</sup> Vegh 73

international audience targeted was already familiarized with the late night talk show host lineup: those who were joining the Facebook group likely already had personal cultural understanding of both Jay Leno and Conan O'Brien, and likely had at least some experience with either of their shows.

In stark contrast, the Iran Election protests suffered exactly from a lack of awareness, both in terms of cultural perceptions as well as actual news and information about the goings-on; for this reason, the slacktivist campaign, traditionally seen as ineffectual, may have a much more profound, yet still completely ethereal, impact. The relationship between the US and Iranian governments has been profoundly strained since the revolution; similarly, the relationship between their constituent populations has been as well. No less subject to Edward Said's definition of Orientalism than any other Middle Eastern state, the relationship between the two populations is subject to the lasting impact of the American experience of "bearded and turbaned mullahs; thick frown of the Ayatollah Ruhollah Khomeini; veiled women; raised fists; unruly and frantic mobs shouting, 'Death to America,' 'Death to Carter'; and finally, the image of the blindfolded American hostage that opened the ABC's *Nightline* program throughout the so-called hostage crisis."<sup>75</sup> As a result of the profound political difficulties, as well as historical cultural struggles, there exists a considerable misperception in the US of the Iranian population. In short, if one of the net results of the Iran election, at least in terms of foreign policy, was the re-framing of the citizenry of Iran from the previous image to one of a fledgling democratic, modernizing and westernizing population under a powerful ideological regime, the role of the "Green Thumb" campaign plays a contributory role in that re-introduction between the US and western users and the Iranian population. Whereas with Leno and O'Brien, the awareness-raising involved in new perceptions were not necessarily a target, with the "Green Thumbnail" campaign, they were absolutely integral to the overall goal. By engaging in the act, the user affirmed the acknowledgement of a completely different Iranian: one actively working against the government that had jarred the American psyche so severely in 1979. Additionally, poll results from the post-election period seem to bolster the idea of a major shift in perception and awareness of the citizenry of Iran as a completely separate entity from the government. When faced with the question "What has your personal reaction been to the way the Iranian leaders

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<sup>75</sup> Naficy 79

have dealt with the demonstrators in that country? Would you say you are outraged, or are you upset but not outraged, or are you not upset?”, respondents overwhelmingly stated their disapproval of the government, and implicit approval of the citizens: 85% of respondents were either “Outraged” or “Upset” at the government’s actions, compared to only 13% who were “Not Upset” (2% were “Unsure”).<sup>76</sup> Although this may actually be more indicative of an aversion to the regime more than an approval of the citizens, the positive attention is somewhat indicative of a major shift in the American citizenry’s perception of the Iranian citizenry.

Furthermore, the nature of what is at stake must be taken into account. In the frivolous case, the company in charge of the decision, NBC, was in no position to rescind the decision once it had been made. At the same time, NBC also likely had many other factors lead up to the decision that took precedence over popular opposition affiliations online. On the other hand, Iran’s political system was at stake, and the popular opinion of citizens both domestic and abroad has the ability to completely dictate the terms of the final agreement.

Essentially, a slacktivist action is only as efficacious as situation lends. When the instance of online activism can markedly capitalize on awareness raising and perception shifts, slacktivism may actually be efficacious. The fact that it seems to be low commitment does not take away from the fact that the user is acknowledging the situation, and showing support for it. In the aggregate, when this activity reaches the level that the “Green Thumbnails” campaign reached, it is not enough to simply disregard it as slacktivism without taking into account the context of the particular situation, the role of slacktivism and the way in which it can benefit the situation, and the potential gains from awareness raising, however obfuscated they may be. In the case of the Iran Election, it is almost certain that a major perception shift occurred in the way Americans view Iranians separate from their government; it would be foolish to assume that there is no meaningful correlation between this “slacktivist” campaign and the perception shift, if not an actual causal relationship to some extent.

## **Vegh’s Model and the Case for Online Activism**

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<sup>76</sup> CNN/Opinion Research Corporation Poll

Here, we can move beyond the cursory analysis of the various types of data, and look specifically at how the Iran election was effected by Twitter by incorporating the analytical results into a comparative analysis between the current case study and perhaps the most documented instance of online activism, the Seattle WTO protests of 1999. Again, Vegh employs a three-dimension framework in dissecting the way users engage in online activism: awareness/advocacy, organization/mobilization, and action/reaction. By using histogram, network, and language data we can specifically address each dimension and evaluate the efficacy of the Twitter platform in fulfilling each dimension - from this, we can then evaluate both the value of Twitter in the election as a whole and possibly the effectiveness of using social media platforms in online activism in general.

The largely efficacious Seattle WTO protest is considered both to serve in a comparative analysis as well as provide contextualization for both Vegh's framework and the Iran Election as an instance of online activism. By adopting Seattle as a case study, we can then see, through Vegh's definition of online activism and categorization framework, the techniques and technologies employed, and their subsequent efficacy in achieving online activist goals. By comparing and contrasting this case study with the #IranElection Twitter data, we can determine how the technologies of online activism have changed in the past decade, namely with the advent of Web 2.0, and to what extent this has augmented both the dynamics as well as the techniques of online activism as a whole, and whether or not this has changed the role of the online activist as a single actor. In other words, the successful characteristics of the WTO case, largely hailed as one of the first significant online activist campaigns, can help compare and contrast against the specific attributes of the Iran Election case study, and inform the reader as to what may constitute efficacious online activism, what had constituted it in the past, and what may be changing in the contemporary Web 2.0 environment.

### **Background, Seattle 1999**

In order to fully appreciate a case study like this, it is essential to have a general understanding of the contextual facts of the case. As Smythe outlines, "[t]he WTO had by 1999 become a target of choice for the resistance campaign for a number of reasons." The Uruguay Round of negotiations had "resulted in the imposition of new regulations in areas not

traditionally considered part of international trade, such as intellectual property, services, and the treatment of investors,” and due to “the contentious nature of some issues” such as the still unresolved question of labor standards throughout WTO member nations (even more so in light of the 2000 US presidential elections) “and the lengthy negotiations, the Uruguay Round left much unfinished business for the Seattle ministerial to pick up.”

Smythe succinctly unwinds the conditions under which the meeting was to occur:

[t]he likelihood for severe conflict among WTO members in Seattle was already very high, given the presence of agriculture on the agenda. There was also evidence of real discontent among representatives of developing countries, which had taken on new and onerous obligations, as a result of the Uruguay Round, in areas such as intellectual property in return for little real results in Improved market access for their goods in developed economies. Ministers thus came to Seattle with few areas of agreement mapped out in advance.<sup>77</sup>

From the online activist’s perspective,

preparations had been under way more than a year in advance of the meeting and went into high gear once Seattle had been chosen as the venue. In Seattle, a coalition of groups created a local Washington group, People for Fair Trade. This group established a Seattle office and began organizing on the ground with an army of volunteers drawn from churches, universities, and a host of local organizations that plugged their own efforts into a broader series of events at the alternative citizens’ summit. Similarly, in Washington, D.C., Public Citizen and Friends of the Earth coordinated another fifty groups. Environmental groups, already well organized, angered by WTO decisions but buoyed by successful boycotts of several major firms and retailers, coordinated other groups and concerned citizens in cooperation with organizers.<sup>78</sup>

Bearing in mind this complete, academically sourced, and rather concise contextualization of the background and lead up to the actual Ministerial round, we can already lay out a few important points about the nature of this particular case study of online activism.

First, and perhaps most importantly, it must be noted that the impetus for online activism in this particular instance was not *endogenous* to the internet. Rather, we could describe the actual source of tension as fundamentally *exogenous* relative to the internet. This distinction is important: if the source of tension is exogenous, then it is consistent with precedent: indeed, many other case studies’ tensions (the MAI campaign, pro-Zapatista movement, Ottawa Treaty, the “color” revolutions of the 2000’s, etc...) that lead to the justifications and reasons for the

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<sup>77</sup> Smythe 63

<sup>78</sup> Smythe 64



instance of online activism are clearly exogenous relative to the internet, and are based in “real life”. We can safely posit, then, that although the nature of online activism perhaps results in an overall amplification of tensions, it does not inherently create them. That is to say, the communication medium does not create the conflicts in previous cases of online activism; it is not unreasonable to assume that protests against the meeting would have occurred regardless of the communication mediums available at the time. The increased magnitude, the scale, the overall unification and cohesion that results through the communications medium is the issue at hand. Ultimately, however, in the case of the Iran election, this increased magnitude on all levels may contribute to the factors leading to outright protest (as opposed to “ethereal opposition” activities), and therefore it is important to separate the function of the internet from the pre-existing conditions.

Second, we can posit that beyond merely having a pre-existing source of tension, there must also pre-exist some semblance of an established, structurally organized system of opposition, at least in the case of Seattle. This pre-existing opposition played an instrumental role in the event; without them, it could be argued that there wouldn't have been the institutional or organizational capacity to create websites geared towards anti-WTO activities, and certainly, the listservs such as STOP WTO would not have had the founding support it did. Although there is an established opposition to the Ahmadinejad government (and indeed, the ideological regime as a whole), this opposition lacked any significant structural organization (likely as a result of strict rules against freedom of assembly). As a corollary to this point, present in the Seattle case, but absent in the Iran case, is the notion of anticipation, or perhaps more accurately, forewarning. The ministerial round was already a controversial subject and was planned months in advance - the election was similarly anticipated, but the actual point of controversy, that being the spontaneous challenging of the results, could not have been. As a result, the establishment of more structured networks of opposition weren't in place by the time protests began. This point may actually be a large contributor to the way in which events unfolded, and may prove to be the major distinction between the two cases.

Third, in the WTO case, we can begin to draw upon the backdrop of progression of internet technologies in order to aid us in our understanding of the particular situation. In 1999, the explosion of Web 2.0 (more specifically, the host of social media platforms that came with it) had not occurred yet, and online interaction was relatively primitive. In the Iran case, simple

many-to-many communications channels had been already well established by Web 2.0 conventions such as the blog or the social network. In Seattle 1999, however, the internet as communications platform was still in most respects a one-to-many (webmaster-to-websurfer) communications platform - this relationship seemed to dictate most of the information flows in the Seattle case. From this backdrop, we can address the specific techniques employed by online activists during the protests.

