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BLOGGING, BRIDGING, AND BROKERING: ANALYZING INTERCONNECTED NETWORKS IN ONLINE COLLECTIVE ACTIONS

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Abstract

As evident in the mass protests during the Arab Spring and Occupy movements, social media platforms helped the protesters spread messages, organize, and mobilize support for their campaigns. The emergence of collective action facilitated by social media has attracted much attention not only from journalists and political observers but also from researchers of various disciplines. In recent years research devoted to deepening our understanding of online collective action has surged. Yet, due to its novelty and complexity, more research is needed to further our understanding of the many facets of it. Here the authors study the transnational nature of online collective action through the lens of inter-network cooperation. We analyze interaction and support mechanisms between the networks of two online collective actions related to women's rights; i.e. ‘Women to Drive’ (primarily in Saudi Arabia) and ‘Sexual Harassment’ (global). The analysis is based on data collected from blogs from 23 different countries authored by female Muslim bloggers. The methodologies used in this study include: an extraction of social networks for each collective action, mapping of interactions among the actors common to these two networks, and a sentiment analysis on the observed interactions to provide a better understanding of the support mechanisms. The broader goal of the study is to examine the common dynamics between the interconnected collective actions. In both we observe an aspiration toward collective awareness by addressing gender inequality and women's rights. This research contributes to understanding of the mobilization of social movements in the age of digital activism. Moreover, this paper contributes to our understanding of the role of cooperative networks in online collective action.

Keywords: Collective action, Inter-network cooperation, Social network, Methodology, Women to Drive, Sexual harassment, Female, Muslim, Blogs.
1 INTRODUCTION

The Internet and social media have transformed the ways people interact, communicate, and share information. As evident in the mass protests during the Arab Spring and the Occupy movements, social media platforms helped the protesters tremendously to spread messages, organize, and mobilize support for their campaigns. In addition to blogs, Facebook, Twitter, YouTube and the plethora of other social media sites, crowdsourcing (Howe 2006) platforms (e.g., Ushahidi, a platform for information collection, visualization, and interactive mapping) have elevated citizen journalism to a new level. People self-report incidents of crime and harassment, and even pot holes. One such crowdsourcing effort, HarassMap (www.harassmap.org), helps people report cases of sexual harassment in Egypt and has been solicited to provide similar interfaces to other women’s rights initiatives throughout the world. These forms of collective action attempt to contribute to the betterment of society through online citizen participation and engagement.

The emergence of online collective action, defined as “a new social community—cultural, religious, or political—in an online environment” (Agarwal et al. 2012a: 113), has attracted much attention not only from journalists and political observers but also from researchers of various disciplines. In recent years, there has been a surge in research devoted to deepening our understanding of online collective action (e.g., Agarwal et al. 2012a; 2012b; Lim 2012; 2013; Morozov 2010; Shirky 2008). Due to its novelty and complexity, however, more research is needed to further our understanding of the many aspects of online collective action. This research analyzes two online communities in seeking to understand the underlying processes of connectivity and developing a rigorous methodology contributing to the theoretical advancement of online collective action. More precisely, we examine the transnational nature of online collective action by studying cooperation between the observed networks of distinct but related collective actions. The overarching questions include: Can the networks of online collective action be expanded and diffused beyond national boundaries?; How does online collective action evolve across multiple networks and shift between local, national, and transnational scales? What is the role of cooperative networks in online collective action?

In this study, we analyze two online collective actions related to women’s rights, viz., ‘Women to Drive’ and ‘Sexual Harassment’ both having leveraged social media for mobilization. While ‘Women to Drive’ is a collective action predominantly organized by Saudi women opposed to the driving ban for women in Saudi Arabia, the one on ‘Sexual Harassment’ is global in nature demonstrating the universality of this crime against women. These forms of collective action are not isolated events. There are shared goals of collective awareness and aspirations of addressing gender inequality toward promoting women’s rights. Although the ‘Women to Drive’ collective action is specific to Saudi Arabia’s gender-biased laws, there is evidence of global support. The transnational support for the ‘Women to Drive’ and the inherent global nature of sexual harassment both offer the opportunity to study the nature of cooperation between these networks.

