Social Media Discourse and Culture: A Proposal for Comparative Informatics Research

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Introduction

Public discourse is rapidly evolving through the use of social media platforms including Facebook, Twitter and others. Though often discussed in terms like "social media", or even more general terms like "web 2.0", social media platforms are not homogeneous. The reflexive relationship between social media and culture will be different for each combination of culture and social media platform. The Comparative Informatics community focuses attention on the role of culture in ICT uptake and use. Comparative Informatics examines the need for governments to consider the diverse cultures they serve when developing ICTs for eGovernment (Robertson, 2010), reflects on the cultural biases embedded in current technology, including the keyboard (Nardi, Vatrapu, & Clemmensen, 2011) and questions web 2.0 visions of global collaboration and remixing (Hughes & Lang, 2006) unencumbered by cultural differences (Cervantes, Nardi, & Kow, 2010). Social media is one component of web 2.0 that affords many opportunities for Comparative Informatics research. One important contribution of Comparative Informatics research in the area of social media will be the development of a more thorough understanding of the relationship between culture and social media uptake and use. This proposal focuses on the reflexive construction of culture through discourse using social media.

Discourse is an appropriate construct for Comparative Informatics research on social media because discourse is the mechanism these media share. Social media discourse includes an immeasurable number of topics that are not fully catalogued and a manageable set of discourse types. The two main categories of social media discourse are discourse between individuals and public discourse. Discourse between individuals through social media is exemplified differently depending on the technology. Twitter affords both private (direct messaging) and public (@ mention) direct discourse. The choice of discourse strategy through social media is a function of the relationship between the individuals involved and the nature of the discourse. In another social media platform, Facebook, public discourse occurs both on personal walls and public groups. On personal walls (Facebook recently started using the term timeline to refer to walls), users post an artifact and their friends or others can comment depending on if the poster's security configuration allows. In a Facebook Group, administrators post news stories, comments or video links they believe will be of interest, and members of the group "like" these posts and comment on them, which leads to public discourse.

The application of ICT for discourse is not new. Technologically mediated discourse between individuals occurs in email, one of the first widely adopted Internet based communication channels. USENET is one of the first large-scale examples of less private person to person and public discourse on the Internet. Social media follows many of the same interaction practices found in USENET, though social media is a richer media for interaction,

enabling people to feel a greater sense of social presence with others (Short, Williams, & Christie, 1976). USENET is more like Facebook Groups than direct messaging, insofar as both media are targeted at specific user group interests. It is this introduction of social presence, brought through social media's richer communication channel, which enables culture to be expressed and constructed more fully in the present era.

Social Media: Its Not All the Same

We suggest that each social media platform and the interactions that occur within them do not constitute one specific technical, social or cultural context; nor are the global cultures that participate in social media easily isolated in social media studies. In this proposal we advocate viewing each social media platform as a transport protocol for public discourse, and systematically examining the presentation and emergence of culture through discourse from a number of perspectives. To accomplish this, we propose using a methodological approach we have developed under the umbrella term Group Informatics (Goggins, Mascaro & Valetto, 2012). This methodological approach includes network analysis of electronic trace data, ethnography, interviews, content analysis and other qualitative research methods. The data are then systematically integrated to tell a more comprehensive and multivalent story than most social media studies, particularly those that examine phenomena in a single social media platform. No prior work systematically studies the reflexive relationship between culture constructed through different social media platforms as a new type of culture and the expression of existing, traditional notions of culture through social media using the lens of emergent, topically focused discourse.

There is a need to systematically examine the role of culture across different social media platforms, and the effect of social media use on culture in each platform; relate technologically mediated activity to activity in the physical world; and understand differences in the patterns of social media use across international, national, regional and local geographic boundaries. We argue that different social media platforms will lead to different trajectories of intersubjective cultural construction. Our proposed systematic examination of cultural phenomena in social media builds on the work Nardi (2011), Vatrapu (2008) and others in the Comparative Informatics community.

We provide a framework for this research. First, we make it clear that culture and online discourse are the focus of the proposal by placing this intersubjective construct in the center. Next, we frame the dimensions of media platform, discourse type and culture (online and offline) as the key constructs we examine phenomenologically. Finally, we include the notion of planned and unplanned events in our framing of research questions in order to narrow the scope of work to something less than "all culture in all social media". Our prior work makes it clear that planned and unplanned events in the real world, and how they are talked about using social media, have different characteristics. Planned events include public elections, sporting events, local gatherings and other occurrences that appear on a calendar days, weeks or months before they occur. Unplanned events include natural disasters, crime, scandals and spontaneous civil action. This framework enables us to make a unique contribution to the Comparative Informatics community through the application of our model and method of Group Informatics.