### **Awareness/Advocacy**

Vegh's categorization of awareness/advocacy can more explicitly be described as the process by which online activists both send and receive information related to their political goals either directly or tangentially, with the inherent purpose of further actions to be taken as a result. Additionally, in Vegh's terms, "Information distribution on the Internet has another important implication for activism. It creates distribution networks that can later be used for organization and mobilization purposes".<sup>79</sup>

Turning to the Seattle WTO Protests of 1999, the University of Washington's WTOHistory.org, or as it is known in its current capacity, the WTO History Project, is host to an astounding number of in-person interviews with those structural online actors that developed much of the awareness/advocacy material both during the lead-up and during the protests. Qualitative evidence from this time is by no means scarce. Of the 40 recorded interviews in the database (according to their site, "more than 80 organizers of and participants in the Seattle protests" were interviewed, although those remaining transcripts are apparently located elsewhere), 13 of the participants spoke directly to the efficacy of the internet in their endeavors.

Central to the awareness/advocacy aspect of the Seattle case is the notion of relatively closer, sustained interpersonal ties between the leadership present for various groups. Michael Dolan, Deputy Director of Public Citizen's Global Trade Watch and Field Director of the Citizens Trade Campaign at the time of the protests, argued that

"I have real reservations about utility of the Internet for organizing. I believe that, and actually there's a very interesting Harvard Business School study that suggests this, that the Internet is perfectly good for

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<sup>79</sup> Vegh 73

basic cognitive interaction, information sharing between anonymous data points. It is not good for the cognitive interaction that is transformational, that between organizers, where people can make commitments to one another and have the follow-up. The Internet's not good for that. Digitally. It's not good for that."<sup>80</sup>

Bruce Bimber's journal article published in *Polity* nearly a year before this comment seemed to echo some of these same sentiments. Bimber argues that:

"Second, thick community is nourished by stable relationships and the expectation of future reliance on others. Yet the Net encourages shifting and fluid relationships as least as much as it encourages the opposite. Citizens may join and quit on-line social groups with ease. On-line "community" is vulnerable to more possibilities of rapid and frequent reshuffling than relationships grounded in geographic proximity, work associations, or other institutionalized interests."<sup>81</sup>

Core to his argument on the strength of online communities is the distinction of thin versus thick communities. At the time, Bimber's stance was that simply put, the services provided by the internet did not sufficiently re-create the same social and psychological pressures that he argues are crucial to creating a "thick" community. As a result, we see much in the way of one-to-many advocacy/awareness, but not much in the way of more collaborative forms of advocacy/awareness that could be expected with later cases.<sup>82</sup> To be fair to both Dolan and Bimber, the nature of the internet has demonstrably changed over the last decade, and these comments may be profoundly different given more contemporary instances of online activism. Still, it is important to understand the debate at the time, and understand the views, approaches, and understandings of how to leverage the internet for awareness raising and online advocacy.

As a final note on the "area" of advocacy as it pertains to the Seattle protests, an interesting comment, in a different direction altogether, came from Dan Seligman, the Director for the Responsible Trade Program, Sierra Club. In answering the specific question "do you think the organization's activism in general has changed, say in the last 20 years or so?" He responded with the argument that (in reference to the internet):

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<sup>80</sup> Dolan

<sup>81</sup> Bimber

<sup>82</sup> Bimber

“It does create alternative paths for information and people to express themselves. There are currents of ideas and perceptions and misperceptions and even manias out there that are able to circulate pretty freely and get an audience, because we have this tool. So I think it does facilitate this kind of movement building. And it does help, I think, break the monopoly of the big papers, and maybe that's something of a shift in that there was a tendency, I think, for the big papers to be very dismissive on trade issues, certainly through the Fast Track fights in '97 and '98. Ed boards were very dismissive and kind of ignorant in a way, knee-jerk in their approach to the issues. *But there is this counterpoint on the Web and list serves of “It ain't so”*. So in some ways becomes difficult for the ed boards to maintain their line of thought if there's another channel for expression.”<sup>83</sup>

Seemingly implied in Vegh's framework (and illustrated in his case study of the Free Burma Coalition), but never explicitly included in the framework area of awareness/advocacy, the nature of the online activist as the dissident, or as the voice of “alternative paths for information” seems to be inherently bound to the nature of online advocacy. By its nature, the online activist leverages the internet precisely because it is so cost effective; with a cheap budget, and with the ability to have any opinion, perhaps the internet allows for many more polarizing, opposing, and alternative viewpoints. This is certainly not a question to be answered in this study, but it does bear mentioning that this seems to be a theme with online activism, and should be addressed.

At this point, two limits to the ability of online activists to generate awareness and advocacy arise. These limits are directly related to the technological level at which the internet operated in 1999, and for that reason, it is instructive to highlight some potentially significant departures (or at the very least, areas of focus) when compared to the Iran case.

The first of these limits is that the specific methods of dissemination employed were restricted to the technology of the time. In 1999, the interactivity of the internet, as compared to now, was nearly non-existent. That is to say, on the application layer of the internet, the range of tools that could be employed was narrow; in more precise language, the technology actually did

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<sup>83</sup> Seligman

exist (as the internet could theoretically provide more interactive services)<sup>84</sup>, but the software that would transparently extend it did not. As a result, the methods employed for dissemination of information were at parity with other methods of the time: like a television channel, online activism, in terms of dissemination of information, though it flowed through many actors and could be spread between people rapidly, was sourced through one channel and distributed to many, thus making it fundamentally a one-to-many distribution system (at least relative to contemporary forms of technology available online). Personal web sites, created by one person, or group web sites, created by coalitions of like-minded individuals, were the preferred method of dissemination in this instance. As a result, the online activist's method of awareness-raising and advocacy was a process that can be emblematically described in the quote from Puckett: “‘We’d like to look at that report. Send us a hard copy.’ And we’d say, ‘Well, you can pull it down from the website.’”<sup>85</sup>

Second, the efficacy of awareness/advocacy actions was limited by the ability for users to create meaningful connections solely through the internet. As stated previously, the internet does not inherently engender online activism; indeed, many activists themselves repeatedly described it as just another tool, not a new form of activism in and of itself. For this reason, we can attribute much of the success of advocate action not to the internet itself, but to the online activists' astute use of it. Ultimately, the efficacy of advocacy in this instance was only as successful as the contributors made it through creation and dissemination.

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<sup>84</sup> The technology was so much so there that Tim Berners-Lee, pioneer of the World Wide Web, generally credited with hearkening the beginning of the modern internet, disagreed with the distinction of Web 2.0, which introduced all the conventions based around true many-to-many communication and emphasized a social networking perspective. Berners-Lee, in an interview with IBM developerWorks, stated:

**developerWorks:** You know, with Web 2.0, a common explanation out there is Web 1.0 was about connecting computers and making information available; and Web 2 is about connecting people and facilitating new kinds of collaboration. Is that how you see Web 2.

**Berners-Lee:** Totally not. Web 1.0 was all about connecting people. It was an interactive space, and I think Web 2.0 is, of course, a piece of jargon, nobody even knows what it means. If Web 2.0 for you is blogs and wikis, then that is people to people. But that was what the Web was supposed to be all along. And in fact, you know, this Web 2.0, quote, it means using the standards which have been produced by all these people working on Web 1.0. It means using the document object model, it means for HTML and SVG, and so on. It's using HTTP, so it's building stuff using the Web standards, plus JavaScript, of course. So Web 2.0, for some people, it means moving some of the thinking client side so making it more immediate, but the idea of the Web as interaction between people is really what the Web is. That was what it was designed to be as a collaborative space where people can interact (Laningham).

<sup>85</sup> Puckett

The data collected from Histogram, Network, and Linguistic approaches clearly supports the idea that awareness/advocacy was the primary function of the Twitter platform, at least in the general sense. From the images passed around by StopAhmadi as discussed in the section on diasporic actors to the timeline of created accounts, there seems to be a general convergence around precisely what the Twitter platform is culturally and infrastructurally built to achieve: send quick bits of information throughout networks rapidly.

Interestingly, one of the core concepts of the Seattle case - close, sustained, interpersonal ties - seems to be supplanted by an equally efficacious method of loosely networked users. As mentioned in the Network Analysis section, the users in the data set are generally not tightly woven together as clusters of users. Although this seems to negatively impact the deliberative process insofar as organization/mobilization is concerned, it doesn't seem to have an appreciable impact on the spread and rate of information transmission to other actors. In a Web 1.0 world, people tended to not be connected as easily (due to an absence of personal online presence via an account or profile on a large system) - for this reason, we see quotations like that from Puckett about grabbing materials. In the contemporary Web 2.0 environment, linking to this content via a tweet supplants the phone call, and can be easily tagged and re-distributed through the network if a user is interested in its content. This distinction is important, as in the Seattle case, these close interpersonal ties are held throughout the various areas of activism: the activists already knew one another, and were able to congregate freely and openly. With the case in Iran, users did not have this option, and instead leveraged the network more or less anonymously (regardless of their actual geographic location) and were able to be just as effective in transmitting awareness-raising content.

In discussing the case for awareness/advocacy, the "green thumbnails" campaign cannot be stressed enough. Although it may actually be slacktivism, and achieve nothing on the ground or within the borders of Iran, it plays a role in informing users of the goings on within the country. Additionally, as stated earlier, knowing that "the whole world is watching" is a powerful motivation for sustained protest - it is unlikely that the mass user (and thus, mass media) attention on the protest via Twitter did not significantly contribute to this sentiment. The simple fact that so many users engaged in this online activity raised awareness, and is akin to any other slacktivist campaign; it may not actually have tangible effects, but it certainly raises the activist's cause to a level of consciousness, which in turn may have lasting, more ethereal effects.

Hardly mentioned in this paper, but absolutely essential to the question of awareness raising, is the case of Neda Agha Soltan, the 27-year-old woman purportedly shot by Basiji militants. In Seattle, activists recorded video and uploaded the content to their own sites - YouTube wasn't around at the time, so the activists relied on low-overhead RealPlayer streaming video to share the events worldwide. Just as the activists in Seattle were certainly aware of the notion that the whole world could see their cause almost instantly, the awareness/advocacy potential of the death of Neda was immense, and was clearly reflected in the Web Ecology Project's own findings, which firmly placed the #Neda hashtag as one of the most used categorizations for tweets in their immense and thorough data set. In this way, we can see the direct way in which the internet augments the activist's ability to raise awareness - as a result of the mass attention on Twitter surrounding #Neda, traditional media caught on and broadcasted the information to a much more widespread audience than the online social network itself. In a way, the corollary to that statement is this: the real power of awareness/advocacy in online activist moments is the ability to bring information to the fore at a much faster and much more efficient pace. In turn, this process of rapid information curation and deployment can have an effect on traditional media, which, with a much larger audience, can actually have tangible impacts on public opinion.

