SOCIAL MEDIA, ELECTIONS, AND DEMOCRACY IN WEST AFRICA

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SOCIAL MEDIA, ELECTIONS, AND DEMOCRACY IN WEST AFRICA

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SUMMARY

Today is an exciting time to be a political activist in sub-Saharan Africa, particularly for the technically inclined. New media technologies including the mobile phone, the Internet, and social media are proliferating rapidly and their potential as potent political tools is being realized. While 2012's Arab Spring in North Africa captivated the world, similar campaigns have been occurring south of the Sahara both before and since. But the embrace of social media for political ends raises the question of how, if at all, these new media actually perturb the political landscape. These questions have been well-studied in Western contexts, but remain virtually unexplored in developing regions where traditional media are scarcer, democracies are younger, and the effect of social media on politics has the potential to be quite distinct.

This dissertation explores these questions by focusing on social media use during elections in Nigeria and Liberia in 2011. It asks how social media impacted the democratic process during these key events, and compares social media discourse to formal election monitoring operations. The findings suggest that given sufficient civil-society coordination, social media can be an effective tool for electoral scrutiny. Furthermore, for this and other reasons, it appears that social media has the potential to emerge as a key influence on public faith in electoral processes.

Based on these results, it is further argued that social media's true disruptive power in developing world contexts lies in its ability to transcend the economics of scarcity that have dominated traditional media in such contexts. This observation is offered as an extension to the networked public sphere theory of Yochai Benkler that frames this work.

CHAPTER 1

INTRODUCTION

Today is an exciting time to be a political activist in sub-Saharan Africa, particularly for the technically inclined. New media technologies including the mobile phone, the Internet, and social media are proliferating rapidly and widely, and civic groups of all stripes are adopting these technologies as a key part of their activism. Social media, which includes Twitter, Facebook, YouTube, and other platforms, has emerged as a potent organizing tool. While 2012's Arab Spring in North Africa captivated the world, similar campaigns have been occurring south of the Sahara both before and since.

The embrace of social media by political activists raises the question of how, if at all, these new media actually perturb the political landscape. Do they fundamentally enhance democracy or are they simply the totems of a younger elite (or both)? Are they a genuine threat to entrenched power structures or are they more likely to be co-oped by those same structures (or both)? These questions have been studied to a considerable degree in Western contexts, but remain virtually unexplored in developing regions where traditional media are scarcer, democracies are younger, and the effect of social media on politics has the potential to be quite distinct.

This dissertation explores these questions by focusing on one of the most important democratic events in any country, the general election. Opportunities abound for networked technology to bolster the democratic process in many sub-Saharan African nations. Activists have employed various technologies for awareness building, voter education, results tracking, and combatting electoral malfeasance. Elections are also a boom time for discourse on social media in many African nations, as citizens review

their electoral choices, encourage each other to vote, and report what they are seeing. Elections therefore serve as an excellent lens on the broader phenomenon of social media and politics.

The vibrancy of social media during elections suggests that younger generations see the general election as a key moment for democratic advancement and accountability, and social media as a key tool to achieve it. But a deep understanding of the interactions between social media and extant political structures is needed for such efforts to be maximally effective. The first question addressed by this dissertation is therefore:

> *Question 1: How, if at all, does social media impact the electoral process in developing regions?*

This question is addressed through a multiple case study of elections in Nigeria and Liberia in 2011.

This dissertation also examines the pervasive practice of formally structured election monitoring (hereafter referred to as *formal* election monitoring), which long predates the creation of the Internet. This institution may now be seen as somewhat in conflict with more loosely structured, social-media-based election monitoring efforts (hereafter referred to as *social* election monitoring). Indeed, some civil society groups are increasingly turning to social media technology as a means to crowdsource the election monitoring process, and social election monitoring has been the subject of some of the most ambitious technology-oriented civil society activity in the region. Are costly international monitoring teams really needed when millions of citizens are equipped with camera phones? Is social election monitoring a reliable system? Opinions have been voiced on either side of the debate, but to date there has been no systematic comparison. The second question asked by this dissertation is thus:

Question 2: How does the information generated by social media and formal election monitoring compare, specifically in developing regions?

This question is addressed with a textual analysis of data collected from social and formal election monitoring operations in Nigeria and Liberia in 2011.

The third chief inquiry pursued in this dissertation is an introspective one. I contemplate my experiences as an interventionist researcher of information and communication technologies for international development, with particular focus on the relationship between my technical abilities, my research community, and the character of project agendas. I ask:

Question 3: What are the ethical issues involved with developing new technologies in a developing-world context for the purposes of academic research, and how can these issues be addressed?

This inquiry leads me to the proposal of a codified approach to research of this sort, which I call *reciprocal action research*.

1.1   Theoretical Framing

The principal theoretical device framing the work presented in this dissertation is the networked public sphere as described by Benkler (2006).

The public sphere portion of this term refers to the set of social spaces in which citizens set forth and develop opinions and points of view on political issues, eventually coalescing into what might be called public opinion. Ideally these views culminate in real effects on public policy. Public spheres have taken many different forms historically as media technologies have developed. Much romanticized are the unmediated agoras of ancient Greece and Rome. Habermas also famously examined the bourgeois public sphere of 18th century Europe, in which a limited print media featured importantly. The mass-mediated public spheres of the 20th century saw public opinion increasingly developed and influenced by radio, television, and widely circulated

print media. Benkler sees the emergence of low-cost networked technologies—chiefly the Internet—as ushering in an entirely new type of networked public sphere, with far-reaching implications.

Benkler's theory is perhaps best understood in opposition to the mass-mediated public sphere in which the production of information was centralized—controlled by a repressive government or an increasingly concentrated cadre of powerful and private media organizations—and unidirectional—broadcast to passive recipients with little or no opportunity for audience input. As Benkler says,

> "The structure of the mass media resulted in a relatively controlled public sphere . . . with influence over the debate in the public sphere heavily tilted toward those who controlled the means of mass communications."

According to the theory, the proliferation of the Internet has led to a major shift in this structure. Certainly, the mass media continues to play a central role in the public sphere as print and broadcast media still enjoy large audiences. Furthermore, mass media players have themselves engaged heavily, and often successfully, with each successive networked media phenomenon that has arrived. For instance, many of the most popular blogs, viral videos, and Twitter feeds are controlled by large media corporations, despite their delivery through new media channels. However, Benkler argues that the availability of low-cost networked technologies offers a critical alternative venue for large scale public discourse, and thus that networked public sphere "offers significant improvements over one dominated by commercial mass media", despite the continued prominence of the latter.

Similar themes are explored by other authors. Shirky (2008) argues that the Internet transforms group organization in the same way that the telephone enabled greater individual communication. One of the consequences, he claims, is the potential for deep changes in the modern democratic process. In one of the earliest and perhaps

most prescient works on the topic, Rheingold (2002) surveys the then-emerging landscape of mobile, ubiquitous technologies and introduces the idea of the smart mob. He recounts one of the first major political casualties of the new networked sphere, the Estrada regime of the Phillippines, which was unseated with the help of an SMS campaign (p. 157). Even Castells, though not explicitly constraining his logic to the political sphere, offers that: "The advantage of the Net is that it allows the forging of weak ties with strangers, in an egalitarian pattern of interaction where social characteristics are less influential in framing, or even blocking, communication." (Castells, 2000, p. 388) Such realignments of the social calculus cannot but have an effect on the prevailing political order and public sphere.

Benkler (2006) also recounts several examples of this phenomenon. Agitation on the Internet against a perceived political bias on the part of a major US broadcaster (Sinclair Media) resulted in a plummeting stock price and a major reversal in policy. Independent investigations shared and preserved online revealed major problems with voting machines made by Diebold, Inc. More recently, an outcry online defeated the SOPA and PIPA copyright bills in the U.S. Congress (Benkler, 2012). The prominence of the whistleblowing website Wikileaks in recent years is another significant demonstration of the power of the networked public sphere (Benkler, 2011a).

These examples illustrate what Benkler lists as the two chief functions of the networked public sphere: "to offer a platform for engaged citizens to cooperate and provide observations and opinions, and to serve as a watchdog over society on a peer-production model", or more briefly, what might be called the *deliberation* and *watchdog* functions. The watchdog function is perhaps the more visceral and dramatic of the two, and based mostly on criticism, and geared to limiting abuses of power, whereas the more generative deliberation function is essential in developing public opinion and policy alternatives.

In the specific case of an election, both of these functions may be broadly exercised.

The public sphere as watchdog generates and distributes information concerning the conduct of the election collected from civil society groups, private citizens, and other sources. As will be seen in this dissertation, the Internet has greatly expanded this capacity. Meanwhile, the public sphere as deliberative space is a key site for discussion of the merits of contesting candidate and parties. The election, as the canonical democratic event, is therefore also prime time for the public sphere.

However, the extent to which this is true, and indeed the very character of the networked public sphere, varies by country. It is important to remember that as political reality varies greatly from nation to nation, so too does the nature of the public sphere and the role of networked technologies within it. As Benkler says: "The Internet's effect on the public sphere is different in different societies, depending on what salient structuring components of the existing public sphere its introduction perturbs." In authoritarian countries, the main disruptive effect of the Internet is to make control of the media more difficult. In more liberal societies, the effect is to lower the economic cost of participation and enable new organizational forms. The effect on developing nations—such as those examined in this dissertation—that are dominated by economic scarcity, patronage, and foreign aid is likely to be different as well.

Notably, the character of the public sphere can also vary between different social groups within a given nation. For instance Shaw & Benkler (2012) show that the left-wing blogosphere in the U.S. exhibits a more discursive and participatory character (e.g. fewer blogs with sole-authorship, more fluid boundaries between primary and secondary content) than does that of the right.

The effect of these caveats is to remind us that while the Internet is capable of novel and substantial democratizing effects on the public sphere, the specific nature of these impacts, and whether they even come to pass, is determined to a large extent by the social and political realities of the context at hand. One goal of this

dissertation is to broaden understanding of the impact of networked technologies—specifically social media—on public spheres in regions where the mass media has historically been constrained not by corporate oligarchy or authoritarian control, but by economic scarcity.

1.2 Background

This section presents vital background information on the sites, elections, approaches to election monitoring, and partner organizations that feature in this dissertation.

1.2.1 Sites

The present work concerns 2011 national elections in Liberia and Nigeria, two West African nations.

1.2.1.1 Liberia

Liberia is a small country of approximately four million. Long inhabited by a constellation of African tribes such as the Kpelle, Bassa, and Mandingo, it was founded as a modern state in 1847, the first independent state in Africa (Clegg, 2004).

The country suffered two devastating civil wars from 1989–1996 and 1999–2003 in which nearly 250,000 people were killed and a further one-third of the population was displaced either internally or externally. A tenuous peace was established in 2003 and democratic elections were held in the fall of 2005 resulting in the selection of Africa's first elected female head of state, President Ellen Johnson-Sirleaf (see Ellis (2007) for a thorough review of the Liberian conflict).

Liberia's technological capacity has been minimal owing to its still-recovering post-war economy. Internet use was reported at 3% of the population in 2011 (ITU, 2013b), among the lowest in the world. Nonetheless, use of social networking services, especially Facebook, has grown rapidly in recent years. People access their Facebook accounts through office connections or slow shared connections in Internet cafés. The

vibrant diaspora community is also well represented online. A recently-landed submarine fiberoptic cable promises to further enhance connectivity in the area.

1.2.1.2 Nigeria

Nigeria is the most populous country in Africa with over 160 million inhabitants, and like Liberia, it is also marked by a troubled political history. The country endured its own ruinous civil war from 1967–1970 and has passed through multiple transitions between civilian and military rule since becoming an independent state in 1960 (Falola & Heaton, 2008). Its experience with democratic elections has been marred by widespread fraud on most occasions. A notable exception to this tendency occurred in 1993's general election, widely considered at the time to have been the freest and fairest in the country's history. However, the results were annulled by the preceding military president, Gen. Ibrahim Babangida, on dubious grounds. Subsequent elections in 1999, 2003, and 2007 were viewed far less favourably by Nigerians and international monitors alike (European Union Election Observation Mission, 2007).

A key feature of Nigeria's political landscape is the persistent power struggle between the muslim-dominated North and Christian-dominated South. This rift has historically been managed through an informal power-sharing agreement within the ruling People's Democratic Party (PDP) whereby the presidency alternates between Northern and Southern candidates every eight years. However, this order was disrupted in 2011 by the out-of-turn candidacy of Goodluck Johnathan, a Southerner and former vice-president who took office when then-president Umaru Yar'adua died in 2010.

Nigeria's technical infrastructure, while more extensive than Liberia's, still leaves much to be desired. Internet use stood at 28% as of 2011 (ITU, 2013b). The number of fixed Internet connections per 100 people was much lower, at 0.14 (ITU, 2013a),

Table 1: List of all elections studied in this dissertation.

Date	Country	Election(s)
2 April 2011	Nigeria	Postponed
9 April 2011	Nigeria	National Assembly
16 April 2011	Nigeria	Presidential
26 April 2011	Nigeria	Gubernatorial, State Assembly
11 October 2011	Liberia	Presidential, Legislative
8 November 2011	Liberia	Presidential Run-off

suggesting that most Internet access in Nigeria is via shared connections (as in Internet cafés) and mobile data usage. But despite these issues of access, Nigeria boasts some of the highest social media usage on the continent (Augoye, 2012; Social Bakers, 2012).

1.2.1.3   Summary

The two chosen sites exhibit some commonalities along with some key differences. Common among them are checkered democratic experiences and histories of civil warfare. Differences include size, technological capacity, and the character of the political landscape. This choice of research sites was meant to cover a range of political situations and experiences among democratic countries on the continent and to thereby enable modest generalizations beyond the chosen sites.

1.2.2   Elections Studied

The 2011 national elections in Nigeria and Liberia were both composed of multiple rounds. The dates and specific races are given in Table 1 below. In the remainder of this section, notable elements in each process are discussed.

1.2.2.1   Nigeria 2011

The 2011 Nigerian elections were hotly anticipated as they represented a watershed moment for the nation in several ways. The old political order showed signs of transformation with Goodluck Johnathan's candidacy; years of sham elections had reached

a boiling point among the populace, most notably the youth; and the proliferation of digital technology, especially social networks, since 2007 promised to have important implications for the conduct of the vote.

The elections for various offices were slated to take place over a three-week period starting April 2. However, the first election scheduled (for the National Assembly) was postponed by the Independent National Elections Commission (INEC) when election materials were late arriving in several areas. This postponement to April 4th and a further postponement to April 9th caused much furor among the anxious populace.

On April 8th, a bomb exploded at an INEC office in Suleja, Niger State, killing 16 people (European Union Election Observation Mission, 2011a). The attack is widely believed to have been carried out by Boko Haram, an Islamic fundamentalist group based in the North (Nnochiri, 2012).

When the votes were tallied, incumbent president Goodluck Johnathan was re-elected with 59% of the vote, soundly defeating his principal challenger, Muhammadu Buhari of the Action Congress of Nigeria (ACN), with 32%.

According to the reports of international and domestic monitors along with discussions on social media, the election was not without irregularities—aside from the Suleja bombing, isolated incidents of multiple voting, underage voting, and voter intimidation were reported—but the result of the presidential contest was widely held to be credible. INEC was roundly applauded for its earnest efforts, under newly-appointed director Attahiru Jega, to conduct a transparent and accessible process. The 2011 election was considered by many the freest and fairest poll in recent history.

Tragically, though, a series of riots erupted in several locations in the country's North in the days following the presidential vote. The aggrieved Notherners claimed fraud and decried Johnathan's candidacy and victory as deeply unfair given the previous de-facto PDP power-sharing plan. INEC facilities and personnel were among those targeted. Several hundred people were killed during the multi-day period of

unrest, including ten National Youth Service Corps (NYSC) workers (also known as "corpers") who were enlisted to help administer the election (European Union Election Observation Mission, 2011a).

1.2.2.2 Liberia 2011

The 2011 national elections in Liberia represented the first major electoral test of the fledgling post-war democracy established in 2005. President Johnson-Sirleaf, standard bearer of the Unity Party (UP) stood for re-election versus a number of opposition candidates, with Winston Tubman of the Congress for Democratic Change (CDC) considered the main challenger. Elections for the Presidency, Senate, and House of Representatives were to take place all on the same day, October 11. Unlike 2005's poll, which was chiefly conducted by the United Nations Mission in Liberia (UNMIL), this election was to be run by Liberia's National Elections Commission (NEC), with only marginal support from UNMIL.

When the results were tallied, no presidential candidate had achieved the required 50% + 1 votes to win outright and a run-off election between Ellen Johnson-Sirleaf (who garnered 44%) and Winston Tubman (33%) was scheduled for November 8.

While domestic and international monitors reported no major problems with the election, Tubman's CDC party claimed that the vote had been manipulated and, after a series of negotiations, decided to boycott the run-off. On the eve of the run-off, a CDC protest clashed with police and a riot ensued. Police responded with live fire, killing at least one protester ("Liberia election: CDC Monrovia protest turns deadly", 2011). Following this incident, the sitting Sirleaf government acted to shut down four radio and three television stations considered to be pro-CDC, accusing them of broadcasting hate messages and inciting violence.

The turnout for the run-off was much lower than the first round as a result of the boycott. President Sirleaf claimed 91% of the vote to Tubman's 9%. Thankfully

there was no further violence.

1.2.3 Approaches to Election Monitoring

This dissertation features much examination of the practice of election monitoring: both its more traditional and formal variant along with newer approaches made possible by communications technology. In this section I review current best practices for each approach.

1.2.3.1 Formal Monitoring

In order to safeguard the integrity of an electoral process, the deployment of trained, impartial election monitors to observe each stage of an election has become a standard practice worldwide (Hyde, 2011; United Nations, 2005; Davis-Roberts & Carroll, 2010). Both foreign and domestic observers are typically present. This study is mostly concerned with foreign monitors for several reasons. Well-known international monitoring groups like The Carter Center set the benchmark standard in election monitoring and are often the same groups that support and train domestic monitors. International monitors can also claim a greater level of impartiality given their expatriate status and standardized methods. Furthermore, reports issued by international monitors are usually those most cited by local media in their commentary on the election.

International monitoring missions typically contain two principal phases: long-term and short-term. Long-term monitoring involves a smaller number of monitors deployed throughout the country to monitor pre-election-day aspects of the process such as campaigning, voter registration, voter education, and other preparations. Such monitors may arrive in the country months prior to election day. As the election day approaches, a larger team of short-term observers arrives and is deployed just a few days prior to balloting. Once at their areas of observation, these monitors also report on the pre-election environment. On election day, all monitors visit a series

of polling places and file checklist-style reports for each place visited. Checklists typically contain many questions on the minutiae of the process (e.g. "Were the ballot boxes properly sealed?") and the environment at the polling place (e.g. "Was the environment around the polling station reasonably calm?"). On the day after the election observers continue to witness the counting and tabulation processes before returning to headquarters.

Once the election has concluded, missions usually issue two types of report: i) a preliminary report, issued a short time after the close of voting, that summarizes findings and passes initial judgement on the election, and ii) a final report, issued upon the conclusion of the election process, usually some months after election day.

Best practices and standards for formal election monitoring have been codified and published as a Declaration of Principles and endorsed by many international bodies (United Nations, 2005). These standards are reviewed in greater detail in Chapter 5.

1.2.3.2 Social Monitoring

Social election monitoring entails the enlistment of untrained or minimally trained citizens as monitors who report what they see during the election period using digital technology. Unlike formal election monitoring, efforts of this sort do not follow any standardized procedures. Typically, they are run by a team of civil society members. The campaign is publicized in advance of the election. Citizens are sensitized as to how they can contribute. For instance, SMS short codes and/or Twitter hash tags may be promulgated, instructions for what to include in reports may be given out, and so forth. On election day, the team monitors reports as they arrive and escalates any incidents to the appropriate authority, be it the election management body, police, emergency services, or otherwise. Many initiatives also include a parallel vote tally, in which citizens are requested to report per-polling-unit results as they are posted following counting. Results are aggregated and checked against officially reported

numbers as a deterrent against manipulation of the results during collation processes.

Social election monitoring has taken several technological forms in its brief history. The crisis-mapping platform *Ushahidi* has been used in conjunction with SMS short-codes to allow citizen reporting. In Nigeria, a custom BlackBerry and Java app called *ReVoDa*[1] was developed by a local civil society group in 2011, also to facilitate citizen reporting. The expanding popularity of general purpose social networking services, especially Facebook and Twitter, has also been harnessed for the purpose of election monitoring, especially in recent years. For instance, citizens may be encouraged to make their reports directly on their own Twitter timelines using agreed-upon hash tags, or in the comment sections of specially created Facebook groups.

But the practice of social election monitoring is still a new phenomenon and new approaches continue to emerge. This dissertation is the first deep examination of the practice.

1.2.4 Partners

The research in this dissertation was carried out in partnership with two groups: *Enough is Enough*, the Nigerian youth-led democracy group, and the *Liberia Media Center*, the Liberian media watchdog organization. These groups are referred to often in the chapters to follow, so a brief introduction to both is given here.

1.2.4.1 Enough is Enough

The frustration felt by Nigerians with the corruption and ineffectiveness of their government is evident in the name of this pro-democracy group. Created in 2010, Enough is Enough (EiE) promotes good governance and public accountability in Nigeria by mobilizing young Nigerians of voting age (18–35), with an emphasis on the use of social media technologies. Several of the group's leaders are among the

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[1] http://www.eienigeria.org/revoda/

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best-known social media personalities in the country. The group came to prominence after it organized a march on the National Assembly in April, 2010 to protest the absence of then-president Yar'adua. It then orchestrated a major voter education and election monitoring initiative in 2011, dubbed "RSVP" for Register (to vote), Select (your candidates), Vote, and Protect (your vote from fraud). This campaign had a strong presence on social media, and even featured a custom-built mobile phone application called Revoda. A special Social Media Tracking Center (SMTC) was also organized to monitor popular social media platforms for signs of trouble (Asuni & Farris, 2011).

Subsequent to the election, EiE was involved in a major protest action, dubbed "OccupyNigeria by some", in reaction to the cancellation of Nigeria's fuel subsidy program. The group continues to have an active presence on social media.

1.2.4.2 Liberia Media Center

The Liberia Media Center (LMC) is an independent media watchdog and support group that emphasizes the importance of plentiful and accurate media coverage to the health of Liberia's democracy. Its initiatives have historically included regular evaluations of the nation's newspapers, radio, and television stations, and training courses for Liberian journalists on various topics. More recently, the group seems to be involving itself in first-hand reporting activities. During the 2011 election, it organized a parallel vote tally in cooperation with a coalition of reporters from various news outlets who dispatched piecemeal results to the central office via specially coded SMS.

After the election, it has spearheaded efforts to follow up on the campaign promises of the Sirleaf administration and provide easy public access to the federal budget. The LMC also embraces Internet and social media technologies, and has been home to some of the most innovative efforts in Liberia in these areas. The SMS results

aggregation system, for example, was custom-built by Liberian developers working for the LMC.

1.2.5 Summary

The question of the effect of digital technologies on democracy has been a subject of heated debate for almost as long as those same technologies existed. Its answer is complex and highly context dependent. This dissertation aims to contribute to the debate through the examination of a particular kind of technology in a particular context. The technology—social media—is one of the most democratically potent to come along in some time, as recent world events have already shown. The context—areas where traditional media have been plagued by economic scarcity—is an understudied one, even though it seems especially fallow ground for cheaper and more agile social media. What this all means for democracy remains to be seen.

The next chapter reviews related academic work on digital democracy. Chapter 3 provides an overview of the methods used in the research presented here, including a reflection on researcher positionality. Chapter 4 presents a multiple case study of social media use during elections in Nigeria and Liberia. Chapter 5 reports on a quantitative analysis of formal and social election monitoring data collected during those same elections. Chapter 6 offers a reflection on the nature of interventionist technology-for-development research. Finally, Chapter 7 concludes with a summary of takeaways and implications for networked public sphere theory.

CHAPTER 2

RELATED WORK

Digital, networked technologies have forever changed the conduct of modern democracy. These tools have been integrated into such disparate areas as political discourse between citizens, communications and interactions between politicians and the citizens they represent, oversight by citizens of the operations of the state, and public actions of protest and dissent.

Unsurprisingly, the literature examining this transformation is broad. In this section, I first review several prominent theories, aside from the networked public sphere theory described in the previous chapter, that are commonly brought to bear on discussions of digital democracy. These theories are grouped into two emergent categories: social tie theories and communicative affordance theories. I then attempt to organize the empirical research relevant to my work according to the aspect of civic life that it explores. I especially highlight research related to democratic elections and developing contexts, as both of these are central to my work.

2.1 Theories of Digital Democracy

Theories of digital democracy abound, and a full enumeration goes beyond the scope of this work. Rather, I choose to focus on two categories of theory that I judge most relevant to this dissertation. First, social tie theories are those that attend to the effect of digital communications on human social relationships as the chief mechanism of democratic impact. Second, communicative affordance theories are those that interrogate the salient characteristics (affordances) of digital tools as conduits for democratic communication. I now review theories in each of these categories.

2.1.1 Social Tie Theories

The study of human social networks lends itself readily to conceptualizations of digital politics, since politics is at its base a function of human relationships and the introduction of digital technology into the political sphere has had some of its most resounding effects in this area. Well before the birth of the Internet, Mark Granovetter introduced one of the most influential ideas in this space, the notion of the strength of social ties. He defined two sorts of social ties: strong ties, such as those with family and close friends; and weak ties, more commonly known as "acquaintances" (Granovetter, 1973).

Somewhat counterintuitively, Granovetter argued for the importance of weak ties over strong ones in producing robust political organizations in communities. Since strong ties take more time to maintain and are necessarily fewer in number, weak ties are necessary for broader cohesion in a network. Furthermore, weak ties are more likely to serve as bridges, or ties which represent the only connection between two parts of a social network. Granovetter reasoned that a strong tie can almost never be a bridge since the parties to a strong tie are highly likely to have at least one contact in common (Granovetter, 1973, p. 1365). For this reason, a paucity of weak ties in a network is indicative of cliquishness and network fragmentation, leading to political weakness. Conversely, the presence of weak ties, and especially bridges, enables a wider flow of information and ideas, which is essential to political advancement.

The Internet has shown itself to be an ideal technology for the creation and maintenance of weak ties (Donath & boyd, 2004), with dramatic effects on the shape of political organization and modern democracy. Hampton & Wellman's (2003) research on a Toronto suburb (pseudonymously dubbed "Netville") showed how neighbourhood email lists can support large numbers of weak ties that can be marshaled in service of a community movement, in this case against a planned housing project. Similarly, Haythornthwaite (2002) introduced the idea of latent social ties—those

that exist technically but have yet to be activated, such as ties between subscribers of an email list that are otherwise unknown to each other. This third category of tie may help explain digital communications success stories such as Netville where latent ties were activated through interest in a common cause. Latent ties may also explain the apparent political power of Twitter in which the entire population of users may be thought of as latently tied through the hash-tag mechanism.

Striking a more cynical chord, Gladwell (2010) invoked Granovetter's theory to argue that the preponderance of weak ties on the Internet actually has a deleterious effect on social and political activism. Clay Shirky, a leading exponent of Internet activism (e.g. Shirky, 2008), retorted that the availability of weak ties enables new strategies for organizing that have been proven effective in bringing about real change (Shirky, 2011). The concordant rise in "slacktivism" discussed by Gladwell does not detract from this, he claimed.

Though this debate at times seems little more than a modern incarnation of the now-classic dispute over technological determinism, it nonetheless demonstrates the utility of Granovetter's social tie strength theory in reasoning about online political behaviour.

Closely related to social ties theory is the notion of social capital, the idea that just as physical capital (e.g. a machine) and human capital (e.g. a university education) can be ascribed value in a capitalist economy, so too can social relationships, hence social capital. While this concept has a longer history than social ties, it has only risen to prominence within the past few decades, perhaps most famously in Putnam's widely read lament Bowling Alone (Putnam, 2001). Putnam explicitly connected social capital and political participation, warning that a withering of the former has led to a decline in the latter.

Social capital has also proven a helpful implement in theorizing about online social networks in recent years. Eric Gilbert and colleagues found that Facebook and

Twitter can serve as accurate predictors of real-world social tie strengths (Gilbert, 2012; Gilbert & Karahalios, 2009). Ellison et al. (2007) identified a correlation between Facebook use and social capital, especially the bridging variety that is roughly analogous to Granovetter's weak tie construct (Putnam, 2001).

The question thus arises: if social capital is linked to democratic vitality as Putnam asserts, and if the rise of social media has ushered in a renaissance of social capital, what does this mean for democracy? This question is just beginning to be explored. Valenzuela et al. (2009) found a similar result to Ellison et al. and called out positive correlations between Facebook use and political participation, with the disclaimer that statistical effect sizes were small. They concluded that online social networks are probably "not the most effective solution" for revitalizing democracy. While this position seems difficult to assail, the Shirkys of the world might contend that it is something of a red herring—the truly interesting question is concerns the new forms of democratic engagement enabled by social media and their capacity to support positive social change. Whether social capital is an appropriate lens through which to ponder this question remains to be seen.

2.1.2 Communicative Affordance Theories

Manuel Castells, the well-known communications scholar, was one of the first important commentators on the democratic affordances and political consequences of new media. In his foundational trilogy The Information Age he suggested that the digital age was inducing a "crisis of democracy" from which a new political logic, dubbed "informational politics," was emerging. The essence of this idea is that since electronically mediated politics usually takes on a highly simplified nature, "faked passions, hidden ambitions, and backstabbing" have become the norm. Furthermore, he argues that mastery of the media is a necessary prerequisite to political power in the age of information—the media has become the very space of politics, and politics

is "framed, in its substance, organization, process, and leadership, by the inherent logic of the media system, particularly by the new electronic media." (Castells, 1997, p. 368).

Castells' development of this theory preceded the prodigious rise of user-generated content and social media—and the affordance of interactivity more generally—but his pronouncements have retained their potency. The question, though, remains: What does new media add in addition to what it subtracts? His answer came in a later work specifically addressing these newer technologies which he calls "interactive, horizontal networks of communication." (Castells, 2007). Foreshadowing the future Gladwell-Shirky debate, he asserted that "insurgent politics and social movements" have embraced these new affordances with gusto, hastening a shift of the public sphere itself from an institutional context (town hall meetings and political parties) to this "new communication space." Castells also wisely noted a phenomenon that is routinely omitted from much contemporary discussion of social media—the high levels of investment by the corporate mainstream in this selfsame new space. Indeed, the mass media and new media are far less distinct than we may be led to believe.

The cute cat theory of Zuckerman (2008) offers a more whimsical but no less profound characterization. Zuckerman argues that the affordance of the Web 2.0 as a venue for the effortless, peer-to-peer exchange of self-produced entertainment content (most famously pictures of cute cats) is readily transformed into a conduit for activist communication and distribution of dissenting media artifacts. This logic helps to account for the proliferation of the "interactive, horizontal networks" that Castells describes, and also for the difficulties faced by oppressive regimes in attempting to restrict access to political content. In this sense, Zuckerman's theory takes a page from Kedzie's notion of the dictator's dilemma (Kedzie, 1997).

Best & Wade (2007) also touched on this concept when they, too, reviewed the

democratic affordances of the Internet. They augmented Lessig's theory of regulability (Lessig, 1999), which holds that the regulating influences (regulators) of the Internet come in four distinct categories (laws, markets, social norms, and architecture), by classifying key regulators (e.g. filtration software, Internet access price, state laws, and self-censorship) as either democratic, undemocratic, or, in many cases, both. While this theory remains neutral with respect to the ultimate effect of the Internet on democracy, earlier cross-national empirical work by the authors found a significant link between Internet penetration and democratization (Best & Wade, 2005).

In work that could offer an explanation for this result, Coleman and Blumler contended that interactive, digital media have a "vulnerable" potential for enriching democracy through improved public communications—vulnerable, they claim, because the infrastructure for realizing it is lacking. They listed four affordances of the Internet that give rise to this potential: the active quality of Internet use as compared to the more passive nature of broadcast media consumption; the opportunities for richer exchanges of ideas online; the availability of vast quantities of information at relatively low cost; and the newfound ease of two-way, peer-to-peer, many-to-many communications (Coleman & Blumler, 2009).

Their work culminated in a recommendation for a government agency tasked with promoting and moderating online political deliberation (Blumler & Coleman, 2001). In line with what seems to be the prevailing evolution of the digital democracy zeitgeist, they revised this recommendation in their more recent book (Coleman & Blumler, 2009), claiming that the original was "ignorant of networked organization [and] in danger of placing too much emphasis on a singular, univocal public." Nonetheless, they retain their advocacy of a bureaucratic approach in which their new agency would "act as a 'magnet', attracting various groups to a space where they can interact meaningfully with the government." Though this notion seems decreasingly practical

as public disillusionment with government grows, it does point to another point of media convergence in networked society: not only has corporate mass media invested in Castells' "new space", so too has the state and its bureaucracy. Indeed, Coleman & Blumler (2009, pp. 90–116), provide an excellent survey of this phenomenon.

Rooted in many of the same traditions as Coleman and Blumler, Barber's theory of "strong democracy"—which emphasizes participation over representation—was one of the first the speculate about the potential for technology to enable participatory democracy at large scales (Barber, 1984, p. 274). However, he too followed the well-trodden path to caution and restraint as technology's impediments to a purer democracy made themselves known (Barber, 1997, 1998, 2000). Among his chief concerns were the deleterious effects of rapid communication on political deliberation and the problematic ownership structure of media infrastructure (Barber, 2004, p. xv). As Barber's views remain anchored in the deliberative democratic tradition, he seems to have less to say about the role of technology in the contentious politics exemplified by the Arab Spring, or indeed about any of the transformative effects discussed in the later work of Castells or in Benkler's public sphere.

A final communicative affordance theory of which to take note is "smart mob" of prominent futurist Howard Rheingold, one of the first authors to chronicle and theorize about the social implications of the novel affordances of mobile digital technology (Rheingold, 2002). He defines the smart mob as a transformative social result of technologies that "enable people to act together in new ways and in situations where collective action was not possible before." While the new situations he surveys span the gamut of society (and are not all socially desirable, as conveyed by the term 'mob'), he appears to give special prominence to progressive political activism: the 2001 overthrow of the Estrada regime in the Philippines and the 1999 WTO protests in Seattle are two key examples. These ideas have since been echoed and expounded upon by many in this space.

Table 2: Categorizations of empirical work.

	High trust of state	**Low trust of state]**
Citizen-to-state	Politican-citizen relations	Protest and dissent
Citizen-to-citizen	Deliberative discourse	Monitoring and oversight

2.1.3 Summary

To summarize, it seems appropriate to note that the theoretical terrain of digital democracy, whether examined from the perspective of social ties or communicative affordances, is marked by a persistent tension: between techno-determinism and social-constructionism; between enlightenment-style exuberance and postmodern critique; and between those who seek to modernize classic democratic ideals and those who foresee new societal structures. These tensions are no doubt healthy and indicative of an area of societal experience that is still being worked out, both in the wild and in the laboratory. The goal of this dissertation is to contribute to both these processes of negotiation.

2.2 Empirical Research

In this review of empirical research of digital democracy, I divide the intellectual space into four quadrants, as shown in Table 2.

This categorization is situated along two dimensions. The first concerns the level of trust—low or high—exhibited by the studied activity towards the state and its orthodox democratic system. The second dimension accounts for the parties to the activity—whether the messages exchanged flow chiefly between citizens, or between citizens and the state. The four categories are as follows.

Politician-citizen relations. This category refers to digital relations between citizens and their elected or aspiring representatives that exhibit a high level of trust

in the state. Typical examples are online legislative consultation programs and campaign activities. I also place petitions and contact-your-representative campaigns within this category since while nominally contentious, they are premised on a basic belief in the responsiveness and propriety of the political system.

Protest and dissent. This category encompasses contentious political actions that exhibit less trust in orthodox democratic channels to respond to grievances, such as digitally coordinated mass protests and hacktivism. While such actions are of course partially intended as appeals to fellow citizens to join the cause, their ultimate audience is usually the state.

Deliberative discourse. Many contemporary idealized notions of democracy stress the importance of an informed public that regularly considers issues and provides input to policymaking. This category covers efforts to digitally enact this ideal.