This research analyzes blogs authored by female Muslim bloggers from 23 different countries. The female Muslim blogosphere is an important domain to study. Statistics show that three of four females online are active social media users (BlogHer 2010) and, yet, there is very little research attempting to understand the social, cultural and political roles of female bloggers and collectivity among female social groups (Agarwal et al. 2012a). Further, from the recent political upheaval in the Middle East and North Africa we learn that Muslim women were at the forefront of the movements, both in offline and online environments. Female Muslim bloggers are an important part of social transformations taking place not only in the Arab world but also in other countries with predominantly Muslim populations.

In this research we attempt to provide a deeper and more comprehensive understanding of the complexity of online collective action by:
1. Proposing a methodology and combining a set of computational methods to observe and map the social network of activists engaged in these collective actions through social media,
2. Designing a methodology to extract and depict the cooperation network among multiple related issues,
3. Developing a sentiment analysis-based approach to analyze the interactions observed from the interorganizational cooperation network to understand the support mechanisms between these topics,
4. Culling real-world blog data for women’s rights collective actions (‘Women to Drive’ and ‘Sexual Harassment’),
5. Offering research based implications to the study of self organizing communities and their interorganizational cooperation in the pursuit of their mutual goals,
6. Contributing new insights into the advancement of collective action theory especially in online settings, and
7. Potentially assisting practitioners in furthering their understanding of increased citizen participation in decision-making, management of campaigns and movements, and facilitating the coordination of self-organizing communities.

The rest of the paper is organized as follows: Section 2 will provide a review of the relevant literature, followed by brief descriptions of the two online collective actions of interest in Section 3. Section 4 will discuss the proposed methodologies and data collection efforts. Results and analyses are presented in Section 5. We conclude and discuss future work in Section 6.

2 LITERATURE REVIEW

In this section, we will revisit three relevant theoretical domains, namely: collective action, social network analysis, and interorganizational cooperation and coalition formation. By reviewing these areas, we gain insights and understanding of applicable theories and approaches that will inform the analytical framework needed in analyzing the dynamics of online collective actions.

2.1 Collective Action in the Age of Internet

Collective action is a concept critical to the understanding of collective behavior and social movements. Social scientists have generally defined the term as “a common or shared interest among a group of people” (Oliver 1993: 272). The origin of collective action theory can be traced to Ronald Coase’s (1937) approach in explaining how individuals mobilize in the face of free market failures. In 1965, Mancur Olson (1965) updated the theory to explain the “free-riding” problem of collective action. Neither Olson nor Coase would have imagined that collective action would emerge not only physically in offline settings but also virtually in online environments. The emergence of new media and information and communication technologies (ICTs), especially the Internet and social media, has transformed the landscape of collective action. With such low cost, high-speed technologies and the vast network of communication and information, smaller and larger groups now have equal opportunities to access communication resources because the burden of internal communication is no longer cumbersome and a hindrance to collective action (Lupia & Sin 2003).

With the prominent usage of the new media and ICT in contemporary movements, a critical question arises: How should we conceptualize collective actions in the age of the Internet? In their effort to reframe collective action theory in the contemporary media environment, Bimber et al. (2005) did not posit that traditional framings are obsolete or wrong. They were, however, concerned that “much of traditional theory is simply limited to conditions in which private-public boundaries are firm and comparatively impermeable” (Bimber et al. 2005: 384). To better understand contemporary collective action in the age of the Internet, Bimber et al. (2005: 385) suggest several new directions for research, namely work that examines collectivism embracing the blurring boundaries of private and public, emerging structures, the relationship between social capital and collective action, and the development and utilization of social networks.
2.2 Social Network Analysis