In the Seattle case, two limitations were noted - the limitations to true many-to-many communications channels and the lack of close interpersonal ties solely through the internet. In the case of Twitter, the many-to-many communications system is fully implemented, and clearly plays a role in the rapid dissemination of various forms of information related to the case, be it imagery/video, online petitions, news articles, etc. In that right, the problem of having too few channels of communication is largely resolved. Yet, in some ways, the one-to-many communication model persists: although the data shows that there was not a significant monopoly of a few influential users on the content spread throughout the #iranElection case, the fact remains that this is seen as an essential flaw in many respects: without this monopoly, many successful forms of awareness/advocacy are lost: at its base level, a many-to-many model allows for more fluid contact, faster transmission, and more heterogenous data being transmitted. Although this is perhaps useful in some ways, there are major downsides that can only be gained by a one-to-many model: the ability to provide narrative, focus, and clarity with the situation can only be done by a few actors. It is not hard to imagine, for example, an equally successful case

for Iran where PersianKiwi, OxfordGirl, and StopAhmadi became the sole communicators to the western world: through their feeds, the rest of the world could contextualize the step-by-step progression of the situation through one user's eyes, and focus on specific pieces of content curated with a single vision in mind - with the many-to-many model, the user base is at the mercy of the masses in the aggregate. In the case of Twitter, the brevity of content further compounds this issue.

Second, although Twitter is a social networking site, the cultural usage of the application is not for that. In many ways, Twitter is a secondary social networking site: instead of visiting the site and engaging in large conversations with other users, the basic usage is through some other medium (be it Facebook, iPhone, etc) and is relatively centered on posting and then scanning one's feed. In other words, where Seattle's case could have benefitted from close interpersonal ties online, so too could Iran's case - Twitter simply does not focus on this aspect of social networking, and instead serves as an essential thought-by-thought repository more than a place of gathering; this is reflected in the application by the (at least at the time of the election) lack of groups, affiliations, forums, group messages, late adoption of personal messages and other related forms of communication that would further engender that connection.

### **Organization/Mobilization**

Vegh argues that the organization/mobilization stage of an instance of online activism is a three-fold process consisting of a "call for offline actions, as exemplified by a distributed e-mail or a posted Web site that calls for a demonstration at a given place and time," a "call for an action that normally happens offline, but can be more efficiently done online, such as a call for contacting one's congressional representative through e-mail," and a "call for an online action that can only possibly be carried out online, such as a coordinated massive spamming campaign or ping-storm attack".<sup>86</sup>

The common theme in these three forms of organization/mobilization is that they are, at their core, online calls to action that are directly targeted against the opposition (in either physical or digital space), and are conducted on a broad-based scale. Vegh is rather inconclusive

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<sup>86</sup> Vegh 74-75



as to where these calls to action are actually separate from actions and reactions, and in fact states that his third type of organization and mobilization is in fact better defined as a subset of the last area of action/reaction. For this reason, it is more directed to simply define organization/mobilization in online activist campaigns as two-fold: the organization/mobilization category is comprised of the processes by which online activists collaborate and deliberate to organize and plan actions to be called for, and resultant broad-based calls to action conducted either online or offline. Of this larger dimension of calls to either online or offline action, the action/reaction area in Vegh's framework is a distinct sub-dimension meriting its own definition and explanation, which can be defined as solely online activities taken by online activists, or the result of calls to specifically online actions.

Of particular interest in the question of organization and mobilization is the difference of results when the process of organizing/mobilizing is essentially at the whim of a wide network of users, as in the case of Iran, as opposed to a small cabal of activists, as in the case of Seattle. In contrast to Seattle 1999, the utility of Twitter as a platform in disseminating plans for protest and decision-making to occur seems relatively inadequate; planning, strategy, and long-term mapping of goals is required, and has to be deliberated, which is a process that simply cannot be achieved on Twitter. If we analyze the structure of the protests in Seattle, and then discuss the merits of a network-based approach as in the Iran election, it should become clear which system is likely more efficacious.

Of particular interest in the Seattle case is the way in which organizers used the internet to collaborate and share common goals, then work together in creating joint offline calls to action, and their subsequent ability to achieve a desired turnout for their activities. Again, the University of Washington's vast wealth of primary quotes in the form of interviews conducted in the year following the protests are particularly instructive. Through these interviews, it is possible to understand the dynamics of how online activists organized and mobilized over the internet, in terms of technique and technology, and to what extent they credited it to their overall success.

As a qualitative example, Kristine Wong, affiliated with the Community Coalition for Environmental Justice, stated that insofar as online activity was concerned,

We [used the internet] to publicize what we were doing, and to also research what was going on. To get a clear picture, for example, I visited the World Trade Organization home page. I visited the different non-

profit websites, read what they had to say, and used that to spread information amongst people that I knew, verbally and electronically...

I used it primarily as an information source. I did send out emails to people that I knew about this, but it wasn't the main source. Of course, that's how we found out about a lot of what was going on, because people sent us emails saying, 'Come to this, participate in this. Would you like to come to this meeting? Would you like to be a speaker here or there?'"<sup>87</sup>

In discussing the techniques employed with e-mail technology, Wong displays a technique of closed collaboration: closely connected individuals determining precise plans and mapping out organizing/mobilizing calls to action, as opposed to an open forum of discussion coming to consensus as a whole, then jointly acting on it, which would seemingly be a structure more akin to Twitter and Web 2.0's user-driven open content paradigm.

In the case of e-mail as a technology employed in organization, the technique was of a closed nature. Throughout the interviews, organizers do not avoid the fact that the work flow was private organization first, then public mobilization: Alesha Daughtrey (then a Field Organizer with Global Trade Watch) employed this work flow: "Yeah, we operate about a half dozen list serves here. Some of them are very closed strategy lists that are just for key coalition partners that we work with around the country. Others are far more broad and include thousands of subscribers. And they include the action alerts and updates and things like that."<sup>88</sup> Perhaps more telling, Daughtrey states earlier in the interview that "I think what really set the work in Seattle apart from some of the subsequent protests has been that there was a huge amount of local organizing going on and local coalition building and education and outreach."<sup>89</sup> In Daughtrey's opinion, then, the real driving force was not the nature of the closed e-mail lists (which had the effect of a restricted overall range of options, and allowed for a more focused venue between actors through the internet). Instead, the real backbone of organization was based on traditional methods, and the close relationships of those traditional actors.

Through web sites, the organizers wanted to, in Denise Cooper's (then affiliated with the Brown Collective/Basement Nation) opinion, "keep people informed about what was going on"<sup>90</sup>

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<sup>87</sup> Wong

<sup>88</sup> Daughtrey

<sup>89</sup> Daughtrey

<sup>90</sup> Cooper

in the form of a singular narrative specific to that group. Through their respective websites, they were able to publish, advertise, and engage with their audiences in detail on only the nuances they wanted to advocate. As a specific example of this usage of the operator driven website, Bill Aal, of the People for Fair Trade and Network Opposed to WTO, explained that “flyers were passed around the internet left and right so that people in Ohio and Vancouver and Florida were able to use the same flyers to let people know what was going on in Seattle and why the WTO was a target. So, it became a mode of not just communication but of passing finished work around so that people didn’t have to recreate the same material over and over again.”<sup>91</sup> This description is in concurrence with Vegh’s framework of mobilizing by virtue of the low overhead of publishing content online as opposed to offline. It is important to note the general structure of this form of using a website to mobilize: it is a one-to-many format, not unlike the concept of a news channel; the operator of the website decides what information is relevant, necessary, or useful, then publishes ostensibly so that many possible participants can be aware of the now-complete plans.

In stark contrast, if there were any pre-existing offline groups akin to the ones present in Seattle, they are either a. not publicly apparent, b. not significant enough to be a clear signal in the data set, or c. non-existent. In the particular case of Twitter as an agent of organization/mobilization, the argument for its usefulness would appear to break down, if not throughout the process, then certainly in the initial stages.

In short, the efficacy of Twitter as an organization/mobilization platform can best be explained by a combination of the lack of organizational structures apparent in the case of Seattle and the joint problem of signal/noise and brevity in the Twitter environment. Clearly, pre-existing personal ties played a key role in the efficacy of organization and mobilization activities; without personal knowledge of one another, the protestors would likely less readily work together - this is apparent from Daughtrey’s statement on the utility of different list serves: “Some of them are very closed strategy lists that are just for key coalition partners that we work with around the country.”<sup>92</sup> Through some value judgement, key coalition partners are identified and included in relatively cohesive discussions, rather than being an open topic. As in real life,