Monitoring and oversight. Whereas the act of deliberation encodes a mostly trusting attitude to the democratic system, a more skeptical stance is sometimes appropriate. This category encompasses the use digital technologies to surveil the state's activities in various arenas.

I note that this taxonomy does not make space for digital bureaucratic initiatives, or what is often referred to as "e-government." While a case can be made for the inclusion of e-government research under the umbrella of digital democracy, I avoid such work here since I am chiefly concerned with political activity, and bureaucracy is an ideally apolitical enterprise (J. Wilson, 1991).

I now review research in the above four categories, placing emphasis on any work that deals with elections and developing world contexts.

2.2.1 Politician-Citizen Relations

The proliferation of digital communications technologies has had a broad impact on the way citizens interact with elected representatives and aspiring candidates.

As early as 2001, some in the UK were proclaiming their "first Internet election," although the limited interactive affordances of the Internet at that time meant that online political advertising was the extent of online engagement (Coleman, 2001). By the time of the 2004 US elections, interactivity had increased, and candidates ran websites with interactive features soliciting participation (donating, volunteering) and blogs with comment sections Trammell et al. (2006). In particular, Democratic primary candidate Howard Dean's campaign, though ultimately unsuccessful, was widely celebrated for its pioneering use of the Internet to solicit donations and recruit volunteers. Hindman (2005) suggests that Dean's chief innovation in this regard was to harness the Internet as a streamlining tool for campaign logistical operations (especially fundraising and recruitment) rather than just as a conduit for distribution of political messaging to voters. Again in the US, the Obama campaign of 2008 used and expanded upon these same tactics, extending them into social media services such as MySpace, Facebook, and Twitter, that had emerged since the 2004 polls (Greengard, 2009; Miller, 2008).

Despite issues of limited access, digital campaigning has also taken hold in some parts of sub-Saharan Africa. As far back as 2000, Zimbabwe's opposition MDC party had used email and websites in its legislative and presidential election campaigns. Interestingly, though, this tactic was primarily intended to circumvent the regime's tight hold on traditional broadcast media and distribute information to spectators abroad: members of the Zimbabwean diaspora, foreign press, and human rights organizations L. Moyo (2009). This stands to reason as the MDC's campaign was as much an exhortation for foreign solidarity and support as it was a genuine domestic appeal for votes, given the corrupt nature of the nation's electoral system and the persistent threats of violence toward perceived MDC supporters.

While the use of mobile digital technology to both incite and resist violence drew

much attention in Kenya's disputed 2007, Nyabuga & Mudhai (2009) report that candidates had embraced the new technology for campaign purposes as well. President Mwai Kibaki's campaign claimed a "high-tech communications network" that took the use of "short text messages and satellite telephones in electioneering to another level."

Social media, too, are being used for campaign purposes in many states. Perhaps most famously, current Nigerian president Goodluck Johnathan first announced his 2011 candidacy on Facebook (Nwakanma, 2011), a move widely considered to be an overture to Nigeria's huge urban youth population among which Facebook and Twitter enjoy great popularity.

Whilst campaign interactions typically flow from politicians to citizens, communications in the other direction, from citizens to politicians, often take the form of petitions and representative contact campaigns (those in which citizens are urged to write, call, or email their elected representatives in support of a cause). Digital technologies have also had profound effects on this modality of communication. For instance, Coleman & Blumler (2009) reported on the use of the web by the UK's Stop the War campaign, organized against the US/UK invasion of Iraq in 2001, to facilitate name gathering for petitions and sending of letters to members of parliament. In a broad survey of what they term "e-tactics", Earl & Kimport (2011) emphasized that the Internet has fundamentally changed the character of petition and representative contact campaigns as "parties of one, two, and three, and drastically small teams, can now organize online using e-tactics." This is because, they claim, the Internet makes "organizing inexpensive enough that it can begin to follow power-law dynamics in some cases," that is, the cost of running an Internet based petition campaign is so low that the bulk of the investment can be borne by one or a small group of individuals. This is in contrast to traditional, more costly forms of organizing where a significant investment in time and/or funds is required of many more participants.

Earl and colleagues have also studied the nature of online petition activity in youth culture, finding it mostly directed to non-political, cultural causes requests for band tours and movie sequels (Earl & Schussman, 2007), and structural questions around the use of "e-tactics", including the nature of the online infrastructure that supports such engagements (Earl, 2006).

There is a dearth of scholarly research examining online petitions and representative contact campaigns in sub-Saharan Africa and indeed, personal experience suggests that such campaigns are not common in the region. This is possibly the combined result of inadequate Internet access and a lack of faith in the responsiveness of government, though further research would be needed to confirm this suspicion.

A third class of digitally mediated politician-citizen relations ideally involves a bidirectional exchange between these two groups and is most commonly referred to as online consultation. Scholarly excitement this idea—use of the Internet to enable large scale public consultations on policy issues and usher in a more participatory form of democracy[1]—seems to have peaked around the early-2000's. Notable experiments took place in Germany (Lührs et al., 2003) and the UK (Coleman & Blumler, 2009, p. 91). Fishkin's deliberative polls could also be seen as a form of online consultation (Fishkin & Luskin, 2005). However, eliciting meaningful participation from an often skeptical and otherwise occupied populace is challenging, and online discussions of this sort tend to be dominated by the more educated and articulate participants (Coleman & Blumler, 2009, p. 99).

At the extreme of online consultation is digitally mediated direct or plebiscitary democracy in which digital communications enable citizens to regularly vote their

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[1]There is some overlap between the notion of online consultation and the theory of deliberative democracy which is discussed in the next subsection. Some visions of online consultation include substantial citizen-to-citizen interaction that amounts to deliberation. However, online consultation, as defined in the present taxonomy, does not require it.

positions on policy issues, with the results of these frequent plebiscites binding on the legislature (Budge, 1996). This approach is also not without its critics (e.g. Barber, 2004, p. 149), who worry that "Instant polling via the Internet is less a recipe for strong democracy than for plebiscitary tyranny."

In any case, online consultation in any form has not seen significant adoption to date. While politicians have flocked to the Internet as a potent organizing and messaging tool during campaigns, when it comes to drafting policy, traditional, representative processes remain the norm.

2.2.2 Protest and Dissent

Research on digitally mediated protest and dissent spans a wide array of movements and political environments, including non-democratic ones. Openly repressive regimes are examined, including online dissent in China (Chase & Mulvenon, 2002; He, 2008) and the prominent use of social networking technologies in the Egyptian and Tunisian revolutions (Lotan et al., 2011; Starbird & Palen, 2012; C. Wilson & Dunn, 2011). Digital protest in more nominally open environments has also been studied, and it is revealing that in many cases the true power of digital tools in this context is revealed through their use against the less overt forms of repression that are present in such societies. For instance, the campaign by privacy activist groups against Intel's PSN scheme stood up to what some considered a dangerous step toward "ubiquitous monitoring" (Center for Democracy and Technology, 1999; Leizerov, 2000), and the embrace of the internet by the Dutch women's movement subverted male-dominated control of traditional media (Edwards, 2004). The successful protests against the SOPA/PIPA copyright legislation in the U.S. could be seen as another poignant example of this (Benkler, 2012).

Studied movements also tend to lie on the left of the political spectrum. Examples include the far-left ideology of the digital dissent pioneering Zapatistas (Cleaver Jr,

1998; Garrido & Halavais, 2003), Elin's compelling story of the internet-based path to left radicalism taken by a young American male (Elin, 2003); Klein's assertion that 21st century anti-corporate activist groups have come to resemble the networked technology they employ (Klein, 2000); and Jordan and Taylor's tales of hacktivists who dwell mostly on the far left (Jordan & Taylor, 2004). This is not to say that conservative activists are failing to adopt digital tactics, but simply that such work seems to be given less attention in academic writing.

A final tendency in this literature seems to be, much in the same vein as Benkler's theory, an optimistic stance toward the potential for digital communications to invigorate contentions political activity and spur progressive social change (Benkler, 2006, p. 212). Even in the account by Goldstein and Rotich of digital technology's role in Kenya's violent post-election protests, the primary focus is on the citizen journalism and human rights movements that sprung up in response to the turmoil (Goldstein & Rotich, 2008).

The digital protest literature can also be examined according to the technological artifact under study, which, unsurprisingly, has evolved with the rapid change of available consumer technologies. Perhaps one of the earliest papers on the topic dealt with "computer networks", and was positioned largely as a call to action for researchers of the then-emerging phenomenon of the Internet (Myers, 1994). In some of the earliest case-study research in this area, several authors discussed the role that Usenet groups, email lists, and chat rooms played in early digital activism (Blood, 2001; Cleaver Jr, 1998; Danitz & Strobel, 1999; Pini et al., 2004; Wall, 2007).

The rapid proliferation of the World Wide Web had serious consequences for digital protest and dissent, especially with the advent of user-generated content mechanisms. Bulletin boards and forums were among the earlier such technologies studied (Chase & Mulvenon, 2002; Nip, 2004). Blogs, which rose to prominence in the early 2000s, have also been fairly well-examined (Bennett, 2003; Kahn & Kellner, 2004), as has

YouTube (Askanius & Uldam, 2011; Thorson et al., 2010; van Zoonen et al., 2010).

Meanwhile, the explosive growth of the mobile phone has inspired a significant amount of activism-related scholarship (Miard, 2012; Zuckerman, 2007), with special attention given to SMS as a potent, low-cost organizing tool (Celdran, 2002; Ekine, 2009; He, 2008; Hirsch & Henry, 2005; Rheingold, 2002).

Social media such as Facebook and Twitter represent the latest major technological paradigm to be studied in terms of affordances for online protest and dissent (Lotan et al., 2011; Starbird & Palen, 2012; C. Wilson & Dunn, 2011). However, only a small amount of scholarship, most of it in the form of quantitative analyses, has so far emerged. My work will be one of the first deep qualitative examinations of the use of social media for activist ends.

2.2.3 Deliberative Discourse

One significant trend in empirical digital democracy research has been the evaluation of networked technologies as a conduit for deliberative democratic discourse. This work has taken the form of surveys, practical experiments, and design projects. But in order to contextualize these explorations, a review of the foundations of deliberative democracy is in order.

Theories of deliberative democracy hold that democracy is most effective when, beyond the singular act of voting, the public is also empowered to regularly ponder the issues of the day with an expectation of the opportunity for meaningful input to the policymaking process. Such theories stress the value of careful, informed contemplation, diversity of opinion, equal consideration of differing views, and mutual respect as requisite for just governance (Cohen, 1989; Fishkin, 2009).

The postulated mechanism of public input varies. James Fishkin, a leading proponent, argues for direct participation and has developed the Deliberative Poll methodology in which a statistically representative sample of citizens are assembled to deliberate over an issue (Fishkin & Luskin, 2005). The results of these deliberations can be used as recommendations or binding decisions. Many real world Deliberative Polls have been conducted (Cavalier, Attari, et al., 2009; Center for Deliberative Democracy, 2009). Unsurprisingly, the Internet has been explored as a venue for this activity, as an alternative to face-to-face meetings (Fishkin et al., 2005; Iyengar et al., 2003).

In general, the attractiveness of the Internet and other networked technologies to deliberative democratic theorists arises from the problem of scale. Whereas the archetypal deliberations of ancient Greece involved the small populations and geographies of the era, modern day deliberative efforts must contend with vast polities. The Internet holds promise as a channel for rich interactions without the constraint of physical colocation (Coleman & Gotze, 2001).

A persistent theme in this literature is the observed gap between deliberative ideals and the realities of Internet discourse, including:

> . . . the increasing colonization of cyberspace by state and corporate interests, a deficit of reflexivity, a lack of respectful listening to others, the difficulty of verifying identity claims and information put forward, the exclusion of many from online political fora, and the domination of discourse by certain individuals and groups. (Dahlberg, 2001b)

Prescriptions for overcoming these barriers have included techniques for attracting participation (Dahlberg, 2001a), special attention to design considerations (Wright & Street, 2007), the promotion of transnational versus cosmopolitan identity (Bohman, 2004), careful consideration of the political psychology of users (Lupia, 2009; Witschge,

2004), or even a national holiday set aside for deliberation, either online or in-person (Fishkin, 2000).

Several researchers have also developed novel online deliberation tools. In one of the first such attempts, Noveck (2004) introduced Unchat, a discussion platform that attempts to remedy "the loss of visual signals and etiquette when conversation is moved to the web." She stressed the importance of democratic intention during system design. The PICOLA system (Public Informed Citizen Online Assembly) enables synchronous deliberative interactions using video and audio. Researchers showed that it supported similar outcomes to face-to-face deliberations (Cavalier, Kim, & Zaiss, 2009). e-Liberate is an online implementation Robert's Rules of Order, a detailed set of roles and directives for the governing of formal meetings D. Schuler (2009). No formal evaluation of that system has yet been performed. Furthermore, none of these tools are in active use today. The only systems still in operation that have received attention from the research community seem to be basic technologies like message boards and forums (e.g. Aikens, 1998).

The initial enthusiasm around structured online deliberation spaces such as these has faded in recent years as spaces of this sort have not seen significant implementation beyond the experimental. The concept is also not without fundamental criticism. Young argues that the formulation of deliberative democracy embraced by these platforms demands that discussants "leave behind their particular experience and interests" and privileges rational-critical debate above all other styles of interaction (Young, 1996). She proposes an alternative "communicative" democracy that is more sensitive to the class, gender, and race of its participants. Perhaps more caustically, Posner senses in exhortations for deliberative democracy "a power grab by the articulate class whose comparative advantage is—deliberation". Meanwhile, the academic literature seems to have shifted away from the topic in recent years, seemingly in favour of digital activism and the potential of the Internet to foment

political change by more contentious means.

Nonetheless, the pursuit of deliberative-by-design online spaces appears to have been a necessary experiment in the broader exploration of digital democracy. The benefits might have been formidable had the idea seen more success. As it stands, the lessons learned in the process—the resistance of citizens to highly structured conversation spaces, the tendency for Internet discourse to replicate societal pathologies—will inform the next generation of research in this space.

The majority of online deliberation research has been situated in the Western democracies of the U.S. and Europe. Several exceptions to this trend may be noted. Thakur, for instance, explored deliberative practices in Caribbean online discussion forums (Thakur, 2012). Especially relevant to the present dissertation is Walton and Donner's review of mobile-mediated political participation during South Africa's 2009 national elections (Walton & Donner, 2009). They found that the event of the election generated a flourish of political engagement on mobile chat services such as Mxit, but that this enthusiasm toward politics did not endure beyond the election. Indeed, online deliberation may be a more challenging proposition in developing contexts given reduced levels of connectivity and education.

It is also important to remember that a more organic form of online deliberation that is carried everyday on familiar general-purpose channels such as social networks, online forums, mailing lists, chat services, and so forth. Common experience suggests that this less structured type of deliberation represents a fundamental societal role played by the Internet. The vibrant online debates around issues such as SOPA/PIPA, Kony2012, the Aaron Swartz case, and so many other issues are demonstrative of this.

2.2.4 Monitoring and Oversight

When citizens speak to each other with a less trusting or more vigilant attitude toward their democracy, the result is agitation for citizen-led monitoring and oversight of the

government's activities. Digital technologies are proving well-suited to some aspects of this task. In this review of academic literature on the subject, I focus specifically on efforts targeted toward elected officials and political candidates; the bureaucracy is also a frequent target for such scrutiny, but such efforts stray into the field e-government and thus go beyond the scope of this dissertation.

Perhaps the most prominent example of the power of digital scrutiny is Wikileaks, the famous whistleblower site that has released millions of leaked documents, mostly from the US. Benkler recounts how the threat of Wikileaks is so great that it has spawned or invigorated new tactics for extra-legal regulation of the Internet by the state (Benkler, 2011b). Meanwhile, the quantity of data Wikileaks has made available is so formidable that third-party search and exploration tools have been created[2].

Beyond whistleblowing, Bertot et al. (2010) provides a helpful list of the transparency-enhancing services that digital technologies can convey. They include: providing information about government decisions and actions; promoting monitoring of government actions and expenditures; identifying elected officials and civil servants under investigation for corruption; and disclosing of assets and investments of elected officials and civil servants. While (unlike Wikileaks) many of these services are provided or enabled by government, it is the exhortations of citizens that undoubtedly brought them into existence, and it is the sustained scrutiny of citizens that unearths meaningful insights from the vast quantities of information that may be available.

Sites that fit these categories have proliferated in recent years, and a limited amount of academic research has taken notice. For instance, a recent ACM panel featured Josh Tauberer, founder of Govtrack.us, one of the first online tools for tracking voting records and other representative activities (Washington et al., 2012). Chadwick (2009) reviewed several similar sites including TheyWorkForYou.com, which describes

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[2]See for example `http://cablegatesearch.net/`

itself as "Keeping tabs on the UK's parliaments & assemblies", and TheyRule.net, a graph exploration tool that visualizes connections between directors of the biggest US corporations and non-profits, many of whom have political ties. The US government, in line with President Obama's stated commitment to transparency, has made a substantial quantity of government data available through sites like Recovery.gov and USAspending.gov (Bertot et al., 2010). Some US states have also embraced this trend—Akin & Castellon (2011) describe recent initiatives in Texas, for instance. While these efforts are laudable, there has been some scholarly criticism of the way in which data is being shared—it tends to be not easily accessible or searchable (Brito, 2007), stored in proprietary formats (Bizer, 2009), and scattered across a highly heterogeneous set of infrastructures (Robinson et al., 2009). Many recommend a turn towards the Linked Data standards championed by Tim Berners-Lee and colleagues (Bizer et al., 2009) as a solution, and propose engineering techniques for doing so (Ding et al., 2010; Maali et al., 2010; Omitola et al., 2010).

Some efforts to enact digital scrutiny have also surfaced in developing contexts. Even the presence of SMS infrastructure as potential carrier of viral government criticism is potent. For instance, in 2010 a message decrying the compensation of Nigeria's National Assembly members went viral:

> "Do you know that it costs tax payers 290m Naira ($1.38 million) yearly to maintain each member of our National Assembly in a country where nothing works & 80% of population earn below 300 Naira ($1.90) a day? A working day earning of a senator is more than a yearly income of a doctor; it's more than the salary of 42 Army generals or 48 professors or 70 commissioners of police or more than twice the pay of the US president or 9 times the salary of US congressmen. Please say NO to looting of Nigeria in the name of democracy by sending this text to at least 5 others."

More recently, entrepreneurs in Nigeria created a federal- and state-level budget

tracking system called BudgIT[3]. A similar tool, tracking the campaign promises of the Johnson-Sirleaf administration, was developed in Liberia[4]. One paper examines a corruption reporting system in Kenya (Schuppan, 2009), reporting some modestly encouraging results. However, academic work examining initiatives like these in developing contexts is sparse.

In fact, academic research exploring the effects and impact of e-transparency services is sparse the world over. Bertot Bertot et al. (2010) argues that measuring the success of such tools is difficult and recommends development of a set of evaluation criteria. But as it stands, the existing literature is mostly descriptive.

Another frequent subject of digital scrutiny is the democratic electoral process. The work described in the present dissertation lies in this area. In contrast to the e-transparency services just discussed, technology and technologically-based initiatives designed for election monitoring seem to be most prevalent in developing contexts. This is perhaps due to a combination of lesser faith in electoral machinery and lesser resources available to traditional watchdog institutions (such as the broadcast media) in such regions. This phenomenon also tracks a similar trend in the institution of international election monitoring, which was first directed toward less mature democracies, only to later become a common practice in almost all states (Bjornlund, 2004; Hyde, 2011).

Unfortunately, though, the academic literature examining digital election monitoring is again minimal. An early article by Glidden (2000) noted the emerging trend of digital election monitoring in "developing democracies" and advocated international standards for the practice. I. Schuler (2011) reported on several years of work by the National Democratic Institute (NDI) and its international partners using SMS as a

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[3]http://www.yourbudgit.com/

[4]http://www.lmcliberia.com/about_the_system.html

conduit for the collection of election data from observers in the field on election day. His work spanned many countries and exhibited increasingly advanced techniques, including the use of SMSes specially coded for automated recognition and tallying. A series of press articles, NGO reports, and blog posts have discussed SMS-based election monitoring as well (BBC News, 2007; Freitas, 2010; Network of Mobile Election Monitors, 2007; Verclas, 2007). Ushahidi, the crisis mapping tool, has also been employed in this area (e.g. Alliance Guinea, 2010; Salazar & Soto, 2011).

It is clear from this work that digital election monitoring in developing contexts is a promising area of socio-technical innovation. However, these articles and reports are again chiefly descriptive, focusing on the technologies used and occasionally the lessons learned. The present dissertation will be the first academic work to analyze the effectiveness of digital tools for election monitoring and to reflect upon and characterize the socio-technical system that makes these efforts possible.

2.3   Conclusion

In this chapter, I have reviewed two sets of theories—those focused on social ties vs. those considering communicative affordances—and four sets of empirical work, varying in the amount of trust they afford the orthodox democratic order and in the nature of their constituents. It is clear from this landscape of work that scholarly interest in digital democracy is strong, but also that significant gaps persist in the literature. The theoretical canon, principally designed by and for Western democracies, has yet to be earnestly tested in developing contexts where democracy often exhibits distinct features such as greater societal tendency toward communalism, prominence of patronage networks, less robust electoral machinery, and limited traditional media capacity. Meanwhile, there is almost no empirical work examining how social media, which are rapidly and proliferating in these same regions, are impacting and reshaping the conduct of democracy. Such is the goal of the work presented in the remainder

of this document.

CHAPTER 3

METHODS

This dissertation is situated at the intersection of several methodological traditions and research communities. While subsequent chapters review the specifics of the methods used in each study, this chapter provides background on the rationale by which those methods were selected and the research context in which they were applied.

3.1 The ICTD Community

This dissertation's chief audience is intended to be those who study the use of information and communication technology for international development, often known as ICTD. This community is famously interdisciplinary, attracting researchers and practitioners from anthropology, computer science, economics, engineering, geography, informatics, information science, management information systems, public health, sociology, and beyond. As a result of its multifaceted nature the community also features a range of epistemologies, definitions of development, and approaches to research.

ICTD discourse often encounters an epistemological divide between positivism, which is usually associated with a results-oriented and quantitative approach to development, and interpretivism, which values more holistic and qualitative forms of knowledge. In this document I adopt a mixed approach, favouring interpretivism but incorporating quantitative methods when appropriate.

Burrell & Toyama (2009) discuss ICTD's epistemological divide and suggest that regardless of the side one finds oneself on, reflexive analysis of one's role as a researcher is important, "particularly because ICTD research so often involves a cultural gap between the researcher and the researched." This chapter, and especially its last

section, are intended as such a reflection.

Underlying the ICTD community are also a variety of conceptions of the ends and means of development itself. The economic development view sees development as a question of bolstering gross national product (GDP) growth. Slightly more tempered versions of this view look to more inclusive indicators of quality of life, such as the UNDP's Human Development Index (HDI), which measures health and education along with income. The capabilities approach of Nussbaum et al. (1993) (upon which the HDI is based) actually considers even more aspects of life quality—such as emotional health, practical reason, affiliation, play, and control over one's environment—that are perhaps more difficult to operationalize and measure. Still other viewpoints question the universalism inherent in orthodox development and econometric epistemology, urging that human development is a fundamentally local, not global, endeavour. While the ICTD literature rarely discusses these different conceptions explicitly, they are often implicit in the text.

As to the appropriate means through which human development and the amelioration of quality of life should be pursued, there is also a variety of beliefs. Orthodox development theory has moved through several phases, from the top-down, industrial mentality of structuralism and modernization, to the *laissez-faire* attitude of neoliberalism, to the more bottom-up thinking of the basic needs approach. More critical stances on development suggest that a colonial mindset runs through all of these approaches and that true human development can only be attained when the yoke of colonialism is thrown off, making way for a more equitable and mutually beneficial exchange. These various approaches to development also periodically surface in ICTD discourse, and can more often be inferred from the nature of the work.

A final source of variation in the ICTD canon concerns the style of engagement. Some research takes a primarily observational stance, seeking to measure or chronicle the use of technology as it currently exists. Other work introduces new technology in

the interest of measuring or chronicling its effect. Each approach carries a distinct set of ethical concerns. One approach to research that explicitly considers such ethical issues is action research, which is described next.

3.2   Action Research

Most generally, action research is research that is intended to solve a real-world problem. In reality, it is a broad concept with definitions that vary depending on community. For many, the approach is about envisioning research as an engagement of scholarly techniques with processes of social change. Here, the relationship to ICTD is clear. But action research is more than just a method or a call to action—it can also be seen as a critical philosophical position on the creation of knowledge itself. For instance, Fals-Borda & Gaventa (1996) offer four guidelines for action research that resonate well in the milieu of international development:

1. Do not monopolize your knowledge nor impose arrogantly your techniques but respect and combine your skills with the knowledge of the researched or grassroots communities, taking them as full partners and co-researchers. That is, fill in the distance between subject and object;

2. Do not trust elitist versions of history and science which respond to dominant interests, but be receptive to counter-narratives and try to recapture them;

3. Do not depend solely on your culture to interpret facts, but recover local values, traits, beliefs, and arts for action by and with the research organizations; and

4. Do not impose your own ponderous scientific style for communicating results, but diffuse and share what you have learned together with the people, in a manner that is wholly understandable and even literary and pleasant, for science should not be necessarily a mystery nor a monopoly of experts and intellectuals.

It is perhaps in this form that action research has had its most profound impact. Chapter 6 discusses some of the challenges involved in living up to these guidelines in the context of interventionist ICTD research.

3.3 Case Study

The case study is a method of research that prescribes intensive, empirical study of an individual unit, be it a person, group, place, institution, or otherwise. Case study was chosen as the initial method for the research in this dissertation due to the understudied nature of the phenomenon at hand. A qualitative, holistic approach seemed appropriate in order to build a basic understanding of the role of social media in Nigerian and Liberian political life.

Yin (1994) draws a distinction between descriptive and explanatory case studies, with the latter attempting to account for causation. The case studies in Chapter 4 are meant to be explanatory as they explore the causative effects of social media on the political landscape via interviews with key informants. They also feature multiple cases (Liberia and Nigeria) in the interest of generalizability.

It should be noted that the selection of these cases was somewhat opportunistic. My research group had pre-existing contacts in both countries, the timing of their elections was convenient, and the Carter Center's mission to Liberia was somewhat serendipitous. However, these facts do not diminish the attractiveness of both countries as sites for research. They are both democratic, politically complex, and English speaking, and both exhibit traditional media scarcity along with a vibrant social media community.

3.4 Analyzing Text

The study of social media inevitably leads to a wealth of textual data. In the course of the research reported in this dissertation, a large number of tweets, Facebook posts, and observations from formal election monitoring missions were archived. A variety of

Table 3: Methods that were considered for analysis of social media data.

	Manual	**Automatic**
Quantitative	Content Analysis	Natural Language Processing
Qualitative	Open/Inductive Coding	[None]

methods were considered for the task of comparing these data sets, both quantitative and qualitative, and both manual and automatic. Table 3 gives a summary of the methods that were considered.

Content analysis is a manual, quantitative, positivistic method for analyzing text that relies on multiple coders reviewing data and agreeing, within a standard of statistical reliability, upon a categorization (Krippendorff, 2003). Open and inductive coding, the qualitative sibling of content analysis, takes an interpretivist stance and sees the thematic coding process as a necessarily subjective exercise inextricable from the researcher's knowledge and experience (Strauss & Corbin, 1998).

Both these manual techniques are problematic to apply to large amounts of data. Sampling may be attempted in some cases, but determining an appropriate sampling rate is difficult in the absence of agreed-upon standards. In the case of content analysis, deciding on an *a priori* classification scheme was also a challenge, given the relative novelty of the topic of study.

Practical replicability was also a concern. The hope in developing a method for the comparison of formal and social election monitoring was that the method could be applied by other researchers in the future, both to election monitoring and other similar domains where formal and social methods compete. A cumbersome manual coding process would have undermined this vision. A final consideration was the possibility that elements of the analysis method could be applied to social media data in real time during an ongoing event such as an election. As later chapters will describe, several of software projects arising from this dissertation could potentially benefit from such a capability.

For all these reasons, automated methods were closely considered for the analysis, especially those designed with the unique features of social media communications (brevity, repetition, linguistic quirks, etc.) in mind. However, these methods were approached cautiously as it can be easy to over-interpret their results.

In the end, a hybrid approach that combines automated and manual analysis was chosen, resulting in a method that is rigorous, replicable, and useful in real-time situations. Chapter 5 presents this method in detail.

3.5   Researcher Reflexivity

As Burrell & Toyama (2009) write, "[Researcher] reflexivity is not only a matter of considering the impact of the researcher's disruptive presence, but also of thoughtfully considering one's normative assumptions ..." I concur with this idea, and thus conclude this chapter with a reflection on my position as a researcher and my conception of development.

I first entered the ICTD research world with a somewhat naïve understanding of development. My perception was roughly that the developing world was simply a few rungs down on some ladder of universal progress. The challenge, as I saw it, was to find ways to accelerate its ascension. I had had previous experience as a volunteer in Ghana, and thus my comprehension went further than the stereotypical images of starving children. I had heard the familiar "teach a person to fish" metaphor, and I knew the difference between development and aid. But that was about the extent of my knowledge.

I now realize that development is infinitely more complex than this picture. Development is no longer, for me, an "us vs. them" concept. It is clear now that as much (or more) "development" is needed in the so-called "developed" world as anywhere else. That abject poverty can exist in the midst of vast wealth in the U.S. and

Europe is indicative of a deep disorder—Amartya Sen, for instance, is fond of pointing out the significant disparity in life expectancy between Harlem, New York and Kerala, India (Sen, 1999). Extreme levels of racialized incarceration in the U.S. evoke comparisons to slavery and jim crow (Alexander, 2012). One in six American women have been the victim of sexual assault (Tjaden & Thoennes, 2000). The model of constant economic growth that underpins development orthodoxy is responsible for grave and ongoing injury to the planet's natural environment (Chomsky, 2011). The exploitative practices of extractive industries in the developing world (e.g. Omoweh, 2005) are perpetrated by Western corporations in service of this system of production. Warfare is constant. The list goes on.

I also recognize that international development itself is equally implicated in the deep problems that characterize the capitalist-imperialist international system (Illich, 1968). Development projects are subject to influence from donors, be they state agencies, private foundations, corporations, or otherwise. Until the system in which these bodies operate is reformed, it is futile to believe that development will do anything but export these same problematic structures, or worse.

All this is not to say that "development", in some sense of the word, is neither achievable or desirable. Through my travel in Nigeria, Liberia, and elsewhere, I have seen that these societies face many challenges that are distinct from those experienced in my own. I believe that these challenges can be overcome, and human suffering alleviated, through mutually beneficial exchange across a variety of scales. But achieving relationships of this sort is difficult.

As a white, male, middle-class, Western graduate student at a prestigious college, I recognize that these attributes put me at a disadvantage in my effort to establish genuine, equitable relationships with my Liberian or Nigerian colleagues. It is this realization that informs the ideas of reciprocity that are shared in Chapter 6. I have tried to practice these ideas wherever possible in completing this dissertation.

CHAPTER 4

SOCIAL MEDIA, ELECTIONS, AND DEMOCRACY

The 2011 elections in Nigeria and Liberia were a boom time for social media. While the character of the conversation varied in some respects between the two nations, it was universally vibrant and eventful. The period also saw considerable growth in the social media user base of both countries.

This chapter reports on a case study of social media during the two elections, and specifically of how the technology was used to monitor and observe the electoral process. It examines the broader media environment of the two countries, the specific nature of social election monitoring in each nation, and the ultimate effect of social media on the perception of the election by the general public. The question at issue is:

> *How, if at all, does social media impact the electoral process in developing regions?*

A second goal of the chapter is to consider the implications of the phenomenon for networked public sphere theory. Does the theory account for contexts such as those under study? Are the developments revealed here predicted by it? Benkler himself recounts that the birth of radio as a mass-medium in the U.S. was spurred on by the demand for live coverage of the 1920 general elections (Benkler, 2006, p. 202). It is therefore fitting to take up the same democratic event, nearly 100 years later, as a lens for examining the emergence of a similarly new and important medium in a different part of the world.

Ultimately, in this chapter it becomes clear that the political use of social media in the region is not just about elections, but also about the nature of the networked

public sphere in the developing world and its implications for democracy in those areas.

4.1 Method

The work reported here comprises a set of 27 semi-structured interviews carried out in Abuja and Lagos, Nigeria and Monrovia, Liberia. Data collection took place over a 2-week period in May/June of 2012.

Abuja and Monrovia are the capital cities of their respective nations, while Lagos is the financial capital of Nigeria, and its biggest city. These sites were chosen as they possessed the highest concentrations of persons of interest to this study.

Interviews typically lasted about 45 minutes and were audio-recorded. Participants were not compensated. All interviews were conducted in English.

4.1.1 Selection criteria

Participants were selected from three groups:

1. Prominent social media contributors (13)

2. Members of the Social Media Tracking Center (Nigeria) and Liberia Media Center (8)

3. Traditional media professionals (6)

Some participants were members of more than one group. In the above tally I have only counted each participant once, as per their primary affiliation.

4.1.2 Sampling

Prominent social media contributors were identified through a frequency analysis of data collected for the study in the Chapter 5. The most prolific contributors within the dataset were those sought. Contact with identified contributors was initiated by

sending them direct messages on Facebook or Twitter or by reaching them through known members of their social network. Not all those contacted replied. In all, 13 such contributors were interviewed.

Members of the SMTC and LMC were contacted through the leaders of the two groups, both of whom are colleagues of mine. Once again, not all those contacted replied. A total of eight such members were interviewed.

Traditional media professionals were contacted in a snowball-like manner through trusted informants who were also participants in the interview study. Several such informants are well-connected in the Liberian/Nigerian media communities and were able to arrange meetings or provide contacts. In all, six such professionals were interviewed.

In the case of all three groups, new participants were sought until little new information was being gleaned from interviews and it seemed that all major phenomena had been covered.

4.1.3 Analysis

A combination of inductive and deductive processes, inspired by Grounded Theory and other qualitative analysis methods Miles & Huberman (1994); Bernard (2011); Glaser & Strauss (1967), was used to analyze the data collected. Interviews were first transcribed. In a first round of a coding, transcriptions were read and salient passages were assigned codes. A second round of coding followed, in which the passages and selected and codes assigned in the first round were re-read and iteratively grouped into categories. Categories were selected based on successive readings of the data combined with consideration of the networked public sphere theory that guides this work. The chosen categories were then used to build the narrative that presents the results in the following section.

4.2 Results

The results of the study are presented in the four subsections to follow. First, in the interest of establishing context, the comments of participants on the prevailing media structures in the two countries are reviewed. Here, a dominant theme that arose from the analysis—traditional media scarcity—is introduced. Second, the transformative effect of social media on the pre-existing condition of media scarcity is discussed. Third, the two chief capacities of the networked public sphere as defined by Benkler—the reactive and generative capacities—are examined in the context of Nigerian and Liberian social media during the elections. Finally, some of the common critical contentions around social media's role in politics and election monitoring are considered with reference to the data.

4.2.1 Prevailing Media Structures

The traditional media in Nigeria and Liberia, including print, radio, and television, suffer from fiscal stress that leave the industry in a chronic state of scarcity. The 24-hour news cycle that has become integral to societal function in many societies is practically non-existent in West Africa. As one Liberian participant put it,

> "If you look at the media landscape in Liberia, it's undercapitalized. We are not being well paid."
>
> <div align="right">Liberia P8, Traditional Media Professional</div>

While the situation in Nigeria is marginally better, the local news media is still relatively under-equipped. One Nigerian participant made reference to the fatal plane crash that occurred in Lagos days before our interview, saying:

> "While CNN was breaking news on [the day of the crash] and releasing footage and more information, a lot of the local media houses in Nigeria didn't have as much information. In fact you would even read newspapers

in Nigeria that are quoting foreign sources on local news."

<div align="right">Nigeria P13, Prominent Social Media Contributor</div>

He claimed that this scarcity of information was due in part to equipment inadequacy. Again, speaking of the plane crash, he said:

> "The only TV station that was able to get there on time was Lagos State Television. But if you watch the channel, the video quality was unbelievable. It was like you were doing video Skype with someone over dial-up."

<div align="right">Nigeria P13, Prominent Social Media Contributor</div>

Transportation difficulties also plague the traditional media. After the plane crash, the notorious Lagos traffic worsened further, making access difficult for even emergency vehicles. The same participant said:

> "I called one of the TV stations and said 'Hey, have you guys confirmed [the crash],' but they couldn't confirm immediately because ... getting a reporter there was going to be a bit difficult."