The deep understanding we build from our study will lead to contributions in social media design; to define guidelines and principles for creating different, specific types of online culture, and to demonstrate respect and understanding of existing cultures that use social media.

Our approach is pragmatic, insofar as we heed Kling & Courtright's (2004) warning that online community is an aspirational construct, while at the same time seeking understanding of how culture is constructed through social media for the purpose of reaching the aspiration of technologically mediated community.

Community and culture are intertwined at the local, regional and national levels. We seek not only to perform a systematic Comparative Informatics study of social media using our Group Informatics methodological approach, but also to conclude our research by providing a better understanding of how cultural differences may be bridged through the deliberate design and use of social media. This recognizes two levels of design – the intentions of the designer, and the ensuing design of media that occurs through use (Harrison & Tatar, 2007). Viewing design from these mutually constitutive perspectives enables the Comparative Informatics community to apply our findings to a culturally focused version of positive design (Carroll, Rosson, Farooq, & Xiao, 2009).

PRIOR WORK

Figure one illustrates the framing of our study of culture and online discourse. We consider differences in social media platforms, two types of discourse types and the intersubjective relationship between online culture and culture expressed through individual identity. The widespread use of social media during planned and unplanned events in the physical world enable us to frame the proposed research in a tractable way. With the rest of this section, we outline essential prior work in each of the four outer boxes in figure 1. We focus on discourse to a greater extent because it is the lens through which we propose to view the intersubjective relationship between culture and social media.

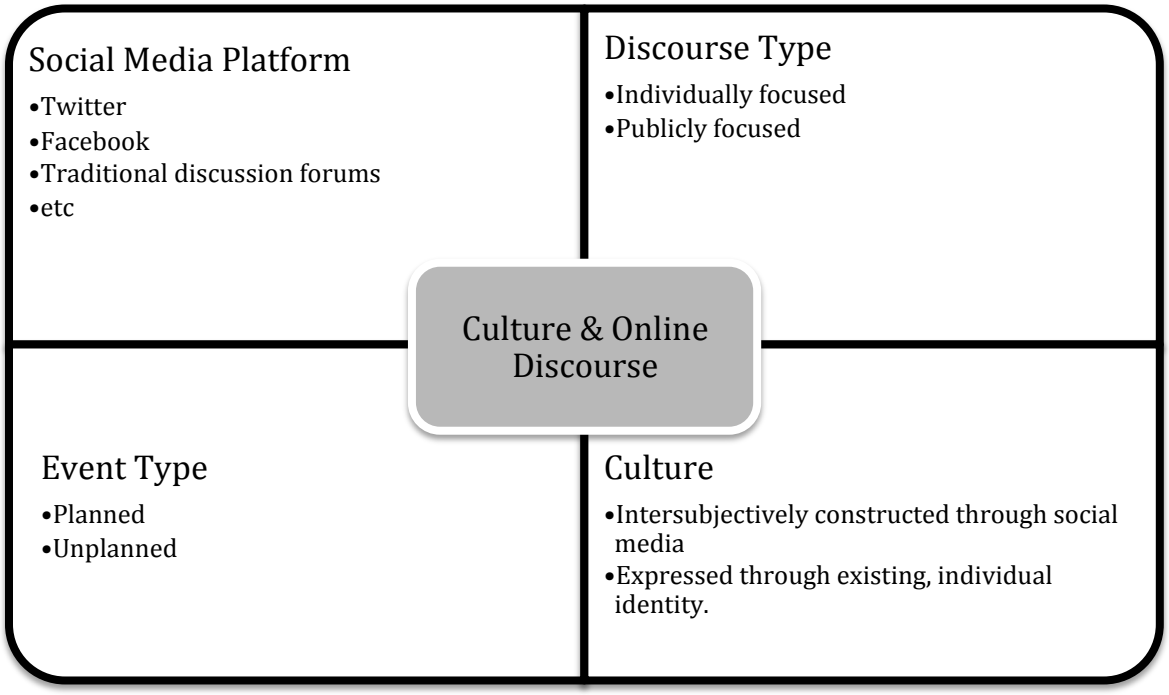

Figure 1 - Framing the Complexity of Technologically Mediated Culture Studies

Social Media Platform

The technological affordances of each social media platform influence the way that discourse is conducted. For example, Twitter allows for asymmetric connections and provides other technological affordances such as @ mentions, hashtags and retweets. On the other hand, Facebook has some support for @ mentions, but allows this to be easily turned off by users and does not allow for searching of status messages based on hashtags. These differences in technological context may appear minor, in some respects, but our work (Goggins & Mascaro, 2011; Goggins, Mascaro, & Mascaro, 2012; Mascaro & Goggins, 2011a; Mascaro & Goggins, 2012) and the work of others shows that the technological affordances in a particular online culture (Nardi et al., 2011; Robertson, 2010; Vatrapu, 2008; Vatrapu, 2010; Cervantes et al., 2010) influence the manner in which individuals participate in discourse and are constrained or enabled by the relationship of a particular ICT (social media platform) in the use of a particular social media platform.