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<sup>91</sup> Aal

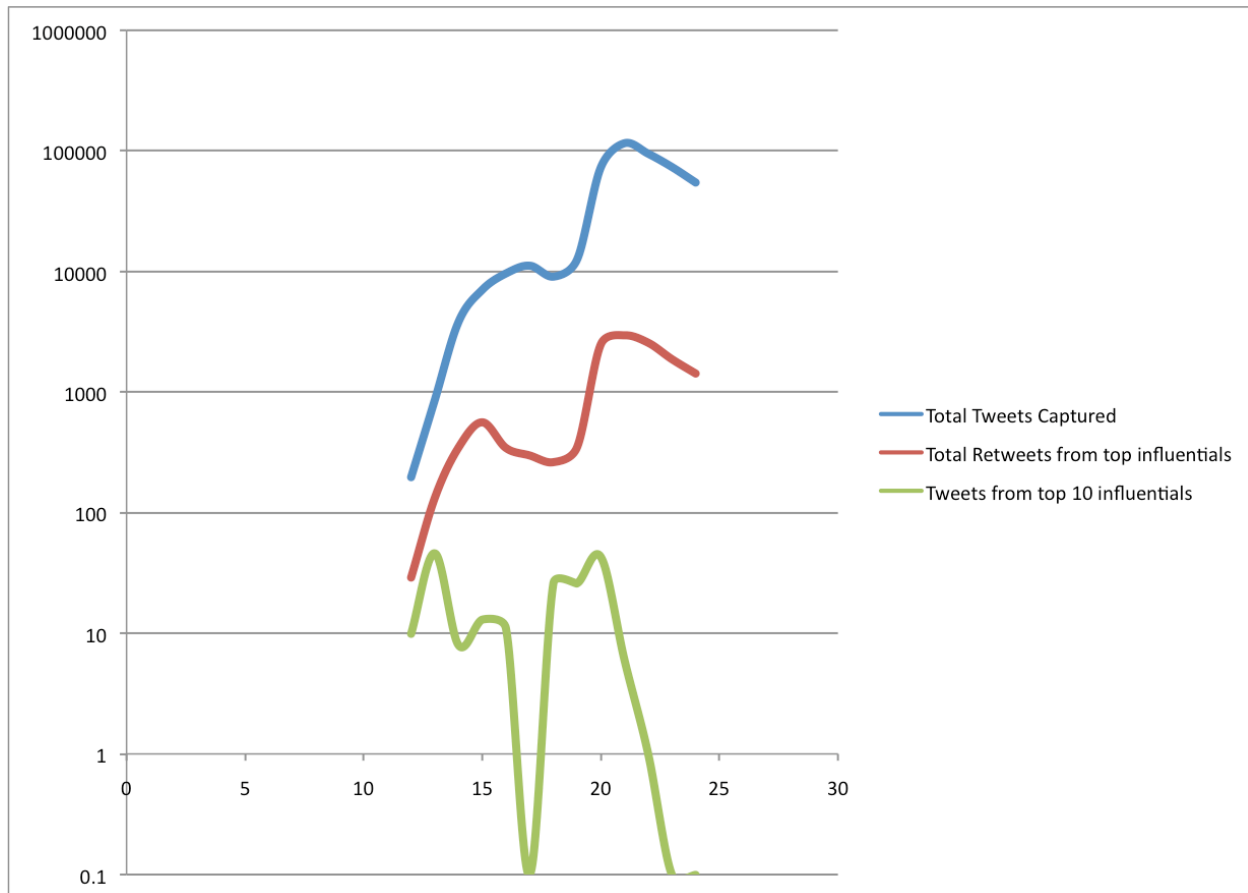
<sup>92</sup> Daughtrey

small groups tend to be quicker to react to changes, and are able to reach consensus much easier than larger groups - in other words, Daughtrey's adherence to a small, locked list serve for strategy debate makes empirical sense.

Another key aspect of the organizational success of the Seattle WTO protests seemed to be the power of a single narrative representing entire groups; through a group website, the published posts served as position statements, firmly placing the group on the continuum of organizational questions, which in turn streamlines the process of decision making. If we consider the structure of this type of activity, we could say that the online activists in 1999 fit into a multi-tier structure of decision making. At the atomic level, there was an individual, who was likely affiliated (or at least agreed with) a particular group over others, which in turn may be represented by some coalition of groups. At each stage, there was a representational structure apparent in the organization process; Kristine Wong's interview with the University of Washington demonstrates the utility of such a process. By researching groups at a time, and reading a chronological digest of opinions and prior activities, Wong could efficiently consider the merits of the group and whatever proposals had been made by the group. In comparison, the stream of incoming messages on Twitter for a particular hashtag are much less efficacious: whereas Wong could digest prepared statements representing entire swaths of online actors, the Twitter platform implies a process of manual digestion of a large number of disparate tweets over an extended period of time to gain a similar understanding.

It could be argued that the interested online actor could identify a few influential accounts and only read those messages, recognizing those accounts as more indicative of the broader conversation than random users in the search stream results, but even so, the data suggests that these "influentials" account for only a small portion of the re-tweeted data, which accounts for much less of the entire Twitter traffic in turn; as figures 19 and 20 jointly show, only a small portion of tweets are retweeted content directly attributed to the influential users in the data set. For this reason, we could start to posit that even recognizing and actively digesting a selected influential set of users may not be indicative of the general sentiment of entire groups, and certainly is not representative of all the content across the larger community. Simply put, the network is too big, the impact of influential users too small, the throughput too much, and the depth of content so shallow that it is impossible to employ any previous techniques of understanding to this case for online activism. If a structure of digestion were in place via

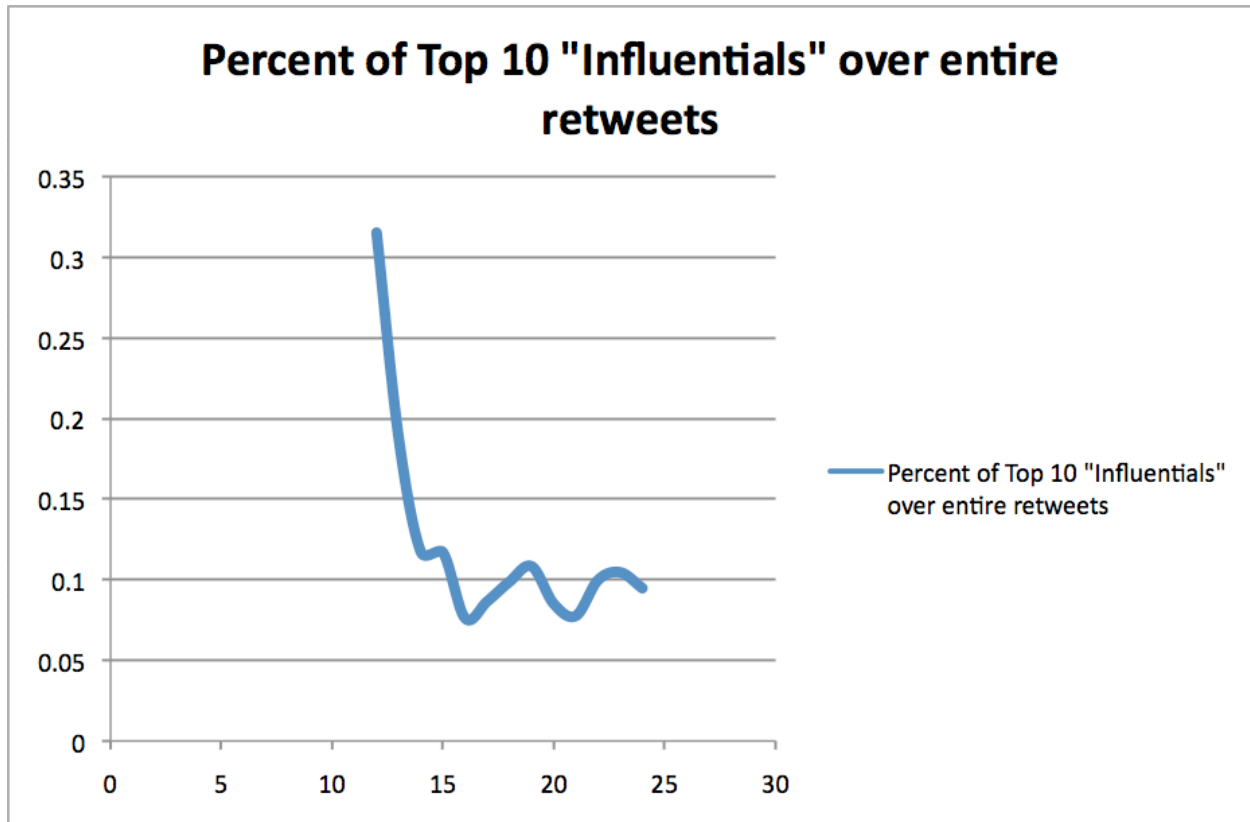
grouping systems or more structure in the network by further defining distinct roles and responsibilities for users, the case may be different, but as it is, no use has more precedence than any other, and for that reason, deliberation is not a valued concept in the culture of Twitter.



**Figure 19:** Logarithmic chart of raw Tweets per day: in green, the rolling list of top 10 re-tweeted users for the day's combined tweet total. In red, the total number of re-tweets generated from the rolling list of the top 10 users. In blue, the total number of Tweets captured for that day.

Regardless of online activism, Twitter alone, in its current iteration, lacks the technical and cultural capacity to maintain close personal ties and enforce multi-tiered organizational structures. Indeed, the explicit benefit of Twitter lies precisely with the fact that it lacks the ability to accomplish either of these goals; by assuming a structureless and loosely-socially-connected environment, Twitter is able to gain in ways that other networks may not. At any rate, we can effectively rule out the possibility of using Twitter the way that prior online activists had - if there is not an apparent grouping system, it is much harder to determine consensus opinions for subsets of the population. In other words, without a way to represent groups of people at a

time, the debate is left to be carried out between all actors, which does not match the use case for Seattle.



**Figure 20:** Percent share of rolling top 10 influential daily users combined re-tweet spread over total re-tweet count

As far as the actual platform goes, Twitter’s problem of signal/noise is probably the most significant in terms of organization/mobilization; simply put, there’s too much information to clearly decide how one should deliberate and come to consensus with the larger population - amidst 100 tweets, only a few may be fully formed, reasonable propositions, and it is difficult to determine which ones those may be without manually filtering the information; the lack of provenance to an offline identity (which would provide contextualization of how “important” or “relevant” the call to action may be) further compounds this problem.

Indeed, the path towards efficacious online organization/mobilization practices may be the closed, tight-knit community - when so much is available, it is hard to discern which pieces are more useful than others. When a small community is in control, the process of processing relevant information into a single coherent message allows for a greater control over what will

become important to the users in the network. As seen with the Seattle case, the ability to organize many groups around concentrated activities can have profound effects. In contrast, as stated by Keohane and Nye, “to understand the effect of free information on power, one must first understand the paradox of plenty. A plenitude of information leads to a poverty of attention. Attention becomes the scarce resource, and those who can distinguish valuable signals from white noise gain power.”<sup>93</sup> Exacerbating this issue is the fact that Twitter promotes brief and rapid publication over long and slow publication; as a result, the plenitude of information is increased, and the ability to pay attention to any particular detail is decreased. In a use case where information is to be passed from one user to another, this is a benefit: tweets are quick to digest, and for that reason, content can be rapidly disseminated. In the case of organization, however, there is a crucial deliberative process which requires sustained conversation, reply and response, and requires a one-to-many format in many ways in order to have a majority of support from the base of supporters. In this way, Twitter seems to break down as a useful tool for organization/mobilization. On a platform where bits of small data are prized over sustained thought, it is likely untenable to use it as a tool for organization or mobilization in Vegh’s definition.