The increasing influence of social network media in organizing collective action warrants a closer examination of collective action theory in online environments using social network analysis (SNA) concepts. A set of connected individuals engaged in collective action represents a social network. This network contributes extensively to individual participation in any kind of collective action. Consequently, social network analysis can contribute to the analysis of collective action, particularly by examining the role of prior social ties as a basis for recruitment as well as peer influence affecting individuals’ decisions for participation. Social network analysis provides a set of methods to examine the varying degree of relations among a set of nodes representing individuals, groups, and organizations (e.g., Wasserman & Faust 1994). These methods help investigate the underlying social structures and their relational aspects (Wigand 1988; Scott 1992). Further, it is important to note that within a social network, the actors and their actions are viewed as interdependent; the ties are considered as conduits for information and opinion diffusion; network structures may provide opportunities for or constraints on the actors’ participation; and network models conceptualize structures (social, economic, cultural, and political) as lasting patterns among actors (Wasserman & Faust 1994). With the overwhelming volume of online social network data, a rich set of computational social network analysis (CSNA) methodologies have been developed to examine and summarize large information networks to study complex network dynamics including, community extraction (Fortunato 2010), influential identification (Agarwal et al. 2008), information diffusion (Gruhl et al. 2004), among other social processes. In addition to studying complex network dynamics, CSNA methodologies enable examining structural properties of large social networks and help identify various roles of actors in the network depending on their positions and tie strength (Wasserman & Faust 1994). One such role, which is central to this research, is the bridge node that has implications in information brokerage, bridging structural holes in the network (Burt 2004), facilitating diffusion of new ideas and opportunities, and liaising between different communities or organizations. Centrality measures developed under CSNA, such as betweenness centrality are particularly helpful in identifying and describing bridge or broker nodes (Newman 2009).

2.3 Interorganizational Cooperation and Coalition Formation

Blogs may be seen as social systems, i.e. systematic ensembles of interdependent, inter-human activities attempting to achieve joint objectives by coordinating joint efforts of a group of people following a predetermined program of conduct (Wigand 1979). In social systems such as blogs, a complex array of roles is formed and constituted by individuals, and groups linked together in mutual recognition and realization of certain values and norms. In this structuring process, organizations are evolutionary formations that emerge, exist, and change for the realization of their common goals.

While the two online collective actions under study are not ‘organization’ in a conventional form, we find that organization theory, particularly the concept of interorganizational cooperation and coalition formation, is useful to analyze the interconnectedness between multiple networks. Aldrich (1979) describes two perspectives on the nature of the environment that can support and enhance organizational effectiveness, i.e. the information and the resource perspectives. In this paper we focus on the information perspective, which is reflected within several disciplines concerned with organization theory. The work of Burns and Stalker (1961) exemplifies this information view especially well.

In analyzing the relationship of the two collective actions, in this paper we follow an information model that considers the environment as a source of information. Within this environment blog participants operate and exchange information. This information perspective then is pertinent to interorganizational settings because interorganizational structures manifest and evolve while handling information flows and exchanges.

Wahba and Lirtzman (1972) have formulated and utilized a theory of organizational coalition formation by looking at the formation process with certain and uncertain conditions and within and
between organizations. Organizations, in turn, consider their expected utility of coalition-building for each member and the organization as a whole as well as the probability of coalition success that can be calculated. The authors posit that coalitions are formed to maximize the expected utilities. We pose that the two blogger networks examined here and their coalition formation, expressed in the terms of mutual support and information exchanges, can be broached through theoretical discussions of interorganizational cooperation and coalition formation.