<div align="right">Nigeria P13, Prominent Social Media Contributor</div>

In both countries, newspapers struggle to station reporters throughout the country due to the high cost of transportation:

> "Because of the financial implications sometimes you have one reporter covering a very large area, which also is a problem in terms of gathering the news and being factual and punctual."

<div align="right">Liberia P11, Traditional Media Professional</div>

Many rural areas are sometimes even "inaccessible" due to bad roads, said one participant. In describing the media environment during the election, another Nigerian participant noted simply that, "Traditional doesn't seem very powerful."

<div align="center">51</div>

Meanwhile in Liberia, a participant said that on election day, no media houses had the capacity to assemble aggregated election results as polls closed, and instead:

> "were announcing piecemeal results. Like Truth FM was announcing that 'This polling center says this, this polling center says this . . . "'

<div align="right">Liberia P2, LMC Member</div>

The Liberia Media Center's effort to announce aggregated results shortly after polls closed was the first in the country's history, and was only possible due to international donor funding.

Aside from this scarcity of resources, the media in Liberia and Nigeria are faced with certain restrictions on their activity. Some of these are due to threat of sanction by the government. Several radio and TV stations were ordered off the air in Liberia following the November 7 riot. In Nigeria, one participant claimed that:

> "Even though INEC allows you to broadcast results per polling booth, but because they fear being shut down by [federal communications regulator] NBC, they actually wait for INEC to announce the final collation."

<div align="right">Nigeria P10, Prominent Social Media Contributor</div>

The threat of violence from other political elements can also give pause. One veteran reporter said:

> "Sometimes politics is based on region, tribe. People see you as their king, their queen. . . . If you keep saying [negative] things against him, you may be seen as being against him. Then someone will get at you. It might not be the state security. For example a case at the CDC where they perceived certain journalist as being against them, when the journalist went to the CDC, they were attacked."

<div align="right">Liberia P9, Traditional Media Professional</div>

These restrictions, however, could be considered moderate compared to recent history (e.g. various military regimes in Nigeria and Charles Taylor's government in Liberia) and to other countries on the continent (e.g. Zimbabwe, Chad) and worldwide (e.g. North Korea, Iran). Both countries were rated "Partly Free" on Freedom House's Freedom of the Press rankings for 2011 (Freedom House, 2012).

It appears, therefore, that as a networked public sphere emerges in Nigeria and Liberia, it does so in the context of a traditional media whose chief deficiency arises not from its dominance by powerful media conglomerates nor its restriction by authoritarian regimes, but from a chronic scarcity of resources, most likely resulting from the general economic duress of the region.

This reality makes the instantaneity of social media all the more alluring for citizens of the two nations. This theme arose frequently in the data. One Nigerian participant summed it up nicely:

> "I would get news on Twitter before I'd find it in the newspaper. Before I see it on TV, it's possible I would have gotten it on Twitter. I don't know how they do it, but it's a faster means of passing on information."
>
> Nigeria P6, SMTC Member

Participants in Liberia referred to the encumbrance upon traditional media outlets to verify information before broadcasting it:

> "If I am here and I have a friend in Bopolu, he phone me [with news], the moment he phone me I post it on Facebook. …It's not going there as a fact, it's going there to steer debate, for people to either say it is true or for others to say no. But radio have to verify the information."
>
> Nigeria P6, SMTC Member

and to wait for scheduled news hours:

"Newspapers usually take time to put up [breaking] news, radio stations have to wait on news hours to be able to give out news. That [Facebook] page serves as a one central point where people are just putting out gossips, putting out statements, though most of the information placed out there, no way to verify them, but at least they tend to give a sense of some things happening in different parties, places."

<div align="right">Liberia P7, Prominent Social Media Contributor</div>

While the speed of social media versus traditional media has been one of its marquee selling points worldwide, the difference is especially stark in the under-resourced media environments of Liberia and Nigeria. Several participants described once having to wait until the following day's newspaper or newscast to get the news:

"Information usually comes the day after in Nigeria. . . . Something happens today, you read it in the newspaper tomorrow."

<div align="right">Nigeria P13, Prominent Social Media Contributor</div>

In the context of an election, this could mean that vital information becomes stale:

". . . a band of thugs [may] disrupt the process and take off. Of course they're not going to see it in the papers until tomorrow, by then people are thinking of something else . . ."

<div align="right">Nigeria P12, Traditional Media Professional</div>

In Liberia, a lack of parallel tallying in the traditional media combined with slowness on the part of the NEC meant significant delays in the announcement of results. An LMC member put it this way:

"For so long in Liberia data around electoral coverage has been placed within a restricted space where only the elites, before election results

were announced, know about the results. Otherwise, two weeks before

the population know about the election results."

<div align="right">Liberia P2, LMC Member</div>

Social media appears to be a major factor in the transformation of these traditionally information-scarce environments. One participant described the sense of empowerment derived by social media users when the Nigerian parliamentary elections were first postponed:

"The first election that was postponed was an amazing day on social media

because people who were on the queue and waiting for materials, some

of them got tweets, . . . and they kind of became powerful immediately,

because they were the ones telling even the INEC officials that, 'Hey

guys, the elections have been postponed."'

<div align="right">Nigeria P13, Prominent Social Media Contributor</div>

Examples like these were commonplace in the data.

4.2.2 Social Media and Information Scarcity

As participants tell it, the history of scarcity of information during elections in Nigeria and Liberia led to a host of problems with the process. But the emergence of social media and a networked public sphere in both countries for the 2011 elections seems to have counteracted several of those old problems. This section reviews three such phenomena: the perception of transparency, the defusing of tensions, and the connection with diaspora populations.

Perception of transparency. For the first time in some time, Nigerians were excited about their 2011 election. Several participants related this to their ability to make reports on what they saw:

"They were very passionate about the whole process. They wanted to talk about the experience. On voting day, they were willing to report the process of voting."

<div align="right">Nigeria P7, SMTC Member</div>

According to another participant, use of technology to this end abounded:

"I was doing video and picture, and everybody at my polling unit was saying 'Oh, yes, yes, good, good!' They were encouraged, they were excited. They thought maybe I was a media person. But then they saw there were like four or five of us doing that. And they were excited. . . . A lot of people were taking pictures. I'm sure more than a third."

<div align="right">Nigeria P13, Prominent Social Media Contributor</div>

INEC, the Nigerian election management body, was also lauded by participants for its accessibility for questions and requests, and its provision of a steady flow of information, in stark contrast to previous years:

"In the past . . . when you want to make any complaint, you have to drive down to the INEC office, and it's election time, there are hundreds of people with similar complaints. Everybody's shouting, very rowdy, nobody attends to you, maybe there are policemen with horse whips, chasing people away. Now I just sit down and take my phone."

<div align="right">Nigeria P7, SMTC Member</div>

The organization was no longer seen as a "black hole", in the words of one participant. Social media seems to have played a large part in this transformation from scarcity to plenty:

"The beauty of it is the INEC Twitter handle was very active. And Nigerians will have questions, and once they get answers to their questions

they are very comfortable."

Nigeria P9, Prominent Social Media Contributor

Many participants felt that this stance engendered a perception of transparency:

"Even from INEC, accepting that they had difficulties and needed help, especially in social media, and then putting information out there. I mean, it shows some form of sincerity and a little bit of transparency."

Nigeria P5, SMTC Member

One participant experienced this in an especially visceral way:

"Everything I saw I was following on my BlackBerry, on my Twitter, on my Facebook. So I felt more like I was there counting the votes with them. And I felt I was, you know, 'in it'."

Nigeria P10, Prominent Social Media Contributor

In addition to the availability of information, several participants emphasized the ability to make a report and receive a meaningful response as key to a sense of transparency. For instance,

"When you can report what's happening, it helps your own assessment of [the election's] transparency and credibility."

Nigeria P8, Prominent Social Media Contributor

This sense of transparency, in turn, seems to have translated into a perception of fairness and credibility for the elections as a whole. One participant discussed this effect in the context of election results:

"You would see people tweeting the results, and mostly you have a feeling that everything is going on well."

Nigeria P7, SMTC Member

A second participant agreed, providing more detail:

> "Most of the organizations working on social media or online . . . knew that
> Johnathan had won with about 65%-67%, even before INEC released the
> results. So at end of the election there was a general acceptance that this
> result announced by INEC was true reflection of the outcome."
>
> Nigeria P11, Prominent Social Media Contributor

So it seems clear that whereas previous elections in Nigeria had been plagued by a scarcity of information arising from a limited media industry and non-cooperative election management body, in 2011, the picture had changed significantly. Thanks in part to judicious use of social media by both individual citizens and INEC for sharing information and reporting issues, a perception of increased transparency, fairness, and credibility emerged relative to previous years. The result was what is widely considered to be Nigeria's freest election in recent history.

Defusing of tensions. While the 2011 Nigerian election was anticipated with excitement, the corresponding emotion in Liberia may have been closer to anxiety. The election was only the second since the end in 2005 of two consecutive devastating civil wars, and the first to be managed by the nation's own electoral commission (NEC). With the inexperience of NEC came heightened weariness of the potential for rigging and the violence by which it is often accompanied.

Several participants reported that the greater availability of information on social media on election day did much to mitigate this tension. One participant, a journalist, described the novelty of real-time information at election time:

> "That was the first time in our country's history that people knew exactly
> what was happening as the polls closed."
>
> Liberia P4, LMC Member

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This more abundant information took several forms. Perhaps most celebrated were the aggregated results provided by the Liberia Media Center (LMC) and posted on the LMC Facebook group and web site. One LMC staff member described the group's motivation for collecting the results:

> "We all know that the NEC could not give results . . . on time because it would take like one or two days before they start coming out with provisionary results. So LMC now says 'Hey, if we can even provide it as it comes in, that will help to keep people informed, and gradually they will also digest the result.'"

<div align="right">Liberia P6, LMC Member</div>

The operative words here—"gradually", "digest"—evoke a calming influence. Another LMC staffer went a step further, saying that access to the results provided:

> ". . . a picture of the electoral process to [people] that helped probably to calm the tension that may have developed if that kind of indirect flow of information did not exist."

<div align="right">Liberia P4, LMC Member</div>

Making reference to the Kenyan electoral crisis of 2007, he suggested that the results system contributed to the stability of the electoral process which did not "go up in flames like what happened in Kenya."

A participant not affiliated with the LMC also believed that the availability of early results via social media may have reduced the risk of violence:

> "In my opinion social media influenced and cut down the scales of violence in the election. Because it was like I already know the figure of my political candidate. . . . I will say look, if you look on Facebook, the figures there almost the same as the NEC. So there is no need for violence . . . "

<div align="right">Liberia P3, Prominent Social Media Contributor</div>

Aside from results reporting, one participant, a journalist, suggested social media may also have played a role in easing tensions immediately after the November 7 riot by providing a real-time account, including photos, of what transpired.

> "There was this incident on the eve of the election wherein there was a very big riot at the CDC headquarters, a lot of people were injured, and there was even claims that people died. It was the social media that helped to quell the situation down by giving the real fact, by posting those photos that were necessary. ...There was a very big chaos. But we on social media kept the people informed ..."

<div align="right">Liberia P5, Prominent Social Media Contributor</div>

Of course it is difficult to say for certain whether information distributed through social media had any effect on the general perception of an election's fairness or on the level of electoral violence. However, it does seem certain that many participants experienced a personal sense of relief in having newfound access to a rich source of fresh information about the election, and to a space in which comments and questions could be aired.

Connection with diaspora populations. A third phenomenon revealed in the data concerned the considerable diaspora populations typical of many African nations. Scarcity of information is especially pronounced for members of the diaspora for whom access to the already limited traditional media of the home country is further inhibited by distance. On the other hand, the diaspora community may represent an important part of a nation's overall political sphere. This is especially true in Liberia, where many of the country's educated citizens now live abroad, having fled the civil war (as an illustration of this, when one participant was asked why Facebook was becoming more popular in Liberia, the first reason he gave was that "It provided an alternative for people to send Western Union transfer numbers" for remittances).

Thus, the concept of the networked public sphere takes on a new dimension in such a situation as it carries the potential to better integrate diaspora communities into political discourse back home in ways that the public sphere under traditional media could not. Multiple participants recounted this effect in the context of the election.

One Liberian participant, an LMC member, when asked about how social media compared to traditional during the election, concern for the diaspora quickly came to mind, demonstrating how relevant the diaspora community is in Liberia.

> "The traditional media was a little bit slower because the newspapers had to go to bed to print, [and] radio stations couldn't reach the Liberian population in the diaspora."

<div align="right">Liberia P2, LMC Member</div>

The LMC Facebook group offered a central location for election discussion for diaspora members and locals alike. Several Liberian participants remarked on this. For instance:

> "People in the diaspora were discussing issues with people here on the ground on Facebook. Even right now they're still going on."

<div align="right">Liberia P11, Traditional Media Professional</div>

The same participant went on to say that one key benefit of this setup was its asynchronicity, which allowed interaction across time zones:

> "Sometimes, issues would come from somebody from the diaspora and people here would start to respond to it. Or issues would come out here, people in the diaspora would be responding to it, you know because it's difficult for them to call in, time difference and everything. So what they use mostly would be the social media."

<div align="right">Liberia P11, Traditional Media Professional</div>

A Nigerian participant told of the benefits of social media in campaign organizing vis-a-vis the diaspora. He was working for an underdog presidential candidate, Nuhu Ribadu, whose campaign relied mostly on grassroots support. He said:

> "Social media helped me when trying to coordinate the diaspora community because we had a lot of volunteers from the United States, in Canada, in Australia, . . . social media helped to harness all those opportunities because people kept on sending in messages 'Oh, I'm from Austria, what will I do [for the campaign]?' "
>
> <div align="right">Nigeria P16, Prominent Social Media Contributor</div>

Along with participation in campaigning from abroad, social media also afforded Nigerians the chance to take part in social election monitoring from abroad as well. One Nigerian-born participant told of his experience living in the U.K. during the 2011 elections. Through social media, he said he was able to set up a "sort of monitoring center" on his laptop to keep tabs on the process through the tweets and Facebook posts of his compatriots back home. He said he was not alone in that experience:

> "I know lots of people in the diaspora like me whose involvement or consciousness at that point changed because for the first time, I mean if you're in the U.K. you can't vote in Nigerian elections, but this was the closest we could get involved. Coming from nothing, it's a huge step, I think."
>
> <div align="right">Nigeria P15, Prominent Social Media Contributor</div>

Several Liberian participants painted a more sinister picture of diaspora's use of social media during the election to try to manipulate public opinion. One participant described an incident in which a Facebook group member repeatedly posted inflammatory remarks until she was finally banned by the group owner. He suspected the offender was probably a Liberian in the diaspora with certain career aspirations:

"A lot of Liberians that live in the U.S., they want to come back home, but not as ordinary people, they want to come back home and work in government as ministers. . . . they will join the opposition party that they perceive to be the party that will most likely win. . . . So that's the reason why some of them make those kind of claims."

<div align="right">Liberia P4, LMC Member</div>

Another participant told of a similar case in which a Facebook contributor seemed to be trying to paint an unfavourable picture of the current government:

"[He] went to one of the slums and took a photograph of a dilapidated toilet that had been out of use for almost years. And he posted it on Facebook and said 'See what Liberians use.' . . . He thought he was going to convince people in diaspora that people are suffering."

<div align="right">Liberia P5, Prominent Social Media Contributor</div>

But these alleged attempts at manipulation only speak further to the perceived import of social media in diaspora circles.

4.2.3 Benkler's Two Capacities

In Benkler's formulation of the networked public sphere, he describes it as having two main capacities: the reactive and the generative. In his words, the networked public sphere "promises to offer a platform for engaged citizens to cooperate and provide observations and opinions," its generative capacity; "and to serve as a watchdog over society on a peer-production model," its reactive capacity. He offers recent examples from the United States of each capacity.

These two capacities also appear frequently in the data collected for this study. In particular, social media seems to have been used especially well as a reactive tool in Nigeria and as a generative space in Liberia. There are signs of the opposite phenomena as well, but the former two are the focus of this section.

In Nigeria, a nation that consistently ranks in the bottom quartile of Transparency International's Corruption Perceptions Index (and 25th out of 39 sub-Saharan African countries (Transparency International, 2012)), there are signs that a new culture of social media watchdogging is emerging, and the 2011 elections seem to have been a watershed moment in this trend.

Participants reported multiple incidents during the election that were picked up on social media. Perhaps most famously:

> "One of funniest videos was two women in Port Harcourt thumb-printing multiple [ballot] papers. And it was funny, this was a video they had no idea anybody was recording, and the video came out [on Twitter]."
>
> <div align="right">Nigeria P13, Prominent Social Media Contributor</div>

A frame from the now-infamous video is shown in Figure 1.

Several participants were struck by the visceral quality of the video, which put a rare image to an all too familiar act:

> "That was evidence. This was more than somebody tweeting 'someone snatched a ballot box.' ... just seeing that video, and seeing the potential of people actually using their phones to take videos, that also stood out."
>
> <div align="right">Nigeria P15, Prominent Social Media Contributor</div>

A second photo that made the rounds on Twitter, shown in Figure 2, depicted a polling unit security officer asleep on the job.

In a further incident, a participant who volunteered as an SMTC staff member told of a first-hand report he received from a National Youth Service Corps member working as a polling officer:

Figure 1: A frame from an infamous video clearly showing multiple voting or "thumbprinting".

Figure 2: A photo circulated on social media of a policeman asleep outside of a polling unit that he was supposedly guarding.

Figure 3: A photo sent by a youth corps volunteer showing an apparently underage girl whom he claims he was forced to register to vote. (As this was not a widely distributed photo, her face has been obscured here to protect her identity.)

> "They forced him to register underaged kids, . . . then during elections proper they now forced him again for these people to vote. When he was about to refuse, they brought a dagger. . . . He was able to silently take a picture of some of the kids, so he sent it to me."
>
> Nigeria P5, SMTC Member

One of the pictures he sent is shown in Figure 3.

In fact, many respondents mentioned reports by the so-called "corpers," who appear to have embraced social media technology fervently. Another participant said:

"A lot of reports by youth corpers. At least, I saw one of they were threatened, they had a gun pointed to their head and that was in the south south where they just harass them, stole the ballot box, and they couldn't do anything. They tweeted all of this."

<div align="right">Nigeria P10, Prominent Social Media Contributor</div>

Tragically, a number of youth corps members were killed in post-election violence in the North of the country. Several participants described a feeling of powerlessness in reading what would be their final posts:

"...one of the youth corpers died in Bauchi. Before he died he updated his Facebook status ... A day later he was dead."

<div align="right">Nigeria P15, Prominent Social Media Contributor</div>

The actual Facebook update to which this participant referred read, poignantly, as follows:

"Na wao! This CPC supporters would hv killed me yesterday, no see threat oooo. Even after forcing underaged voters on me they wanted me to give them the remaining ballot paper to thumb print. Thank God for the police and am happy i could stand for God and my nation. To all corps members who stood despite these threats esp. In the north bravo! Nigeria! Our change has come." (Kolawole, 2011)

In some cases, the rapid reporting of incidents through social media seems to have had a positive effect. The multiple voting in shown Figure 1 is said to have been curtailed due to action over Twitter and the candidate supported by the act ended up losing (though the alleged culprits were not prosecuted). Another participant described seeing the beginnings of a common tactic in which a staged fight is a distraction for ballot box theft:

<div align="center">67</div>

"I had to call the police guys in charge to say I have seen a picture of people fighting in such place. I'm not there but I have a picture. Please, can you verify. And truly, they got there and made some arrests and took the people away and restored order."

<div align="right">Nigeria P16, Prominent Social Media Contributor</div>

The sum total of these acts of vigilance appears to be an expectation that cheaters will henceforth be forced to think twice. In describing yet another alleged act of malfeasance, one participant claimed that the flurry of discussion around the incident may have had a dissuading effect on others:

"You had over six polling units all inside a very rich man's compound . . . people were able to report such kinds of incidents. And then because so many people were reporting that and talking about that, it dissuaded many of those who had that kind of intention."

<div align="right">Nigeria P11, Prominent Social Media Contributor</div>

Another participant generalized further:

"I see a very near future where you have to think twice about doing anything at polling booths. . . . Because if you know that when you are voting somebody has cameras, I mean phones that have cameras, you mess around, your picture gets taken, it goes on Twitter, you are so popular."

<div align="right">Nigeria P1, Prominent Social Media Contributor</div>

The presence of cameras in polling units turns out to have been a hard-fought voter right that came about thanks to agitation on social media. One participant that was involved in negotiations around this issue said:

"One of the police authorities, I think in Rivers State, said people couldn't take their phones to the polling unit. There was a lot of discussions on

that on social media, and then officially INEC came out and said, 'Yes,
citizens can take their mobile phones.' "

Nigeria P11, Prominent Social Media Contributor

Since the election, the penchant for vigilance among Nigeria's connected youth
appears to have continued unabated. At the beginning of 2012, the OccupyNigeria
movement formed when the government threatened to remove the country's fuel sub-
sidy. One of the tactics of the movement was to dig into the federal budget, where a
series of excessive expenditures were uncovered and publicized on social media. One
participant who attended some of the protests commented on the mobility of that
information:

> "...next day you get to protest grounds and you see people wearing plac-
> ards with info from the tweets."

Nigeria P13, Prominent Social Media Contributor

Another major event that inspired a bevy of citizen investigation online was the
Dana Air plane crash in June, 2012. The same participant, speaking just a few days
after the event, described the activity:

> "If I check Twitter right now, I'm sure there'll be a lot of information
> released in terms of the history of the airline crash, people digging up facts,
> talking about issues, I think social media is driving that . . . Nobody would
> know this was the same plane [that was involved in previous incidents]
> except that somebody posted the exact registration number of the airplane
> . . . "

Nigeria P13, Prominent Social Media Contributor

This kind of investigative reporting, historically lacking in Nigeria due to the
issues of scarcity discussed above, is now being undertaken by private citizens on
social media.

As a culture of watchdogging bloomed during Nigeria's 2011 poll, in Liberia, the 2011 election seems to have been a key moment in the development of online discourse in Liberia, chiefly on Facebook.

In the words of one participant, discussions on Facebook "exploded" as the election approached, especially in the LMC's Facebook group, which was by far the most active group focused on the election. The rollout of the LMC's results reporting system on election day seems to have pushed membership in the group even higher, as new members "poured in," further stimulating discussion. One participant described it thus, highlighting the "free" nature of the discussion:

> "The discussions were free and you get peoples opinion from all over. So you put one topic and maybe before the end of the day you got maybe 100 or more person giving reactions."
>
> Liberia P11, Traditional Media Professional

This is in contrast to recent history in Liberia, where, in the words of one participant trained as a journalist, "You always had the fear that somebody would pick you up because they didn't like your opinions."

Another participant called the discussions "tremendous":

> "Our own participation as Liberians giving our views about the election, it was tremendous because it was like everyday debate on [the] LMC [Facebook group]. You have to be there, I have to have my laptop on my lap . . . contributing my own opinion."
>
> Liberia P3, Prominent Social Media Contributor

One of the most lively discussions on the Facebook group surrounded the expulsion of a particular contributor who repeatedly posted highly suspect information alleging

election fraud and other misdeeds by the ruling party. The debate centered on the merits of free speech versus the detriments of inflammatory remarks. The post that started the fracas read:

> "The time to pray is over because ballot boxes were pre-stuffed and ballots were pre-marked in advance. Let's GET READY TO START A NATIONAL PRAYER RETREAT for the aftermath if the slightest inkling of cheating is verified."

Retorts quickly followed, many of them expressing fear that such speech could incite violence. Examples include:

> "This is very inciteful, stop this [original contributor]. U're asking the people to prepare for violence instead of peace? This is terrible, this is unpatriotic."

> "COULD U PLEASE TELL THE LOCATION AND POOLING PLACE OR COUNTY WHERE THERE ARE STUFFED BALLOTS, THIS IS NOT THE WAY TO LOOK FOR POPULARITY. PLEASSSSSE."

> "Ask [Liberian Nobel Peace Prize winner] Laymah Gbowee, people dont win Nobel Peace Prize by instituting violence."

One contributor attempted to explain the details of the balloting process as reassurance:

"[Original contributor], those ballots found won't appear at the poling centers . . . the way the system works, is: @ every party agent from all political parties n domestic n international observers are @ dey polls in dey morning n in their presence, the election officer will open the ballot box turn it outside down. . . . After the counting the election officer signs it n give signed copy of dey result 2 every observer n party agent. The election officer will finally post the election result on the wall in polling center for public review."

But others argued that the original comments constituted dissenting speech, a democratic right. For example:

"Wat is inciting violence? you can't threaten Liberians bcoz one is not singing 2 dey drum beat of one's candidate . . . Those terms are dictatorial n not democratic tenets."

Tensions between Liberians in-country and in the diaspora also surfaced:

"Please come to Liberia and continue ur political sensitization campaign, cuz u wont have sufficient audience once this is done on the internet. U can start coming now on Delta Airlines."

The original contributor then made another post alleging ballot stuffing,

"HOW FREE AND FAIR IS THIS? - According news reports coming out of Maryland County, two operatives of the Unity Party were arrested by police for being in possession of two ballot boxes containing pre-marked

ballots . . . ”

and reporting some highly questionable pre-election poll statistics:

> “The African Standard poll on the Liberian presidential race spelled more
> bad news for the Unity Party . . . according to the poll, CDC is close to
> 32%, Liberty Party at 26%, Unity Party at 24%.”

The owner of the group refuted the ballot stuffing allegation:

> “We will not permit people spreading lies and misinformation on this
> platform. I can confirm, in sharp contrast to [original contributor’s] al-
> legation, there is no report of voting fraud in Salayea Maryland or other
> places. Our correspondents have seen no such incidents. We will break
> any development once we can confirm it.”

Some 15 minutes later, he reported:

> “[Original contributor] has been blocked!!!!!!!!”

This act seemed to add fuel to the debate, with many celebrating:

> “Wonderful, we need to maintain the sanity of objectivity.”

> “Well done, [original contributor] is capable burning down liberia with her
> pack of lies in few second if she is giving the chance.”

but some concerned about freedom of expression:

> "She is entittled to her views! . . . Its unfair! Where are we headed if people cannot freely express themselves? . . . This is a public forum [group owner]!!!! It might have been your idea, but it still is a public one! UN-FAIR!!!!!!!"

> "Why does this lady struck so much fear into many?"

The debate continued with further rebuttals:

> "FREE speech has a cut off point. . . it is not free to infinitum.."

> "it all comes responsibility. . . . "Freedom of Speech" is a trap and a lie. . . "

The original contributor eventually re-appeared in the group and posted more inflammatory content, badly misquoting an Associated Press story about Ellen Johnson-Sirleaf. This ploy was also quickly exposed by another contributor. In general, the ability of group members to quickly correct and defuse the remarks of the original contributor was impressive, calling to mind the maxim that in the face of obnoxious speech, the remedy to be applied is more speech, not enforced silence.

This exchange is especially notable in light of the subsequent closure by the federal government of multiple media outlets following the November 7 riots (Sieh et al., 2011). Such an overt act of government censorship reveals that the issue of free speech is highly contested in Liberia. The media closure incident was also the subject of much discussion on the LMC group, with considerable support for both sides of the

issue. Other topics provoking robust debate included the merits of the CDC's boycott, the culpability of various parties involved in the November 7 riot, the importance of George Weah's spoiled ballot, and the neutrality of the group owner and the LMC as an organization.

A related phenomenon discussed by several participants concerned the relative lack of access to the online forum given Liberia's limited Internet infrastructure, and the avenues for online discussion to move into the offline realm. One participant, a media expert, described how discussion on Facebook sometimes presses traditional media outlets to cover a story from which they may have otherwise shied away:

> "For example there was a time, there was a issue on Facebook about people leaving the army, desertion. . . . You might have gone to a station and maybe the editor would not want to carry that kind of story. They may say it has security implications. But because it was being discussed widely on Facebook, the traditional media took advantage of that."
>
> <div align="right">Liberia P11, Traditional Media Professional</div>

Here, the phrase "security implications" refers to the common concern that political criticism can attract retributive violence. This example therefore represents an interesting effect in which the culture of openness on Facebook appears to have allowed an issue to come to light online and then spread into mainstream discourse.

The same participant also claimed that some topics originating in the Facebook group made their way into Monrovia's street-side ataye shops (one is pictured in Figure 4), famous for their lively discussion and pungent tea:

> "Sometimes at the various ataye centers there were issues being discussed that people actually took from social media . . . Everybody [at the shop] wanted to bring an issue that other people didn't know about."
>
> <div align="right">Liberia P11, Traditional Media Professional</div>

Figure 4: A roadside "ataye" shop in Monrovia where men gather to drink tea and hold discussions. This particular ataye shop focuses on political issues.

Another participant offered a more general assessment regarding information flows:

> "The participation [on Facebook], if you compare it to the population
> of the country, was actually really small. But those kind of discussion
> fora, they have a kind of ripple effect. Even people who are not directly
> participating, are in a way, indirectly, getting the news, the information,
> all that kind of stuff. So think it was really vibrant."

> Liberia P4, LMC Member

As a counterpoint to all this enthusiasm, several participants offered critiques of the discussion, calling out its partisan nature ("Most of the comments on Facebook were attacking one party, and back and forth,") its emphasis on personal politics over substantive issues ("People were hardly ever talking about the plans of the parties. They were all basically just centered around who had the largest crowd,") and its lack of structure ("[The group should] get somebody who'd be moderator, or a group of people who'd be moderator. Try to stimulate issues-based debates as much as possible.") This last remark suggests an interesting topic for future work.

4.2.4 Signs of Robustness

As discussed in Chapter 2, the concept of social election monitoring tends to provoke enthusiasm in some camps and skepticism in others. This has resulted in a mostly healthy discourse, with some topics, such as reliability and accessibility, making frequent appearances. This sections seeks to inject a measure of nuance into some of these discussions by reviewing some encouraging signs of the apparent robustness of the social monitoring system that appeared in the data. Three phenomena are examined in particular: the civil society coordination efforts driving the system; the mobility of information beyond social media; and the use of cross-media triangulation to bolster reliability.

4.2.4.1 Civil Society Coordination.

The idea of social election monitoring, or citizen reporting of any kind, often calls to mind an anarchic system consisting of unknown actors. However, the data suggest that in both Nigeria and Liberia, the system was strongly influenced by coordinating efforts of one or more democracy-focused civil society groups that chose to embrace social media as a key part of their strategy.

The LMC in Liberia and SMTC in Nigeria are examples of this arrangement. A comment by an SMTC staffer provides a glimpse of the coordinating activities of that group:

> "People that were going to vote, they didn't know exactly what to put on social media, . . . maybe, just copping about being under the sun for too long, but that doesn't really help anybody. So we just made sure we were putting information that tells them, you know, what to tweet and to be specific about it."
>
> <div align="right">Nigeria P4, SMTC Member</div>

Another group affiliated with the SMTC was Enough Is Enough, a youth oriented democracy organization. They orchestrated a "Register-Select-Vote-Protect" (RSVP) campaign in an effort to mobilize youth. The campaign relied heavily on social media and urged young voters to be vocal online as they went through the process. One participant involved in the campaign described it this way:

> "Social media from then became a focal point for mobilization as well. Some of us were involved in the RSVP campaign [which] became a way to get a lot more young people participating in the elections, registering to vote, becoming champions for youth participation."
>
> <div align="right">Nigeria P3, Prominent Social Media Contributor</div>

Groups like Enough Is Enough reached out to Nigerian celebrities including music stars, to help promote their campaign. This also happened chiefly on social media:

> ". . . a music artist[s] who is popular in Lagos, LD and BankeW, would say if you can show your voter's card, if you can take a picture of your voter's card with your name on it, you'll get a [Twitter] follow-back from me."
>
> Nigeria P7, SMTC Member

Campaigns like these, he said, and stimulated interest in protecting the process:

> "On voting day, [the youth] were willing to report the process of voting. They were willing to report misbehaviour from any policeman, they would get his number and name . . . "
>
> Nigeria P7, SMTC Member

Information sharing between civil society groups was also a common theme. The SMTC had an especially close link with INEC as one of the SMTC volunteers was seconded to INEC's social media situation room, where she managed the official Twitter and Facebook accounts of the organization:

> "Whenever anything happened at the SMTC she would take the information we got to INEC, and whatever was happening at INEC, she brought to us."
>
> Nigeria P4, SMTC Member

The SMTC also "worked with the police" to share security related information. One particularly suspenseful case took place during periods of random violence following the election:

> "They went to attack this girls' hostel. And then a particular girl kept on tweeting that her sister is supposed to be here and she's scared, she

hasn't heard from her, her number is not going through, and things like that. Then [the SMTC director] actually got in touch with her, and gave her the numbers to call so that they could get some policemen to that area, to try to quell the situation. ...She called the police officers and they were able to get there in time and now she heard from her sister, her sister is fine. They got there just in time because if they didn't get there who knows what would have happened. Most of these things, you know they are happening and people usually don't know. Like the police officers don't know, OK, this is happening here, but with social media she was tweeting about it and [SMTC director] could give her a number that she could call ..."

<div align="right">Nigeria P4, SMTC Member</div>

This was one of several stories in which Twitter was employed as a source of succour, a practice made necessary by the non-existence or non-functioning of a national emergency services number akin to 911 in the U.S. and Canada. While Nigeria's Office of the National Security Adviser had published a set of hotline numbers (as referred to in the above quote) before the election, the most effective system for distribution of those numbers turned out to be social media.

Meanwhile, a participant at a different organization said that they maintained:

"...a direct line to INEC to share the messages and phone calls, especially for troubleshooting, or if they needed to respond either security-wise or logistical-wise."

<div align="right">Nigeria P8, Prominent Social Media Contributor</div>

At still another civil society organization, a participant described an instance where a tip received through the organization's SMS network was verified through Twitter and eventually led to a positive outcome:

"Someone SMSed that INEC officials and youth corpers who were coming with the electoral materials were kidnapped. First, we forwarded that information to INEC. Then we also put it on social media, Twitter, and then we were able to verify that it was true. . . . And the INEC also had to call the navy and the security agencies, and actually rescued those [people] because of that information."

<div align="right">Nigeria P11, Prominent Social Media Contributor</div>

This kind of cooperation was the result of significant pre-election planning. In Liberia, the main area of social media activity was the LMC Facebook group, created and maintained by LMC staff. One LMC participant outlined that group's preparations:

"The interaction mainly was between LMC, CSO partners, and media. . . . We made several presentations with the Election Coordinating Committee, the civil society group [a local formal election monitoring group]. We made several presentations in a lot of forums . . ."

<div align="right">Liberia P2, LMC Member</div>

An SMTC staff person described similar preparations in Nigeria:

"We had a roundtable [discussion], we had a lot of the stakeholders invited to the roundtable, including people from the various situation rooms that were going to be around the elections. So civil society, people from civil society were invited and a lot of the international development partners who were funding efforts around the elections were invited including INEC, faith-based organizations, police service organization. . . . The idea was to discuss how there could be strategic communication around the elections."

<div align="right">Nigeria P3, Prominent Social Media Contributor</div>

Thus it appears that civil society groups in both countries were instrumental in fostering a culture of vigilance and vocality on social media, as well as harvesting and acting upon the reports and information shared by interested citizens. This fact, however, does not detract from the social nature of the monitoring effort—the majority of reporters and discussants contributing to the effort were still everyday citizens and not trained operatives. Rather, it shows that a social monitoring need not be completely anarchic, and benefits from a certain level of coordination.

4.2.4.2 *Information Mobility*

Despite the rapid growth of social media in Nigeria and Liberia, access to the Internet in both countries remains low, especially in rural areas. This fact was mentioned often during the interviews. However, an equally popular topic was the ability of information to flow between social media and other types of media, broadening the effective reach of the technology.

One oft-mentioned path for this information flow was traditional media. For instance, in Liberia, where radio is the chief broadcast medium:

> "Kings FM used Facebook a lot because they were having issues that were being discussed, then they were reading from the Facebook page because people were sending in their comments. And they would say 'Now we go to our Facebook page and read the text from there.' Same thing with Truth FM."