### **Action/Reaction**

Vegh’s categorization of action/reaction is, most generally, the initiation of “an action or the react[ion] to one”.<sup>94</sup> More specifically, these are online forms of protest that is at the base a “more proactive and aggressive use of the Internet to achieve a goal that can be both politically and financially motivated”.<sup>95</sup> If we can describe the organization/mobilization area as primarily direct, traditional protests primarily conducted offline (as in the case of the Steelworkers Union march to the Kingdome in the Seattle WTO Protests of 1999), then the action/reaction area is one of innovative strategies of “hacktivism” or direct online actions. This is endemic to online activism, and “is usually provided by sympathizers located in more technologically advanced

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<sup>93</sup> Keohane and Nye

<sup>94</sup> Vegh 72

<sup>95</sup> Vegh 75

countries.” Specifically speaking, Vegh uses the term “online direct actions” to differentiate these activities from other forms of organization/mobilization.

One of the most creative acts, one that was eventually featured in a full-length documentary, were the actions of the “Yes Men.” According to Baldi, “In the case of the Seattle protest, a fake website (or rather a “shadow site”) was created on the basis of the official WTO website (Fig. 19). It is important to note that even the URL, <http://www.gatt.org>, was carefully chosen with obvious reference to the previous name of the WTO (the official website address is <http://www.wto.org>)”.<sup>96</sup> Expressly built to satirize the WTO’s actual positions, the website enveloped (and continues to, as it still is in use) the core awareness raising and advocacy that was present in the initial stages of the protest.

Rather than deceiving the public, the goal of the <http://www.gatt.org> shadow site seemed to be that of attempting to override any messages being created or rebuttals formed by the actual WTO via a virtual ship-boarding. The media attention created as a result of this website, as well as the official criticism of its existence by the WTO itself on 23 November, made the website a popular destination during the protests. This was far from being the only website that employed a similar idea, however: <http://www.wtoseattle.org> faced a similar impostor website, <http://www.seattlewto.org>, which featured a clearly political statement of satire intended to elicit a response from the readership, who, regardless of their knowledge of the site prior to accessing it, were now exposed to a form of direct online action:

The World Trade Organization held its latest ministerial in Seattle, Washington, the week of November 29th, 1999. The meeting ended at an impasse after the negotiations broke down on Friday, December 3rd. Representatives from developing nations stated that the people that filled the streets of Seattle to demand representation and accountability gave them the strength to stand up for their country’s rights.<sup>97</sup>

As figures 21-24 show, the differences on the sites, though present, matter little; the websites themselves carry a certain veneer of authority, and, although not unique to, certainly much more so enhanced by, the internet, users of the communications medium did not have direct, verifiable access to the original creator of the website, and could not easily identify its true authenticity. By leveraging this, the websites created to both hinder the WTO’s actions, as well

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<sup>96</sup> Baldi

<sup>97</sup> quoted in Baldi



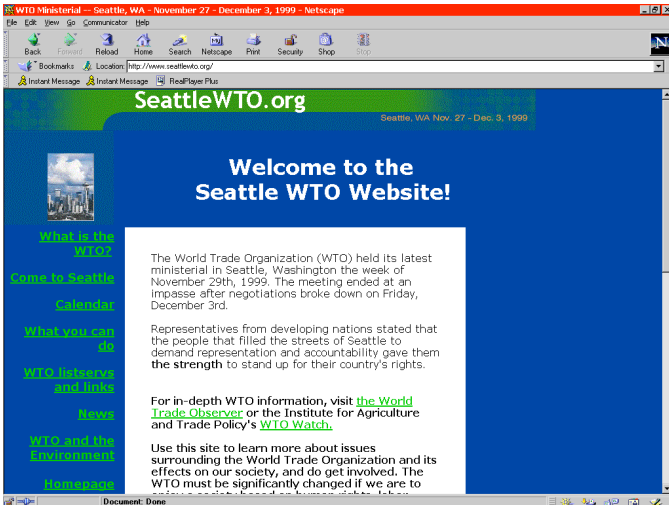


Fig 21: Fake website for WTO Seattle Ministerial Conference, <http://www.seattlewto.org>



Fig 22: Real website for WTO Seattle Ministerial Conference, <http://www.wtoseattle.org>

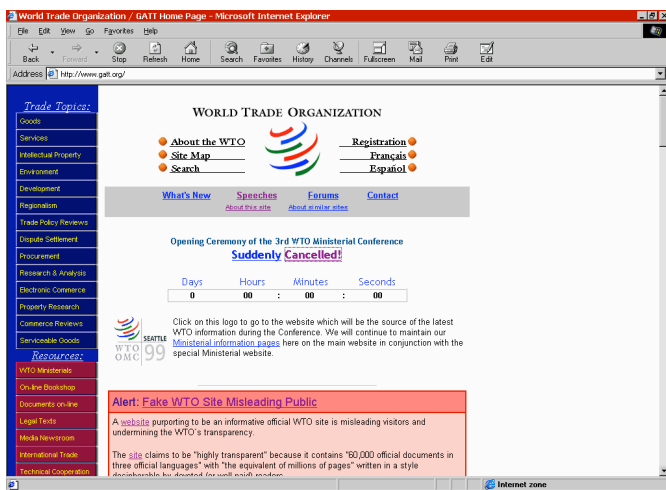


Fig 20: Fake WTO website, <http://www.gatt.org>

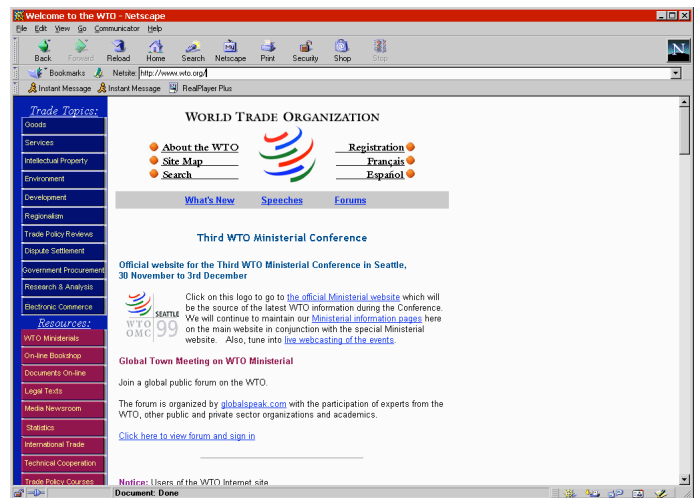


Fig 21: Real WTO website, <http://www.wto.org>

as push their own political agenda into the population, proved to be an efficacious, if somewhat primitive, form of direct online action.

Another form of efficacious direct online action, one that is just as popular today, was the DDoS attack. Essentially, any given server has an upper limit as to the total number of requests it can properly respond to. When multiple users are accessing the same website, the server has to cycle through each requests, which individually chip away at the total leftover available processes that the server can handle. In its most basic implementation, the DDoS attack is rather simple: if one computer can chip away at the servers processing throughput, then a certain

number of computers can collectively chip away all throughput, either resulting in an overall slowdown of the hosting service, or at worst, a total denial-of-service (the DoS in DDoS, which fully stands for distributed denial of service attack).

In the case of the Seattle protests, coordinated attacks, which were at the time more popularly known as “virtual sit-ins” (clearly conjuring up imagery of some of the more popular “real-life” sit-ins of the civil rights movement), were enacted against the WTO website. According to the main coordinating group, the self-proclaimed “electrohippies,” the sit-in on November 30 had a total of 105,635 pings to the site. The following day’s sit-in upped the number to 137,114. Following these coordinated attacks, the electrohippies posted the following on their website, apparently proclaiming nominal achievement of their goals:

The WTO’s main server was unavailable for periods on Tuesday, and the Conference server has been intermittently very slow (as compared to our measurements the previous week). Both servers have been responding slowly and/or stalling requests on Wednesday. In fact, I would love the WTO to give us all a peek at their server logs - and in fact I challenge them to release them, and the previous weeks statistics for comparison, for us all to see! (I presume they’ll read this shortly after it goes out, and if they don’t then they’re slacking).<sup>98</sup>

The actions are disruptive to the goals of the WTO, and combined with the fake websites, proved to provide both a smokescreen of satire, as well as a limited access to the actual information that was intended. However, as in the first and second areas in Vegh’s framework, the same fundamental limitations remain in place; in general, the range of possibilities for direct online action were limited, both due to actual bandwidth/computer limitations, as well as service limitations (as was discussed, the non-existence of more advanced social media services), and also through a general lack of ad-hoc cohesion as opposed to the careful planning that had to be involved in creating a site like <http://www.gatt.org> and <http://www.seattlewto.org>, or the careful creation of programs specifically designed to target the WTO’s site (for reference, the program used was called “FloodNet”). Instead, these groups relied on more traditional top-down structures, pre-existing offline relationships, and closed online planning. In their execution of online-based direct action, the diffusion of information and overall influence on actors may have been vastly increased through their use of the internet, but the actual relationships were relatively non-collaborative across spontaneous groups once the private planning stages were complete.

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<sup>98</sup> Quoted in Baldi

As a cognate in the Iran case, users attempted to override the useful information via techniques of obscuring the facts and using a similarly subversive approach. This was clearly seen in the data on self-reported time zones, a likely significant proportion of users changed their time-zones to Tehran local time; although 21.03% of users were “located” in Tehran, there was no appreciable difference in hourly traffic than at normal traffic levels. In the Royal Pingdom graph (figure 4), there was clearly a dip during the American late evening. Similarly, this same dip was seen in the aggregate for the #iranElection data set. Thus, we can reasonably conclude that although there was likely some users that were accurately reporting their location as Tehran, the 21.03% figure is a gross exaggeration of actual users within the borders of the Islamic republic, let alone Tehran proper.

In judging the efficacy of such an action, it is hard to tell what level of control there would be in determining whether or not this is useful; as the argument seemed to go, by changing one’s location, users were essentially adding noise to the signal of actual Iranian users, thus complicating the job of the government in tracking down tweeting protesters. Ostensibly, if traffic were generated from outside of Tehran, it would be relatively straightforward to isolate only Iranian IPs as possible protestors, and remove that noise in a rather straightforward manner. In this case, it would seem that although it is a well-intentioned motive, there is little utility in actually changing one’s location. Nevertheless, the same conventions seen in Seattle were in play during the Iran case, though the efficacy of these actions differed.

As can be seen in the case for diasporic actors, another particularly popular form of online activism was the use of online petitions. Realistically, an online petition would likely gain very little traction in offline life - who, after all, would honor a list of names without any sufficient provenance of how this list was generated? - so it can be treated largely as online vocalization of opposition to the government. At its core, this is an activity of identification and alignment, and likely has an effect beyond the petition itself. By framing the list of agreeing users as a petition, the action bears a political weight that aligns many actors around a central idea. Indeed, an online petition in and of itself is a form of action/reaction, but the effect of this may actually serve the purposes of awareness/advocacy or organization/mobilization, dependent upon its content.