3 ONLINE COLLECTIVE ACTION ON WOMEN’S RIGHTS

3.1 Women to Drive

Women in Saudi Arabia have limited rights, an obstacle to their full participation in public life compared to international standards, including the prohibition on their driving motorized vehicles. Saudi Arabia is the only country worldwide with this type of ban in effect. Although there is no official ban, due to social and cultural restrictions there are no women drivers in the Kingdom1 (United Nations 2007). The origin of Women to Drive, a movement that emerged to address this issue, can be traced to the November 6, 1990 event in which 47 Riyadh women staged a protest and drove in a Riyadh parking lot in resistance to this ban. Protesters were taken into custody for a day and were released only after their male guardians signed statements that they would never drive again. Most of the protesters lost their jobs and their passports were confiscated by the government. More than a decade later, in September 2007, under the leadership of Wajeha al-Huwaider and Fawzia al-Uyyouni a group of Saudi women submitted a 1,100-signature petition to King Abdullah in an effort to reverse the driving ban (Coomaraswamy 2008). On International Women’s Day in 2008, Wajeha al-Huwaider recorded herself driving and posted the video on YouTube, attracting the interest of social media sites and women across the world (Young 2009). Following the al-Huwaider protest, in 2011, a group of women, including Manal al-Sharif, started the Facebook campaign supporting women’s driving rights in Saudi Arabia, “Women to Drive.” In subsequent months of the campaign, al-Huwaider videotaped al-Sharif driving a car and posted the video on YouTube and Facebook. The consequences were severe: she was arrested the following day. Although she was released on bail, the conditions of her release were that she would refrain from driving and talking to the media. During the following days, several Saudi women protesters posted videos of themselves driving in protest of al-Sharif’s arrest. In June 2012, to celebrate the anniversary of the June 2011 driving campaign, a member of the My Right to Dignity, a women’s right campaign, drove her car in Riyadh. Figure 1 illustrates the timeline of various campaigns and events organized as part of the Women to Drive and the Sexual Harassment collective actions.

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1 The Saudi government stated that “There is no legal provision banning women from driving cars. However, this matter is the subject of study and requires time for implementation.”
3.2 Sexual Harassment

Evident by the large and growing number of online initiatives aimed at addressing the endemic issue, sexual harassment is an important concern for many of the Muslim bloggers surveyed. However, like Women to Drive, sexual harassment campaigns develop to address this concern in specific contexts. HarassMap, for instance, was born out of the desire of Egyptian women to walk down the street without unwanted groping and endless streams of insults and propositions. Based on a survey conducted by the Egyptian Center for Women’s Rights (2008), 83% of Egyptian women admit to have been sexually harassed on the street. Since the initiative’s inception, HarassMap has been contacted by organizations in several other countries, such as Indonesia, Pakistan, Turkey, and Palestine, for technological advice on implementing Ushahidi-based interfaces and other similar mapping/alert technologies already exist in India, Bangladesh, Lebanon, and elsewhere. Though the mapping technology is important in determining “hotspots” where HarassMap targets its offline advocacy, the initiative has also sponsored blogging/Twitter events, such as #endSH, as opportunities for victims to share their stories.

In a similar vein, people in other countries are using blogs, Facebook, and Twitter to spread awareness about sexual harassment. Several manifestations of the global SlutWalk movement that have arisen in North Africa and South and Southeast Asia count the eradication of sexual harassment among their primary goals. Although the origins of the SlutWalk movement mainly aim at countering perpetuated myths that result in victims being blamed for their rapes, Women Choufouch (originally SlutWalk Morocco) focuses on sexual harassment as much if not more than rape. In the nearly two years since its inception, the Women Choufouch Facebook page has been “liked” by 8,360 people. Likewise, Besharmi Morcha, one of the anti-rape offshoots of SlutWalk in India, has also used the SlutWalk platform to oppose sexual harassment as a concern of women that is as important as countering myths associated with rape and victim-blaming. Figure 1 illustrates the timeline of several campaigns and events organized as part of the Sexual Harassment collective action. The timeline is not comprehensive due to the sheer number and extremely varying scale of the campaigns.