> Liberia P11, Traditional Media Professional

Meanwhile in Nigeria, a participant who managed the official INEC Twitter account described a kind of benign plagiarism on the part of a major newspaper:

> "I noticed at some point they were just tweeting exactly what I was tweeting from INEC ... there was this time I tweeted in pidgin, that's when I

knew they were actually taking my tweets [word for word]."

<div align="right">Nigeria P6, SMTC Member</div>

Another participant joked about the prevailing order of information flow:

> "There is a joke on Twitter that what we discuss on Twitter today is headline news in the papers tomorrow."

<div align="right">Nigeria P14, SMTC Member</div>

Aside from traditional media, participants spoke about how information flows through person-to-person interactions as well. One example of this, discussed above, was the raising of topics from social media at streetside ataye shops in Liberia. Similarly, a Nigerian participant discussed information flows after the 2012 plane crash in Lagos:

> "We've got less than 30% of Nigerians online. But what I have seen as the connection is, a lot of people take stuff from social media and send to their friends. Increasingly, I mean this is still very elitist to have a BlackBerry, but [there is] SMS. So people got information yesterday about the plane crash, and were basically texting and calling . . . "

<div align="right">Nigeria P13, Prominent Social Media Contributor</div>

Interestingly, one Nigerian civil society organization made it their goal to act as a bridge between less-connected citizens (those with mobile phones but no Internet access) and social media:

> "What we tried to do was: 'How do we ensure that the voice of the community people is heard by those who are connected to Twitter and Facebook?' So primarily the focus of [organization] was on the use of SMS."

<div align="right">Nigeria P11, Prominent Social Media Contributor</div>

As a result of extensive preparations, this organization was able to leverage its network of so-called "grassroots citizens" to expand the reach of social media:

> "We would get reports of hijacking of ballot boxes on Twitter . . . Because we had in our records people who were in those communities, either we'd send a message or we'd call them and say 'Hey, what is happening,' and they'd then verify the information."
>
> <div align="right">Nigeria P11, Prominent Social Media Contributor</div>

This organization's attentiveness to social media and its desire to bridge "grassroots" Nigerians to social media discourse highlight the perceived importance of social media during the election. Another Nigerian participant captured this well in providing an overview of information flows:

> ". . . you've got celebrities, musicians, you've got people who run radio stations, who have radio shows, who've got TV stations, run TV shows, and people have all these different platforms so they can reach so many people. And they come together on social media. So social media is like a common denominator for all of these diverse, different channels. And therefore it creates a single touch point for getting the message across to all of these different people . . ."
>
> <div align="right">Nigeria P3, Prominent Social Media Contributor</div>

It therefore seems that in Nigeria, social media is becoming a kind of lingua franca for the media world. In Liberia, social media has not achieved the same level of centrality, though there are signs that this may soon happen. Therefore, while issues of access are important and deserving of attention, they do not imply that social media constitute a confined space of little consequence to society at large, as this is obviously not the case. Rather, as the societal importance of social media

discourse is recognized, the key challenge becomes to ensure that voices without access to social media are not marginalized. The efforts of the organization discussed above are laudable, and more will surely be needed.

4.2.4.3 Cross-Media Triangulation

Another persistent criticism of social monitoring efforts concerns the reliability of the information gathered, and the potential for abuse of the system stemming from contributor anonymity or psuedonymity. Participants confirmed these fears in some instances, such as the inflammatory remarks appearing in the LMC Facebook group, and instances where false results had been tweeted in Nigeria. However, participants also discussed ways in which the social monitoring system had acted to verify information.

In several cases, this verification was orchestrated through civil society coordination of the sort discussed above. For instance, one participant described his organization's use of a "roving observer" to check on reports from social media:

> "If you're getting information from a particular place and you're not too comfortable with that information, you can place a call across to our roving observer to double check whether what they are posting from that side of the country is right or wrong."

> <div align="right">Nigeria P2, Prominent Social Media Contributor</div>

This quote also brings to mind the comments above from another participant who reached out to a large network of "grassroots citizens" to verify information from social media reports. Interestingly, that same participant also described exchanges in the other direction:

> "We ensured the reports we got from SMS, we put on Twitter and Facebook, and got people there to verify that information."

> <div align="right">Nigeria P11, Prominent Social Media Contributor</div>

The SMTC was also called on to consult social media to verify reports from other sources. An SMTC participant described one incident:

> "When there was a rumor that there was a bomb scare in say zone six for instance, we got a lot of calls from different news agencies, like 'Have you heard about it?' "

<div align="right">Nigeria P3, Prominent Social Media Contributor</div>

It turned out that SMTC had already seen similar reports:

> "...when the story came up we had seen it and we wanted to confirm as well, and so we spoke to a few people, we called them, and it turned out it wasn't true. So we had already debunked it [by the time the news agencies called]."

<div align="right">Nigeria P3, Prominent Social Media Contributor</div>

One Liberian participant also mentioned citizens looking to Facebook as a source of verification:

> "Facebook actually helped people to understand exactly some of those rumours you heard out there. Getting from credible people like us through Facebook, they find out, 'Yes, I think this is the actual story.' "

<div align="right">Liberia P7, Prominent Social Media Contributor</div>

Therefore, the "unreliable" criticism perhaps also suffers from the assumption that social media exists as a closed system. The reality seems to more closely resemble an multifaceted ecosystem of information in which social media plays a key role, not only as a source of raw information that requires verification, but also as a site for verification of information obtained elsewhere.

4.3 Conclusion

This chapter has investigated, from several angles, the use of social media during the 2011 elections in Nigeria and Liberia. In doing so, it has made several contributions.

First, it has portrayed the pre-existing condition of media scarcity that has characterized both nations. While this fact does not detract from (and in fact renders all the more impressive) the vibrancy and importance of the traditional media landscape, it means that the information flow around events like elections may be found wanting, as several of our informants indicated. This gap sets the stage for the gainful adoption of social media.

Second, this study has reviewed three ways in which a new networked public sphere supported by social media has helped to overcome traditional media scarcity: by creating a perception of increased transparency in the process; by helping to defuse tensions around credibility of election results; and by connecting important diaspora populations to the electoral environment.

Third, this work has provided examples of the reactive and generative capacities of the networked public sphere in a previously media-scarce context. These examples underline the scarcity-overcoming effects discussed above. In Nigeria, it was shown that the reporting of and in some cases response to election-related incidents contributes to perceptions of transparency. In Liberia, the open dialog on Facebook may well have helped quell anxiety by reducing uncertainty, as at least one participant suggested.

Finally, this chapter has identified signs of robustness of the social monitoring system that should provide nuance to ongoing debates about social media's place in the public sphere. These encouraging signs were: coordination of social media discourse by civil society groups; reach-extending mobility of information across multiple media, both digital and traditional; and vetting and verification of information by citizens, also by reference to other forms of media.

An obvious limitation of this work concerns its generalizability to the population at large. In the interest of deeply examining an emerging phenomenon, this qualitative study has largely targeted insiders, elites, and early adopters in the social media and democratic civil society spaces. It is very likely that the average Nigerian or Liberian knows little to nothing about Facebook or Twitter. This makes general statements about social media's impact on West African elections difficult to justify.

What can be surmised from these results is that there are clear mechanisms by which social media has the potential to build public trust in the process, given sufficient reach and adoption. It may be too early to witness these effects on a large scale, beyond the urban, connected youths upon which this study focused. On the other hand it may not be too early. For one, social media is enjoying rapid growth, arguably reaching the mainstream in Nigeria when the now-President announced his candidacy on the platform. Furthermore, it may be that social media, despite its limited adoption, can boast a disproportionate impact on opinion leaders in the two nations, thus magnifying its influence. In any case, looking into this in a quantitative fashion is a tantalizing prospect for future work.

CHAPTER 5

SOCIAL AND FORMAL ELECTION MONITORING

In recent years, enthusiasm for employing digital technology in service of monitoring democratic elections has been widespread, and nowhere more so than sub-Saharan Africa. For instance, the now-celebrated crisis-mapping software Ushahidi came to life during 2007 elections in Kenya. Since then the same technology has been used to monitor elections in Uganda, Sudan, Nigeria, Ghana, Côte d'Ivoire, Liberia, Senegal, and Guinea, and others. Often, these initiatives include the promotion of an SMS short code to encourage citizen reporting of incidents. Twitter hash tags and Facebook groups for election monitoring have been promoted by civil society groups in Nigeria and Ghana. In at least one case (Nigeria 2011), a custom mobile phone app has been developed to facilitate submission of citizen election monitoring. Additionally, "situation rooms" and "tracking centers" have been setup to track election-related conversation on social networks (e.g. Asuni & Farris, 2011). All these initiatives share the belief that election monitoring can be crowdsourced—that ordinary citizens, supported by low-cost digital technology, can protect their votes and promote more credible elections by reporting what they see.

While crowdsourced or social election monitoring is an emerging trend, witnessing of elections by international monitoring organizations has become an established norm in the international community (Hyde, 2011; United Nations, 2005; Davis-Roberts & Carroll, 2010). These formal monitoring "missions" have thriven ostensibly due to their supposed impartiality as foreign nationals and their well-tested methodologies and practices. However, international teams are generally small in number and can in most cases only visit a small sample of the country's polling places. Some research

suggests that as international monitoring methods have become more advanced, so too have the techniques of the cheaters (Hyde, 2011). On top of all this, while foreignness may imply impartiality in some cases, it may lead to suspicion in others.

One can thus identify two distinct approaches to monitoring of modern elections. *Formal* election monitoring entails the deployment of trained observers under a traditional, hierarchical organizational structure, while *social* election monitoring is a more horizontally structured, loosely organized phenomenon in which ordinary citizens share reports on the conduct of the election using social media.

Recent years have seen a controversy around the relative effectiveness of these two methods. Some commentators raise questions about the integrity the social media-based process, arguing that it can easily be infiltrated by rumour or false information (I. Schuler, 2010b). Counter-claims assert that with enough people watching, the truth is sure to emerge (Asokan, 2011). Furthermore, some social media commentators question the need for costly international monitoring missions given the growing popularity of social media (Asuni & Farris, 2011, p. 20).

This is surely an important debate for both groups. Each method is sure to have its strengths and weaknesses and there may exist opportunities for collaboration and synthesis between the two. However, to date there has been no in-depth comparative study of the two approaches and the topic therefore remains mired in uncertainty. The purpose of the present study is provide such a comparison and thereby advance the state of the art in election monitoring, with the ultimate goal of strengthening democracy worldwide. The research question motivating this study is thus:

> *How does the information generated by social media and formal election monitoring compare, specifically in regions of traditional media scarcity?*

The study examines national elections in Nigeria and Liberia, both held in 2011. It compares reports from social media and from formal monitoring missions using a

hybrid process of automated topic extraction and manual topic clustering. Before reviewing this method in detail, a brief background of the software tools that were involved in data gathering, along with a review of formal monitoring standards are presented.

5.1 Software Tools

Two software tools were instrumental in gathering data for this study.

5.1.1 ELMO

Historically, international monitors on election day filled out paper forms and aggregated statistics were telephoned to mission headquarters at the end of the day. I consulted with The Carter Center to improve this process by using smartphones or tablets and mobile data networks, allowing immediate delivery of reports as they are completed.

I developed an application called ELMO (short for ELection MOnitoring). ELMO is an open-source web-based application that interoperates with another open-source tool called Open Data Kit (ODK). ODK Collect handles data collection and transmission on mobile devices while ELMO supports checklist design, receives transmitted data, allows editing and cleaning of data, and performs basic reporting.

ELMO's first major deployment was for the 2011 Liberian elections. I travelled to Monrovia, Liberia's capital, to manage the deployment. All 25 monitor teams were equipped with smartphones and trained on their use.

Unfortunately, The Carter Center did not monitor the 2011 Nigerian elections, so ELMO was not used in that case.

5.1.2 Aggie

In the lead up to Nigeria's 2011 elections, I partnered with Nigerian civil society members to create Aggie, a web application that aggregates information from social

Figure 5: Screenshot of main Aggie screen showing a list of reports.

networking services including Twitter and Facebook.

Given Twitter's open publication model (all tweets are publicly searchable by default), Aggie retrieves tweets matching a user-defined set of keywords. Exact phrases can be matched, as can boolean AND and OR queries. Care must be taken to select keywords that are adequately specific to the phenomenon of interest, otherwise the amount of tweets retrieved becomes unmanageable.

Unlike Twitter, Facebook features a series of different content types including Timelines (for private individuals), Pages (for public entities such as organizations or celebrities), and Groups (for group communication). Each of these content types includes an area for comments (statuses). Given that statuses for Groups and Pages can be made publicly available, it is these latter two types of Facebook content that Aggie can query. Aggie returns all statuses and comments that appear on the Pages and Groups selected by the user.

Figure 5 shows a screenshot of Aggie. Aside from retrieving social media content, the tool also supports trend analysis, automatic and manual classification, and incident tracking. More detail on Aggie is given in Chapter 6.

5.2   Formal Monitoring Standards

While the notion of social election monitoring is fairly new and not well-defined, the practice of formal election monitoring is decades old, and in recent years a number of standards for the practice have emerged. A *Declaration of Principles* and *Code of Conduct* have been drafted, and most of the leading international monitoring bodies are signatories (United Nations, 2005).

Furthermore, The Carter Center has led an effort to develop a set of "obligations for democratic elections" compiled from a host of charters, treaties, and other international legal instruments (Davis-Roberts & Carroll, 2010). These obligations delineate all the responsibilities of national governments that concern the conduct of democratic elections. The proponents of this effort reason that such obligations define a useful basis for cross-national standards upon which the assessment of a democratic election can be based. In their words:

> "...states have obligated themselves to standards of behaviour and respect for human rights through the signature and ratification of treaties and in some cases through membership in the international community of states. Because these obligations are based on recognized PIL [public international law], they provide a more objective and transparent basis for election assessment."

Given that this study seeks to compare social and formal monitoring practices, this standard is an important tool. It is therefore briefly defined here and referred to throughout the rest of the chapter.

5.2.1 Obligations

The 21 obligations are as follows. More detailed definitions can be found in an article by Davis-Roberts & Carroll (2010) and in an online, searchable database[1].

1. *Expression of the Will of the Electors.* This blanket obligation comprises many others below.

2. *Genuine Elections.* A genuine election is widely understood to be one in which a real choice between candidates is offered, as well as a variety of other conditions covered by other obligations below.

3. *Periodic Elections.* Elections must take place at reasonable intervals.

4. *State Must Take Necessary Steps.* This obligation covers many responsibilities of the state, including to regulate violations of human rights, to educate the population on its electoral rights, and to facilitate access to the electoral process for minority groups.

5. *Rule of Law.* This rather general obligation speaks to the authority and influence of the law in a society.

6. *Universal Suffrage.* The state must ensure that the widest possible pool of voters be allowed to vote, only revoking the right to vote on the basis of "reasonable and objective criteria."

7. *Equal Suffrage.* Everyone's vote must carry equal weight—one person, one vote. Safeguards must be put in place by the state to prevent multiple voting.

8. *Secret Ballot.* Ballots must not be able to be linked to voters, thereby removing the threat of intimidation.

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[1]http://www.cartercenter.org/des-search/des/

9. *Prevention of Corruption.* States must ensure that public officials (including incumbents) do not make inappropriate use of public resources, and that campaign finance is suitably regulated.

10. *Right to Participate in Public Affairs.* Citizens must be free to join civil society organizations and serve as domestic observers.

11. *Right to Vote.* The right to vote may only be limited based on reasonable criteria such as minimum age or residency.

12. *Right to Be Elected.* The right to stand in an election may also only be limited based on reasonable criteria.

13. *Freedom of Assembly.* Citizens must be free to assemble at will for political and other purposes.

14. *Freedom of Association.* Citizens must be free to organize campaign efforts and establish political parties.

15. *Freedom of Movement.* Citizens must be free to move within the country during an election period, and to return from abroad to vote.

16. *Equality/Absence of Discrimination.* States are obligated not to discriminate on the basis race, colour, gender, language, religion, faith, nationality, tribe, property, birth or other status in any area regulated by public authorities, including elections.

17. *Freedom of Opinion and Expression.* Voters and candidates must be free to communicate ideas and information.

18. *Access to Information.* States must be transparent in their management of the electoral process.

19. *Right to Security of the Person.* Citizens should be free from arbitrary arrest or detention, and voters, candidates, poll workers, and other should be protected

from violence and intimidation.

20. *Right to an Effective Remedy.* In the event of a violation of any of the rights provided by these obligations, citizens must have access to an effective and timely remedy.

21. *Right to a Fair and Public Hearing.* Citizens are entitled to a determination of their rights by a competent and impartial judicial body in a timely fashion.

5.2.2 Parts

Davis-Roberts & Carroll (2010) also set forth a set of 10 *parts* of a democratic election that will also be useful in the present discussion. They are:

1. *Legal Framework.* The domestic laws that govern the election.

2. *Electoral System and Boundary Delimitation.* The system by which votes determine mandates and the drawing of geographical political boundaries.

3. *Election Management.* The conduct, structure, and mandate of the nation's election management body.

4. *Voter Education.* Education of citizens on their rights and responsibilities as voters.

5. *Voter Registration.* Registration of voters prior to the election.

6. *Parties, Candidates, and Campaigns.* All matters relating to parties, candidates, and their campaigns.

7. *Voting Operations.* The mechanics of the actual voting process.

8. *Vote Counting.* Vote counting, aggregation, and tabulation processes.

9. *The Media.* Journalists, media environment, media coverage, and media access.

10. *Electoral Dispute Resolution.* The hearing and adjudication of electoral disputes.

Table 4: Sources for social and formal monitoring data.

Election	Source	Period (2011)	Message Type	Message Count
Nigeria	Twitter	Apr 8 – Apr 27	Tweet	546,434
	Facebook		Status	7,022
	Mission Report	N/A	Paragraph	394
Liberia	Twitter	Oct 10 – 12	Tweet	14,214
	Facebook	Nov 7 – Nov 9	Status	1,169
	Observer Reports		Response	1,150
	Mission Report	N/A	Paragraph	190

5.3 Data Sources

The data used in the remainder of this analysis came from four sources: Twitter and Facebook for social monitoring, and observer and mission reports for formal monitoring. Table 4 below presents a summary of this data. In the remainder of the section the rationale for data selection is reviewed.

The timeframes during which social media data were collected, given in Table 4 above, are based on what I considered to be the *immediate election period* during each election. Considering the election standards framework introduced above, this period does not include the Electoral System and Boundary Delimitation, Voter Registration, or Electoral Dispute Resolution *parts*, as those are mostly concerned with events well before or after election day.

For the Liberian elections, which featured a one-day election followed by a run-off election nearly a month later, I defined the immediate election period as one day before and after the election, in addition to election day itself. For the Nigerian elections, since there were 3 distinct election days, I defined the election period as one day prior to the first election through to one day after the final election. The numbers of of tweets and statuses listed in Table 4 correspond to the data gathered

by Aggie during those times[2].

Aggie keywords for tweet retrieval were chosen in several ways. Prior to each election, inquiries were made among local social networking leaders to determine the likely popular hash tags (voluntary markers of a tweet's topic) for each election. These included #nigeriadecides, #nigeriaelection, #plessyahand (a Nigerian slang term for voting), #liberia2011, and #liberiaelection. hence their inclusion. Other terms included likely signifiers of election malfeasance (e.g. "ballot box snatch"), state names (e.g. "sokoto", "rivers state[3]"), and country names. The full list of keywords used is given in Table 5.

The greater number of keywords used in Nigeria was due to an expectation of far more voluminous Twitter traffic originating from that country as compared to Liberia, where most Twitter traffic was expected to be international in origin. Also, given Nigeria's size, there was a concern that some tweets might only include regional geographic signifiers.

5.3.1 Facebook

The choice of the Facebook Groups/Pages to monitor in the Nigerian and Liberian cases was made through exhaustive search using Facebook's search tool along in addition to discussion with local social media leaders. The two most active groups were chosen in each case and are shown in Table 6.

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[2]Aggie did not support Facebook data collection at the time of the Nigerian election. Nigerian Facebook data were therefore retrieved retroactively using Facebook's API which, unlike that of Twitter, allows retrieval of statuses far into the past.

[3]The qualifying term "state" appears with some state names that are common words ("rivers", "plateau", and "oyo" (a Spanish word)), such that without a qualifier there would be too many matches of irrelevant tweets.

Table 5: Keywords used by Aggie to query Twitter during Nigerian and Liberian elections.

Election	Keywords			
Nigeria	nigeria	nigeriadecides	borno	lagos
	nigeria vote	nigeriaelection	cross river	nasarawa
	voting materials	plessyahand	ebonyi	niger
	ballot box snatch	pressyahand	ekiti	ogun
	ballot box thugs	violence lga	enugu	ondo
	polling unit	bomb nigeria	gombe	osun
	stuffing ballot box	abuja	jigawa	oyo state
	voters register	anambra	kaduna	plateau state
	ballot box	akwa ibom	kano	rivers state
	buhari	adamawa	katsina	sokoto
	corpers	bauchi	kebbi	taraba
	inec	bayelsa	kogi	yobe
	jega	benue	kwara	zamfara
Liberia	liberia			
	liberia2011			
	liberiaelection			

Table 6: Facebook groups monitored by Aggie during the Nigerian and Liberian elections.

Election	Group Monitored	URL
Nigeria	INEC Nigeria	`http://www.facebook.com/inecnigeria`
	Nigerians for Nigeria	`http://www.facebook.com/nigeriansfornigeria`
Liberia	Liberia Elections 2011 Media Monitoring	`http://www.facebook.com/groups/electionsmediamonitoring/`
	Liberia Elections	`http://www.facebook.com/groups/225462884143436/`

5.3.2 Mission Reports

Mission reports are the ultimate product of the formal elections monitoring process and are the documents that are communicated to local and international press. It therefore seems reasonable that these documents be represented in the present comparative analysis. I furthermore contend that the preliminary report should be chosen where available since the present study is concerned mostly with the timeframe immediately surrounding election day, and less concerned with the remainder of the elections process for which the final report is also designed to account.

The international monitoring groups chosen as data sources were the European Union for Nigeria and The Carter Center for Liberia. Both groups have a formidable reputation in election monitoring circles (Hyde, 2011) and several decades of experience.

The Carter Center produced preliminary reports for both rounds of the Liberian elections, dated 13 October and 10 November, respectively (The Carter Center, 2011a,b). These reports are used in the analysis.

In the case of Nigeria, the European Union's preliminary report was released on 18 April (European Union Election Observation Mission, 2011b), just after the second of three elections and crucially, immediately before the violence that erupted in several Northern areas on the same date. This preliminary report therefore makes no mention of the violence, whereas for social media, those events were a major focal point. In the interest of an accurate comparison, the European Union final report is therefore used (European Union Election Observation Mission, 2011a) in this case.

These longer mission reports were divided at the paragraph level before being input to the analysis process described below.

5.3.3 Observer Reports

The unfiltered ELMO dataset from Liberia consists of over 24,000 individual responses to checklist questions such as those described above. The majority of those responses are a simple "Yes" or "No" and are thus not amenable to textual analysis. For these data, the aggregate figures found in the preliminary and final reports (e.g. "Observers reported that ballot boxes were properly sealed in 95% of polling places observed.") carry more meaning. However, there are also a considerable number of free-form textual responses within the ELMO dataset. These responses result from questions like "Please describe any irregularities you witnessed," and "If you answered 'No' to the previous question, please explain." I include these responses in the present analysis, excepting those with trivial one word answers such as "no" or "N/A".

Unfortunately, despite repeated requests, no similar data were available from the European Union for the Nigeria election. It is also not clear in which format their data is stored, and whether individual textual responses of the sort made available by ELMO would be available, as many missions maintain only aggregated, quantitative records from observers. Therefore, the Nigeria analysis relies only on mission report data.

5.4 Analysis

The analysis of the above data was carried out using a hybrid process combining automated topic extraction followed by manual topic clustering. Figure 6 presents an overview of this process while the remainder of this subsection reviews the details.

5.4.1 Sampling

In order to reduce computation resource requirements, the Nigeria Twitter dataset was randomly sampled to produce 50,000 tweets, just under 10% of its original size. No other datasets needed to be sampled.
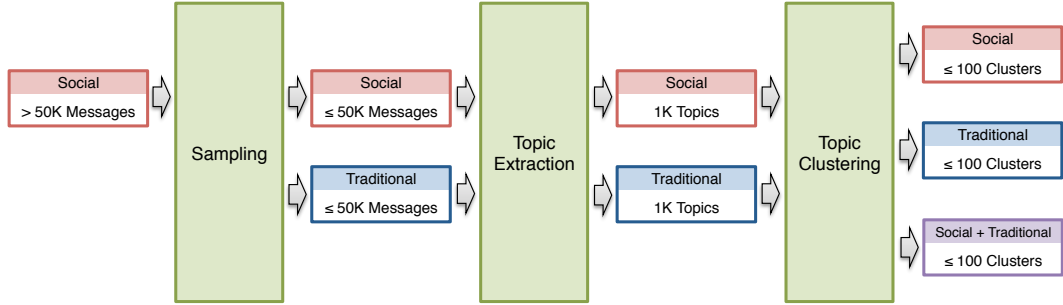
Figure 6: An overview of the hybrid, semi-automatic analysis process used in this study.

5.4.2 Topic Extraction

The topic extraction method used in this studied is called TweetMotif (O'Connor et al., 2010). It is a term frequency/inverse document frequency (TF/IDF) based method designed specifically to work with short messages as opposed to longer "documents". Its originally designed purpose is to produce topic on-demand summaries based on Twitter search queries. Figure 7 shows the Tweetmotif website[4] for an example query of "g20".

The Tweetmotif method includes a novel tokenizing algorithm better suited to the linguistic peculiarities of tweets and other short online messages. It produces a ranked list of 1–3 word topic phrases (n-grams) for a given dataset by computing, for each n-gram, a likelihood ratio proportional to the frequency of the n-gram in the entire dataset, and inversely proportional to its frequency in a background corpus. Specifically, for each n-gram,

$$likelihood = \frac{\Pr(phrase \mid dataset)}{\Pr(phrase \mid background\ corpus)}$$

Unlike typical TF/IDF methods, the n-gram frequency within individual messages is not computed since the short length of the messages minimizes the usefulness of

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[4]This website was no longer operational as of this writing.

Figure 7: Output of the Tweetmotif tool for a query of "g20".

this number.

The Tweetmotif method also includes techniques to further refine the ranked topic list. Distinct topics that arise from very similar sets of messages are merged, while topics that are based on a single set of near-identical messages (such as re-tweets) are discarded. The final output of the method is a ranked list of topics. The number of topics output is configurable. In this study, 1000 ranked topics were extracted for each dataset.

While this method was designed to be used with Twitter messages, experimentation revealed that it produces useful, representative results for the other message/document types in this study. Thus the Tweetmotif method was used on all four data source types in the study, for the sake of comparison.

The background corpus against which messages are compared is composed of some 150,000 tweets collected from Twitter via search queries for common English function words such as "the" and "of". While this corpus appeared to also be appropriate for Facebook and observer report data (the latter having been entered on a mobile keyboard), its suitability for use with the more formal writing style of the mission reports was questionable. For this reason, an alternate background corpus derived from the canonical Brown corpus was also experimented with.

Specifically, using the Liberia mission report data set, the Tweetmotif algorithm was run twice: once with the Brown corpus and once with the Twitter corpus. Then compared the top 100 topics returned in each case (shown in Table 7). This comparison revealed about 90% agreement between the two result sets. The few differences were apparently due to certain modern usages on the one hand (e.g. "deploy", "civil society", "2011" are uncommon in the Brown corpus) and the greater prominence of more legalistic terminology in the Brown corpus vs. the Twitter corpus (e.g. "magistrate", "was filed" are uncommon in the Twitter corpus). Given the minimal difference revealed in this experiment combined with the desire for an equitable

Table 7: Topic set differences for Tweetmotif algorithm run on the same dataset for two different background corpuses. Note that the two resulting sets of 100 topics only differed in 11 topics (i.e. the set intersection was of cardinality 89). Only the differences are shown below for brevity.

Topics Unique to Twitter Corpus Results	Topics Unique to Brown Corpus Results
observed	2011
observers	polling stations
impartial	freedom of expression
magistrate	2004
electoral	underage
by the national	2005
adhered	para
tabulation	deploy
was filed	lnp
be elected	referendum
candidates were	civil society

comparison, I elected to use the same Twitter corpus for all four data source types.

5.4.3 Topic Clustering

The topic extraction process resulted in sets of 1000 ranked topics (topic sets) for each of the datasets in Table 4. For the purposes of this study, since the chief point of comparison is between social and formal monitoring, the social (Twitter, Facebook) and formal (mission reports, observer reports) topic sets were merged, resulting in a total of two topic sets per election. Future work could examine differences between social and/or formal topic sets.

In order to complete the comparison exercise, I sought to identify topics that appeared in both sets. This step necessitated human intervention. Topics with near-identical n-grams were excellent candidates for matches, however the ambiguity of natural language meant that even identical words or phrases could refer to different phenomena. More importantly, some n-grams with markedly distinct spellings were nonetheless related—perhaps the best example is the variety of shortened spellings

of "Nigeria" including "naija" and even "9ja". Acronyms, which were numerous in the data, also presented challenges. In many cases, examination of the individual messages that gave rise to a topic was necessary to determine its meaning.

The manual process I followed was as follows. A cluster was defined as a set of one or more closely-related topics. Clusters were arranged into columns labeled **social-only**, **formal-only**, and **both**. A cluster with at least one topic from both the social and formal topic sets was placed in the **both** column. At the start of the process, the **social-only** and **formal-only** columns were populated from their corresponding topic sets. Each cluster initially contained only one topic. The both column began empty. The rank of a cluster was defined as the highest rank among its member topics. The process then consisted of inspecting the clusters and merging any clusters that contained identical or closely related topics. The process continued until the top 100 clusters in each column had been examined.

To facilitate this manual analysis task, I devised a simple web-based tool that lists all ranked clusters in each column and allows interactive merging of clusters by point-and-click. Clusters can be filtered by boolean keyword queries and underlying messages are revealed in a popup dialog when topics are right-clicked. Selecting a topic in one cluster and then clicking another cluster merges the two clusters. Clusters that contain at least one topic from both the social and formal sets move to the third column labeled "Both". Clusters are displayed in ranked order. A screenshot of the tool is shown in Figure 8.

5.5   *Results*

The full list of top 100 clusters from each column and each country are listed in Appendix A.

Given that there were effectively two axes of comparison in this study (social vs. formal and Liberia vs. Nigeria), each is separately in these results. Cross-national

Topic Clusters

Social

1 3	3 weah · 16 george weah · 80 weah · 87 manneh · 111 george manneh weah · 230 george weah · 615 legend george weah
2 9	9 lmc · 50 liberia media center · 385 media center · 595 liberia media center · 634 liberian media center
3 11	11 lovetta · 25 dorley · 30 mawine · 34 taa · 39 checago · 40 benetta · 43 lakshmi subramani · 46 neejay · 51 rob dorley · 57 mawine diggs · 61 checago bright-sawo · 65 laura wilson · 67 stephen johnson · 68 peah · 77 gyude · 81 neejay dwah · 82 taa wongbe · 95 neufville · 96 lovetta thomson · 100 fahnbulleh · 101 deddeh · 112 siezie · 113 lamii · 119 sekou · 129 fofana · 133 gyude moore · 141 mannah · 151 tyrrell kwia · 152 laks · 154 gbokolo · 215 edwin fahnbulleh · 679 @fahnbulleh
4 12	12 mehn
5 15	15 brumskine
6 16	16 liberians vote · 28 liberians vote despite · 29 vote despite protests · 822 liberians vote
7 17	17 for liberia · 23 for liberia
8 20	20 re-election · 41 seeks re-election · 95 seeks new term · 97 seeks new · 322 re-election
9 21	21 mama liberia · 146 for mama · 603 mama liberia
10 23	23 counts votes · 24 liberia counts votes · 96 counts votes after
11 29	29 lawrence randall
12 31	31 partisans · 618 partisans
13 32	32 as presidential runoff · 35 as presidential
14	36 liberia tense

Traditional

1 1	1 carter center · 20 carter center-eisa · 62 eisa · 73 carter center's · 81 for sustainable democracy · 147 integrated carter center-eisa · 269 carter
2 3	3 poll workers · 13 presiding officer · 14 polling staff · 39 poll workers · 41 poll worker · 57 officer did · 72 polling staff · 80 polling workers · 92 officer present · 186 presiding officer
3 4	4 party agents · 22 party agent · 40 party agents · 84 party reps · 85 agents did · 124 agents were · 126 all agents · 136 party agents were · 177 party agents did · 337 agents · 446 agents
4 5	5 how to mark · 20 did not explain · 31 how to vote · 39 mark ballot · 60 no explanation · 66 explain to voters · 67 mark the ballot · 74 how to fold
5 6	6 vio · 42 vio did
6 12	12 percent of polling
7 12	12 for ink · 23 not checking · 24 did not check · 27 for traces · 33 voters fingers · 37 traces of ink · 54 fingers for traces · 72 fingers for ink · 86 indelible ink · 108 not checking voters · 109 fingers not checked · 166 finger of left · 189 checking for ink · 190 check voters fingers · 192 checked for ink · 203 voter was inked · 269 inker · 280 inking · 302 inked · 376 ink · 499 fingers · 535 finger
8 13	13 iccpr · 23 charter on human · 44 covenant on civil · 49 international obligations · 53 human and people's · 64 general comment · 75 convention against corruption · 93 achpr
9 15	15 legal framework · 16 election law · 38 elections law · 52 liberian constitution

Both

1 1	1 sirleaf · 5 sirleaf · 7 ellen johnson · 9 johnson sirleaf · 10 ellen johnson sirleaf · 13 johnson-sirleaf · 18 ellen johnson sirleaf · 19 ellen johnson sirleaf · 40 ellen johnson-sirleaf · 62 president ellen · 72 ma ellen · 80 president sirleaf · 88 johnson-sirleaf · 89 #sirleaf · 92 sirleaf · 94 liberia 's sirleaf · 98 president ellen · 115 ejs · 132 ellen johnson-sirleaf · 144 liberia 's johnson-sirleaf · 150 oldma · 152 president ellen johnson · 157 madam sirleaf · 184 president sirleaf · 219 president ellen johnson · 284 president sirleaf
2 1	1 liberians · 4 liberians · 14 liberian people · 22 all liberians · 27 liberians are · 35 fellow liberians · 45 liberians · 66 as liberians · 214 all liberians · 414 liberians are · 599 as liberians · 643 all liberians
3 1	1 polling place · 3 polling places · 8 precinct · 9 polling places · 31 polling place · 49 polling centers · 61 precincts · 106 polling places · 128 precincts · 129 many polling places · 224 polling stations · 281 polling stations · 399 polling stations · 920 polling stations · 967 precinct
4 2	2 liberian · 5 liberian · 6 liberian · 63 liberian
5 2	2 monrovia · 8 monrovia · 25 monrovia · 66 monrovia (reuters · 117 liberia 's capital
6 2	2 carter center observers · 4 observers reported · 11 center observers reported · 28 observers noted · 33 observers · 34 carter center-eisa observers · 57 center observers noted · 59 center-eisa observers reported · 76 observers were · 94 observers · 762 observers
7 2	2 ltp · 410 ltp
8 3	3 runoff · 11 presidential runoff · 15 presidential run-off · 25 runoff election · 26 run-off election · 27 runoff vote

Figure 8: The custom, manual topic clustering tool used in this study.

trends are first reviewed, followed by phenomena unique to one country or the other. Within the cross-national trends, each of the columns (**formal-only**, **social-only**, and **both**) are reviewed separately. Topics that are representative of the clusters being discussed are interspersed throughout the text in **bold, sans-serif font**. Cluster ranks are given as subscripts consisting of two letters and a number. The first letter represents the country (N = Nigeria, L = Liberia), the second letter represents the column (S = Social, F = Formal, B = Both), and the number corresponds to the rank.

5.5.1 Universal Concepts

A surprisingly small number of concepts appeared in both formal and social data from both countries. Major newsworthy incidents appeared in several cases, including the opposition boycott in Liberia, the postponement in Nigeria, and the unfortunate electoral violence in both countries. The names of major candidates were also seen in several places. Ellen-Johnson Sirleaf (**ma ellen**$_{LB3}$, **ejs**$_{LB3}$, **oldma**$_{LB3}$), the incumbent president of Liberia, topped the **both** column in Liberia, while Nigeria's incumbent

Goodluck Johnathan (**goodluck**$_{NB16}$, **gej**$_{NB16}$, **ebele**$_{NB16}$) ranked highly in Nigeria's data. The main opposition candidates (**buhari**$_{NB7}$, **tubman**$_{LB9}$) also appeared in both cases, further down the list.