Event Types

Focusing our study on how discrete events in the physical world are manifest within and across cultures and social media platforms is a constraint on the scope of our proposed study. Planned events, including social, cultural and interest focused events are shown to have a distinct trajectory of social media uptake and use. Similarly, unplanned events like natural disasters, civil unrest and ad hoc social gatherings have patterns of social media use that are distinct, and notably different than patterns observed during unplanned events. Contrasting these two classes of events brings a deliberate contrast to our proposed study. Cultural identity, we hypothesize, is expressed and constructed differently through social media use.

Intersubjective views of culture – Comparative Informatics Literature

Culture is recognized as a tricky construct for framing research (Vatrapu, 2010). Focusing on how online culture influences culture among different kinds of groups who share a cultural identity, and how social media leads to the development of its own, specific notion of technologically mediated culture make the research we propose tractable. Events of all kinds occur within more conventional cultural contexts, and to date culture has been studied as a geographically focused or an ancestral heritage focused (The Jewish Diaspora is a good example, but there are others) phenomenon. Culture is a tricky construct that has been examined in organizations (Munich, 2011), emerging virtual organization (Nardi, 2007), at the national (Mead, 1950; Mead, 1999) and regional level (Maitland & van Gorp, 2009; Malecki, 2010). Our studies of social media to date suggest that cross cultural, online cultures form through social media discourse, often around events in the world (Goggins et al., 2012; Goggins, Laffey, Galyen, & Mascaro, 2011; Mascaro & Goggins, 2011a; Mascaro & Goggins, 2011b; Mascaro & Goggins, 2012; Mascaro, Novak, & Goggins, 2012; Novak & Mascaro, 2012).

Discourse and Social Media

Prior studies of discourse in social media relate to the expression of political, issue based topics (Gonzalez-Bailon, Kaltenbrunner, & Banchs, 2010; Hill, Hughes, &, 1997; Kelly, Fisher, & Smith, 2005). This work illustrates the reflexivity of social media interactions, and activity in the physical world. The *a priori* existence of shared contexts of individuals based on demographics contributes to a shared set of information between individuals, both virtual and offline. Lazer *et al.* (2010) found that individuals do not rely on political views as a basis for relationship formation, but shift their political attitudes towards those of their social contacts after a

relationship is formed. Further, this shift in political attitudes allows for the emergence of a core group of individuals with one set of viewpoints and a periphery of individuals with opposing viewpoints that withdraw from the core. These findings build upon previous research that illustrates the importance of social relationships in political information exchange and discourse (Huckfeldt & Sprague, 1987).

Social networking sites enable technologically mediated engagement to occur in multiple ways. Participants can post to the larger group or utilize a mechanism of direct addressal, including the @ symbol, to single out another individual in their social media communication. This singling out occurs in the public forum and is seen by everyone. In addition to these formal direct addressal mechanisms, individuals utilize more informal mechanisms like a users name. Failure to use the provided affordances for singling out another individual through technological means creates noise that the analyst of social media, whether focused on culture, communications, political science or other domain of interest, must address. Messages where individuals are singled out form a subset of interactions within a particular social media group that, when analyzed together, form a network of conversation. These networks of conversation are more explicitly identified than previous research on conversations within larger scale forums and allow for a much richer analysis of the networks of discourse that emerge (Fisher, Smith, & Welser, 2006).

The leadership that exists in the forum often shapes these outcomes. Leaders in an online space dictate the initial flow of conversation and shape the dialogue over time as more individuals become involved. (Cassell, Huffaker, Tversky, & Ferriman, 2006). As the group grows individuals can also take on leadership positions and shift the dialogue to areas of interest to them (Hersey, Blanchard, &, 1992). These differences indicate that a social media platform and the culture of a particular group within that platform lead to distinct discourse cultures in each case. For example, one person may join a group to find others that they agree with and another may join a group to find individuals they disagree with. Depending on the user motivation they will experience very different outcomes. In Facebook Groups, the posting of a parent post is an exercise of leadership, whereas in Twitter the creation of a hashtag to discuss a new topic may be seen as a similar, but more diffuse expression of leadership around a topic of discourse.