4 RESEARCH METHODOLOGY

The web, including blogs, can be mined to track information and data about emerging trends and behaviors in almost any area. Moreover, such data may also demonstrate and reveal information about precisely how ideas diffuse and how trends develop and take hold. We explore evolving individual opinions and their respective development in transnational online collective action through the broad perspective of inter-network cooperation and, in so doing, delineate the underlying challenges and
propose a new research methodology. The objective of this paper is to study two online collective actions related to women’s rights, i.e. ‘Women to Drive’ and ‘Sexual Harassment’ by analyzing the female Muslim blogosphere. Specifically, we study the interaction between the members of the two networks to understand cooperation and support dynamics. As depicted in the methodological scheme in Figure 2, we,

1. Collect data for the women’s rights online collective action,
2. Preprocess and filter noise (i.e. indexing the data and selecting the blog entries related to ‘Women to Drive’ and ‘Sexual Harassment’ collective actions),
3. Perform blogger classification to identify activist bloggers involved in the networks, viz., ‘Women to Drive’ and ‘Sexual Harassment’,
4. Construct networks for the two online collective actions and visualize,
5. Observe if there is any interaction between the networks, and
6. Observe the polarity of sentiments expressed in the interactions to understand whether the interactions are supportive or not.

Facilitated by the transnational nature of the online collective actions and the underlying common contexts (i.e. having leveraged social media for mobilization and collective awareness toward addressing gender inequality and promoting women's rights), the methodology described here helps to study the effects of cooperative networks on online collective actions. In the following sections we provide detailed explanation of each individual component of the methodology.

![Figure 2](image)

**Figure 2.** Research methodology to study cooperative networks in online collective action.

### 4.1 Data Collection and Preprocessing

We collected 200 blog sites from 23 different countries between 2005 and 2012. The selection of bloggers is based on three characteristics: they are women over the age of 18, they are Muslim (verified through their self-identification or through references in their postings, e.g., by mentioning Islamic holidays, by use of hijab, etc.), and they primarily blog in English. Given that the bloggers blog in English, they are not necessarily the most popular ones within the blogospheres of the various countries (based on 2008 Technorarati scores relative to other blogger at within the same national context). The decision to blog in English could signify the desire to reach out to a global English speaking audience. These English speaking female Muslim bloggers are important for our analysis as they provide a global perspective to their campaign efforts, translating into the transnationalism of their online collective action. Other available demographic and descriptive information, such as nationality, current residence, and screen name, is also included. Since these blogs are updated with frequencies varying between two to three blog posts per day to just one blog post per month, a crawler (viz., Web Content Extractor, www.newprosoft.com) was configured with the above mentioned nuances that runs constantly to automatically collect, parse, and index the data.
The crawler allows us to store the extracted data in a variety of formats, including CSV, TXT, HTML, XML or directly to a relational database. Collected data includes the title of the blog post, blog post content, timestamp when the blog post was created, followers’ reactions in the form of comments, and the category/tags of the blog post, which could be system-defined or user-defined. We preferred a relational database to store the data due to reliability, scalability, platform independence, and, most importantly, fast indexing to handle large numbers of records. From the crawled blog sites, 111 blog sites consisting of 1,380 blog posts were discussing ‘Women to Drive’ or ‘Sexual Harassment’ at different time periods. 73 out of these 111 blog sites were discussing ‘Women to Drive’ and ‘Sexual Harassment’ campaigns in different posts, and 26 bloggers were discussing both in same posts. Figure 3 illustrates the distribution of the blog sites and entries. Figure 4 shows the distribution of blog entries and follower comments related to both ‘Women to Drive’ and ‘Sexual Harassment’ occurring between 2005 and 2012.

4.2 Blogger Classification and Overlap Detection

We filtered the indexed crawled blog entry contents by performing keyword searches that are related to ‘Women to Drive’ and ‘Sexual Harassment.’ Our first aim was to focus on the entries that have ‘women’, ‘drive’, ‘women to drive’, etc. keywords for the ‘Women to Drive’ movement and ‘sexual harassment’, ‘sexual abuse’, etc. keywords for the ‘Sexual Harassment’ movement, respectively. As a second filtering mechanism we added the entries that are labeled with user defined or system defined tags, which include the same keywords as well. We realized that users do not always necessarily tag their entries by specific keywords, although they are talking about the same issues. Since our crawled data includes blogger information, we created the network classes for both events by grouping bloggers under ‘Women to Drive’ and ‘Sexual Harassment’ result sets. The result sets were compared to identify the common members.