Finally, as discussed at length above in the section on slacktivism, the “green thumbnails” campaign was clearly the single most emblematic example of action/reaction in the case of the

Iran election. While its actual efficacy may be of dispute, it too could be categorized as an action/reaction form of online activism in addition to the purpose of awareness/advocacy in itself.

As far as contrasts between the case studies in a particular category of Vegh's framework are concerned, the differences between the Seattle case and Iran could not be more stark: whereas in Seattle, users engaging in action were primarily externally focused, with Twitter, action/reaction was primarily inwardly focused. In Seattle, DDoS attacks and fake websites were launched to dramatically and directly affect the progression of the WTO prime ministerial round. In the Iran case, users flagged their own approval of the goings on by signing petitions and marking their identifying avatars as such. Perhaps this has more to do with the nature of the Iran case (where a government is being faced, a much more formidable opponent than the WTO, and where the geography and cultural gap between the largely western Twitter user base and the citizens of Iran certainly distanced direct interaction) than it does with the differences of Web 1.0 versus 2.0 or the platforms employed.

Either way, the fact remains that in the case of Seattle, the primary focus was based on direct action against the opposition, something that is perhaps even implied in Vegh's definition. There were, to be clear, cases of users directly engaging the opposition: perhaps the two clearest examples of this were the frequent listing of proxy websites with which to access the open internet as opposed to the Iranian government-filtered access provided within the borders and the use and advertisement of the Tor or Onion network, which essentially allows for the use of anonymized IPs. Even so, these were less about direct engagement against the government than they were about providing ways to circumvent them entirely. In the case of Iran, it is unclear where direct action/reaction could have even been employed: in the Seattle case, the clear target was the WTO's web presence, and as such, reasonable and logical results were arrived at - with the Iran case, it is less clear, perhaps the target would have been state media or the government's websites. If this were actually present in the Iran case, it was not immediately clear that the action was explicitly mediated through Twitter, and it is certain that if it did happen, it paled in comparison to the other forms of action/reaction taken.

As such, this implies a few things: perhaps with the advent of social media and the subsequent obsession of the self (via one's profiles, one's curated content, one's online identity that is carefully crafted, edited, and revised), more efficacious actions like the ones taken in

Seattle are not present simply because they do not focus on the self. The “green thumbnails” campaign is clearly user-focused, and is thus more of an internal form of action/reaction; a DDoS attack is much less so about the self, absent any sort of identifier appended to the attack that acknowledges one’s participation in it. As a whole however, we cannot discredit the role of internally focused action/reaction, it does have a role, and does primarily work in collaboration with awareness/advocacy; whether it is as efficacious as the more direct action taken in Seattle is another question.

## Conclusion

On December 5th, 2009, forty years to the day of the completion of the first network of computers, which came to be known as ARPANET (and later the internet), DARPA, the US Department responsible for advanced research in various fields, launched a contest specifically designed to understand how people use networks in the contemporary information-laden environment. The goal was simple: 10 red balloons, each with an identifier of which specific balloon it was, were placed in randomly selected public spaces across the United States. The first person, or team of persons, that reported the locations of all 10 balloons would receive \$40,000, and would meet with DARPA to document their strategy. A team of students from MIT won, and did so by leveraging the profoundly efficient communications network that we as a society have brought to maturation: as the balloons were theoretically spread over such a large space (the entirety of the nation), there was no practical way to find all balloons by oneself in time (as it is probably impractical to cover that much space in a decade, much less a reasonable timeframe of a week or so). So, they built an economic reward system so that everyone would get some of the money, and focused the campaign around Twitter. If you tweeted the location of a balloon first, you won some share  $x$  of the money - if you referred that person to the contest, you won  $x/2$ , and the person who referred that person won  $x/4$ , and so forth.<sup>99</sup>

By leveraging the social networking platform for precisely the challenges it addresses, the MIT group was able to complete the contest in a matter of hours: by crowdsourcing

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<sup>99</sup> Warren

information from every corner of the US, and by providing some sort of incentive for their efforts, they were able to collect the most relevant data in a profoundly efficient manner; in their endeavor, it is hard not to envision the internet as some sort of oracle at which to posit questions as difficult as that one, and receive reliable and speedy replies.

Similarly, the primary achievement of the social media network was successful in transmitting and prioritizing the most compelling information filtering out of Iran through a complex path of network influence via re-tweets, friend and follower relationships, and proximity to actual people on the ground in Tehran. To think that, for example, the surge of attention to the very specific case of the death of Neda Agha Soltan was some network-theory based random occurrence is not giving the social machine enough credit.

With all of the analysis finished, the discussion of Vegh's areas of online activism complete, and the contextualization in place, we can now begin to arrive at some broad conclusions about the role of Twitter in the Iran Election of 2009.

In general, a rule of online activism should be that the action taken should be done through a medium that complements the action. In many ways, Twitter is an ideal platform for online activism; in many ways, it is not. Clearly, the case for awareness/advocacy is one where Twitter is well-suited to leverage online users for political gains; organization/mobilization is much more problematic.

In this way, we can argue that, at a high level, the single most important role played by Twitter in the Iran election of 2009 was the function of rapidly disseminating useful media, links, and basic information through disparate channels. Twitter's unique high-throughput, shallow data culture is perfectly in line with an awareness-raising activist's intentions: there is just enough of a social atmosphere to promote branching spreads of data, and the costs of participating are just low enough that the incentives for participation are not necessarily expensive. A more refined and nuanced answer exists, but all the analysis conducted suggests, implies, or directs our attention to the essential components of the ethereal networked nature of Twitter and its implications for a case such as this election: no one message, no one user, is of profound importance; only through the sum of their actions and through careful analysis of specific subsets can the functioning of the network (and role of Twitter) be found. It is inherent in the structure of the network that although no single entity may be coordinating the efficient transmission of information, it is still able to occur. In other words, even though we may not be

able to clearly see how suddenly a mass of users are actively engaging with content surrounding the election, everything seen so far implies that it happened on a scale that markedly transformed the efficacy of the protests, primarily in terms of the perceptions of outsiders and the morale of the insiders.

From this, we can put this argument forth: without Twitter, or more accurately, without the internet-wide social network (if Twitter didn't exist but Facebook did, it would be hard to imagine this not just happening on Facebook instead), the speed, reliability, and throughput of information on what was happening in Iran may likely not have occurred as it did. In turn, that crucial notion that "the whole world is watching" may not have lasted. Certainly, the lasting, profoundly disturbing, and mobilizing final moments of Neda Agha Soltan's death would never have been made public. A death such as hers has certainly happened before in times of unrest. The difference here is that within a day's time, the whole world knew where it happened and had a reasonable hunch as to the circumstances surrounding it. Compounded with all the other data, it's very reasonable to suggest that in times of sudden and considerable political unrest, the single-best platform for dispersing information (at least as of now) is an ad-hoc high-throughput brief message network like Twitter - this is supported by the fact that in similar cases, the use of text messages, almost completely identical in infrastructure (so much so that Twitter was in fact modeled for text messages from its inception) was clearly key in advancing the opposition's cause.<sup>100</sup>

On measure, however, not all things can be completed by Twitter. Where it gains in information spread by having no formal leadership, it almost certainly loses in efficient, broad-based organization/mobilization. This is almost certainly compounded by the simple fact that very few people "saw this coming," (whereas the meeting in Seattle had been scheduled for a long time before the actual meeting took place, providing ample preparation time). Additionally the optimistic theory "leadership emergence," whereupon some users eventually grasp the reins of online society through a combination of randomness, luck, and good content, seems to not hold, at least not significantly: they still do not adequately provide enough signal to drown out all the other noise. In turn, this combination of circumstances contributes to on-the-ground confusions, and is likely to blame for much of the argument against Twitter being efficacious for

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<sup>100</sup> As an example, see McCullagh

actual direct offline action against the regime. The absence of a cabal, as it was suggested in the comparative analysis of the Seattle case and the Iran election, seems to be the primary difference between the two cases in terms of how people actually organized themselves as a result of online discussion.

Another important note is that the facts of the case matters: in Seattle, the freedom of assembly exists - the ability to not rely solely on online interactions or secretive meetings is of profound importance to the reason why the protests failed to achieve more concrete gains. When political opposition is stifled to the degree it is in Iran, it is ludicrous to assume that any meaningful organization/mobilization could occur solely through the internet across people who are only aware of one another via the medium. Although there are clear cases against organization/mobilization, as with the case of slacktivism, the absence of clear pathways towards an eventual result does not necessarily lead to those pathways not existing at all. Perhaps the most compelling evidence that there were sincere attempts of organization/mobilization is the qualitative tweet matrices, where the most interested users did seem to tweet more often about concrete goals and plans.

From an action/reaction perspective, as alluded to in Andrew Keen's "Cult of the Amateur," users are perhaps becoming too self or social-focused on the internet: the fascination or obsession with one's online identity may not be a useful cultural shift in terms of online activism in particular. The specific online actions adopted in the case of the Iran election - all primarily focused on identity alteration - pale in comparison to the outwardly focused action/reaction activities present in earlier cases of online activism, at least in terms of direct causal benefits. Whereas a DDoS attack or an impostor website clearly engage the opposition directly and efficaciously, the effectiveness of overlaying one's avatar with a green tint is much less obvious. This effectiveness is so vague, in fact, that it is generally completely discredited before it is even considered as a possible effective form of online action. In this right, it is important to state that although inwardly-focused, identity-based action/reaction campaigns may not clearly have any impact on the online activism instance, the possibility that they may profoundly augment the spread, efficacy, and resultant attention on the subject via awareness/advocacy raising cannot be entirely rejected, and must be left as an open question.

The Iranian protestor quoted in 2003 comparing the ability to leverage the internet to a storehouse of gunpowder must have felt vindicated 6 years later when the first reporters began to



board planes bound for their native countries after being kicked out following the unrest. In retrospect, the protests are as surprising as the revolution itself was to some - no one could have accurately predicted the results of these protests. What is clear though, is that although some may argue that the June 2009 protests had no net impact on the political system (since nothing changed structurally, and Ahmadinejad remained the winner), there has been a profound shift in the way Iranians, diasporic Iranians, and foreigners perceive their government. Until the election, there had not been popular protests against the government - furthermore, there had not been popular protests that were faced with heavy government and basiji resistance. What had started as an election became a popular protest for the right to free and fair elections. What had become a popular protest for the right to free and fair elections became a nationwide referendum on the efficacy and legitimacy of the regime itself. When the dust settled, and no political concessions were ultimately delivered, the legitimacy of the regime was shaken to the core.