Some election terminology (**election**$_{LB10,NB19}$, **polling**$_{LB10,NB19}$, **ballot box**$_{LB23,NB56}$, **polling place**$_{LB2}$, **voter**$_{LB13,NB63}$) also appeared universally, while other election-related terms did not. The terms that did appear universally were generally the most common, most iconic terms, while more specific, less well-known terms such as **party agent**$_{NB28,LF3}$ were not universal. I review these less common terms later in this section.

A final universal trend was reference to normative qualities of an election, especially peace (**peaceful**$_{LB49}$, **peaceful vote**$_{LB49}$), order (**orderly**$_{LB35,NB97}$), and fairness (**free and fair**$_{LB26,NB26}$, **credible**$_{NB26}$).

5.5.2   Social Media Specialties

Social media seemed adept at near-real-time reporting of election incidents. Three such incidents surfaced in the data: a bomb explosion at a Nigerian INEC office (**bomb blast**$_{NS52}$), a fire at a Liberian radio station (**elwa**$_{LS30}$, **elwa radio**$_{LS30}$), and the looting of a Monrovia gas station and other businesses (**kailondo**$_{LS53}$, **looted**$_{LS63}$). Table 8 reviews, for each event, the estimated actual time of the event along with the time and content of the first captured social media message making mention of the event.

The average lag time from the occurrence of the event to the first message is 53 minutes. Interestingly, the latter two incidents (the ELWA fire and gas station looting) do not appear to have been picked up by formal monitoring or the international press as they appear nowhere else in the data.

Certain social-media-specific artifacts also turned up in the social column for both countries. These included hash tags (**#nigeriadecides**$_{NS1}$, **#liberiaelection**$_{LS43}$), author references (**@eggheader**$_{NS9}$, **mawine diggs**$_{LS14}$), shortenings (**8s**$_{LS35}$ for "it's", **9ja**$_{NS33}$ for "Nigeria", **4 d**$_{NS12}$ for "for the") and patois words, especially from Nigerian pidgin

Table 8: Three election incidents that surfaced in the topic analysis, including the date, actual time of the event, message time, and message text.

Event	Date (2011)	Actual Time (est.)	Message Time	Diff (mins.)	Message Text
Suleja INEC office bomb blast	April 8	5:55pm[1]	6:37pm	42	Reports coming into our situation room suggest that there has been a bomb blast at the INEC Suleja office.
Gas station looting	Nov 7	4:00pm[2]	5:10pm	70	Latest from the CDC and Police Riot,Serious Looting have began with the Kailondo Gas station forming part of it . . .
ELWA radio station fire	Nov 8	9:50pm[3,4]	10:37pm	47	ELWA RADIUO STATION IS ON FIRE AS I TEXT. CAUSE IS UNKNOWN FOR NOW. I AM ELVIS CEPHAS REPORTING

[1] http://www.enownow.com/news/story.php?sno=8820

[2] http://frontpageafricaonline.com/images/pdfs/official-report-nov7.pdf

[3] http://www.hcjb.org/hcjb-global-news/sub-saharan-africa/give-now-and-help-us
-provide-elwa-with-new-radio-equipment.html

[4] http://www.facebook.com/media/set/?set=a.10150279651633239.293982
.42279623238&type=3

(**sef**_{NS45}, **abeg**_{NS40}, **jor**_{NS71}). Certain "viral" phrases also appeared in both countries, though Nigeria's were more common and more typical of social media trends. Nigerian phrases included **lagos rats**_{NS31}, a humourous discussion about the intelligence of rodents in Lagos; **#deprivednaijachildhood**_{NS32}, a self-deprecating reflection on the experience of growing up in Nigeria; and **akala is bleaching**_{NS61}, a reference to a gubernatorial candidate's rumoured use of skin lightening products. The sole Liberian phrase that appeared was "This, too, is Liberia" (appearing as **too is liberia**_{LS89}), which is also a self-deprecating, ironic commentary on Liberia's perceived idiosyncrasies.

The phrase **akala is bleaching**_{NS61} is an example of another social media trend, namely the mention of second-tier political candidates and personalities. These included gubernatorial candidates (**akala**_{NS6}, **fashola**_{NS5}, **ajimobi**_{NS14}, **rochas**_{NS67}), less significant presidential challengers (**brumskine**_{LS5}, **momodu**_{NS96}), legislative candidates (**akunyili**_{NS93}, **acarous gray**_{LS31}), and vice presidential candidates (**george weah**_{LS1}, **sambo**_{NS86}). In fact, the top-ranked **social-only** cluster for Liberia was George Weah, the former soccer star and running mate to Winston Tubman, the main presidential challenger. Weah's popularity on social media and absence from formal reporting is likely due to his pre-existing notoriety. Interestingly, notorious former heads of state also showed up in social media data only (**obasanjo**_{NS51}, **charles taylor**_{LS66}).

Social media also featured several varieties of what might be termed populist concepts. These included democratic calls to action (**ur vote**_{NS87}, **our vote**_{NS26}, **vote wisely**_{NS30}, **fellow nigerians**_{NS41}, **fellow liberians**_{LS19}, **right to vote**_{LB58}) and patriotic sentiments (**god bless nigeria**_{NS8}, **new nigeria**_{NS74}, **god bless liberia**_{LS33}, **mama liberia**_{LS10}).

5.5.3 Formal Monitoring Specialties

Perhaps the most pronounced specialty observed in formal monitoring data was attention to legal issues, evoking the Legal Framework *part* in the standards framework. In both countries, the **formal-only** column contained multiple law-related topics

including references to national and international legal documents (**electoral act**$_{NF1}$, **legal framework**$_{LF11,NF10}$, **1999 constitution**$_{NF4}$, **iccpr**$_{LF9}$, **election law**$_{LF11}$, **achpr**$_{LF18}$, **liberian constitution**$_{LF34}$, **international obligations**$_{LF30}$), legal bodies (**electoral offences commission**$_{NF40}$, **election petitions tribunals**$_{NF46}$, **magistrate**$_{LF15}$), and other legal terms (**adjudication**$_{NF26}$, **accordance**$_{LF19,NF8}$, **stipulates**$_{NF51}$, **chapter iv**$_{NF66}$). These topics mostly arose from mission reports.

Formal data also reflected an attention to the mechanics of the electoral process, as per the Voting Operations and Vote Counting parts. For instance, the topic **seal numbers**$_{LF20}$ referred to the recording of ballot box seal serial numbers by polling staff; **how to mark**$_{LF4}$ referred to the requirement that voters be given instructions on how to vote; **check voters fingers**$_{LF8}$ referred to the inking of voters' fingers to prevent double voting; **were posted outside**$_{NF30}$ referred to the standard practice of displaying result sheets outside polling places, and so forth. The bulk of these topics appeared in the Liberia data due to the inclusion of observer reports, though some also appeared in Nigerian and Liberian mission reports.

Other areas that differentiated the formal data were clearly related to the parts and obligations introduced above: i) the cataloging of formal complaints and petitions made to electoral commissions by candidates and parties (**petitions and appeals**$_{NF12}$, **redress**$_{NF77}$, **aggrieved**$_{NF78}$, **official complaints**$_{LF33}$); ii) attention to minority issues such as disability (**disabled voters**$_{LF24}$) and the representation of women in legislative bodies (**35 percent**$_{NF18}$[5]); and iii) references to civic and voter education (**voter education**$_{LF42,NF59}$, **civic education**$_{NF59}$). None of these topics appeared in the social media data.

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[5]This figure refers to a proposed Nigerian National Gender Policy promoting 35 percent affirmative action for women in government.

5.5.4 Nigeria Only Social Media

Nigeria is one of the most active nations on social media worldwide. As an example, the tracking site Social Bakers consistently ranks Nigeria as the most active and fastest growing sub-Saharan country on Facebook, ahead of even South Africa (Social Bakers, 2012). Furthermore, the 2011 election was billed by some as Nigeria's first "social media election", as social media adoption had grown drastically since the previous poll in 2007. Indeed, the maturity of Nigerian social media and its importance in the electoral process were evident in the data I collected.

One sign of this was the embrace of social media by INEC and its high-profile director Attahiru Jega. The INEC Facebook Group was the most active such group related to the election, and INEC topics (**inec**$_{NB1}$, **jega**$_{NB2}$) ranked highly in both Facebook and Twitter datasets. During the furor over the election postponement, jega became a globally trending Twitter topic for a time.

There was also a visible effort by civil society to both monitor and contribute to election-related social media discourse. This was evident in certain Twitter handles such as **@pollwatch2011**$_{NS22}$, run by the Coalition of Democrats for Election Reforms, and **@bubusn**$_{NS11}$ and **@eggheader**$_{NS9}$, the handles of two prominent civil society members who contributed large amounts of information and commentary. During post-election violence, Twitter was also used to publicize emergency hotline numbers (**nsa hotlines**$_{NS56}$, **096303520**$_{NS56}$)

Perhaps the most striking evidence of social media's engagement with the election was the number of topics related to low-level election mechanics (Voting Operations and Vote Counting) that appeared in the **social-only** or **both** columns (**party agents**$_{NB28,LF3}$, **electoral officers**$_{NB85}$, **presiding officer**$_{NB83,LF10}$, **returning officer**$_{NS91}$, **collation centres**$_{NB57}$, **result sheets**$_{NB73}$, **security agents**$_{NB91}$, **massive rigging**$_{NS16}$, **my polling unit**$_{NS64}$).

Also appearing in the **both** column in the Nigeria were recommendations or entreaties to INEC (**pls inec**[NB46][6], **inec should**[NB46]), reflecting an interest in the Election Management *part*. The presence of these references to specific election concepts, as opposed to more generic vocabulary, suggests that a subset of Nigerian social media contributors were sharing their detailed observations and opinions about the election.

5.5.5 Liberia Only Social Media

Detailed topics regarding election mechanics and entreaties were markedly less prevalent in Liberian social media (only **ballot box**[LB23,NB56], **ballots**[LB18,NB35], **invalid votes**[LB59]). The Liberian electoral commission did appear (**nec**[LB14], **by nec**[LB14]), but not in the context of recommendations or suggestions.

Meanwhile, Liberia's data included references to both international and domestic observers (**observers**[LB5,NF29], **ecc**[LB30][7]), which was not the case in Nigeria. Liberian social media also contained several references to other international bodies (**international community**[LS47], **ecowas**[LB25][8], **unmil**[LB31][9]). No such entities were mentioned in Nigeria's data.

Many of Liberia's **social-only** topic clusters arose from n-gram fragments of widely re-tweeted headlines from major news services (e.g. **liberians vote**[LS6], **liberians vote despite**[LS6], **vote despite protests**[LS6]). These headlines, intended for global consumption, mainly dealt with high-level topics such as the start of voting, the pre-election

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[6]Short for "Please, INEC". This is a common way of stating a request in Nigerian English.

[7]The Election Coordinating Committee (ECC) was a coalition of seven Liberian civil society organizations that observed the elections. Such groups are often termed "domestic" observers in contrast to international observers such as The Carter Center.

[8]The Economic Community of West African States.

[9]The United Nations Mission in Liberia is the peacekeeping force established in 2003 and remaining in the country as of this writing, though in reduced number.

violence, the opposition's boycott of the second round, and other major stories. The predominance of this type of cluster in Liberia's data is likely due to the small number of Liberian Twitter users in contrast to Nigeria's large Twitter user base.

Liberia's recent experience of civil war also seemed to creep into its social media. While references to the civil war itself (e.g. **civil war**$_{\text{LB64}}$, **liberian civil**$_{\text{LB64}}$) appeared in the **both** column, references to the Truth and Reconciliation Commission (**trc**$_{\text{LS71}}$) showed up in **social-only**. Furthermore, several **social-only** topic clusters suggested a vigilant attitude toward hate speech (e.g. **hate messages**$_{\text{LS26}}$, **preaching hate**$_{\text{LS26}}$, **spreading hate messages**$_{\text{LS26}}$) and other potential precursors to violence (e.g. **incite violence**$_{\text{LS29}}$, **inciting**$_{\text{LS29}}$, **inflammatory**$_{\text{LS29}}$). This attitude was typified in the discussion around the expulsion of a contributor for posting inflammatory remarks, as reviewed in the previous chapter.

5.5.6 Comparison to Election Standards

This section considers the topic analysis results in the context of the election standards *obligations* and *parts* introduced above. Tables 9 and 10 present a side-by-side comparison of which of each were evident in the social and formal data. The remainder of this section discusses the determinations expressed in the tables.

5.5.6.1 *Obligations*

Expression of the Will of the Electors. Social clusters like **massive rigging**$_{\text{NS16}}$ displayed a general interest in the fair conduct of the election. The cluster **result sheets**$_{\text{NB73}}$, which appeared the Nigerian **both** column, also fit this obligation, since the display of result sheets outside polling centers enables parallel tallying and thereby safeguards the will of the voters.

Genuine Elections. The question of whether the elections studied presented a "real choice" was never really at issue. Both elections featured competent and formidable opposition parties. Therefore the absence of topics related to this obligation in the

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Table 9: Comparison of social and formal monitoring based on common international obligations for election as defined by Davis-Roberts & Carroll (2010). Notable differences are marked with an asterisk (*).

Obligation	Social Monitoring?	Formal Monitoring?
Expression of the Will of the Electors	Yes	Yes
Genuine Elections	No	No
Periodic Elections	No	No
State Must Take Necessary Steps	No*	Yes
Rule of Law	Yes	Yes
Universal Suffrage	No*	Yes
Equal Suffrage	Yes	Yes
Secret Ballot	No*	Yes
Prevention of Corruption	No*	Yes
Right to Participate in Public Affairs	N/A	N/A
Right to Vote	Yes	Yes
Right to Be Elected	N/A	N/A
Freedom of Assembly	No	No
Freedom of Association	No	No
Freedom of Movement	No	No
Equality/Absence of Discrimination	No*	Yes
Freedom of Opinion and Expression	Yes	Yes
Access to Information	No	No
Right to Security of the Person	Yes	Yes
Right to an Effective Remedy	N/A	N/A
Right to a Fair and Public Hearing	N/A	N/A

data is not surprising.

Periodic Elections. Similarly, both nations have had acceptably regular elections and the timing of either election was never at issue.

State Must Take Necessary Steps. This obligation was notably absent from the social data, while the formal data contained several clusters such as **voter education**$_{LF42,NF59}$, **how to mark**$_{LF4}$ (the ballot), and **disabled**$_{LF24}$ that are highly relevant to the obligation.

Rule of Law. Both datasets made common reference to the police and security forces (e.g. **unmil**$_{LB31}$, **liberian police**$_{LB27}$, **no police present**$_{LF40}$). Such topics are also related to the obligation for Security of the Person, but may also be considered relevant here.

Universal Suffrage. Formal data contained clusters such as **allowed to vote**$_{LF12}$ and **final registration roll**$_{LF25}$ that displayed an interest in who was being allowed to vote and who was being denied. No such clusters appeared in the social data.

Equal Suffrage. The social cluster **massive rigging**$_{NS16}$ could also be interpreted as related to equal suffrage, and some of the evidence shared on Nigerian social media, such as the video of blatant ballot stuffing, show an interest of social media in this obligation. Several formal clusters also spoke to this obligation, such as **fingers for ink**$_{LF8}$ (inking the voters finger is a protection against multiple voting), **were not sealed**$_{LF20}$ (ballot box seals prevent vote tampering), and **unused ballots**$_{LF28}$ (accounting of unused ballots is also an important check on multiple voting).

Secret Ballot. Liberian formal included a **voting screens**$_{LF35}$ cluster, since the availability of voting screens turned out to be an issue in that election. No mention of ballot secrecy was found in the social data for either country.

Prevention of Corruption. Liberian formal data also mentioned **campaign finance**$_{LF72}$, **state resources**$_{LF63}$, and **access to public**$_{LF63}$ (resources), as these were also issues in that election. Again, there was no mention of the topic in the social data.

Right to Participate in Public Affairs. This obligation is deemed to be not covered by the study since the exercising of this right, for example in joining a civil society

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group or volunteering as an observer, is more likely to take place well before the immediate election period.

Right to Vote. Both social and formal Liberian data included a **right to vote**_{LB58} cluster.

Right to Be Elected. This obligation is deemed to be not covered by the study by similar reasoning as with the Right to Participate in Public Affairs.

Freedom of Assembly. Neither dataset made mention of this obligation, likely because it was not an issue during either election.

Freedom of Association. Also no mention.

Freedom of Movement. Also no mention.

Equality/Absence of Discrimination. The Nigerian formal data included the **35 percent**_{NF18} cluster, which refers to an affirmative action gender policy. No mention of this obligation was found in the social data.

Freedom of Opinion and Expression. The Liberian data featured a cluster in the **both** column (**press freedom**_{LB38}, **freedom of expression**_{LB38}) directly referring to this principle. The Liberian social data also contained a cluster about hate speech (**preaching hate**_{LS26}) which is related.

Access to Information. No mention in either dataset.

Right to Security of the Person. Security was a major issue in both elections and this was reflected in the data. Social data included clusters such as **deadly riot**_{LB21}, **bomb blast**_{NS52}, **hotlines**_{NS56}, **peaceful**_{LB49}. Formal data in Liberia also mentioned the **peaceful atmosphere**_{LB49} along with the riot at the **cdc headquarters**_{LB21}.

Right to an Effective Remedy. This obligation is deemed to be not covered by the study since the pursuit of remedies is typically undertaken across a wider period than the immediate election period.

Right to a Fair and Public Hearing. This obligation is also deemed to be not covered for similar reasons.

Table 10: Comparison of social and formal monitoring based on major election parts as defined by Davis-Roberts & Carroll (2010). Notable differences are marked with an asterisk (*).

Part	Social Monitoring?	Formal Monitoring?
Legal Framework	No*	Yes
Electoral System and Boundary Delimitation	N/A	N/A
Election Management	Yes	Yes
Voter Education	No*	Yes
Voter Registration	N/A	N/A
Parties, Candidates, and Campaigns	Yes	Yes
Voting Operations	Yes	Yes
Vote Counting	Yes	Yes
The Media	Yes	Yes
Electoral Dispute Resolution	N/A	N/A

5.5.6.2 Parts

Legal Framework. As discussed above, this part featured prominently in formal data and not at all in social data.

Electoral System and Boundary Delimitation. This part is deemed to be not covered by this study since electoral system formation and boundary delimitation take place well before the election period.

Election Management. Both datasets refer to this part. Social data includes clusters such as **inec pls**$_{NB46}$ and **election materials**$_{NB93}$, while formal data includes the **electoral preparations**$_{LF78}$ cluster, among others.

Voter Education. Only formal data referred to this part (**voter education**$_{LF42,NF59}$, **how to mark**$_{LF4}$ (the ballot)).

Voter Registration. This part is deemed to be not covered by this study since voter usually takes place well before the election.

Parties, Candidates, and Campaigns. Both social and formal data unsurprisingly made frequent mention of candidates and parties (e.g. **political parties**$_{LB33,NF5}$, **ma ellen**$_{LB3}$, **goodluck**$_{NB16}$, **pdp**$_{NB3}$).

Voting Operations. Both social and formal data also made frequent mention of voting operations. For social data, this was especially true for Nigeria (**party agents**$_{\text{NB28,LF3}}$, **poll workers**$_{\text{LF2}}$, **presiding officer**$_{\text{NB83,LF10}}$, **returning officer**$_{\text{NS91}}$, **massive rigging**$_{\text{NS16}}$, **my polling unit**$_{\text{NS64}}$).

Vote Counting. The **both** column in both countries contained several references to this part, including **counting process**$_{\text{LB43}}$, **result sheets**$_{\text{NB73}}$, and **collation centres**$_{\text{NB57}}$.

The Media. Social data in both countries made frequent reference to traditional media (e.g. **truth fm**$_{\text{LS8}}$, **@channels_tv**$_{\text{NS68}}$). Nigerian formal data contained several references to the EU's media analysis activities (**direct speech**$_{\text{NF28}}$, **privately owned**$_{\text{NF64}}$, **broadcast media**$_{\text{NF65}}$).

Electoral Dispute Resolution. This part is deemed to be not covered by this study by similar reasoning as with the Right to an Effective Remedy obligation above.

5.6   Discussion

The research question that gave rise to this study asks about the relative merits of social media and formal election monitoring in assessing the integrity of an electoral process. The results presented above suggest that there are two main answers to this question. The first is that the two approaches are complementary to each other in multiple ways that are not likely to change. The second is that there seems to be a contested middle—a set of roles currently played by both social media and formal monitors—in which there may be some transformation as social media technologies continue to mature and proliferate. The remainder of this section reviews each of these "answers", followed by a reflection on the method used to arrive at them.

5.6.1   Complementarity

The comparison of the two methods within the election standards framework makes it clear that there are several key obligations and parts in which the social data was found lacking. Perhaps the foremost among these was the Legal Framework part, and

related obligations. The prominence of this topic in the formal data is understandable. Formal monitoring missions often employ a full-time expatriate legal adviser who studies the electoral legal framework in advance of the election, contributes considerably to report writing, and monitors the fidelity of the electoral process to its legal blueprint. The absence of this interest on social media is also not surprising. The general public is not likely to be as interested in procedural minutiae as it is in higher-level concepts and personalities. Ultimately, this phenomenon might be considered an artifact of modern democracy in which the details of the system's functioning remain below the attention of most citizens unless they become problematized. This does not, however, negate the importance of those details to the integrity of the election, nor the necessity of their being monitored. Elections are deeply connected to the law, as became starkly apparent in the dispute following the 2000 U.S. presidential election, for instance. Based on this reasoning, I contend that attention to the electoral legal framework and complaints processes are likely to remain chiefly the purview of formal monitoring missions, and that this an important function for such groups to continue to fulfill.

A second set of obligations and parts in which formal data excelled broadly concerned the rights of minorities and disadvantaged groups. For instance the State Must Take Necessary Steps obligation deals with disabled access and voter education; the Universal Suffrage obligation concerns enabling the widest possible pool of voters (in practice it is the disadvantaged who are often at highest risk of disenfranchisement); and the Equality/Absence of Discrimination obligation is also clearly related. Each of these obligations were present in the formal data but not in the social data.

It is clear from the standards and from common sense that minority issues such as these are central to the integrity of an election in a true democracy. While social media can be an important carrier of discourse on minority issues, popularity

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is perhaps the most important indicator of value in the social media world and determines more than anything else which messages get seen. Twitter's trending topic system and Facebook's 'like' mechanism are examples of this. By contrast, the issues given priority in formal monitoring reports are by the election standards and other institutional principles that may deviate from the interests of the majority.

Social media also played several roles that seemed to enhance the integrity of the process, but that lie outside of the electoral standards framework. The first is the promulgation of calls to action and patriotic sentiment. These functions, especially the former, serve to spur the democratic participation without which an election's legitimacy suffers. This is especially true of Nigeria's youth demographic for which social media has invigorated political participation in an important way. However, patriotism and calls to action are not strictly monitoring activities, and are thus presented as something of a side note here.

Social media also offers the capability to support intervention in problematic situations such as violence or malfeasance. This capability was reflected in topics such as **massive rigging**$_{NS16}$, **hotlines**$_{NS56}$, and **looting**$_{LS63}$, and borne out further in several incidents that are described in Chapter 4. With regards to election standards, this capability relates strongly to the Right to Security of the Person, in the case of violence, and several obligations including Equal Suffrage (e.g. for multiple voting), Prevention of Corruption (e.g. for improper use of state resources by incumbents), Secret Ballot (e.g. for vote buying), and Expression of the Will of the Electors (e.g. for doctoring of results). Naturally, formal monitoring bodies also pay close attention to these events, but tend not to intervene out of respect for the sovereignty of the host nation.

5.6.2   A Contested Middle

One of the most surprising findings of this study was the number of topics related to low-level election mechanics (i.e. Voting Operations and Vote Counting parts) that turned up in the Nigerian social media data. These topics were not examples of high-level or iconic election terminology (e.g. **ballot**_{NB35}). Rather, they were specialized, less common terms such as **party agents**_{NB28,LF3} and **collation centres**_{NB57} that demonstrate a concerted effort by social media contributors to monitor the election and report first-hand on its conduct. As discussed in the next chapter, these efforts bore fruit on several occasions and the promise/threat of social media vigilance appears to have entered the consciousness of the Nigerian body politic.

The level of bi-directional interaction between social media and INEC was also striking, evoking the Election Management part. As discussed further in the next chapter, INEC staffed an in-house social media team and made an earnest effort to respond to queries conveyed through the medium. The high rankings of the **inec**_{NB1} and **jega**_{NB2} clusters attest to this. Similarly, Nigerian social media showed its willingness to take INEC to task, as reflected in topics such as **inec pls**_{NB46} and **inec should**_{NB46}.

These topics did not feature as prominently in Liberian social media. On the other hand, the Liberian data featured references to international and domestic monitoring groups and the international community more broadly, while Nigerian data contained neither. This difference is likely a function of the smaller size and maturity of the Liberian user base and the absence of a concerted civil society effort to encourage sharing of citizen observations on social media. This topic is partially addressed in the next chapter.

In any case, it is apparent that unlike legal concerns, minority issues, calls to action, and emergency intervention, the monitoring of election-day mechanics is squarely in the purview of both formal monitors and social media. We might subsequently be tempted to ask whether social or formal monitoring does a better job in this specific

area. Based on the results shown here, it seems that each has important contributions to make. For example, the data reveal that EU observers witnessed an instance of ballot box snatching in Akinyele, Nigeria (European Union Election Observation Mission, 2011a) that went unreported on social media, while Liberian Facebookers reported on fire and looting episodes not witnessed by Carter Center observers. Both approaches have also at times dwelt on issues of questionable import. For instance, Liberian social media obsessed over vice-presidential candidate George Weah's allegedly spoiled ballot in a mocking fashion that came across more as partisan name-calling than a substantive discussion of merit. In fact, much of the discourse in Liberian Facebook groups carried a similar tone. Meanwhile, Carter Center observers repeatedly reported problems with inking procedures and missing hole punches, even though these issues were barely mentioned later in the mission report. There are many further such examples.

It is certainly clear, especially from the Nigerian case, that social media audiences and contributors both show an affinity for information related to election-day mechanics. Whether social media monitoring could soon be sufficiently extensive to obviate formal monitoring of election mechanics by teams of trained observers—one of the costliest aspects of a formal monitoring mission—remains to be seen. The data presented here suggest that this may be a possibility, assuming sufficient support and coordination by civil society.

However, it should also be noted that the population of the host nation is not the only audience of a formal international monitoring mission (Hyde, 2011). Other states and supranational bodies also rely on the pronouncements of formal monitors to inform their policies, and such actors are likely to be cautious in regarding information generated from non-traditional sources. Furthermore, it is these same actors that provide the bulk of the funding for formal monitoring activities.

5.7 Methodological Reflections

The hybrid method used in this study is a novel one, representing a compromise position between what would be an insurmountable manual coding task on the one hand and the need for some human interpretation on the other. Based on my intimate knowledge of the raw data used in this study, I feel that the topic clusters produced by the method were by and large representative of the underlying content. The method and the analysis software created for this study could be widely applicable to other domains as a tool for comparative study of social media. As discussed in the next section, it is one of few methods cut out for this task.

The method is, however, not without its limitations. Inevitably, some topics made the top 100 in one dataset while their counterparts, sometimes due to different phrasing, did not emerge in another dataset. For example, the topic **bomb blast$_{NS52}$**, referring to the pre-election bombings of two INEC offices, appeared in the Nigerian Twitter data, but no corresponding topic surfaced in the EU analysis. Even though the EU report mentions the bombings three times, each occurrence is worded differently ("a bomb exploded", "bomb explosions", "explosion of a bomb"), whereas "bomb blast" is the usual expression in Nigerian parlance for that all-too-common event. For this reason, only the n-gram **bomb blast$_{NS52}$** ranks highly, and the only reference to the bombings in the final data is in the **social-only** column.

A related limitation shared by any method that uses frequency-based methods is that topics that may be highly salient but infrequently repeated may lose out to less interesting but oft-mentioned topics. For instance, in Liberia, there were a small number of expatriate Twitter users on the ground in Monrovia during the election. These contributors posted first-hand accounts of several events such as campaign rallies and voting activities. However, their relatively small number of tweets was drowned out by the cacophony of similar-sounding re-tweets of international headlines about the Liberian election and Ellen-Johnson Sirleaf's Nobel Peace Prize win. This

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same phenomenon did not occur in Nigeria, apparently due to the much larger number of tweets by Nigerian authors. Future work could experiment with techniques for giving more weight to some less frequently mentioned topics where appropriate.

A final limitation of the method as currently implemented is the need for some sampling due to the incapability of Tweetmotif to deal with very large datasets. This could likely be solved with some re-engineering of the algorithm and its implementation.

5.8   Related Work

In this section I review related academic work of two types: that which has analyzed election monitoring via social media, and that which has endeavoured to automatically distill meaning from large amounts of social media content or similar textual data.

5.8.1   Social Media, Crowdsourcing, and Elections

A limited number of articles and reports discuss the recent adoption of crowdsourcing technology for election monitoring. Curiously, the vast majority of such reports focus on elections in sub-Saharan Africa. Additionally, virtually all work deals with SMS and mobile phones, perhaps because of the relatively recent adoption in Africa of newer forms of social media such as Twitter and Facebook[10].

In one recent paper, Hellström & Karefelt (2012) surveyed randomly chosen Ugandan phone users, asking them about their knowledge of an SMS-based election monitoring platform (*UgandaWatch*) in 2011. They found, among other things, that adequately publicizing such a platform is challenging and that most survey respondents

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[10]In one of the few reports from outside Africa, Salazar & Soto (2011) describe ¡Cuidemos El Voto!, an initiative in Mexico using crowdsourced reporting and the Ushahidi incident mapping platform to monitor that country's 2009 election. They noted that most reports were made via the web and Twitter, while SMS was scarcely used at all. This supports the idea that SMS use for this purpose declines with the availability of newer media.

had not heard of the platform.

In discussing SMS-based election monitoring in Zimbabwe, D. Moyo (2010) suggests that "the knowledge that there is someone wielding a mobile phone who can instantly send a text message reporting an incident can serve as a deterrent against rigging." This is a powerful notion that I will return to severally in this dissertation. Moyo makes a second key observation when he says that for crowdsourced monitoring to work, "it was necessary to have a coordinating force at the centre in the form of a well-resourced organization with the necessary tools to receive and send out bulk SMS messages." This need for coordination seems equally relevant to social media-based monitoring, as will be discussed in the following chapters.

Also in Africa, Heacok (2009) examined technology use for monitoring in three elections, two of which were crowdsourcing initiatives (Nigeria 2007, Kenya 2007). She concluded that "By allowing voters to become reporters and evaluators, mobile phones encouraged citizen participation and a greater sense of ownership in the political process." On the other hand, she suggests that "Mobile monitoring is too informal to replace international monitoring missions." Unfortunately, both of these statements are presented with minimal empirical support. That said, Heacock's impressions represent a seemingly common belief about crowdsourced election monitoring.

In fact, a pair of articles by Verclas, Schuler, and Heatwole say much the same thing (I. Schuler, 2010a; Verclas & Heatwole, 2010), stating that citizen reporting is "based on sentiment and in-the-moment impressions from citizens" and "cannot serve as a trusted source about the conduct, validity or fairness of an election" because it is not "representative or standardized" and therefore is "not meant to be a means of judgment about the quality or conduct of an election." As justification for these similarly broad claims, the authors offer poor participation statistics in a series of citizen reporting initiatives.

While it seems indisputable that some of these earlier programs were minimally

effective, I question whether these initially modest results merit the generalizations expressed by the above authors. In particular, I call attention to the difference between SMS-based initiatives and those centered on modern social media (Twitter/Facebook). A considerable drawback of SMS, as hinted at by D. Moyo (2010), is the comparatively higher difficulty and cost of broadcasting on the medium. Bulk SMS messages are costly and lists of valid phone numbers can be difficult to come by. Conversely, tweets are of near-zero cost and designed to be easily discovered via the hashtag mechanism. The implications of these differing affordances remain to be seen.

Indeed, a recent report on efforts to coordinate social-media-based citizen reporting for Nigeria's 2011 elections features compelling results, stating that "social media fed the perception by traditional media of a transparent process." (Asuni & Farris, 2011) The report goes on to offer several provocative recommendations that counter some of the above reasoning. It suggests that international organizations interested in election monitoring should "Partner with domestic observer groups who have established a track record of utilizing social media tools" and "Rely less on costly foreign observer teams who often restrict themselves to limited areas of the country."

5.8.2 Processing Social Media

A wide array of literature endeavouring to automatically process and distill meaning from social media content has emerged in recent years. Various researchers have experimented with detecting events referred to in streams of posts (Becker, 2011; Schinas et al., 2012; Shamma et al., 2011), automatically summarizing a set of posts (Nichols et al., 2012; Takamura et al., 2011), and evaluating the sentiment expressed on a certain issue (Go et al., 2009; Kouloumpis et al., 2011; Narr et al., 2012; Pak & Paroubek, 2010; Wang et al., 2012). Other empirical work has sought to computationally probe certain characteristics of the social media discourse, such as gender

(Bamman et al., 2012), geographical lexical variation (Eisenstein et al., 2010), and social tie strength (Gilbert & Karahalios, 2009).

But the most frequently studied area appears to be automatic discovery of topics in a social media dataset. One of the earliest efforts was the Tweetmotif system used in this study (O'Connor et al., 2010). Since then, multiple other techniques and tools have been applied to the problem. One group used Thompson Reuters' OpenCalais tool (Liu & Jansen, 2012). Several have applied latent Dirichlet allocation (LDA), a fairly recent topic modeling algorithm (Dimitrov et al., 2012; Roy et al., 2012). (Zhang et al., 2011) proposed a novel topic model for social media based on a post's author name and temporal information in addition to its textual content. Another paper introduced a technique based on "generalized stochastic blockmodels" (Dai et al., 2012). For Twitter specifically, Rosa et al. (2011) designed a supervised technique that relies on hash tags.

An unfortunate issue with this literature seems to be a lack of common benchmarks for comparison and evaluation. Each of the above papers uses its own metrics and sample datasets, making it difficult to compare their performance. I chose the Tweetmotif system for this study because it is highly cited, its source code is readily available, and it yielded sound results in early experimentation.

5.9 Conclusion

In summary, this chapter makes several contributions. First, it offers new empirical data to the debate over the usefulness of social media to the practice of election monitoring. The data presented clearly demonstrate that not only does social media carry certain key forms of election discourse not within the purview of formal monitoring (calls to action, emergency intervention), it also has important contributions to make to certain facets of orthodox monitoring practice. Contrary to some earlier assertions, social media are able to make concrete empirical observations about the conduct of

an election.

This work also highlights several shortcomings of social monitoring. The social monitoring community would do well to examine these shortcomings and make efforts to expand their efforts to fill gaps. This is not to say that the priorities of the international formal monitoring community should be taken up verbatim by social monitoring enthusiasts. But just as the formal election standards were developed organically within that community, so too could the social monitoring community come up with its own standards. How to develop and promote those standards via a citizen-based, electronic medium is an interesting topic for further work.

Methodologically, this work has successfully proposed and demonstrated the first (to my knowledge) partially-automated method for comparing large corpora of short documents. This method could easily be applicable to other comparative work as disparate research communities seek to deepen their understanding of social media in comparison to extant information sources.

CHAPTER 6

RECIPROCAL ACTION RESEARCH

The field of ICTD continues to grow, and the question of how digital technology can be used in service of international development continues to attract researchers from multiple academic disciplines. Researchers from a subset of these disciplines, including computer science and information science, are often technically inclined. Such researchers and the groups in which they operate desire to make positive change in areas of need through the creation of new technologies, whilst also contributing knowledge to the academy, earning a credential, and building a career.

This interventionist stance stands in contrast to the typical approach of researchers from other fields, such as the social sciences or economics, who seek to study existing structures and institutions with a minimum of perturbation. Intervention, on the other hand, usually involves proposing, deploying, and evaluating technical solutions to development problems, often in collaboration with a "local partner" from the developing region on which the work is focused.