![Website Distribution](image1)

**Figure 3.** Distribution of the bloggers between ‘Women to Drive’ and ‘Sexual Harassment’ online collective actions.

![Blog Entries of Common Websites](image2)

**Figure 4.** Volume of blog posts (left) and comments (right) for ‘Women to Drive’ and ‘Sexual Harassment’ online collective actions.
4.3 Network Construction and Visualization

The classification result set was analyzed by Gephi to study their structures and visualize the relationship of members within the respective networks. We measured the modularity of the network to detect and study the compartmentalized classifications of the network. The method consists of two phases. First, it looks for “small” communities by performing local optimization of the modularity. Second, it accumulates nodes of the same community and builds a new network across the communities. These steps are repeated iteratively until a maximum of modularity is achieved. Figure 5 shows the network of the ‘Women to Drive’ and ‘Sexual Harassment.’ The overlapping set of members is enlarged for better readability.

4.4 Sentiment Analysis

After we collected the blog posts, sentiments were extracted using LIWC (www.liwc.net) software, in order to study the transformation of individual opinions to collective sentiments. LIWC provides an efficient and effective method for studying various emotional cognitive and structural components present in individuals’ written forms of communications. LIWC outputs approximately 80 variables. The variables include four general descriptor categories, 22 standard linguistic dimensions (e.g., percentage of words in the text that are pronouns, articles, auxiliary verbs, etc.), 32 word categories tapping psychological constructs (e.g., affect, cognition, biological processes), seven personal concern categories (e.g., work, home, leisure activities), three paralinguistic dimensions (assents, fillers, nonfluencies), and 12 punctuation categories (periods, commas, etc.). We have mainly focused on affective processes under psychological processes. The affective processes include 406 positive emotion words (e.g., love, nice, sweet) and 499 negative emotion words (e.g., hurt, ugly, nasty). The negative emotions are further categorized into anxiety, anger, and sadness feelings. Scores for positive and negative emotions were obtained from LIWC for the blog posts and the associated comments. Next, we will discuss the analysis of the results from the proposed methodology on the blog data for ‘Women to Drive’ and ‘Sexual Harassment.’

In LIWC’s external validity and internal reliability measures (Cronbach’s alpha) report highly correlated results. Validity judges reflect simple correlations between judges’ ratings of the category with the LIWC variable (Pennebaker & Francis, 1996). Using LIWC output and judges’ ratings, Pearson correlational analyses were performed to test LIWC’s external validity. Results reveal that the LIWC scales and judges’ ratings are highly correlated ($r = 0.45$). These findings suggest that LIWC successfully measures positive and negative emotions, a number of cognitive strategies, several types of thematic content, and various language composition elements. The level of agreement between judges’ ratings and LIWC’s objective word count strategy provides support for LIWC’s external validity. Cronbach alphas for the internal reliability of the specific words within each category were calculated by LIWC yielding a $\alpha$ of 0.83 for 64 terms.
5 ANALYSIS AND RESULTS

In our study, we focus on blog entries belonging to both ‘Women to Drive’ and ‘Sexual Harassment’ collective actions (see Figure 3). Networks of bloggers depicted in Figure 3 were constructed based on the filtered posts and comments. These networks help us in identifying the common set of actors between the two online collective actions, i.e. those actors that span both boundaries, thereby identifying the cooperative network, as discussed next. The cooperative network is further studied to understand the support mechanism and the transnational dynamics of both collective actions.