The intention of the paper is in no way to aggrandize the usefulness of the internet in moments of profound change. Rather, it is a concerted effort to avoid both praise and condemnation - the point instead being to actually measure it and apply some form of metrics to the nebulous subject. In many ways, the analysis conducted on the data set drawn from the Twitter platform seems to provide evidence that the platform aided the cause of the opposition. In many ways, it does not. Ultimately, the greatest contribution of the platform in this case is a provision of the feeling that one is not alone, that in any reasonably technologically advanced society, regimes can't just get away with everything. To be sure, the Iranian government held no bars in quelling protestors, and took many precautions in making sure that the journalists originally invited to cover the elections did not cover the resulting turmoil. Just as the ban on satellite television remains unenforceable, however, the ability to transmit data outside of the country remained, and aware citizens, diasporic actors, casual Twitter users, and traditional media alike latched on to the data via the framing of the Twitter platform. The government remained vigilant in its efforts - the difference was that the whole world could potentially be aware. In any government, the management of information is essential - in a regime, this management crosses over into control. The single most important contribution of the internet, and indeed, any ICT, in opposition movements is that it effectively wrests that control, and allows the maintenance of information flows. Here, in Iran, June 2009, Twitter's ultimate role was the maturation (or realization) of the democratization not of Iran, not even of Iran's

population, but of Iran's information flow. By wresting control of Information flows away from the government, users, whether they were located in Iran or elsewhere aside, provided protestors with the essential notion that "the whole world is watching," and empowered a generation of youths to keep up the pressure.

In all truth, the protests spoke more towards a reformation than the flashy, sexy notion of a revolution. When the ability to affect their government for the better, or at least engage in that form of political dialogue publicly, failed and was instead met with Basij militants, there was a shift in the political system that could not be undone. Much like how a political analyst in 1970 could not predict the overthrow of the Shah as the eventual result of the forced ousting of Mossadegh, much less predict the Islamic republic that followed the overthrow of the Shah himself, it is impossible to see what will happen as a result of this profoundly important moment; only time will tell. It is therefore important to keep this moment in mind, as it was at the time, and be prepared for when this comes back to the fore; if history is any lesson, it almost certainly will.

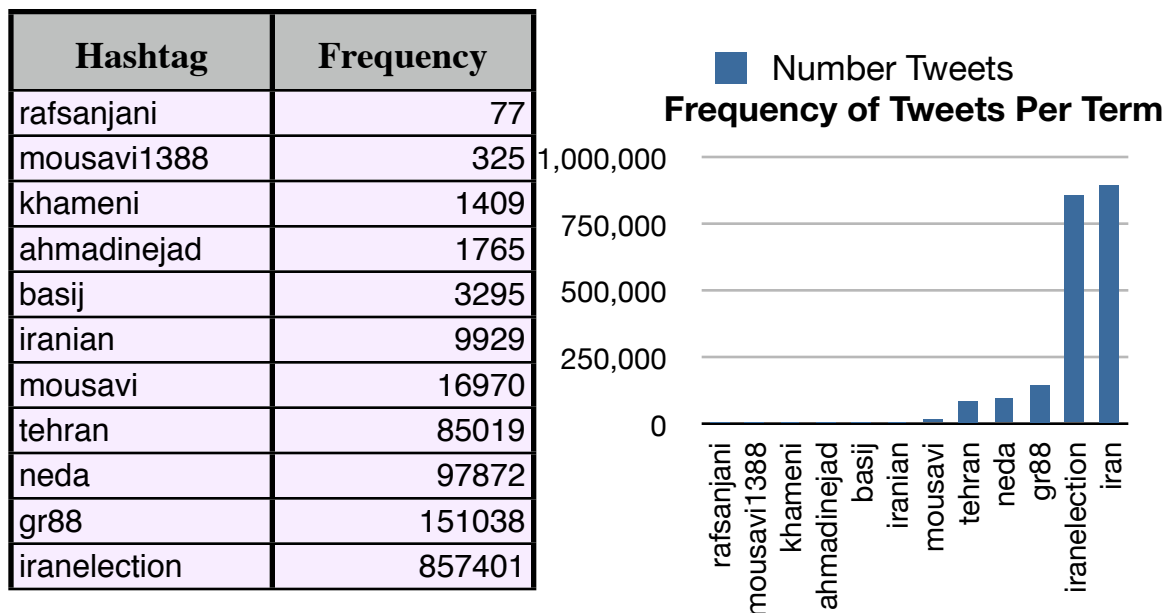
## **Appendix**

### **Data Collection**

The data used in this study is comprised of 766,272 tweets collected from June 12th to October 24th, 2009. The only criteria for including the tweet in the data set was the use of the Twitter categorization, or "hashtag" as it is colloquially known, of "#iranElection." From basic intuition, this term was selected as the primary target of search as it simply seemed to be the most used hashtag for the election. To be certain, there were other categorizations that were directly related to the situation (such as #neda, #gr88, and the even more general #iran), and possibly could enrich the set further. For our purposes, however, time was of the essence, and the need to rapidly develop the simplest, most successful tool for data collection took priority over a more targeted search that would have otherwise likely included those terms. In retrospect, this simple assumption seems to be validated by other primary data sources collected during the election.

In the Web Ecology Project’s study, which included the more multivariate approach of multiple relevant search terms, the data yielded by the “#iranelection” hashtag represented 40.28% of their data set, the only larger percentage being returned by the “#iran” hashtag. Given the context of the situation, it is likely that the vast majority of tweets containing the “#iran” hashtag were relevant to the study. For our purposes, however, a more stringent hashtag that isolated any other news at the time concerning Iran adds a further level of assurance that the data being returned is faithful to the subject under study.

Additionally, by using a single term, we are able to exclude considerations of difference in conversation across terms. The fact remains that multiple hashtags inherently implies the inclusion of semantically distinct subjects into one study. This inclusion could perhaps unnecessarily complicate the interpretation of various characteristics of the data set, such as the frequency of particular links being passed around, the key dates and times at which posting increases, and other subject-sensitive qualities bound to that particular hashtag.



*Figure 25: tweet Frequencies by term, Web Ecology Data Set*

Some information is also lost by taking a single hashtag approach. For instance, the #neda hashtag is a direct sub-topic of #iranelection. This is, of course, the hashtag for tweets concerning the late Neda Agha Soltani, whose very public death, purportedly at the hands of

Basij militants, was captured on video, then spread virally through Youtube. By not including this hashtag, it is harder to distinct when the #neda hashtag evolved into being its own predominant conversation, and the rapidity in which the video of her death was spread. Ultimately, however, as the particular approach was decided in haste, considerations such as these were only made retroactively, as the desire to “get up and running” was too great.

As for the actual data collection, the tweets were collected via an ad-hoc approach of querying the Twitter Search API via a hard-coded URL (<http://search.Twitter.com/search.atom>). Three parameters were added to this base URL: q, rpp, and page. In the Search API, q specifies the query, or word to match for in searching “live” tweets. In the case of the Iran Election, the term “%23iranelection” was used, where “%23” is the URL-safe version of the hashtag, or “#”. The page parameter simply allows for pagination access: we can go up to 15 pages, or at most 3,000 tweets, back in the list of tweets when searching via the API. The rpp, or results per page parameter, was set at the maximum, so as to lower the raw number of requests sent to Twitter. By default, Twitter allows 150 requests (a request would be any full page load) per hour from any IP; this can be changed via white listing, which will be discussed later. With a rpp maximum of 200, and with 150 requests/hour, at maximum, we were able to collect 30,000 unique tweets per hour. Using up to three computers at any given time, this theoretical maximum increased to 90,000 per hour.

Necessarily, then, this means that we generally were not collecting 100% of the data available on Twitter; at one point, the Internet news blog Mashable reported a peak of 221,744 tweets in one hour that contained the word “Iran”.<sup>101</sup> Traffic for #iranelection seemed to only be a fraction of that, but to be sure, it almost certainly peaked the 90,000 cap at times. Although the data in per hour results is not available, Trendrr, a social media data aggregation service, reported 175,781 #iranelection tweets on June 21 alone.<sup>102</sup>

Many other factors also brought the actual per-hour tweet cap to a much lower figure than the theoretical one above. For instance, with a uniform 10 second wait time between calls, we ensured an even distribution of API requests, but did not have control over the evenness of distribution in the Twitter Search API updating its own lists; some times, the list would return

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<sup>101</sup> Parr

<sup>102</sup> Trendrr

results identical to the previous request (the API hadn't caught up with the data being created on Twitter), whereas other times, we would receive fully 200 new posts, which inherently meant that it was likely that posts were lost in between the two calls. Other factors, such as unforeseen program crashes, network down time, and sundry problems associated with collecting data occurred, resulting in a less than ideal, but still acceptable losses and increases in overhead.

In this manner, requests were made to the API with the `q`, `rpp`, and `page` parameters appropriately set. Every time the result was returned, the data would be parsed and translated into a Hash, or a variable type consisting of keys and pairs,<sup>103</sup> which would then be appended to an Array, or a logical collection of these Hashes. When the Arrays reached a predefined size limit, they would be marshaled (or written) to a file located in an `#iranelection` folder. The files would be uniquely named to ensure that no file wrote over another. This was achieved by combining the publish times from the first and last Hashes in the Array and using this as the file name. For example, one of the text files was named “2009-06-21\_08-41-25\_-\_2009-06-21\_09-42-49.txt”.

After a few months of collection, other methods were included in the program to help increase the sample size. One such inclusion was a method wherein the program would look at every user's account, read through all past tweets, then add any that were posted on or after midnight, June 12th, 2009, Iran local time, and included the `#iranelection` hashtag. This process increased the size of the data set from roughly 500,000 to just over 750,000 as the data set now stands. As data collection began to slow down, it was migrated into a relational database system (SQLite), where it could be manipulated much easier. From here, new logical objects were created for analysis, which began in late December 2009.