This chapter takes a close look at this type of research engagement, asking:

> *What are the ethical issues involved with developing new technologies in a developing-world context for the purposes of academic research, and how can these issues be addressed?*

In particular, this chapter examines the tension between the requirement to satisfy research goals and the desire to provide practical, robust solutions to real problems that is inherent in such research. Chief among these research goals is the production of a technically novel artifact that must do more than just apply an existing idea to a new environment—if applying existing ideas to new environments ultimately spurs

technical innovation, it is the innovation which is reported most prominently. Solutions which satisfy this requirement for novelty may be too complex or unnecessarily advanced for the problem at hand. The sustainability and scalability of the solution may suffer as a result.

While this tension between research and practice exists in many fields, it is especially salient in ICTD since projects in this field tend to exhibit asymmetric power relations between researchers and local partners. This dynamic may unconsciously tend to steer the project towards technical novelty at the expense of practical utility.

This is not to say that simultaneously practical and novel solutions do not exist for some problems. However, in this chapter I propose another option. I introduce a research approach that called *reciprocal action research* (RAR) that attempts to assuage the tensions outlined above by consciously recognizing the exigences of international development, academic research, and the researcher's own ethical considerations.

I first explore in greater detail, with reference to extant literature, the conundrums faced by ICTD researchers. I also review the traditions of action research and participation, drawing attention to formulations that most resonate with the topic at hand. These reflections lead into the definition of RAR, followed by a recounting of how the approach was applied during the conduct of the research described elsewhere in this dissertation.

6.1   *Research/Practice Tension in Interventionist ICTD*

As ICTD is a deeply interdisciplinary field, there are many flavours of ICTD research. Some projects examine the organic proliferation and use of technology among citizens of developing regions and contemplate the implications for both the region of interest and the rest of the world (e.g. Smyth et al., 2010; Jensen, 2001). Some research monitors and evaluates ICT-related development projects carried out by international development organizations. Still other ICTD research introduces new technologies

and examines their use and effect. It is this last kind of project that I am calling *interventionist* ICTD.

Interventionist research may be further broken down into sub-types. Some research may create and introduce a technology as a probe through which to understand some social phenomenon (e.g. Wyche et al., 2009). Other work may introduce a technology taken from a different context and study its adoption. Still other research aims to produce and deploy a new and technically novel solution to a development problem. With this sort of research a technical audience is envisioned, and the findings are intended first and foremost as contributions to a technical discourse.

Research envisioned in this last fashion is faced with a particular tension. What if the appropriate solution to the problem turns out to lack novelty from a technical standpoint? Is it ethical to discontinue the research for lack of "results" when positive, practical effects are within reach? What if a sufficiently novel solution may be more difficult to maintain, scale, or sustain over time? Is it ethical to opt for this solution nonetheless?

References to these dilemmas appear in the ICTD literature. A reflection by a group of ICTD student researchers outlines a variety of cases (Anokwa et al., 2009). One researcher reflected on choice of technical architectures, saying he: "found their choice of platform and languages to be outside the scope of local programmers. ...Tiered architecture, model-view-controllers, and object-oriented development were just out of the question." In this case, the researcher decided to switch platforms.

Another researcher described sour reactions of potential local partners who has interacted with foreign researchers previously and were: "quite bitter about their previous experiences. Many of these consisted of one-off, short-term deployments that had subsequently broken down unannounced."

Scalability also became an issue in at least one case: "Our prototype was robust enough to deploy but now we have scores of installations around the country and

cannot keep track of updates, feedback, or bugs from the field." Here, a project focusing on technical novelty was not ready for widespread adoption when demand quickly rose.

One researcher experienced the epitome of the research/practice dilemma: "After speaking with a number of organizations about a promising idea, [he] realized that his project scope was too large and the *research contribution too small*, so the idea had to be put on hold" (emphasis added).

It should be noted that some interventionist projects do succeed in achieving technical novelty and practical utility, sustainability, and scalability. Some examples can be found in relevant reviews of literature (Ho et al., 2009; Toyama, 2010). However, for each such success there are undoubtedly many failures. In informal discourse within the ICTD community, failure of interventions is acknowledged as a perennial bugbear more so than in other fields.

The literature also sometimes acknowledges this. Richard Heeks has written broadly on the topic of failure of information systems in development (e.g. Heeks, 2002), coining the term "design–reality gap" to account for the phenomenon. I see the tension between research and practice described here as an incarnation of the design–reality gap particular to the interventionist/research-driven activity space. That is, the design of a project may emphasize technical novelty and research contributions, while the on-the-ground reality of that project may eschew those same features.

Toyama (2010) also points to the danger of a techno-centric mentality in his review of the field. He says, "One of the oft-recurring lessons in ICT4D is that technology alone is almost never enough to make an impact." An even more recent phenomenon that speaks to the prevalence of failure in ICTD is FAILFaire[1], a series of workshops devoted to examining the failure of ICTD projects. The FAILFaire at the 2012 ICTD

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[1] http://failfaire.org

conference was one of the best-attended sessions at the event.

In short, I suggest that international development and ICTD research is challenging enough without a requirement for technical novelty. Adding that requirement gives rise to a pronounced tension between research objectives and practical utility. Fortunately, the ICTD community is not the first to have encountered this dichotomy. The next section describes action research, which may be seen as an attempt to bring research and problem solving into greater harmony.

6.2   Action Research

Action research is ultimately about sharing—of goals, of experiences, and of results. It is an approach to research that relocates the researcher from spectator to participant, and contends that the rigors of the scientific method are often inappropriate for the study of messy human relationships and environments. It prescribes "the active and deliberate self-involvement of the researcher in the context of his/her investigation," (McKay & Marshall, 2001) and the engagement of "people who have traditionally been called *subjects* as active participants in the research process." (Stringer, 2007) Therefore, action research is also fundamentally about the unification of research and practice. As Rapoport (1970) tells it, "Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework."

But since Rapoport's writing, interest in action research has spread beyond just social science. Researchers from a variety of backgrounds have employed action research to ICTD projects, many of them in the health sector. Jørn Braa (a Norwegian informatics researcher) has led an extensive action research program around health informatics in developing regions (e.g. Braa, Monteiro, & Sahay, 2004). Sharma (a development professional) and Sturges (a library studies researcher), studied ICT's contribution to healthcare delivery in multiple nations (Sharma & Sturges, 2007).

Korpela (a computational medicine researcher) studied the adaptation of Western systems the healthcare sector in Nigeria (Korpela et al., 2000). Chetty and Grinter (both HCI researchers) engaged in action research around rural health services in South Africa (Chetty & Grinter, 2007). In one of the few non-health-related ICTD action research projects, Gitau, Marsden, and Donner (who each embrace a blend of computer and social sciences) explored mobile-centric Internet use by training women residents of Cape Town to use the data features on their mobile phones (Gitau et al., 2010). The appearance of action research in the ICTD research canon, though somewhat limited, is nonetheless encouraging. However, only one of the above projects (Chetty and Grinter) was interventionist per the definition above. Thus the merits of action research in interventionist ICTD would appear to be highly under-explored.

Multiple formulations of action research have been advanced over the past few decades. One text dedicated to the topic claims there is no clear single history of the method (Stringer, 2007). But most formulations involve some variety of *look–think–act* or *plan-act-reflect* cycle. For instance, Rapoport's (1970) definition prescribes the cycle shown in Figure 9, featuring five phases: diagnosing a problem, planning action, taking action, evaluating consequences, and specifying general learnings. An "infrastructure" of relationships within the system of interest binds the phases together.

In later writing, McKay & Marshall (2001) problematized the supposed lockstep unity of research and problem solving embodied in single-cycle models. They argued that real-world situations are rarely so ideal and explicitly called out the dual imperatives of the action researcher: "to bring about improvements through making changes in a problematic situation" and "to generate new knowledge and new insights as a result of his/her activities." Claiming that a single cycle fails to adequately model this reality, they put forward a *two-cycle—* model: "The first cycle relates to the researcher's problem solving interests and responsibilities, the second to the researcher's
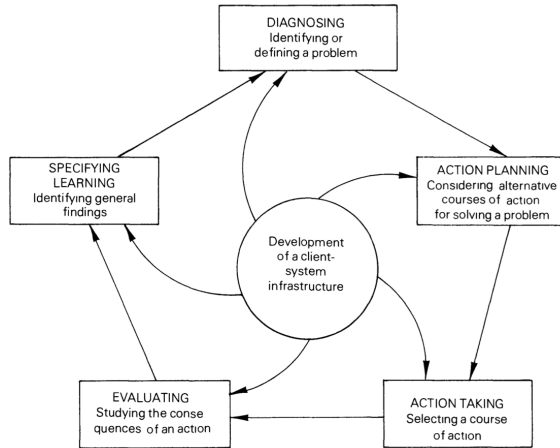
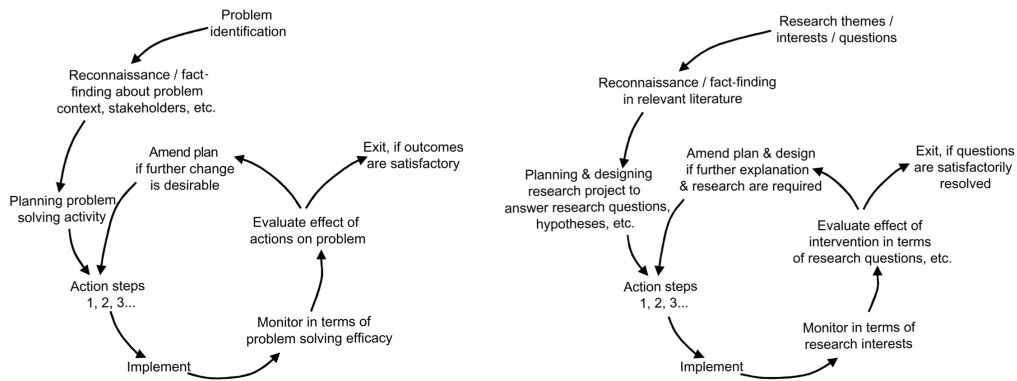Figure 9: Rapoport's action research cycle (Rapoport, 1970).

Figure 10: The dual action research cycles of McKay & Marshall (2001).

research interests and responsibilities." The two cycles, shown in Figure 10 operate in tandem. It is the second cycle, they claim, that differentiates action research from mere consultancy.

This newer formulation seems to better articulate the research/problem-solving tension described above. It acknowledges that simply undertaking and working to solve a real-world problem does not necessarily lead to a publishable research finding. It underlines the dual lives of an action researcher, especially one in an academic position. Since its publication this idea has received considerable attention, suggesting that many researchers have experienced this duality. Chiasson et al. (2009) present a helpful review.

Dimond also considers research/problem-solving tension and the role of the researcher, suggesting "emancipatory action research" as a formulation of action research that is more considerate of that tension (Dimond, 2012).

However, no reference to the dual-cycle model or emancipatory action research is found in the ICTD literature. Later in this chapter I suggest a further refinement of these ideas that explicitly considers the power relations involved in ICTD research. But first I review a related idea, participation, that *has* garnered considerable attention in development circles.

6.3   Participation

The word "participation" makes frequent appearance in contemporary development discourse. Participatory rural appraisal, for instance, is a common technique for incorporating local residents into the planning of development projects. The terms "participatory learning and action", "participatory development", or simply "participation" usually refer to the same idea. Proponents contend that development projects are more likely to succeed when the planning process includes those that the project is being designed to serve. This attitude emerged in reaction to the more top-down project styles of previous decades (Chambers, 1995).

The related tradition of participatory design (PD) traces its roots to Scandinavia, where it was developed by labour unions who wanted more say for their workers in the design and use of computer systems in the workplace (Bodker, 1996). PD has drawn considerable attention from research communities such as Human-Computer Interaction (HCI) and urban planning, among others. The biennial participatory design conference has been held 12 times.

The connection between action research and participation is evident. Both ideas share an ethic of inclusivity in decision making and research. Bodker (1996) describes some of the first participatory design projects in Scandinavia as adopting an action

research approach. Participatory action research (PAR) is a one tradition of action research that in some circles is synonymous with it.

Not surprisingly, participatory approaches have also surfaced in the ICTD literature. Several of the projects mentioned in the previous section, especially those around health informatics in developing countries, reference participation along with action research as informing their methods (e.g. Braa, Titlestad, & Sæbø, 2004; Nhampossa et al., 2004; Puri et al., 2004; Kimaro & Titlestad, 2008). Winschiers (2006) discusses the use of participatory methods in the design of an education management system in Namibia.

Many of these works take a critical stance on participation's role in ICT design for development. This echoes a broader critical review of the concept in many areas of development, where it has become so commonplace. As Dearden & Rizvi (2008) summarize, "recent dialogues have highlighted the complex, and often hidden workings of power relations in the practice of participation." Cooke & Kothari (2001) are more specific, pointing out that in a participatory project, "project staff 'own' the research tools, choose the topics, record the information, and abstract and summarize according to project criteria of relevance." Similarly, Merritt & Stolterman (2012) suggest that, "Being present as an 'outsider' with means and resources for generating a technological intervention . . . implies a position of dominance that accompanies a designer's cultural identity." They propose the notion of "cultural hybridity," adapted from post-colonial theory, as a theoretical tool to bring cultural power relationships into greater focus in participatory development.

Heeks (1999) bluntly asserts that participation, as practiced, often ignores "context", "reality", "other factors", and "is itself ignored." The popularity of participation may also lead to "consultation fatigue" among certain populations. Hayward et al. (2004) relay a quote from a rural government officer: "It was all right when you just had one issue and people came along to a few meetings and it was nice to get

into town. But now it's to the point where it's really cutting into their time ..."

Many of these critiques resonate with the research/problem-solving tension posited earlier in this chapter: just as the researcher's inclination toward novelty may dominate in setting a project's agenda, so too can the researcher's participation in the project dominate the local partner's. As Winschiers et al. (2010) puts it, there is "participating", and there is "being participated". Such critiques apply equally well to action research, given the similarity of the two concepts. Is genuine participation really possible given the typical power relations in a development project? Are a system's utility, scalability, and sustainability likely to be prioritized when its novelty is paying the bills?

The next section suggests a different approach to action research that promises to mitigate some of these issues.

6.4   Reciprocal Action Research

Thus far, this chapter has argued that interventionist technology research in developing countries is plagued by a tension between novelty and utility. Technically skilled researchers wish to contribute to development efforts, but may feel restricted by the exigences of their academic community. While participatory methods promise to ease this tension, achieving genuine participation in a developing world context is difficult.

In this section, I propose a different approach to such research that does not attempt to fulfill the goals of the researcher and local partner in a single project. Instead, technical work is exchanged for experience, networks, and local knowledge that form the foundation of a separate but related research project *after* the period of initial consultancy is complete. Due to the spirit of reciprocal exchange on which it is based, I call this approach *reciprocal action research* (RAR).
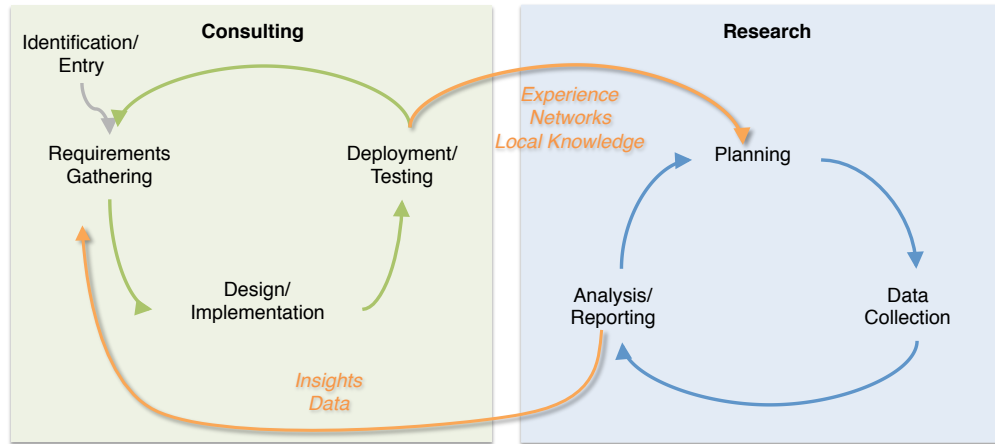
Figure 11: The dual, complimentary cycles of reciprocal action research.

6.4.1 Cycles

Figure 11 depicts the RAR process, which is composed of two distinct but interlinked cycles: consulting and research. Here, "consultancy" refers to work on a problem defined principally by the partner, as in a typical business relationship—not "consultation" (as in "consultation fatigue") wherein a development organization consults with local residents around a project whose agenda is principally controlled by the organization.

The consulting phase comes first, and begins with identification of a local partner and entry into the problem domain. The familiar, iterative requirements-design-implementation-deployment cycle follows for the consultancy phase. The research phase is begun when the deployment stage of consultancy feeds into the planning stage of the research project. Data collection, analysis, and reporting of research results follow. Those research results then feed back into the requirements phase of the consultancy, completing the bi-directional linkages between the cycles.

RAR stays true to action research principles in that both parties involved are interested in the same problem. The eventual research project is likely to be in the same general topic area as the consultancy, since staying in that area allows the

researcher to make best use of the relationship with the local partner. By converse, the results of the research are also likely to be of some interest and use to the partner. The difference is that the objectives of all stakeholders are not tied to a single project.

The research phase that follows the consulting phase relies in all stages upon the experience, networks, and local knowledge gained by the researcher during the consulting phase. The act of developing a working technical artifact in a real-world problem domain is likely to provide in-depth experience for the researcher that will be useful in forming a research agenda. The client-consultant relationship developed during the consultancy is also likely to be strong. The researcher can leverage this relationship to gain access to valuable social networks during the data collection stage of the research. Local contacts also serve as ready sources of local knowledge who can provide insight and assist with analysis and reporting.

At the conclusion of the research cycle, results from the analysis can be fed back into the consultancy cycle, if appropriate. Data collected and insights arising from the analysis can suggest improvements or new additions to the technical artifact. Contacts made during the research phase may be interested in joining the project or using the product.

6.4.2   Guidelines

The following guidelines summarize the process and suggest concrete steps for action.

1. **Identify a local partner** who shares interest in a problem domain or area of practice. Focusing on a specific domain of interest will help ensure that a relevant research topic will emerge from the consulting phase.

2. **Build a relationship** with the partner. Begin by frankly and openly describing research goals, technical skills, and the RAR process itself. If the partner is interested in collaborating, work together to discover a technical problem of joint interest.

3. **Gather requirements** for a technical artifact that solves the problem. In this process, the partner is seen as the client.

4. **Collaboratively design and implement** the solution to the technical problem. Standard interaction design and iterative development practices can be used if appropriate.

5. **Deploy and test** the solution. In this the final phase of the consultancy cycle, the solution is tested and put into use. The consultancy cycle then may begin again with the requirements gathering phase.

6. **Plan research** on a related topic. Throughout the consultancy cycle, ideas for research should be explored as familiarity with the problem domain is built by the researcher. As the consultancy cycle comes to a close, a research question should be chosen and research planning should begin. This phase and the following research phases may happen concurrently with the next consultancy cycle.

7. **Collect data** about the research question. Contacts and networks developed during the consultancy cycle may prove useful in this phase.

8. **Analyze and report** research results. Results should be shared with local partners and may spawn ideas or techniques for future consultancy cycles. If the relationship with the partner is proving fruitful and there are obvious opportunities for further research, a new research cycle may begin with a new planning phase.

These guidelines differ from more typical Action Research guidelines in several respects. The presence of two semi-concurrent cycles (steps 3–5 and 6–8), and a separation of research concerns from practical concerns, differentiates these guidelines from most single-cycle approaches, including that of Rapoport (diagnose a problem,

plan action, take action, evaluate consequences, specify general learnings) introduced above (Rapoport, 1970). Considering the dual cycle model of McKay & Marshall (2001), these guidelines differ in that the first phase is deemed strictly a consulting phase and is intended to come *before* research begins. By handing control to the local partner in the formative stages of the project, RAR attempts to ensure that research agendas will not undermine the project's chances for practical success.

6.4.3 Summary

RAR is ultimately about the disruption of traditional power relations. At the outset of the project, the researcher becomes a consultant and takes instructions from the local partner. This turns the typical model of development on its head. The challenge of making a participatory project satisfy the goals of all involved is removed, and the desire of the researcher to apply their technical skills in service of a development goal is fulfilled. The research that comes later, informed by concrete experience and knowledge, is also more likely to succeed. In the next two sections I demonstrate these ideas through a review of the application of RAR in my own research.

6.5 Aggie and the SMTC

In March of 2011 our lab in Atlanta was contacted by Amara Nwankpa, a member of the Nigerian youth-led democracy group *Enough is Enough (EiE)*. EiE had identified Nigeria's online youth as their demographic of focus for outreach activities during the upcoming election. Part of their strategy for reaching this group was aggressive use of social media. They also devised a campaign called RSVP—Register (to vote), Select (credible candidates), Vote, and Protect (your vote). One of several billboards taken out to promote the campaign is shown in Figure 12.

The vote protection element of the RSVP campaign implored voters to be vigilant and report any irregularities or fraudulent activities via social media or other means. As part of this initiative the group decided to establish a situation room dedicated to

Figure 12: A billboard promoting the Register-Select-Vote-Protect (RSVP) campaign run by the Nigerian democracy group *Enough is Enough*.

monitoring social media for reports and information surrounding the election. This situation room would come to be called the Social Media Tracking Center (SMTC). A group of about a dozen youth volunteers was recruited to staff the room, which was set up in a hotel suite in Abuja, the nation's capital. Nigerian laws restrict movement on election days, necessitating overnight stays for SMTC staff on those days.

Nwankpa, who was familiar with our research group from past encounters, contacted the lab for help with establishing a software tool to assist operations at the SMTC. He wanted a tool to help identify and track pertinent information carried in the deluge of social media, particularly tweets, that was expected during the elections.

With the election just weeks away, our group first tried to find existing software suited to the task, and found a beta-stage open source tool that seemed to meet our needs. Through a helpful contact on the development team, we gained access to the software and set up an instance in time for the first round of elections in early April (see Table 1 for exact dates).

While the first round of elections ended up being postponed, the event still proved a significant test of the system as there was a flurry of social media activity leading up to and following the cancellation. The tool struggled under the load and several bugs in the system came to light. Our team worked with the developers to try to shore up the system in time for the postponed assembly elections one week later. Unfortunately the system continued to experience problems for that election.

At this point, with the pivotal presidential election looming and with a clear picture of the specific software requirements of the SMTC team, our group decided to rapidly develop a new, custom tool. It was dubbed *Aggie the Aggregator*, eventually shortened to *Aggie*.

6.5.1 System Features

Aggie performs four basic functions: crawling, scanning, trend monitoring, and incident monitoring.

Crawling entails the retrieval of messages ("reports") from Twitter searches, Facebook[2] pages, and RSS feeds. The search terms, pages, and feeds to consult are dynamically configured by the user.

Scanning refers to manual, rapid scanning of arriving reports by a team of monitors in search of pertinent information. Aggie allows a given user to "check out" a small batch of reports to scan. Only pertinent reports need to be marked as such, as all others are assumed non-pertinent when the batch is completed. This arrangement allows multiple team members to scan reports at the same time without duplicating effort.

Aggie also performs a kind of automatic scanning in which arriving reports are searched for pre-defined key phrases (e.g. "bomb blast" or "ballot snatching"). The system displays a series of histograms indicating the frequency of each phrase. Figure 13 shows two SMTC members gesturing towards Aggie's trend screen, which was on constant display in the Center.

The fourth key feature, incident monitoring, enables monitors to group pertinent reports into incidents. An incident represents a real-world event or phenomenon that the monitoring team deems worthy of continued monitoring and possibly escalation to relevant authorities. Monitors can add notes on the incident and update its status as it develops.

Each of these basic activities represents a stage in a narrowing flow of reports that

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[2]Facebook capability was not implemented for the Nigerian elections due to time constraints and the expectation that Twitter would be more active. Facebook was added for the Liberian elections later in 2011.

Figure 13: Two SMTC members gesture toward the Aggie trends page, shown on a large screen in the SMTC headquarters.
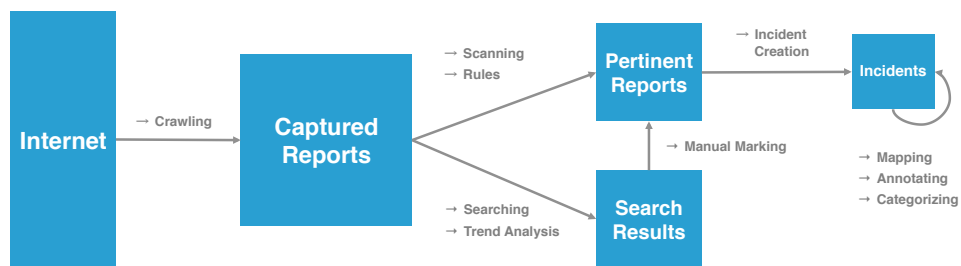

Figure 14: The narrowing aggie workflow that begins with the open Internet and ends with a list of incidents carefully curated by the monitoring team.

begins with the open Internet and ends with a list of incidents carefully curated by the monitoring team. That flow is depicted in Figure 14.

6.5.2 Usage

Aggie was used for the presidential and gubernatorial elections in Nigeria immediately after its creation. Several improvements were made between these two elections. Over a rapid series of short development iterations, our team developed the application from our lab in Atlanta and pushed changes to the web server also located in the U.S. The Nigerian team then tried out the changes and gave feedback.

Over the full election period, the software gathered over 700,000 reports, mostly

from Twitter. Incidents tracked using Aggie were shared with INEC and other relevant authorities (Asuni & Farris, 2011).

Aggie has also been used in several elections since Nigeria. For Liberia's 2011 elections, an Atlanta-based team associated with our lab staffed the deployment. A minimally-staffed instance was created for a special election in Nigeria in mid-2012. More recently, a fully staffed SMTC modeled on Nigeria's (though larger in scale) was assembled for Ghana's 2012 polls. Each deployment has resulted in valuable feedback on the system's design and the software has continued to evolve.

6.5.3 Research Inputs

The Aggie experience was invaluable to my dissertation research on social media and election monitoring. Four inputs to my research stand out in particular: a treasure trove of data, a network of insider contacts, first-hand experience of a social media election, and a resource for local knowledge.

The over 700,000 reports gathered by Aggie served as a primary input to the comparative study presented in Chapter 5. Given Twitter's notoriously restrictive policies on retrieving historical tweets, it would have been difficult to carry out that study had the tweets not been captured in real time.

Personally using Aggie and interacting with the SMTC team during the election provided an up-close experience of social media use in an African election. While I had followed previous elections at a distance, my experience with the Nigerian polls represented a much deeper level of engagement.

Furthermore, my collaboration with a team of Nigerians provided access to local knowledge that would otherwise have been difficult to obtain. Certain popular Internet memes at the time such as "akala is bleaching" and "#deprivednaijachildhood" (both described in Chapter 5) would have been hard to decipher without knowledge of Nigerian politics and culture. After the election, this resource continued to be

indispensable as I analyzed data and wrote about the experience.

Finally, the case studies reported in Chapter 4 would not have been possible without the network of insider contacts provided by Mr. Nwankpa and his colleagues. These contacts included other members of the SMTC, EiE, and other Nigerian civil society groups. During my 2012 visit to Nigeria to conduct interviews, Mr. Nwankpa arranged for my transportation, personally met with me on several occasions, and introduced me to friends and colleagues. This goodwill was the result of a professional relationship initiated through my technical contributions to the SMTC.

6.5.4 Consultancy Inputs

My dissertation research has led to a deeper understanding of election day processes and social media use during elections. In the comparative study described in Chapter 5, I employed a recently developed method for topic analysis of social media data. While this method was designed for use with a small number of tweets, I adapted it to handle much larger volumes. I am currently working on adding a feature based on this method to Aggie. Our group's relationship with Enough is Enough also continues to persist. It is likely that Aggie will see action again in Nigeria's 2015 polls.

6.5.5 Summary

Aggie was a rapidly conceived project that has thriven beyond its original usage scenario. It served the needs of the SMTC in finding actionable incidents in large quantities of social media data. It also served as an entrée for the Atlanta team to an intriguing social and political space that proved to be an engaging subject of research.

6.6 ELMO and The Carter Center

The Carter Center is a Western charitable organization and as such, a working relationship with the Center does not pose the same challenges of asymmetric power relations that were the inspiration for RAR. However, the I recount the following case

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as an example of RAR to demonstrate its applicability to a variety of situations.

Shortly after the Nigerian elections came to a close in the spring of 2011, I approached the Carter Center and expressed my interest in working with them during the summer. Having experienced the capabilities of social media as an election monitoring tool, I was keen to see how the older, more formal style of election monitoring was done. The Center agreed to hire me as a consultant.

After meeting with and offering technical advice to several of the various programs, it became clear that the most pressing need at the Center was to more thoroughly incorporate digital communications technologies into the election monitoring process that the Democracy Program had developed over decades using paper, telephone, and spreadsheets.

As was the case with Aggie, several existing open source tools seemed to fit the bill. The task of data collection in the infrastructure-scarce environments of the developing world (where the Center mostly operates) had become a common use case. The Open Data Kit (ODK) suite of tools seemed a leading choice. The software was open-source, active, well maintained, and in widespread use; the leaders of the project were colleagues of mine; the project had support from Google; and the system had been tested in environments similar to those likely to be encountered by the Center.

The ODK suite consists of several tools including: ODK Collect, which runs on Android devices and allows end users to collect data by filling out digital forms; ODK Build, which handles the design of forms; and ODK Aggregate, which receives data gathered using Collect and transmitted over an Internet link. After a thorough review of these tools, it was decided that ODK Collect met the needs of the Center while ODK Build and Aggregate did not. The separation of form construction and data aggregation precluded a more integrated user experience desired by the Center for the mission staff. Also, both tools lacked fine grained user account and permissions

management, among other features. While ODK Collect also needed some modifications, we decided to perform them and contribute the fixes back to the open-source project.

To replace the Aggregate and Build tools, a new tool was envisioned that would integrate form construction and data aggregation functions while adding other features. This tool soon came to be known as ELMO (short for ELection Monitoring).

6.6.1 System Features

ELMO integrates form design and data aggregation along with several other key features. The system supports multiple permission levels from observer to administrator. Users' login credentials can be generated and printed in batches for distribution during training sessions. For situations where longer text responses are common, forms can be completed using a web-based interface in addition to the Android based client. While ELMO allows export of gathered data to analysis tools in CSV format, it also allows basic tables, charts, and maps to be generated natively within the system. This is beneficial in election day situations where new data is steadily arriving and fresh reports are frequently desired. Figure 15 shows a stacked bar chart generated by the system.

ELMO also allows broadcast messages to be sent to system users via SMS, a heavily used feature. Location capture and editing is also possible. Figure 16 shows the location selection interface. A typical form edit screen is visible in the background.
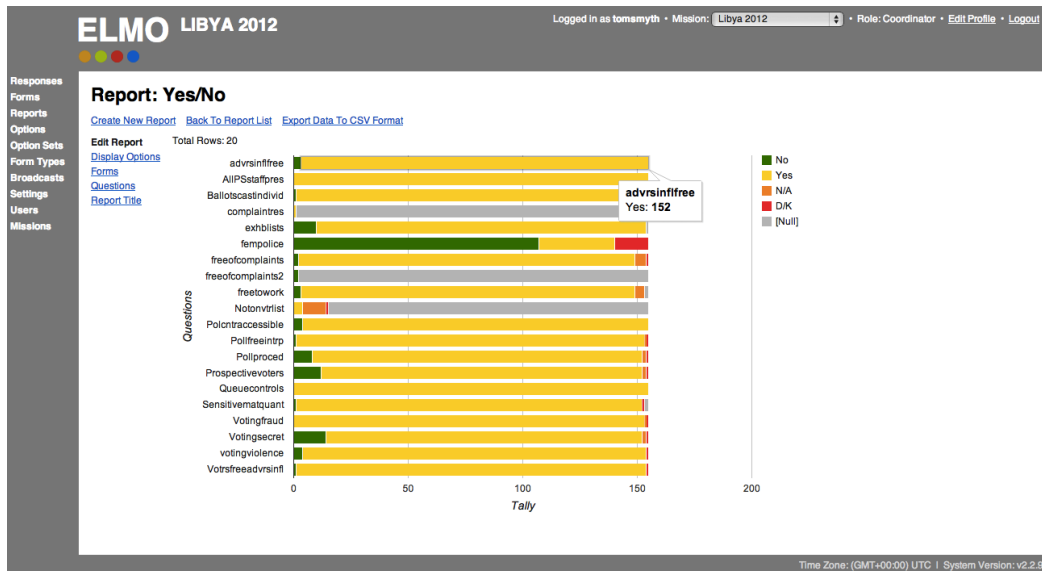
Figure 15: A bar chart generated by ELMO's built-in reporting system.
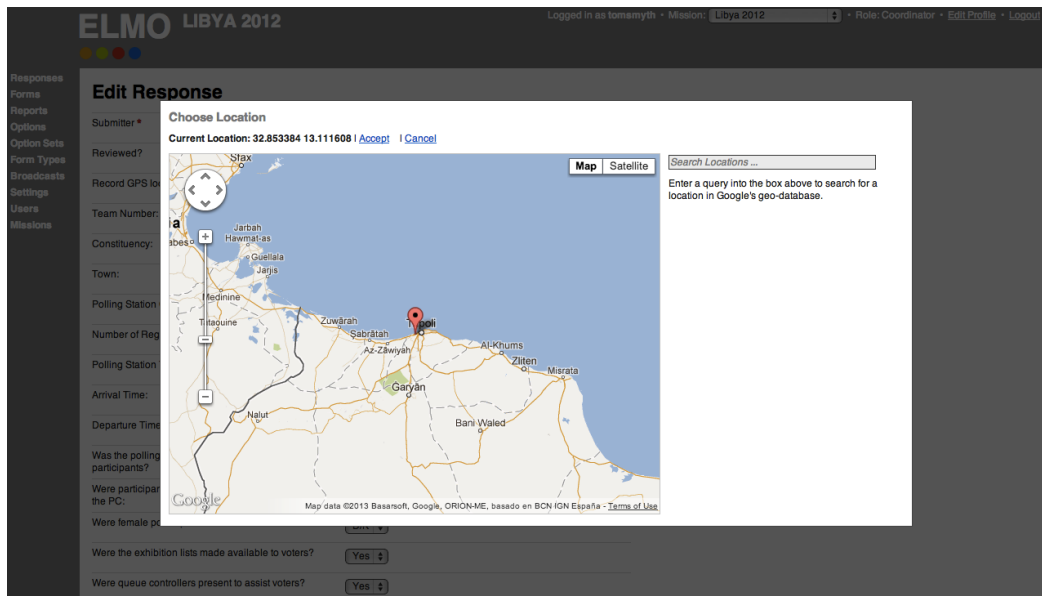

Figure 16: ELMO's map-based location selection interface. The form submission/editing interface is visible in the background.

Figure 17: Carter Center observers are trained in the use of the ELMO system during a mission in Egypt, 2012.

6.6.2 Usage

ELMO grew rapidly during the summer of 2011. Its first live deployment was for the Center's mission to Oklahoma for the Cherokee Nation elections[3]. The first overseas deployment, and a much bigger test, was for Liberia's elections in late 2011 (described in more detail in Chapter 5). ELMO was also deployed in Egypt and Libya for their 2012 polls. Figure 17 shows observers in Egypt being trained in the use of ELMO.

ELMO continues to be refined, with each successive mission providing more insight and suggestions for refinements.

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[3]The Carter Center rarely undertakes missions within the U.S. The Cherokee Nation mission was a special case in which a leadership election had been contested and the Center was invited to observe the run-off poll in an effort to dispel tensions.

6.6.3   Research Inputs

Just as my experience with the SMTC was illuminating with regard to the use of social media for election monitoring, so too has my consultancy with the Carter Center deeply informed my research and understanding of elections and democracy. As already mentioned, I was invited to participate in missions to Oklahoma, Liberia, and Egypt. Aside from technical work with ELMO on these missions, I was also able to visit polling sites as an accredited observer. This opportunity provided first-hand experience of a variety of polling configurations. Meanwhile, at mission headquarters I observed the day-to-day conduct of a monitoring mission, attended daily meetings, and participated in report writing. My role as the manager of the system responsible for much of the mission's data necessitated frequent interaction with the mission staff.