5.1 Inter-Network Cooperation

To show the interaction and support mechanism between networks of the two women’s rights collective actions, we focused on bloggers belonging to both ‘Women To Drive’ and ‘Sexual Harassment’ network classifications as shown in Figure 5. We eliminated the entries of those users who belong only to one collective action. Figure 6 shows a sample of the interactions in the cooperative network between the members common to both networks within our larger blogger network. The results indicate that there is a strong presence of an inter-network cooperation between the two collective actions. As hypothesized earlier, the two online collective actions are not isolated networks. There is a common context of promoting awareness of and collective action against furthering women's rights. Next, we analyze the sentiments observed among the interactions to study the transnational aspects of the support mechanism between the two collective actions.
5.2 Sentiment Analysis and Support Mechanism

We ran LIWC on the text data obtained from the interactions observed in the cooperative network. These interactions include comments exchanged by the members between the posts or the text around the blog links. Individual blogger sentiments are identified for the specific movements. The results are shown in Figure 7. Figure 8 shows the detailed distribution of the emotions for the comments among the bloggers that are common to both the networks. These bloggers act as brokers or bridges between two distinctive but overlapped networks of collective actions.

As seen from Figure 7, followers’ sentiments about ‘Women to Drive’ and ‘Sexual Harassment’ were largely positive, indicating there is cooperative support and interaction among the members of the blogger network for these two collective actions. This indicates a sense of solidarity among female Muslim bloggers. Below, we present some samples of those comments (Eltahawy 2010; OrganicMuslimah 2012; Hala 2009; Saudiwoman 2010) made by the bloggers common to both networks.

Serenity’s comment on Monaeltahawy’s entry:
“Thank you so much for writing this, Mona! Thank you for speaking up for those of us who are too cowardly to do so (at least yet!), Mona! God bless you and give you more courage and strength!”

GTFrenzy’s comment on OrganicMuslimah’s entry:
“Just read it and I love it! I couldn’t agree with you more....”

Mezba’s comment on OrganicMuslimah’s entry:
“I fully agree. I say leave the judgement to God...”

Safiyyah’s comment on OrganicMuslimah’s entry:
“As Salaamu Alaikum Dearest Organica:
Alhamdulillah; such a nice post. I especially like the last line, "forgive us.""
According to our results from LIWC, we observe that there is indeed online collective action among the female Muslim bloggers in support of ‘Women to Drive’ and ‘Sexual Harassment.’ The strong positive emotions indicate that the members of the two networks are extremely supportive of each others’ efforts. Further, the inter-network cooperation helps sustain both collective actions and the linkages between the two.

6 CONCLUSIONS AND FUTURE WORK

In this research we examined how distinct but related collective actions expand and diffuse beyond national boundaries. We studied the role of cooperative networks between online collective actions and found that individual opinions evolve and find traction in the interconnected networks. This is demonstrated by conducting an analysis on the female Muslim blogosphere promoting two online collective actions related to women’s rights, ‘Women to Drive’ and ‘Sexual Harassment,’ between 2005 and 2012. By examining social networks of these two online collective actions, we discovered brokering and bridging processes between the two online collective actions where a set of bloggers acted as nodes and/or brokers bridging two overlapping networks, facilitating the diffusion of information, and, further, becoming liaisons between two different communities. Our findings also depict the transnational nature of both concerns and the underlying common context. This, in turn, allows the examination of the effects on opinions and diffusion of information within joint cooperative networks from which various support mechanisms evolved, resulting in the transnationalization of the collective action as well as coalition formation.

This research demonstrates how new insights and understanding may be garnered by applying novel research methodology (including social network analysis, sentiment analysis, text mining, and content analysis). Our findings provide a better understanding of how we may mine information and data of emerging trends and behaviors. From these efforts we can also demonstrate and reveal information about how ideas and information diffuse and how trends and behavioral patterns develop.

Our plan for future research in this area focuses on additional analyses of social networks, information diffusion patterns, as well as the demonstration of collective action behavior and coalition formation within collective actions, and how they influence public opinion and policies. Moreover, future research should explore cross-cultural implications on the proposed methodology.

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