## Data Analysis

The histogram-based analysis was rather simple: within the program, two object groupings were created: `GraphPoints` and `Graphs`. `GraphPoints` would be any row of a particular histogram, where the `GraphPoint.tag` would specify the `Graph` it belonged to, the

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<sup>103</sup> For our purposes, a Hash would read as such: {“message” => “example tweet message”, “username” => “john”, “date” => “Mon Jan 25 13:40:36 -0500 2010”} where “message,” “username,” and “date” would be the “keys,” and the corresponding sequence (noted by the arrow joining them) would be their respective values.

GraphPoint.label would represent the x-axis data (time posted, username, number of friends, etc), and the GraphPoint.frequency would represent the value of that row. For instance, with user account creation dates, the GraphPoint.tag would specify this was a “user account creation graph,” the GraphPoint.label would specify the date a user joined, and GraphPoint.frequency would specify the number of users who joined on that date. A Graph’s given GraphPoints were then converted into CSV data, which is a widely accepted table data format.

Network-based analysis was a bit trickier, as a system had to be developed that could adequately represent different network mappings of re-tweets based on different granularities. A network map of every re-tweet that occurred in the entire data set would inform us as to who the most influential users were, as well as the general flow of re-tweets from those influential users to “hubs” of people who tend to re-tweet frequently, and then throughout the network. What that particular map would not tell us, though, is the number of messages that occurred within a particular time-space; if we wanted to know the moment at which a particular user became a highly re-tweeted person, it would not be immediately apparent. For this reason, sub network-graphs were developed against day-to-day data, hour-to-hour data, and minute-to-minute data. In this way, for example, we could look at every re-tweet that occurred within one particular minute, then shift further in time to one minute later and see the differences in that map.

From a technical standpoint, every re-tweet was treated as an atomic network: two nodes with a directed edge. The object was defined as a Retweet, where the Retweet.retweeted\_user represented the original user being referenced, the Retweet.retweeting\_user represented the user referencing them, and the Retweet.edge\_id was the Twitter-internal id of the tweet in which the re-tweet occurred. Retweet objects were then collected into RetweetCollectors, which grouped Retweet objects by different time metrics. For example, RetweetCollector.minute, RetweetCollector.hour, and RetweetCollector.date would specify the Retweet objects to belong to that particular RetweetCollector. Within the network map generation code, queries would filter based on the minute, hour, and date settings to collect subsets and super-sets of the Retweet to view the data at varying granularities. Retweet data was then converted to GraphML files, which is a widely accepted file format for network data. When the networks are actually interpreted, a high out-degree for any particular user’s node corresponds to a high number of other user nodes re-tweeting that user’s content. Conversely, a high in-degree for any particular user’s node corresponds to a high number of re-tweets created by that particular user.

Finally, the “leadership emergence” idea must include one caveat: as with anything, data is subject to the humans that create it. Although in strict terms, a re-tweet should be modeled as “rt @{user} ...,” it is likely that not all re-tweets were written as such. This also goes beyond “leadership emergence,” and may skew the entire data set, as some truly re-tweeted content may slip through the detection algorithm (which essentially maps out re-tweets based on the strict re-tweet syntax). Similarly, through the transmission of data from user to user, the original source of the tweet may become a misrepresentation - similar to a game of telephone, the user may have determined that, in the process of creating a re-tweet, the re-tweeted user should be the person they received the information from directly, rather than the original author themselves. This is clearly a realistic concern, as “double” re-tweets (where the message syntax is “rt @{user\_1} rt @{user\_2}...”), were relatively common. In this case, it would be reasonable to assume that, given the 140 character limit, the full provenance of the message would be truncated for the sake of the message itself. If a message was transmitted through 10 different users, for example, it would be impossible to pack the trail of passage through the network via the re-tweet syntax, as that would likely surpass the character limit itself. In that case, we could assume that a fair amount of data may be mis-represented or mis-attributed. If, for example, an example user Gary2009 re-tweeted PersianKiwi’s content, then the next user in the chain may attribute the re-tweet to Gary2009 instead of PersianKiwi. In reality, this is just as accurate - this new user is, after all, re-tweeting something Gary2009 posted it is just omitting the original source. In the aggregate, this type of activity could likely skew the data away from the actual “influentials” and diminish the footprint that a “leadership emergence” process would leave. To diminish this affect, the most reasonable work to be done would be better re-tweet detection - to look beyond the strict syntax and actually parse tweet content in order to detect re-tweets.

The language-based analysis for this particular case study is still in its infancy. Currently, no data is stored permanently in the database; MySQL calls generate basic language-based analysis on an ad-hoc basis. The single most useful tool is word frequency charts; essentially, we can begin to understand the qualitative nature of large sets of tweets by ordering a table of words against the number of times they are used in a particular context. As an example, the simplest word frequency chart that can be implemented would be to take all tweets across the entire data set, combine all words, then store the words in a hash table ordered by the number of times they appear throughout the text string. With this example chart, we would be able to quickly identify

the most used terms throughout the data set, but we wouldn't be able match them up against any particular context. If we wanted to know whether one particular subset of users tended to employ a unique set of words (and then derive some sort of qualitative assessment from that), we would have to select a subset of tweets first, then regenerate the charts. Similarly, we could just as easily be interested in the qualitative change of message content over time; again, this would require another selection of data and a subsequent regeneration of the set. Essentially, it is very difficult to anticipate what any particular subset of word frequencies would be of interest; for this reason, the ad-hoc approach is currently employed.

Future work should focus on the difficult question of natural language processing. As argued in Verspoor et. al., by developing an ontology, the data set can be annotated with the proper terms and definitions, and “serve as input to a learning algorithm that aims to generalize from the original examples by determining commonalities among them through their linguistic properties”.<sup>104</sup> By doing so, progress could be made beyond simple “tag cloud” structures and actually hint at overall structure of the conversation. As noted by Morozov, this is a profound challenge, as “by its very design Twitter only adds to the noise: it's simply impossible to pack much context into its 140 characters,”<sup>105</sup> and without that context, NLP would be exceedingly difficult.

Additionally, by building an ontology of Twitter messages for the purpose of NLP, it would likely be possible to abandon ad-hoc word frequency charts altogether. A network of content linked by the actual meaning of the content itself would likely allow for further filtering by subsets of users or time without cumbersome implementation. Eventually, the core goal of any study using large data sets like the current one is to understand not only the basic metrics and quantitative information associated with the data set, but the qualitative nature of what is being said, both on the macro and micro levels. In this way, the language based analysis is far from complete; it is fairly cursory. By expanding on methods of automating the process of querying qualitative information, both the degree and speed at which researchers will be able to interpret the data will increase.

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<sup>104</sup> Verspoor, et. al.

<sup>105</sup> Morozov 2009, 12



## Standardization and Reproducibility

The work above would be of little use if similar analyses of social media platforms such as Twitter could not be replicated and tested by others. As such, TwitterGrab, a distributed-computing Twitter collection utility, was developed. With this initial study, one computer was polling Twitter, then storing the data in flat files. TwitterGrab, when complete, will feature a front end which researchers interact with, and will manage the collection of tweets for a given term automatically.<sup>106</sup>

Without going into too much detail, a quick overview of the current program should help illustrate the ease in which future work will be able to replicate methodologies as outlined above. As a useful contemporary example, a researcher wants to investigate the network of tweets surrounding the earthquake in Haiti in January 2010. As the situation is unfolding, they would submit a “Scrape request” for the word “Haiti”, and specify a time at which the Scrape request will end ( ex: “I want to collect every tweet that includes the word ‘Haiti’ for the next two weeks.”). The program then determines the priority of this Scrape request (a function of how much traffic is currently surrounding that word, if it is on the trending terms list, etc...) and assigns a priority ranking to the Scrape. The working cluster, a group of any variable number of machines residing within any network which has Whitelisted IP’s,<sup>107</sup> will then collect the list of currently active Scrapes, and select one Scrape based on its priority ranking.

A Scrape can be flagged as a “simple” Scrape, a “user” Scrape, or an “analytical” Scrape. Simple Scrape requests will, upon selection, instruct the working machine to query the Search API with the given Scrape.term (“Haiti”), then bulk upload the set of returned data to a database, flagging it with the appropriate identifiers to assign it as that particular Scrape’s data. When the time runs out (`Time.now >= Scrape.length+Scrape.created_at`), the tweets will be exported to

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<sup>106</sup> TwitterGrab’s front-end is temporarily located at <http://Twittergrab.devingaffney.com>, and is being developed in coordination with the Web Ecology Project. The project is Creative Commons, and, when complete, source code will be available, as well as the ability to conduct research on the system itself.

<sup>107</sup> Reasonably, Twitter rate-limits requests to its Search API to 150 requests per hour. In order to raise this limit, one must request a Whitelisting, where the user specifies the IP to Whitelist, and, pending approval, Twitter raises the number of requests for that particular IP to 20,000 requests per hour. As the Search API can return 100 tweets per request, the maximum limit of tweets collected per hour is 2,000,000, well above any reasonable search; at it’s peak, Mashable reported the tweets per hour for #iranElection as 221,744 tweets on June 16, 2009 (Parr 2009).

raw CSV, zipped into a single file, placed on the front-end server, and a cron job will send an e-mail to the researcher with a link to this zip file.

If the researcher selects the “user” option, a similar workflow will occur: when the time is up, the cluster will then work through the recorded tweets and collect user information for every user in the set. Similarly, if the “analytical” option is selected, the cluster will, at the end of the user collection or timer length (depending on whether or not this was a “user” scrape, as these are not mutually exclusive options), begin to analyze the data set. Included in this is the creation of a range of basic Graphs as outlined in the histogram-based analysis as well as the GraphML network graphs based on the varying time granularities. Similarly, this data will then be collected in CSV’s and GraphML’s, zipped into a single file, and placed on the front-end server. At this point, the researcher will receive an e-mail directing them to the download link.

By providing the raw data along with initial analysis, the hope is that rapid prototyping of different research projects will occur. If the barriers of data collection in this new process are low, then more questions will likely be treated as reasonable research topics.<sup>108</sup> Clearly, a tool accomplishing these goals would be useful. Currently, more work is being done in the way of optimization and scalability, as these issues will become relevant very early on. When it is complete, however, it is expected that the tool will be available to any user who agrees to terms and conditions which outline the appropriate and intended use of the program and subsequent data generated from it.

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<sup>108</sup> If, for example, someone without an adequate programming background, or with little understanding as to how to conduct such a collection process, wanted to research a question that had little support outside of their own work, a request could be posted to TwitterGrab, and the very technical and tedious process of data collection will be abstracted for the researcher.

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