Aside from hands-on experience with formal election monitoring, my status as an employee of the Center was likely a factor in my ability to gain access to other research informants in Liberia. For example, as the Liberia Media Center grew in prominence during the Liberian elections, the Carter Center leadership took an interest in their use of technology to gather results. I was asked to go visit the LMC office in Monrovia and report back on their activities. I introduced myself as a Carter Center staff person interested in the LMC's innovative operations. I also demonstrated some parts of the ELMO system, as its goal of collecting data about the election was similar to that of the LMC's SMS-based system for results aggregation. While I have no doubt that I would have been welcomed by the always-cordial LMC staff regardless of my credentials, I also feel that I was able to make a better impression, engage in a more meaning conversation, and build a stronger relationship as a result. I would rely heavily on that relationship when I returned to Liberia in 2012.

As a third benefit of my work with the Center, I obtained access to a wealth of data about the Liberian election. Not only was my access to this data a result of my time there, so too may have been its very existence. Prior to the development

of ELMO, reports from observers were usually aggregated into summary tables due to the difficulty of managing the tens-of-thousands of data points that would result if every response to every checklist question were maintained. While the aggregate numbers (e.g. "95% of polling places opened on time") are an important part of the story, the study described in Chapter 5 was more interested in the individual textual responses to some questions (e.g. "The police officer at the Sinkor polling unit was asleep!") Were it not for ELMO, accessing this sort of response would have been difficult if not impossible.

6.6.4 Consultancy Inputs

The Carter Center has long been interested in the media as a key element of its observations. Media reports are often cited in mission reports. As social media becomes more prominent, the Center faces a dilemma over whether to afford such media the same attention given to its traditional counterpart. The question of credibility is foremost in this dilemma. During the Liberia mission I was given explicit instructions by mission leadership to not allow, or give the appearance of allowing, any information from social media to mix with the Center's own first-hand observations. The fear was that the mission's credibility would be damaged if it was supposed that unverified social media reports in any way factored into the mission's findings.

While this fear is probably justified, it is likely not the end of the story. As social media continues to grow in its democratic role, it will behoove the Center to consider it in their assessment. The comparative research described in Chapter 5 will likely be of help to the Center in building a more nuanced understanding of social media and how it compares to their own methods and results. As I continue in my role as consultant for the Center, I expect to be called upon to put some of this knowledge to use in future consultancy cycles.

6.6.5 Summary

I was hired as a consultant by the Carter Center to better incorporate digital technology into their election monitoring process. The result was ELMO, a data collection and reporting system that continues to evolve and is now a standard part of most election missions. Hands-on experience with the people, processes, and data involved in an election mission have deeply informed my research. In return, I expect that my findings in this dissertation will inform the Center's approach to election monitoring in the 21st century.

6.7 Conclusion

This chapter has proposed reciprocal action research, a new approach to interventionist technology research in developing world contexts. An RAR project begins with a consultancy in which the researcher offers their technical skills in service of a local partner. As the researcher fulfills this role, they also gather knowledge and resources that inform a subsequent research project. These two processes, consultancy and research, feed into each other in a potentially cyclical fashion.

I have demonstrated two instances in my own dissertation research where I have applied the principles of RAR with promising success. Additionally, I suspect that my work is not the first ICTD research to have taken such an approach. However, research community norms often encourage researchers to retrofit their narratives to conform to extant methods upon publication, so it is difficult to identify other applicable work.

It should also be noted that nothing prohibits the technology developed in the RAR consultancy phase from being innovative or technically novel. Indeed, certain aspects of the Aggie and ELMO systems have this characteristic. For instance, while many social media aggregation and analysis tools exist, Aggie is the only one that is designed to support incident monitoring. Similarly, ELMO is one of many data

collection and analysis systems, but it features several enhancements, including batch user operations, geographic reporting, and SMS broadcasting, that make it especially well suited to the strictures of election monitoring missions. But the key point is that both projects were not conceived primarily as technological innovations but as practical solutions to pressing problems. Technical innovation came as a natural, secondary product of effective problem solving, as well it should.

While the rationale given in this chapter situates RAR as a chiefly North-South concept (that is, applicable to projects involving researchers from the Global North and partners in the Global South), I suspect that it may be equally applicable to other configurations. Similarly uneven power relations can exist in North-North collaborations (involving marginalized groups, for instance), and likely in South-South collaborations as well. Academic researchers hold positions of relative power in many contexts throughout the world.

Another key consideration is that while RAR is designed for technically skilled researchers, the actual research carried out in the research phase of an RAR project need not, and probably should not, be interventionist in nature. In this dissertation, for instance, the research phase consisted of case study and content analysis work. Attempting an interventionist *research* project opens the researcher up to many, though not all, of the same pitfalls that inspired the RAR approach in the first place. Of course, the research design will undoubtedly be influenced by the researcher's community and target audience. Some communities and institutions may be reticent to accept research that does not prioritize technical novelty. Aspiring researchers interested in RAR may do well to seek out institutions and communities (e.g. human-centered computing, sociology, economics, anthropology, STS, etc.) that match the likely *research* outputs of their projects rather than the technical ones. The field of ICTD itself is thankfully (and inevitably) a multidisciplinary one.

Fiscal concerns also deserve mention here. RAR's emphasis on reciprocity and

attention to issues of power asymmetry would suggest that the consultancy phase should be of little or no cost to the local partner, especially in a North-South situation. Fortunately, this arrangement is often compatible with development funding structures. Private foundations and bilateral donors, while certainly subject to their own sets of incentives, often share RAR's primary interest in practical outcomes above technical novelty. Projects funded by such donors can therefore be structured along RAR lines. This was the case with Aggie and the SMTC, which was funded by a private foundation. Other sorts of research funding may also be applicable. Ultimately, for the purposes of securing funding, the entire consultancy phase of an RAR project can be considered as part of the field data collection process that is typical of many kinds of research. Future work could examine various approaches to funding RAR work.

A final consideration, and one that motivated this chapter, is that true beneficiaries of ICTD academic research are too often the researchers themselves, and not those whom the research is ostensibly intended to serve. Not only are researchers entitled to valuable job experience, exotic travel, and healthy compensation, but the results of their research often end up informing discourse and advancement in their places of origin as much as in their areas of interest. Reciprocal action research acknowledges this and suggests a path for a more authentic exchange.

CHAPTER 7

CONCLUSION

The explosion of social use of the Internet is a watershed moment of the information age, and the implications of this moment for our political institutions is only beginning to be understood. This dissertation has contributed in earnest to the pursuit of this understanding through an intensive examination of the interaction between social media and democratic elections in environments of mass media scarcity. In so doing, it has brought to light a series of takeaways that should be emphasized to the reader. This conclusion reviews those takeaways, which are empirical, methodological, and theoretical. It also discusses the limitations inherent in the work.

7.1   Empirical

Two principal empirical takeaways have arisen from the investigations reported in this document. First, it has been shown that:

> *Social monitoring performs well in some of the standard areas covered by formal monitoring, while being silent in other such areas. Social monitoring also does well in several areas outside of those typically of formal monitoring.*

Analysis of data gathered from both processes identified several distinct areas in which formal monitoring (legal issues, minority issues) and social monitoring (emergency intervention, calls to action) uniquely excelled. But in the key area of election-day mechanics like balloting, counting, and results tabulation, it was clear that both social and formal monitoring had much to say. Contrary to some common criticisms, social monitoring showed encouraging signs of robustness including coordination by

civil society, mobility of information beyond the limits of digital media access, and triangulation of reports across multiple forms of media in the interest of accuracy.

The implications of this finding are several. For one, commentators and practitioners in related areas should cultivate a more nuanced understanding of social monitoring efforts of all kinds. Absolutist positions such as "social monitoring is unreliable because it can be manipulated" need to be abandoned in favour of more realistic stances.

Second, the design of modern formal election monitoring operations may need to be reconsidered. While the results given here have shown that formal monitors fill a vital role in certain areas such as concern for legal and minority issues[1], they have also demonstrated that scrutiny of election-day mechanics are no longer the sole purview of formal monitors. Furthermore, as ordinary citizens become enlisted as social monitors on a broad scale, the numerical comparisons become stark. In Nigeria's 2011 poll, for instance, there were over 120,000 polling places. A large international formal monitoring mission may include 50 teams of observers, and each team can be expected to visit 10-15 polling places on election day, which sums to 750 observations, or about 0.6%. While concrete figures are not available for the number of citizens that contributed observations to the social monitoring effort for that election, it seems likely that they would have exceeded that level. Furthermore, formal monitors tend to be conspicuous due to their uniforms and/or foreign characteristics, making it easier for them to be evaded (Hyde, 2011). Of course, citizen monitors are less rigorously trained than formal monitors, information accuracy remains a concern, and so forth. But the current situation, in which social observations are mostly ignored, seems unnecessarily wasteful of a key resource.

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[1]It is also important to mention that this dissertation has not examined other pre- and post-election-day activities such as campaigning and voter registration.

One Nigerian campaign entitled *ReclaimNaija* featured an innovative hybrid model that bears repeating here. They deployed a modest number of trained monitors throughout the country and monitored social media information along with citizen reports received via an SMS shortcode. A noteworthy incident would usually give rise to several independent reports, a first indication of veracity. If the central office felt it was warranted, they could also dispatch one of their roving monitors to the area to verify the incident and gain further information.

This dissertation has also only begun to explore the kinds of information that are generated through social monitoring. Future work should take a more quantitative look at this such that any deficiencies could be addressed in future civil society coordination efforts. The formal monitoring community has a detailed, established standard for its monitoring operations. Nothing prevents the social monitoring community from developing its own standards.

A second empirical takeaway of this work is that:

There are clear mechanisms by which social media has the potential to build public trust in the electoral process in developing regions.

The rich dialog carried through the networked public sphere during both elections seems to have engendered a perception of greater transparency among connected citizens. Social media played a vital role in this perception. Election-day incidents appeared on social media within moments of their occurrence. Fraudsters were caught redhanded on video. Citizens cheered each other as they snapped pictures at polling booths with their camera phones. Preliminary, independently-tabulated results were circulated. Debates about electoral issues were enabled. Furthermore, in the case of Nigeria, the earnest engagement of INEC, the election management body, with social media was a boon. The organization maintained an attentive presence on Twitter and Facebook, leading many to celebrate its openness. All this stands in contrast

to previous elections in which the flow of information through traditional media was highly limited.

Furthermore, the immediacy and reach of social media may have contributed to the quelling of tensions during the election period, especially in Liberia. The agreement between the independently-tabulated results of the LMC and the official results of the NEC seems to have taken the sting out of the inevitable, partisan claims of electoral fraud that so many feared going into the election. Social media also served as a venue in which this discourse could be held. The example of the November 7 riot also suggests the possibility of social media as a way to distribute and discuss information in the wake of an incident with a high potential for escalation.

Finally, social media has served as an important bridge between local and diaspora populations from both countries. As is the case with many developing nations, much of the Liberian and Nigerian electorate and intelligentsia resides outside the country. The studies reported here showed that social media is enabling greater connection to and confidence in the political process at home for this important constituency.

The extent to which these effects reach, or will soon reach, beyond the relatively small populations of connected citizens upon which this study focused is an important question for future work.

7.2 Methodological

In arriving at the takeaways discussed elsewhere in this chapter, this dissertation also explored several novel variations on existing research methods and approaches.

The first is *a hybrid, semi-automated topic analysis of large bodies of social media data.* This method uses a frequency analysis to derive candidate topic n-grams from the data, and then furnishes a graphical tool used by a human analyst to quickly group candidate topics into clusters. The method attempts to take advantage of the best of automated and manual methods. The automated portion of the process

isolates the most mentioned and distinct topics, while the human analyst employs their knowledge of the content domain to link related topics and distill overarching concepts.

This method has potential as both a retrospective and real-time tool. I am currently exploring the addition of a variation of method to the Aggie social media tracking tool to allow prominent topics to be automatically detected as social media reports are collected. I also believe the method could be applied to future studies of social media data, in the context of elections or otherwise, and either comparatively or descriptively.

The second methodological takeaway from this dissertation is *reciprocal action research* (RAR), an approach to interventionist technology research in situations of inherent power imbalance. RAR suggests that academic researchers with technical skills first contribute their skills, consultancy-style, to a project designed and led by a local development partner. This experience will provide lessons, contacts, and data that can all serve a research project conceived some time later. This temporal arrangement is geared to minimize the impact of the researcher's agenda on the development project. It acknowledges the power imbalance inherent in the situation and encourages a more equitable exchange between partners, without forsaking the researcher's desire and ability to contribute their technical abilities to a worthy endeavour.

7.3 Theoretical

This dissertation contributes to networked public sphere theory through the exploration of a previously under-considered context. In his formulation of the networked public sphere, Benkler is wise to allow for trans-national variation, saying that the exact nature of the networked sphere varies "depending on what salient structuring components of the existing public sphere its introduction perturbs." (Benkler, 2006,

p. 180) As he proceeds to outline basic critiques of traditional media, he considers authoritarian states, where the mass media hub-and-spoke model offered easy points of control, and liberal states, where the market-driven mass media restricted access to those on the margins, concentrated power in the hands of media owners, and generated content of questionable societal importance. This retrospective taxonomy, however, leaves out one further mass media scenario that has been prevalent in developing nations such as the ones considered in this dissertation. In this scenario, while the influence of market and/or state actors may still be present, *it is rather the fact of economic scarcity that most impacts the character of the media sector, and the networked public sphere perturbs this situation most by helping overcome that scarcity.*

Mass media systems, after all, are costly to implement on a broad scale, and the traditional economic systems through which they have arisen in developed states are often not present in developing regions. The market mechanism by which media systems are built through advertising revenue is problematic in developing states where per-capita advertising expenditures are significantly lower (Leff & Farley, 1980). Meanwhile, the extent of a state-controlled mass media system is limited by the financial resources of that state. Developing nations, as Chapter 4 has shown, have been marked by relatively anaemic media sectors, especially in the area of news and political coverage.

As to why social media infrastructure has been able to transcend these economics, the reason is undoubtedly connected to the phenomenal commercial success of mobile phone networks, which appear to be more amenable to commodification than traditional broadcast media in developing contexts, and through which a great proportion of users in the region access social media. However, a detailed analysis of this reasoning goes beyond the scope of this dissertation, and would be interesting fodder for future work.

In any case, the identification of scarcity as a distinct media condition obviously

does not reduce the potency of networked public sphere theory in describing the importance of networked technologies to societal structures. Rather, it suggests that the mechanisms by which the networked public sphere "perturbs" society are more varied than originally thought. Future work in this area should attend specifically to the concept of scarcity and how the networked public sphere interacts with it.

7.4   Limitations

This dissertation is intended as an initial exploration of a complex phenomenon. The methods chosen were largely qualitative for this reason.

Chapter 4 was a qualitative case study that focused on a specific and somewhat atypical population of elites and early adopters. For this reason, generalizations to the broader population concerning the effect of social media on electoral politics would not be prudent. However, it is reasonable to expect that the mechanisms and dynamics uncovered in this work will expand in importance and extent. Future work should monitor such developments.

Though some quantitative techniques were used in Chapter 5, the ultimate analysis was also a qualitative one. Also, as a topic analysis, the study cannot make claims about the *extent* or *quality* of coverage of a given topic by a given medium. The results are therefore chiefly intended as a problematization of received wisdom concerning election monitoring, both social and formal. Social monitoring communities may be interested in the gaps in their coverage identified by the study, and formal monitoring communities may be surprised by the reach and influence of social monitoring. The results are *not*, however, intended as a definitive measurement or assessment of the performance of either social or formal monitoring.

This dissertation is also decidedly interdisciplinary. It will be of interest to some audiences within political science and media studies along with more technical fields such as computer science and HCI. This interdisciplinarity trades a measure of depth

for breadth and thus leaves opportunities for future research in any of these fields to extend various aspects of the work with more targeted study. Political scientists might seek to quantitatively investigate the political effects of social media via survey research or cross-national analysis. Media theorists interested in developing contexts might wish to further probe the theoretical assertion that the mitigation of scarcity is the networked public sphere's most salient political effect in such contexts. Computer scientists could extend some of the consultancy outputs of this dissertation (such as Aggie), or further develop empirical research techniques for social media, through innovation in natural language processing.

In summary, this dissertation is intended as neither an opening, nor a closing, but an early and carefully considered remark in an important conversation. I hope that others will have much to say.

APPENDIX A

TOPIC CLUSTERS FROM SOCIAL/FORMAL STUDY

The following tables list the topic clusters that emerged from the analysis in Chapter 5. The top 100 clusters for each of the **social**, **formal**, and, **both** columns are given for each country. For each topic, its original dataset is given in parenthesis along with its original rank in that dataset. Datasets are represented by the codes given in Table 11.

Table 11: Dataset codes for topic cluster tables.

Code	Dataset
fb	Facebook
tw	Twitter
obs	Observer reports
rpt	Mission report

Table 12: Topic clusters for Liberia data, **social** column.

#	Topics
1	**weah**(fb,3), **george weah**(fb,16), **weah**(tw,80), **manneh**(fb,87), **george manneh weah**(fb,111), **george weah**(tw,230), **legend george weah**(fb,615)
2	**lmc**(fb,9), **liberia media center**(fb,50), **media center**(fb,385), **liberia media center**(tw,595), **liberian media center**(fb,634)
3	**lovetta**(fb,11), **lovetta thomson**(fb,96)
4	**mehn**(fb,12)
5	**brumskine**(fb,15)
6	**liberians vote**(tw,16), **liberians vote despite**(tw,28), **vote despite protests**(tw,29), **liberians vote**(fb,822)
7	**for liberia**(tw,17), **for liberia**(fb,23)
8	**truth fm**(fb,20)
9	**re-election**(tw,20), **seeks re-election**(tw,41), **seeks new term**(tw,95), **seeks new**(tw,97), **re-election**(fb,322)
10	**mama liberia**(fb,21), **for mama**(fb,146), **mama liberia**(tw,603)

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Table 12 – *Continued from previous page*

#	Topics
11	**counts votes**(tw,23), **liberia counts votes**(tw,24), **counts votes after**(tw,96), **votes after**(tw,98)
12	**dorley**(fb,25), **rob dorley**(fb,51)
13	**lawrence randall**(fb,29)
14	**mawine**(fb,30), **mawine diggs**(fb,57)
15	**partisans**(fb,31), **partisans**(tw,618)
16	**as presidential runoff**(tw,32), **as presidential**(tw,35), **liberia tense**(tw,36)
17	**runoff vote starts**(tw,33)
18	**taa**(fb,34), **taa wongbe**(fb,82)
19	**fellow liberians**(fb,35)
20	**checago**(fb,39), **checago bright-sawo**(fb,61)
21	**benetta**(fb,40), **fofana**(fb,129)
22	**bassa**(fb,41), **grand bassa**(fb,465)
23	**kings fm**(fb,42)
24	**lakshmi subramani**(fb,43), **laks**(fb,152)
25	**neejay**(fb,46), **neejay dwah**(fb,81)
26	**hate messages**(fb,48), **preaching hate**(fb,837), **spreading hate messages**(fb,891)
27	**tipoteh**(fb,52)
28	**is liberia**(fb,53), **is liberia**(tw,965)
29	**inciting**(fb,54), **inflammatory**(fb,90), **incite**(fb,127), **incite violence**(fb,443)
30	**elwa**(fb,55), **elwa radio station**(fb,626), **elwa**(tw,656), **elwa radio**(tw,674), **elwa radio station**(tw,856)
31	**acarous**(fb,56), **acarious**(fb,118), **acarous gray**(fb,144)
32	**day before vote**(tw,58), **before vote**(tw,59)
33	**god bless liberia**(fb,59)
34	**begins in liberia**(tw,60)
35	**8s**(fb,64)
36	**laura wilson**(fb,65)
37	**gbowee**(tw,65), **leymah gbowee**(tw,77), **gbowee**(fb,682)
38	**stephen johnson**(fb,67)
39	**peah**(fb,68)
40	**this government**(fb,73)
41	**tubman and weah**(fb,75), **weah and tubman**(fb,86)
42	**bomi**(fb,76)
43	**@liberiaelection**(tw,76), **#liberiaelections**(tw,78), **rt @liberiaelection**(tw,127), **#liberiaelection**(tw,561)
44	**gyude**(fb,77), **gyude moore**(fb,133)
45	**pul**(fb,78)
46	**marred**(tw,79), **marred by boycott**(tw,253), **marred by violence**(tw,301), **polls marred**(tw,458), **liberia polls marred**(tw,511)
47	**international community**(fb,84), **international community**(tw,902)

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#	Topics
48	**seen winning**(tw,85)
49	**liberia will**(fb,85), **liberia will**(tw,578)
50	**election amid tension**(tw,86), **amid tension**(tw,87), **election amid**(tw,90), **liberia election amid**(tw,91)
51	**votes in tight**(tw,88)
52	**senatorial**(fb,89)
53	**kailondo**(fb,91)
54	**@scarlettlion**(tw,92)
55	**power tv**(fb,93), **power fm**(fb,158)
56	**neufville**(fb,95)
57	**fahnbulleh**(fb,100), **edwin fahnbulleh**(fb,215), **@fahnbulleh**(fb,679)
58	**liberia set**(tw,101), **set for crucial**(tw,133), **crucial elections**(tw,134), **for crucial elections**(tw,137)
59	**deddeh**(fb,101), **deddeh howard**(fb,353)
60	**johnson-sirleaf seeks**(tw,102), **johnson-sirleaf seeks new**(tw,107), **tight presidential**(tw,108), **term in tight**(tw,109), **tight presidential election**(tw,112)
61	**2017**(fb,102), **come 2017**(fb,548)
62	**democratic change candidate**(fb,103), **democratic change candidate**(fb,124)
63	**looted**(fb,104), **looting**(fb,383), **looters**(fb,694), **loot**(fb,926)
64	**vote tomorrow**(fb,105)
65	**cast gloom over**(tw,105), **over liberia**(tw,128)
66	**charles taylor**(fb,108), **charles taylor**(tw,323)
67	**people of liberia**(fb,110), **people of liberia**(tw,802)
68	**siezie**(fb,112), **siezie siafa**(fb,772)
69	**lamii**(fb,113)
70	**i liberia**(tw,113)
71	**trc**(fb,114)
72	**polls tuesday**(tw,115), **for a runoff**(tw,132), **election after**(tw,138), **liberia went**(tw,141), **after incumbent**(tw,148)
73	**upians**(fb,116)
74	**nobel**(tw,116), **#nobel**(tw,151), **nobel peace**(tw,175), **nobel peace prize**(tw,205)
75	**dtn**(tw,118)
76	**sekou**(fb,119)
77	**sun rise**(fb,121)
78	**postwar election**(tw,122), **open in 2nd**(tw,124), **2nd postwar**(tw,146)
79	**winner seeks re-election**(tw,123), **winner seeks**(tw,131)
80	**disputed**(tw,125)
81	**as liberia**(tw,126)
82	**gedeh**(fb,126), **grand gedeh**(fb,212)
83	**@sarankjones**(tw,129)
84	**real tv**(fb,131)

Table 12 – *Continued from previous page*

#	Topics
85	**their party**(fb,135)
86	**liberians will**(fb,136)
87	**peace loving**(fb,137)
88	**too is liberia**(fb,139)
89	**off election**(tw,139), **election challenge**(tw,142)
90	**democratic progress candidate**(fb,140), **democratic progress candidate**(fb,142), **democratic progress candidate**(fb,148)
91	**mannah**(fb,141), **sam mannah**(fb,276)
92	**liberia first**(fb,143)
93	**at liberia**(tw,143)
94	**situation room**(fb,145)
95	**love fm**(fb,147)
96	**sda**(fb,149)
97	**re-election in liberia**(tw,149)
98	**tyrrell kwia**(fb,151)
99	**2018**(fb,153)
100	**gbokolo**(fb,154)

Table 13: Topic clusters for Liberia data, **traditional** column.

#	Topics
1	**carter center**(rpt,1), **carter center's**(rpt,73), **carter**(rpt,269)
2	**poll workers**(obs,3), **polling staff**(obs,14), **poll workers**(rpt,39), **poll worker**(obs,41), **polling staff**(rpt,72), **polling workers**(obs,80)
3	**party agents**(obs,4), **party agent**(obs,22), **party agents**(rpt,40), **party reps**(obs,84), **agents did**(obs,85), **agents were**(obs,124), **all agents**(obs,126), **party agents were**(rpt,136), **party agents did**(obs,177), **agents**(obs,337), **agents**(rpt,446)
4	**how to mark**(obs,5), **did not explain**(obs,20), **how to vote**(obs,31), **mark ballot**(obs,39), **no explanation**(obs,60), **explain to voters**(obs,66), **mark the ballot**(obs,67), **mark ballots**(obs,128), **mark the ballots**(obs,171)
5	**vio**(obs,6), **vio did**(obs,42)
6	**observed**(rpt,10), **observed**(obs,36), **our observation**(obs,90)
7	**percent of polling**(rpt,12)
8	**for ink**(obs,12), **not checking**(obs,23), **did not check**(obs,24), **for traces**(obs,27), **voters fingers**(obs,33), **traces of ink**(obs,37), **fingers for traces**(obs,54), **fingers for ink**(obs,72), **indelible ink**(obs,86), **not checking voters**(obs,108), **fingers not checked**(obs,109), **finger of left**(obs,166), **checking for ink**(obs,189), **check voters fingers**(obs,190), **checked for ink**(obs,192), **voter was inked**(obs,202), **inker**(obs,269), **inking**(obs,280), **inked**(obs,302), **ink**(obs,376), **fingers**(obs,499), **finger**(obs,535)
9	**iccpr**(rpt,13), **covenant on civil**(rpt,44)

Table 13 – *Continued from previous page*

#	Topics
10	**presiding officer**(obs,13), **officer did**(obs,57), **officer present**(obs,92), **presiding officer did**(obs,107), **polling officers**(obs,141), **presiding**(obs,150), **presiding officer**(rpt,186), **presiding**(rpt,244)
11	**legal framework**(rpt,15), **election law**(rpt,16), **elections law**(rpt,38)
12	**allowed to vote**(obs,16), **allowed to vote**(rpt,142)
13	**polling places observed**(rpt,17), **polling places visited**(rpt,43), **polling stations visited**(rpt,86), **polling stations observed**(rpt,123)
14	**election observation**(rpt,19), **observation mission**(rpt,27), **election observation mission**(rpt,42), **mission in liberia**(rpt,55), **international election observation**(rpt,78), **center's election observation**(rpt,83)
15	**magistrate**(obs,19), **magistrate**(rpt,47), **magistrates**(obs,98), **at the magistrate's**(rpt,131), **magistrate offices**(rpt,218)
16	**carter center-eisa**(rpt,20), **deploy an integrated**(rpt,90), **integrated carter center-eisa**(rpt,147)
17	**15 counties**(rpt,21), **all 15**(rpt,114), **all 15 counties**(rpt,146)
18	**charter on human**(rpt,23), **human and people's**(rpt,53), **general comment**(rpt,64), **convention against corruption**(rpt,75), **achpr**(rpt,93), **rights (achpr**(rpt,127)
19	**accordance**(rpt,24)
20	**not sealed**(obs,25), **2 seals**(obs,91), **only 2 seals**(obs,111), **were not sealed**(obs,119), **seal numbers**(obs,133)
21	**worksheet**(obs,29)
22	**civil and political**(rpt,35)
23	**jpc**(obs,35), **justice and peace**(obs,70), **peace commission**(obs,136)
24	**disabled voters**(obs,38), **for disabled**(obs,46), **for disabled voters**(obs,105), **re disabled**(obs,123), **disabled access**(obs,145), **re disabled access**(obs,201), **disabled**(obs,338)
25	**frr**(obs,43), **registration roll**(obs,59), **final registration roll**(obs,65), **registration roll**(rpt,117)
26	**issuer**(obs,45), **ballot issuer**(obs,58)
27	**with scissors**(obs,47), **hole punch**(obs,78), **cut with scissors**(obs,114), **punch was broken**(obs,191)
28	**unused ballots**(obs,48)
29	**tabulation**(rpt,48), **tallying**(rpt,98)
30	**international obligations**(rpt,49)
31	**voter registration**(rpt,50)
32	**prestamped**(obs,50), **pre folded**(obs,77), **prefolded**(obs,97)
33	**complaints were**(rpt,51), **official complaints**(rpt,196), **complaints**(rpt,280), **complaints**(obs,359)
34	**liberian constitution**(rpt,52)
35	**voting screen**(obs,55), **improvised screens**(obs,88), **voting screens**(obs,89)
36	**for the elections**(rpt,56)

Table 13 – *Continued from previous page*

#	Topics
37	**voting and counting**(rpt,60)
38	**lep**(obs,62)
39	**eisa**(rpt,62), **for sustainable democracy**(rpt,81)
40	**no police present**(obs,64), **no police**(obs,122)
41	**one case**(rpt,66)
42	**voter education**(rpt,67)
43	**was not found**(obs,68), **with valid**(obs,82), **were added**(obs,95)
44	**ballot box controller**(obs,69)
45	**were not present**(obs,71)
46	**independent (3)**(obs,73), **independent x1**(obs,79)
47	**how to fold**(obs,74)
48	**eight long-term observers**(rpt,76)
49	**did not appear**(rpt,77)
50	**no irregularities**(obs,81), **irregularity**(obs,96)
51	**means of ensuring**(rpt,82)
52	**were allowed**(obs,83)
53	**center will continue**(rpt,84)
54	**carter center calls**(rpt,85)
55	**had voted**(obs,87)
56	**conduct for political**(rpt,88)
57	**civil society organizations**(rpt,89), **liberian civil society**(rpt,137), **civil society**(rpt,246)
58	**ifes**(rpt,94)
59	**adhered**(rpt,95)
60	**undp**(rpt,99)
61	**sinoe**(obs,99)
62	**reconciled**(obs,100)
63	**state resources**(rpt,101), **access to public**(rpt,125)
64	**ldp**(obs,102)
65	**most cases**(rpt,102)
66	**make it difficult**(obs,103)
67	**poll workers were**(obs,104), **poll workers were**(rpt,121)
68	**nec officials**(rpt,104), **nec official**(obs,138)
69	**august 23**(rpt,105), **constitutional referendum**(rpt,215), **referendum**(rpt,249)
70	**inside the polling**(obs,106)
71	**center assesses**(rpt,106), **center assesses liberia's**(rpt,133)
72	**campaign finance**(rpt,107)
73	**political process**(rpt,108)
74	**were not found**(obs,110)
75	**also reported**(rpt,111)
76	**given to voters**(obs,112)
77	**procedures were**(rpt,112), **according to procedure**(obs,113)

Table 13 – *Continued from previous page*

#	Topics
78	**electoral preparations**(rpt,113)
79	**community watch forum**(obs,115)
80	**were just handed**(obs,116)
81	**were present**(rpt,116), **were present**(obs,131)
82	**party agents left**(obs,117)
83	**will be paid**(obs,118)
84	**before election day**(rpt,120)
85	**voters**(obs,120), **voters**(rpt,285)
86	**re explanation**(obs,121)
87	**carter center will**(rpt,124)
88	**impartial and professional**(rpt,126)
89	**invalid ballots**(obs,127), **invalid ballots**(rpt,177)
90	**which was adopted**(rpt,128)
91	**materials were**(obs,129), **materials were**(rpt,188)
92	**additional voters**(obs,130)
93	**voter cards**(obs,132)
94	**several political parties**(rpt,132)
95	**all materials**(obs,134)
96	**no voting**(obs,135)
97	**by the national**(rpt,135)
98	**no delays**(obs,137)
99	**measures to prevent**(rpt,138)
100	**valid registration**(obs,139)

Table 14: Topic clusters for Liberia data, **both** column.

#	Topics
1	**sirleaf**(tw,1), **sirleaf**(fb,5), **ellen johnson**(tw,7), **johnson sirleaf**(tw,9), **ellen johnson sirleaf**(tw,10), **johnson-sirleaf**(tw,13), **ellen johnson sirleaf**(fb,18), **ellen johnson sirleaf**(fb,19), **ellen johnson-sirleaf**(tw,40), **president ellen**(tw,62), **ma ellen**(fb,72), **president sirleaf**(fb,80), **johnson-sirleaf**(fb,88), **#sirleaf**(tw,89), **sirleaf**(rpt,92), **liberia 's sirleaf**(tw,94), **president ellen**(fb,98), **ejs**(fb,115), **ellen johnson-sirleaf**(fb,132), **liberia 's johnson-sirleaf**(tw,144), **oldma**(fb,150), **president ellen johnson**(tw,152), **madam sirleaf**(fb,157), **president sirleaf**(rpt,184), **president ellen johnson**(fb,219), **president sirleaf**(tw,284)
2	**liberians**(fb,1), **liberians**(tw,4), **liberian people**(fb,14), **all liberians**(fb,22), **liberians are**(fb,27), **liberians**(rpt,45), **as liberians**(fb,66), **all liberians**(rpt,214), **liberians are**(tw,414), **as liberians**(tw,599), **all liberians**(tw,643)

Table 14 – *Continued from previous page*

#	Topics
3	**polling place**(obs,1), **polling places**(rpt,3), **precinct**(obs,8), **polling places**(obs,9), **polling place**(rpt,31), **polling centers**(fb,49), **precincts**(obs,61), **polling places**(fb,106), **precincts**(fb,128), **many polling places**(rpt,129), **polling stations**(rpt,224), **polling stations**(obs,281), **polling stations**(tw,399), **polling stations**(fb,920), **precinct**(fb,967)
4	**liberian**(fb,2), **liberian**(rpt,5), **liberian**(tw,6), **liberian**(obs,63)
5	**monrovia**(tw,2), **monrovia**(fb,8), **monrovia**(rpt,25), **monrovia (reuters**(tw,66), **liberia 's capital**(tw,117)
6	**carter center observers**(rpt,2), **observers reported**(rpt,4), **center observers reported**(rpt,11), **observers noted**(rpt,28), **observers**(rpt,33), **carter center-eisa observers**(rpt,34), **center observers noted**(rpt,57), **center-eisa observers reported**(rpt,59), **observers were**(obs,76), **observers**(obs,94), **observers**(tw,762)
7	**ltp**(obs,2), **ltp**(fb,410)
8	**runoff**(tw,3), **presidential runoff**(tw,11), **presidential run-off**(tw,15), **runoff election**(tw,25), **run-off election**(rpt,26), **runoff vote**(tw,27), **presidential runoff vote**(tw,31), **runoff**(fb,37), **run-off**(tw,53), **presidential run-off despite**(tw,56), **run-off despite**(tw,61), **run-off vote**(tw,70), **presidential run-off**(rpt,71), **start in liberia**(tw,72), **run-off election**(tw,93), **presidential run-off election**(rpt,139), **liberia 's run-off**(tw,150), **run-off**(rpt,159), **liberia run-off**(tw,180), **presidential run-off**(fb,266), **run-off election**(fb,299), **run-off**(fb,316), **presidential run-off election**(tw,549)
9	**tubman**(fb,4), **tubman**(tw,12), **winston tubman**(fb,36), **tubman**(rpt,97), **winston tubman**(tw,103)
10	**liberia election**(tw,5), **electoral process**(rpt,6), **this election**(fb,32), **electoral**(rpt,32), **polling**(obs,34), **liberia elections**(tw,39), **#elections**(tw,43), **elections in liberia**(tw,68), **liberia poll**(tw,69), **2011 elections**(rpt,74), **electoral process**(fb,83), **liberia's elections**(rpt,100), **liberia 's election**(tw,114), **liberia vote**(tw,162), **elections in liberia**(fb,185), **polling**(rpt,222), **elections**(rpt,274), **election**(rpt,281), **electoral**(obs,316), **electoral**(fb,384), **polling**(fb,386), **election**(obs,461), **elections**(obs,475), **elections**(fb,525), **liberia elections**(fb,543), **2011 elections**(fb,553), **elections**(tw,579), **election**(tw,620), **polling**(tw,729), **2011 elections**(tw,782), **liberia election**(fb,818), **liberia's elections**(tw,843), **electoral**(tw,888)
11	**pyj**(fb,6), **prince johnson**(fb,17), **prince johnson**(rpt,166), **prince johnson**(tw,368)
12	**cdcians**(fb,7), **cdcian**(fb,70), **cdc supporters**(rpt,70), **cdc supporters**(fb,366)
13	**voters were**(obs,7), **voter**(obs,11), **one voter**(obs,21), **voter**(rpt,46), **no voters**(obs,56), **many voters**(obs,75), **voter**(tw,655), **voter**(fb,953)
14	**nec**(rpt,7), **by the nec**(rpt,9), **nec**(fb,47), **nec's**(rpt,61), **national elections commission**(rpt,91), **nec**(obs,93), **from the nec**(rpt,153), **national elections commission**(fb,314), **by nec**(fb,580), **national elections commission**(tw,726), **nec**(tw,911)
15	**liberia's**(rpt,8), **liberia's**(tw,37), **liberia's**(fb,260)

Table 14 – *Continued from previous page*

#	Topics
16	**liberia 's presidential**(tw,8), **presidential election**(tw,21), **presidential elections**(tw,83), **presidential election**(rpt,109), **liberia presidential**(tw,121), **presidential**(tw,199), **presidential elections**(fb,290), **presidential election**(fb,298), **presidential**(rpt,301), **presidential**(obs,405)
17	**nimba**(fb,10), **nimba**(obs,101)
18	**ballots were**(obs,10), **ballot papers**(obs,26), **ballot paper**(obs,40), **ballots**(obs,44), **ballot paper**(fb,92), **ballots**(rpt,328), **ballot papers**(fb,420)
19	**unity party**(fb,13), **party (up**(rpt,122), **unity party**(tw,841)
20	**on nov**(rpt,14), **least one death**(tw,30), **death during opposition**(tw,34), **protests turn violent**(tw,44), **turn violent**(tw,45), **eve of election**(tw,46), **riot breaks out**(tw,48), **protests turn violent**(tw,49), **out in liberia**(tw,50), **deadly riot breaks**(tw,54), **deadly riot**(tw,55), **liberia day before**(tw,57), **peaceful protest**(fb,60), **liberia day**(tw,63), **cdc headquarters**(rpt,69), **protest turns deadly**(tw,75), **unarmed**(fb,99), **liberia poll protest**(tw,100), **cdc headquarters**(fb,134), **poll protest turns**(tw,154), **at the cdc**(rpt,251)
21	**#africa**(tw,14), **africa**(obs,510), **africa**(rpt,612)
22	**ndc**(obs,15), **national democratic**(rpt,192), **ndc**(fb,524), **national democratic**(fb,823)
23	**ballot boxes**(obs,17), **boxes were**(obs,32), **ballot box**(obs,49), **ballot boxes were**(obs,53), **ballot boxes**(fb,74)
24	**ecowas**(obs,18), **ecowas**(tw,104), **ecowas**(fb,263)
25	**cdc's**(rpt,18), **cdc**(fb,38), **for democratic change**(fb,44), **congress for democratic**(fb,71), **for cdc**(fb,97), **that cdc**(fb,109), **with cdc**(fb,122), **cdc will**(fb,123), **change (cdc**(rpt,130), **by the cdc**(fb,138), **cdc**(rpt,250), **cdc**(obs,370), **democratic change**(tw,832)
26	**for democratic**(rpt,22), **democratic elections**(rpt,29), **for democratic elections**(rpt,41), **genuine democratic**(rpt,63), **democratic elections contained**(rpt,79), **free and fair**(fb,94), **democratic**(rpt,236)
27	**eru**(fb,24), **liberian police**(fb,69), **lnp**(obs,159), **lnp**(fb,169), **lnp**(rpt,229), **national police**(fb,428), **police**(obs,536), **police**(rpt,696)
28	**nudp**(fb,26), **nudp**(obs,158)
29	**montserrado**(fb,28), **montserrado**(rpt,165)
30	**ecc**(obs,28), **domestic observers**(rpt,30), **coordinating committee**(rpt,103), **committee (ecc)**(rpt,134), **domestic observers**(obs,239), **ecc**(tw,523)
31	**unmil**(obs,30), **unmil**(fb,33), **unmil**(rpt,96), **unmil**(tw,401)
32	**impartial**(rpt,36), **impartial**(fb,391)
33	**political parties**(rpt,37), **for political parties**(rpt,54), **parties and candidates**(rpt,58), **independent candidates**(rpt,65), **party or candidate**(rpt,87), **political parties**(fb,472), **parties and candidates**(fb,907)
34	**media institutions**(fb,45), **media houses**(fb,63), **those stations**(fb,120), **media institution**(fb,160), **media outlets**(rpt,302), **those media**(fb,304), **liberian media**(fb,346), **media house**(fb,457), **these media**(fb,582), **media houses**(tw,671), **media**(rpt,736), **media**(obs,800)

Table 14 – *Continued from previous page*

#	Topics
35	**orderly**(obs,51), **orderly**(fb,399)
36	**voting begins**(tw,51), **open in liberia**(tw,73), **underway in liberia**(tw,82), **polls open**(tw,111), **polls opened**(tw,160), **opened**(obs,592), **opened**(rpt,663)
37	**npp**(obs,52), **npp**(fb,199)
38	**press freedom**(fb,58), **freedom of expression**(rpt,270)
39	**elections results**(fb,62), **these results**(fb,107), **results were**(obs,125), **latest results**(fb,162), **final results**(rpt,294), **election results**(rpt,303), **results coming**(fb,412), **results update**(fb,461), **results**(rpt,546), **results**(obs,607)
40	**campaign period**(rpt,68), **campaign period**(fb,771)
41	**boycotting**(fb,79), **boycott**(rpt,384), **boycotting**(tw,465), **boycott**(tw,956)
42	**at the polling**(rpt,80), **at the polling**(obs,205), **at the polling**(fb,868)
43	**vote counting**(tw,106), **counting processes**(rpt,115), **counting process**(rpt,182), **counting process**(fb,806)
44	**voting process**(rpt,110), **voting process**(fb,833)
45	**legislative elections**(rpt,118), **legislative elections**(tw,748)
46	**election day**(rpt,119), **election day**(tw,623)
47	**lofa**(fb,125), **lofa**(rpt,228), **lofa**(obs,296)
48	**outside polling stations**(tw,130), **outside polling**(tw,135), **queues outside polling**(tw,169), **long queues**(tw,249), **queues**(obs,344), **queues**(tw,621)
49	**peaceful election**(tw,145), **peaceful atmosphere**(rpt,199), **was peaceful**(rpt,216), **peaceful vote**(tw,247), **peaceful election**(fb,352), **peaceful**(rpt,445), **peaceful**(obs,466), **was peaceful**(fb,609)
50	**any political party**(rpt,152), **political party**(rpt,247), **political party**(fb,927)
51	**as opposition**(tw,161), **opposition**(rpt,354), **opposition**(tw,540), **opposition**(fb,1000)
52	**african union**(rpt,194), **african union**(tw,598)
53	**opposition parties**(rpt,197), **opposition parties**(fb,285)
54	**votes cast**(rpt,201), **votes cast**(fb,803)
55	**with respect**(rpt,209), **with respect**(fb,456)
56	**voter turnout**(rpt,219), **turnout**(obs,336), **low turnout**(tw,432), **voter turnout**(tw,433), **low voter turnout**(tw,692)
57	**united nations**(rpt,221), **united nations**(fb,923)
58	**right to vote**(rpt,238), **right to vote**(fb,925)
59	**invalid votes**(obs,247), **invalid votes**(fb,600)
60	**liberty party**(rpt,268), **liberty party**(fb,430)
61	**incidents**(obs,268), **incidents**(fb,972)
62	**second round**(rpt,298), **second round**(fb,497)
63	**supporters**(rpt,299), **supporters**(fb,924)
64	**civil war**(rpt,425), **liberian civil**(fb,566), **from civil war**(tw,795)
65	**polls**(rpt,461), **polls**(tw,570)

Table 15: Topic clusters for Nigeria data, **social** column.

#	Topics
1	**#nigeriadecides**(tw,1), **#plessyahand**(tw,82), **#nigeriadecides**(fb,227)
2	**rt @nigerianewsdesk**(tw,6)
3	**@234next**(tw,16), **rt @234next**(tw,18)
4	**ondo**(tw,19), **ondo**(fb,79)
5	**fashola**(tw,25), **fashola is working**(tw,81), **fashola**(fb,123)
6	**akala**(fb,26), **akala**(tw,51)
7	**northern nigeria**(tw,27), **d north**(fb,149), **for northern nigeria**(tw,175), **for northern**(tw,177), **north nigeria**(tw,205), **northern states**(fb,278), **d north**(tw,287), **northern states**(tw,508), **northern nigeria**(fb,543)
8	**god bless nigeria**(fb,28), **god bless nigeria**(tw,121)
9	**@eggheader**(tw,29), **rt @eggheader**(tw,37)
10	**ibadan**(fb,31), **ibadan**(tw,69)
11	**@bubusn**(tw,32), **rt @bubusn**(tw,52)
12	**4 d**(fb,45), **4 d**(tw,323)
13	**@purefoycnn**(tw,48), **rt @purefoycnn**(tw,71)
14	**ajimobi**(fb,48), **ajimobi**(tw,132)
15	**#africa**(tw,53)
16	**rigging**(fb,57), **massive rigging**(fb,159), **rigging**(tw,459)
17	**@rosanwo**(tw,66), **rt @rosanwo**(tw,79)
18	**rivers state**(fb,66), **rivers state**(tw,163)
19	**abia**(fb,68), **abia**(tw,426)
20	**lagos is working**(tw,70)
21	**ohakim**(fb,73), **ohakim**(tw,698)
22	**@pollwatch2011**(tw,76), **rt @pollwatch2011**(tw,89)
23	**nasarawa**(fb,77), **nasarawa**(tw,245)
24	**allah**(fb,83), **allah**(tw,409)
25	**maiduguri**(tw,84), **maiduguri**(fb,447)
26	**our votes**(fb,86), **our vote**(fb,116)
27	**weldone**(fb,88)
28	**ppn**(fb,89)
29	**vote wisely**(fb,90), **vote wisely**(tw,230)
30	**acn-**(tw,90), **acn-**(fb,380)
31	**lagos rats**(tw,93)
32	**#deprivednaijachildhood**(tw,97)
33	**hausa**(fb,100), **hausa**(tw,161)
34	**iwu**(fb,101)
35	**@ged**(tw,101), **rt @ged**(tw,134)
36	**all nigerians**(fb,102)
37	**ngige**(fb,103), **ngige**(tw,291)
38	**zaria**(tw,103), **zaria**(fb,326)

Table 15 – *Continued from previous page*

#	Topics
39	**abeg**(tw,106), **abeg**(fb,126)
40	**adc**(fb,106), **adc**(tw,396)
41	**fellow nigerians**(fb,109)
42	**@toluogunlesi**(tw,109), **rt @toluogunlesi**(tw,195)
43	**pls we**(fb,110)
44	**nigeria will**(tw,111), **nigeria will**(fb,178)
45	**sef**(tw,113)
46	**ogbomoso**(fb,114)
47	**acn won**(fb,117)
48	**adefemi**(tw,123), **olubayo**(tw,184), **olubayo adefemi**(tw,250)
49	**is nigeria**(tw,124)
50	**jos**(fb,124), **jos**(tw,222)
51	**bomb blast**(tw,125), **bomb blast**(fb,176)
52	**obasanjo**(fb,125), **obasanjo**(tw,341)
53	**rt @healnigeria**(tw,127)
54	**may allah**(fb,130)
55	**@vanguardngrnews**(tw,130), **rt @vanguardngrnews**(tw,335), **via @vanguardngrnews**(tw,407)
56	**hotlines**(tw,133), **pls call any**(tw,181), **nsa hotlines**(tw,183), **096303520**(tw,189), **096303521 / 096303522 / 096303523**(tw,191)
57	**ndig**(fb,135), **ndig reports**(fb,167)
58	**bakare**(tw,135), **bakare**(fb,450)
59	**jega pls**(fb,137), **jega please**(fb,385), **pls jega**(fb,486)
60	**central senatorial**(fb,138), **central senatorial**(tw,248)
61	**akala is bleaching**(tw,140), **is bleaching**(tw,141)
62	**nigerians are**(fb,141), **nigerians are**(tw,528)
63	**nigerian president**(tw,142), **president of nigeria**(tw,153)
64	**my polling**(fb,142), **my polling unit**(fb,202), **my polling unit**(tw,206)
65	**jonathan wins**(tw,143)
66	**osun state**(fb,143), **osun state**(tw,258)
67	**rochas**(fb,146)
68	**@channels_tv**(tw,147), **rt @channels_tv**(tw,264)
69	**ncp**(fb,148), **ncp**(tw,491)
70	**@iamlagos**(tw,150), **rt @iamlagos**(tw,207)
71	**jor**(tw,155)
72	**dosunmu**(tw,156)
73	**bankole**(fb,156), **bankole**(tw,979)
74	**new nigeria**(fb,158), **new nigeria**(tw,364)
75	**declared winner**(tw,160), **declared winner**(fb,245)
76	**at the polling**(fb,163), **at the polling**(tw,933)
77	**@abuabdallah92**(tw,164)

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#	Topics
78	**owerri**(fb,164), **owerri**(tw,517)
79	**god 4**(fb,169)
80	**wuse**(tw,169)
81	**kudos to inec**(fb,171), **bless inec**(fb,277), **god bless inec**(fb,373)
82	**sdmp**(fb,172)
83	**@cesc4official**(tw,172)
84	**saraki**(tw,174)
85	**anambra state**(fb,174), **anambra state**(tw,833)
86	**sambo**(tw,179), **sambo**(fb,513), **namadi**(tw,693)
87	**ur vote**(fb,180)
88	**#election234next**(tw,180)
89	**dis country**(fb,182)
90	**i dey**(fb,183), **i dey**(tw,289)
91	**returning officer**(fb,184), **returning officer**(tw,509)
92	**may god help**(fb,185)
93	**akunyili**(fb,187), **akunyili**(tw,319)
94	**royal wedding**(tw,188)
95	**abeokuta**(fb,189), **abeokuta**(tw,197)
96	**momodu**(tw,190)
97	**alimosho**(fb,191)
98	**fans in nigeria**(tw,192)
99	**ondo state**(fb,193), **ondo state**(tw,374)
100	**job vacancies**(tw,194)

Table 16: Topic clusters for Nigeria data, **traditional** column.

#	Topics
1	**electoral act**(rpt,2), **as amended**(rpt,3), **electoral act 2010**(rpt,6)
2	**eu eom**(rpt,9), **by the eu**(rpt,100), **election observation**(rpt,662)
3	**observed**(rpt,10), **observed polling units**(rpt,103), **polling units observed**(rpt,270)
4	**1999 constitution**(rpt,11)
5	**political parties**(rpt,15), **parties and candidates**(rpt,129), **by political parties**(rpt,192), **with political parties**(rpt,278)
6	**tribunals**(rpt,32), **federal high court**(rpt,46), **tribunal**(rpt,50), **by the courts**(rpt,181), **by the court**(rpt,184), **high courts**(rpt,230), **court or tribunal**(rpt,265)
7	**state-owned**(rpt,34)
8	**accordance**(rpt,37)
9	**march 2011**(rpt,38)
10	**legal framework**(rpt,39), **legal provisions**(rpt,152)
11	**state level**(rpt,52)

Table 16 – *Continued from previous page*

#	Topics
12	**election petitions**(rpt,54), **petitions**(rpt,246), **petitions and appeals**(rpt,254)
13	**offences**(rpt,57), **electoral offences**(rpt,78)
14	**logistical**(rpt,58)
15	**democratic elections**(rpt,60), **for democratic elections**(rpt,485)
16	**26 april**(rpt,61), **on 26 april**(rpt,262)
17	**voter registration**(rpt,62), **registration exercise**(rpt,169)
18	**35 percent**(rpt,72)
19	**2 april**(rpt,73)
20	**domestic observers**(rpt,74)
21	**may 2011**(rpt,76)
22	**civil society organisations**(rpt,79), **civil society**(rpt,707)
23	**should be amended**(rpt,80), **amended**(rpt,96)
24	**erc**(rpt,82), **electoral reform committee**(rpt,101)
25	**stakeholders**(rpt,87)
26	**adjudication**(rpt,88)
27	**36 states**(rpt,93), **all 36 states**(rpt,188)
28	**direct speech**(rpt,94)
29	**eu observers**(rpt,95), **observers**(rpt,251), **eu eom observers**(rpt,256), **observers reported**(rpt,384)
30	**were posted outside**(rpt,99)
31	**for the conduct**(rpt,104)
32	**nullification**(rpt,105)
33	**frcn**(rpt,108)
34	**high number**(rpt,111)
35	**on 15**(rpt,112)
36	**parties should**(rpt,116), **political parties should**(rpt,126)
37	**campaign period**(rpt,118), **during the campaign**(rpt,127), **election campaign**(rpt,242)
38	**2007 elections**(rpt,119)
39	**human rights commission**(rpt,121)
40	**electoral offences commission**(rpt,123)
41	**electoral act should**(rpt,124)
42	**at the election**(rpt,125)
43	**with international principles**(rpt,132)
44	**by the electoral**(rpt,133)
45	**political parties registration**(rpt,135)
46	**election petitions tribunals**(rpt,136)
47	**omissions**(rpt,140)
48	**strengthened**(rpt,143)
49	**subsequently**(rpt,145)
50	**equitable**(rpt,147)
51	**mandated**(rpt,150), **stipulates**(rpt,201)

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#	Topics
52	**time limits**(rpt,151)
53	**adequate time**(rpt,153)
54	**procedures were**(rpt,154), **voting procedures**(rpt,170), **procedures**(rpt,248)
55	**28 april**(rpt,156)
56	**constitution should**(rpt,157)
57	**inter alia**(rpt,158)
58	**see chapter**(rpt,159)
59	**voter education**(rpt,160), **civic education**(rpt,166), **voter and civic**(rpt,253)
60	**april elections**(rpt,162)
61	**election administration**(rpt,163)
62	**political rights**(rpt,164), **civil and political**(rpt,189)
63	**election period**(rpt,167)
64	**privately owned**(rpt,171)
65	**broadcast media**(rpt,172)
66	**chapter iv**(rpt,177)
67	**with regard**(rpt,179)
68	**pre-election**(rpt,180)
69	**ribadu and shekarau**(rpt,182)
70	**presidential and governorship**(rpt,185)
71	**on 9 april**(rpt,186)
72	**all the states**(rpt,187)
73	**number of polling**(rpt,190)
74	**on 2 april**(rpt,191)
75	**registration and regulatory**(rpt,193)
76	**additionally**(rpt,195)
77	**redress**(rpt,196)
78	**aggrieved**(rpt,199)
79	**adhered**(rpt,200)
80	**election-related**(rpt,202)
81	**regrettably**(rpt,206)
82	**constituencies**(rpt,210)
83	**was noted**(rpt,213)
84	**only exception**(rpt,214)
85	**african union**(rpt,215)
86	**pre-election period**(rpt,216)
87	**on democracy**(rpt,217)
88	**with section**(rpt,218)
89	**were reported**(rpt,219)
90	**16 april**(rpt,220)
91	**any election**(rpt,221)
92	**good governance**(rpt,222)

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#	Topics
93	**were seen**(rpt,223)
94	**jonathan gained**(rpt,225)
95	**during election**(rpt,227), **during election days**(rpt,259)
96	**political communication**(rpt,228)
97	**federal constituencies**(rpt,229)
98	**freedom radio**(rpt,235)
99	**project swift count**(rpt,236)
100	**political actors**(rpt,237)

Table 17: Topic clusters for Nigeria data, **both** column.

#	Topics
1	**inec**(rpt,1), **inec**(fb,1), **inec**(tw,7), **by inec**(rpt,14), **@inecnigeria**(tw,34), **with inec**(rpt,44), **by inec**(fb,51), **electoral commission**(rpt,71), **that inec**(rpt,75), **rt @inecnigeria**(tw,107), **jega and his**(fb,120), **national electoral commission**(rpt,130), **inec nigeria**(fb,150), **#inec**(tw,165), **from inec**(fb,177), **on inec**(fb,195), **for inec**(fb,196), **at inec**(fb,222), **for inec**(rpt,224), **by inec**(tw,241), **electoral commission**(fb,252), **independent national electoral**(fb,335), **independent national electoral**(fb,360), **with inec**(fb,399), **that inec**(fb,401), **at inec**(tw,422), **commission (inec)**(rpt,452), **electoral commission**(tw,478), **from inec**(tw,533), **d inec**(fb,638)
2	**pdp**(tw,2), **pdp**(fb,3), **pdp**(rpt,5), **pdp-**(tw,98), **for pdp**(fb,98), **by pdp**(fb,144), **ruling pdp**(rpt,168), **pdp-**(fb,248), **for pdp**(tw,306)
3	**jega**(fb,2), **prof jega**(fb,10), **jega**(tw,13), **inec chairman**(fb,69), **jega u**(fb,75), **mr jega**(fb,81), **jega we**(fb,84), **attahiru**(fb,93), **inec 's chairperson**(rpt,122), **attahiru jega**(fb,132), **jega**(rpt,149), **jega you**(fb,170), **jaga**(fb,190), **inec 's chairman**(rpt,194), **attahiru**(tw,382), **attahiru jega**(tw,454), **inec chairman**(rpt,593), **inec chairman**(tw,746)
4	**kaduna**(tw,3), **kaduna**(fb,15), **kaduna**(rpt,42), **kaduna state**(tw,80), **kaduna state**(fb,133), **#kaduna**(tw,202)
5	**buhari**(tw,4), **buhari**(fb,7), **buhari**(rpt,41), **muhammadu**(tw,168), **muhammadu**(rpt,209), **muhammadu**(fb,629)
6	**national assembly**(rpt,4), **nass**(fb,42), **house of rep**(fb,82), **national assembly**(fb,214), **nass**(tw,580)
7	**acn**(fb,4), **acn**(tw,9), **acn**(rpt,16), **congress of nigeria**(tw,444), **congress of nigeria**(rpt,484), **congress of nigeria**(fb,865)
8	**oyo**(fb,5), **oyo state**(fb,6), **oyo**(tw,12), **oyo state**(tw,21), **oyo**(rpt,148)
9	**kano**(tw,5), **kano**(fb,11), **kano**(rpt,25), **kano state**(rpt,77), **kano state**(fb,131), **kano state**(tw,347)
10	**polling units**(rpt,7), **polling unit**(rpt,17), **polling unit**(fb,17), **polling unit**(tw,36), **polling units**(fb,46), **pu**(tw,117), **pu**(fb,122), **polling units**(tw,148)
11	**anpp**(fb,8), **anpp**(tw,23), **anpp**(rpt,26)

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#	Topics
12	**abuja**(tw,8), **fct**(rpt,28), **abuja**(rpt,33), **abuja**(fb,76), **fct**(fb,94), **abuja (reuters**(tw,105), **federal capital territory**(rpt,183), **fct**(tw,336), **from abuja**(tw,405)
13	**governorship**(rpt,8), **governorship**(fb,22), **governorship elections**(rpt,23), **governorship**(tw,38), **governorship and state**(rpt,47), **governorship election**(fb,60), **guber**(tw,77), **guber**(fb,78), **gubernatorial elections**(rpt,90), **for the governorship**(rpt,102), **governorship election**(tw,167), **state governorship**(fb,175), **gubernatorial election**(fb,197), **governorship elections**(tw,307), **state governorship**(tw,310), **gubernatorial elections**(tw,404), **gubernatorial**(fb,454), **governorship election**(rpt,634), **governorship elections**(fb,697), **gubernatorial**(rpt,739), **gubernatorial election**(tw,888)
14	**ogun**(fb,9), **ogun**(tw,14), **ogun state**(fb,19), **ogun state**(tw,58), **ogun**(rpt,544)
15	**#nigeria**(tw,10), **nigeria**(tw,11), **for nigeria**(tw,31), **nigeria**(fb,33), **from nigeria**(tw,35), **naija**(fb,38), **naija**(tw,64), **9ja**(fb,97), **republic of nigeria**(fb,113), **republic of nigeria**(rpt,128), **#naija**(tw,178), **for nigeria**(fb,215), **9ja**(tw,223), **republic of nigeria**(tw,586), **nigeria**(rpt,693)
16	**gej**(fb,12), **goodluck jonathan**(tw,15), **gej**(tw,24), **president goodluck**(tw,44), **goodluck jonathan**(fb,50), **ebele**(fb,54), **president goodluck jonathan**(tw,54), **nigeria 's jonathan**(tw,94), **goodluck jonathan**(rpt,110), **nigeria 's president**(tw,110), **president jonathan**(rpt,115), **goodluck**(tw,116), **goodluck ebele**(fb,119), **ebele jonathan**(fb,129), **president goodluck**(fb,151), **goodluck ebele jonathan**(fb,154), **goodluck**(fb,165), **incumbent president**(rpt,178), **ebele**(tw,187), **president jonathan**(fb,198), **president jonathan**(tw,296), **president goodluck jonathan**(fb,363), **president goodluck jonathan**(rpt,455), **goodluck ebele**(tw,465), **incumbent president**(tw,501), **ebele jonathan**(tw,564), **goodluck ebele jonathan**(tw,639)
17	**assembly elections**(rpt,12), **national assembly elections**(rpt,21), **nass election**(fb,128), **assembly elections**(fb,179), **assembly polls**(rpt,378), **national assembly polls**(rpt,434), **national assembly elections**(fb,864)
18	**nigerians**(fb,13), **nigerians**(tw,83), **nigerians**(rpt,729)
19	**electoral**(rpt,13), **electoral process**(rpt,19), **this election**(fb,23), **election days**(rpt,24), **general elections**(rpt,29), **election process**(rpt,40), **elections were**(rpt,53), **nigeria election**(tw,55), **electn**(fb,59), **d election**(fb,63), **2011 general elections**(rpt,64), **nigeria vote**(tw,136), **electoral**(fb,136), **nigeria votes**(tw,149), **election in nigeria**(fb,153), **election in nigeria**(tw,157), **elections in nigeria**(tw,193), **nigeria poll**(tw,204), **polling**(fb,209), **2011 elections**(rpt,226), **polling**(rpt,250), **election**(fb,334), **polling**(tw,421), **this election**(tw,461), **electoral**(tw,588), **d election**(tw,616), **#elections**(tw,668), **2011 elections**(fb,688), **elections**(rpt,691), **election**(rpt,789), **elections were**(tw,836), **elections**(fb,900), **election**(tw,927)
20	**cpc**(fb,14), **cpc**(tw,30), **cpc**(rpt,98)
21	**imo state**(fb,16), **imo state**(tw,162), **imo state**(rpt,628)
22	**bauchi**(tw,17), **bauchi**(fb,37), **bauchi**(rpt,56)

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#	Topics
23	**presidential elections**(rpt,18), **presidential election**(fb,18), **presidential election**(tw,26), **presidential election**(rpt,91), **presidential vote**(tw,95), **presidential poll**(tw,112), **presidential elections**(tw,129), **for the presidential**(rpt,131), **nigeria 's presidential**(tw,152), **for presidential**(tw,232), **nigeria presidential**(tw,266), **presidential**(tw,373), **presidential elections**(fb,389), **for presidential**(rpt,600), **presidential**(rpt,709), **presidential**(fb,730)
24	**lagos**(tw,20), **lagos state**(tw,46), **#lagos**(tw,73), **for lagos**(tw,99), **lagos state**(fb,104), **via lagos**(tw,182), **lagos**(fb,251), **lagos**(rpt,794)
25	**april 2011**(rpt,20), **april 2011**(tw,361), **april 2011**(fb,396)
26	**free and fair**(fb,20), **fair election**(fb,32), **credible election**(fb,39), **credible elections**(fb,161), **fair and credible**(fb,162), **free and fair**(tw,214), **credible**(fb,221), **free & fair**(fb,287), **free n fair**(fb,313), **fair election**(tw,448), **credible**(rpt,978)
27	**anambra**(fb,21), **anambra**(tw,50), **anambra central**(fb,91), **anambra**(rpt,137), **anambra central**(tw,311)
28	**party agents**(rpt,22), **agents were**(rpt,120), **party agents were**(rpt,134), **party agents**(fb,168), **all party agents**(rpt,280), **party agent**(fb,339), **party agents**(tw,948)
29	**delta state**(fb,24), **delta state**(tw,227), **delta state**(rpt,239)
30	**senatorial**(fb,25), **senatorial**(rpt,36), **senatorial**(tw,67), **senetorial**(fb,157)
31	**kwara**(fb,27), **kwara**(tw,47), **kwara state**(fb,64), **kwara state**(tw,247), **kwara**(rpt,536)
32	**shekarau**(rpt,27), **ibrahim**(rpt,83), **ibrahim shekarau**(rpt,117), **ibrahim**(fb,206), **shekarau**(tw,355), **ibrahim**(tw,358), **shekarau**(fb,939)
33	**corpers**(tw,28), **corpers**(fb,29), **nysc**(rpt,65), **nysc**(tw,72), **nysc**(fb,74), **corps members**(fb,87), **corps members**(tw,118), **corper**(fb,147), **corper**(tw,270), **nysc members**(rpt,391), **nysc members**(tw,502)
34	**houses of assembly**(rpt,30), **house of assembly**(rpt,31), **house of assembly**(fb,56), **house of assembly**(tw,403)
35	**ballot papers**(fb,30), **ballot papers**(tw,88), **ballot papers**(rpt,175), **ballot paper**(fb,181), **ballots were**(rpt,231), **ballot**(fb,509), **ballot**(tw,701), **ballots**(rpt,756), **ballot**(rpt,857)
36	**benue**(fb,34), **benue**(tw,56), **benue**(rpt,139)
37	**ribadu**(rpt,35), **ribadu**(tw,63), **ribadu**(fb,95)
38	**accredited**(fb,35), **accreditation and voting**(rpt,55), **accredited**(rpt,81), **accredited**(tw,86), **accreditation**(rpt,249), **accreditation**(fb,315), **accreditation**(tw,553)
39	**akwa ibom**(fb,36), **akwa ibom**(tw,65), **akwa ibom**(rpt,173)
40	**unrest**(tw,39), **post-election**(tw,60), **nigeria unrest**(tw,87), **post-election violence**(tw,104), **election violence**(tw,115), **northern nigeria unrest**(tw,158), **election riots**(tw,171), **post-election**(rpt,197), **unrest**(fb,771), **election violence**(fb,981)
41	**osun**(tw,40), **osun**(fb,47), **osun**(rpt,141)
42	**apga**(fb,40), **apga**(rpt,106), **apga**(tw,600)
43	**bayelsa**(fb,41), **bayelsa**(rpt,59), **bayelsa**(tw,61)

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#	Topics
44	**gombe**(tw,41), **gombe**(fb,71), **gombe**(rpt,311)
45	**katsina**(tw,42), **katsina**(fb,44), **katsina**(rpt,519)
46	**sokoto**(rpt,43), **sokoto**(tw,57), **sokoto**(fb,96)
47	**inec should**(fb,43), **inec should**(rpt,45), **pls inec**(fb,115), **inec pls**(fb,140), **inec please**(fb,309)
48	**enugu**(tw,43), **enugu**(fb,72), **enugu**(rpt,313)
49	**nta**(rpt,48), **nta**(tw,260), **nta**(fb,375)
50	**governors**(rpt,49), **state governor**(tw,145), **governors**(fb,155), **governors**(tw,234), **state governor**(fb,564)
51	**d result**(fb,49), **results were**(rpt,51), **state result**(fb,55), **election result**(fb,65), **any result**(fb,85), **election result**(tw,108), **result pls**(fb,139), **d results**(fb,152), **elections results**(rpt,344), **election results**(tw,814), **election results**(rpt,853)
52	**local govt**(fb,52), **local government**(fb,62), **local government**(rpt,92), **local government**(tw,877), **local govt**(tw,902)
53	**inec officials**(fb,53), **inec official**(tw,131), **inec officials**(tw,154), **inec official**(fb,166), **inec staff**(fb,246), **inec authorities**(rpt,330), **inec staff**(tw,691)
54	**ekiti**(fb,58), **ekiti**(tw,78), **ekiti**(rpt,204)
55	**borno**(tw,59), **borno**(fb,67), **borno**(rpt,146)
56	**ballot boxes**(fb,61), **ballot box**(tw,96), **ballot box**(fb,289), **ballot boxes**(tw,312), **ballot boxes**(rpt,335), **ballot box**(rpt,720)
57	**collation centres**(rpt,63), **collation**(rpt,97), **collation**(fb,208), **collation centres**(fb,300), **collation**(tw,427)
58	**zamfara**(rpt,66), **zamfara**(fb,145), **zamfara**(tw,170)
59	**adamawa**(rpt,69), **adamawa**(tw,74), **adamawa**(fb,80)
60	**jigawa**(fb,70), **jigawa**(tw,138), **jigawa**(rpt,550)
61	**aspirants**(rpt,70), **aspirant**(rpt,207), **candidates were**(rpt,232), **aspirants**(fb,774)
62	**mandate**(rpt,84), **mandate**(fb,219)
63	**voter**(rpt,85), **voters were**(rpt,114), **electors**(rpt,208), **voter**(fb,288), **voter**(tw,390)
64	**senatorial districts**(rpt,89), **senatorial district**(fb,118), **senatorial district**(tw,220), **senatorial district**(rpt,243)
65	**south west**(fb,92), **south west**(rpt,165)
66	**niger**(tw,92), **niger**(fb,331), **niger**(rpt,740)
67	**akwa ibom state**(fb,99), **akwa ibom state**(rpt,410), **akwa ibom state**(tw,673)
68	**pdp won**(fb,105), **pdp won**(rpt,572), **pdp won**(tw,594)
69	**taraba**(rpt,107), **taraba**(fb,107), **taraba**(tw,440)
70	**edo**(fb,108), **edo**(rpt,323), **edo**(tw,367)
71	**bayelsa state**(fb,111), **bayelsa state**(tw,395), **bayelsa state**(rpt,641)
72	**kebbi**(fb,112), **kebbi**(tw,119), **kebbi**(rpt,205)
73	**results sheets**(rpt,113), **result sheets**(fb,306), **result sheets**(rpt,592)
74	**nigerian**(fb,121), **nigerian**(tw,139), **nigerian**(rpt,692)
75	**inec office**(tw,122), **inec office**(fb,134), **inec headquarters**(rpt,372)

Table 17 – *Continued from previous page*

#	Topics
76	**south south**(fb,127), **south south**(rpt,556)
77	**nassarawa**(rpt,138), **nassarawa**(fb,735)
78	**naira**(rpt,142), **naira**(tw,339), **naira**(fb,377)
79	**yobe**(tw,144), **yobe**(fb,188), **yobe**(rpt,198)
80	**displaced**(rpt,144), **displaced**(tw,669)
81	**niger state**(rpt,155), **niger state**(fb,160), **niger state**(tw,315)
82	**plateau**(tw,159), **plateau**(fb,333), **plateau**(rpt,728)
83	**presiding officers**(rpt,161), **presiding officer**(fb,173), **presiding officers**(fb,555), **presiding officer**(rpt,563)
84	**votes cast**(rpt,174), **votes cast**(tw,620)
85	**polling workers**(rpt,176), **polling staff**(rpt,212), **electoral officers**(fb,310), **electoral officers**(rpt,377)
86	**lga**(fb,192), **lgas**(rpt,203), **lga**(tw,542), **lgas**(fb,622), **lga**(rpt,727), **lgas**(tw,761)
87	**bauchi state**(fb,201), **bauchi state**(tw,281), **bauchi state**(rpt,381)
88	**muhammadu buhari**(tw,201), **muhammadu buhari**(rpt,389)
89	**resident electoral**(rpt,211), **resident electoral**(fb,498)
90	**labour party**(fb,223), **labour party**(rpt,233)
91	**security agents**(fb,225), **security agents**(rpt,350)
92	**constituency**(fb,231), **constituency**(rpt,704)
93	**election material**(rpt,234), **distribution of essential**(rpt,258), **electoral materials**(fb,259), **essential material**(rpt,355), **essential election material**(rpt,446), **election materials**(fb,689)
94	**suleja**(fb,268), **suleja**(rpt,526), **suleja**(tw,921)
95	**ait**(fb,272), **ait**(rpt,322), **ait**(tw,862)
96	**kogi**(tw,276), **kogi**(fb,455), **kogi**(rpt,695)
97	**orderly**(fb,294), **orderly**(rpt,543)
98	**malpractices**(rpt,305), **malpractices**(fb,429)
99	**dpp**(fb,316), **dpp**(rpt,517)
100	**umaru**(rpt,319), **umaru**(fb,765)

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