Many attempts to develop visualization technologies to help make sense of large, unstructured conversations online in online forums are available (Kerckhoff & Back, 1965; Sack &, 2000; Smith & Fiore, 2001; Viegas & Smith, 2004). The resulting visualizations allow individuals who are information consumers to better understand the type of information they are reading and who the important actors are. This information, coupled with other behavioral aspects of individuals in social networking sites, and the specific communication technologies enable the identification of discourse roles (Benevenuto, Rodrigues, Cha, & Almeida, 2009; Welser, Gleave, Fisher, & Smith, 2007). Our study expands the scope of the examination of discourse to include a focus on the intersubjective construction and expression of culture through social media.

Discourse Across Social Media Platforms: The Group Informatics Method

While prior work framing the examination of social media use as discourse is largely focused on political activity at the individual and group levels, our work spans technological and cultural contexts. Our first examination of discourse in social media focused on the relationship between

discourse and group size in completely online graduate level courses (Goggins, Laffey, & Gallagher, 2011b; Goggins, Mascaro, Valetto, & Gallagher, 2011c). This led us to focus on the small group unit of analysis, how groups emerge through social media discourse and how leadership within these groups emerges across a range of social media platforms (Goggins et al., 2012; Mascaro & Goggins, 2011a; Mascaro et al., 2012), including disaster relief, software engineering, online dating and recreational sports. Through this empirical work we developed our Group Informatics methodological approach (Goggins et al., 2011c; Goggins, Valetto, Blincoe, & Mascaro, 2011a) for the study of discourse across social media platforms. Focus on the small group unit of analysis in social media studies enables us to consider interactions between the individual and their larger cultural context using the small group unit of social structure, where changes emerge and are propagated (Goggins et al., 2011b; Mead, 1934; Mead, 1958; Stahl, 2006).

Methods

Our prior work examines a number of different socio-technical contexts, including online learning technology, Facebook, discussion forums and Twitter. Though each social media platform generates a distinct set of electronic trace data with different attributes, cardinality and granularity, we store and analyze these traces in a common structure, preserving a record of the provenance of the data from their original form to our interaction warehouse structure (Goggins & Valetto, 2010). This common structure enables comparative analysis of electronic trace data, and the integration of those analyses with collected qualitative data. We further incorporate the use of modeling in the analysis of this data (Goggins et al., 2011a; Goggins et al., 2011c). We apply our model and method to a variety of contexts and technologies, including online political discourse on Facebook (Mascaro & Goggins, 2011a; Mascaro & Goggins, 2011b; Mascaro et al., 2012), open source and industrial software engineering practice (Blincoe, Valetto, & Goggins, 2012) and disaster relief on government sponsored discussion forums (Goggins et al., 2012). Here, we propose to apply these methods to increase understanding of the intersubjective creation of culture through social media discourse.

Proposed Research Questions, Data Collection & Analysis

We propose a longitudinal empirical study to systematically examine the role of culture across different social media platforms, and the effect of social media use on culture in each platform; relate technologically mediated activity to activity in the physical world; and understand differences in the patterns of social media use across international, national, regional and local geographic boundaries. To accomplish this, we have developed a set of research questions, described the data required to answer these questions, and proposed specific types of analysis. These are enumerated in table 1.

Research Questions	Data	Analysis
o **RQ1:** What is the nature of the reflexive relationship between social media participation and local culture? Regional culture? National Culture? Cross cultural interaction?	1. Electronic trace data captured from Facebook, Twitter & online discussion forums. 2. Field notes on changes in the	Apply existing group informatics methods (Goggins, Mascaro, Valetto & Gallagher, 2012)

Research Questions	Data	Analysis
§ How do technological affordances and changes to different social media platforms facilitate or hinder each pattern of discourse: discourse between individuals, discourse in declared groups and public discourse?	technological affordances of different social media platforms	Group trace data according to time periods corresponding with changes to technological affordances on the different platforms, and analyze use differences that emerge in the time that follows the change.
§ How do actors participate differently based on both the platform based and cultural context?		Comparative analysis of individual social network measures, including betweenness centrality and degree using group informatics generated network statistics across social media platforms.
§ To what extent do network structures emerge in distinct ways within a particular social media platform? Across social media platforms?		Apply existing group informatics methods (Goggins, Mascaro, Valetto & Gallagher, 2012) to perform exploratory analysis of network characteristics including centralization, clique formation and network visualizations for each social media platform
o RQ2: What is the relationship between technologically mediated activity and physically mediated activity? To what extent do events external to the technology influence the technologically mediated activity?	1. Electronic trace data captured from Facebook, Twitter & online discussion forums. 2. Interviews with participants in external events 3. Ethnographic	1. Apply existing group informatics methods (Goggins, Mascaro, Valetto & Gallagher, 2012) to perform an exploratory analysis of electronic trace data in concert with interview and ethnographic data.

Research Questions	Data	Analysis
§ To what extent do individuals respond differently to anticipated (debates, elections, conferences) versus unexpected events (disasters, crimes) using different social media platforms?	observation of a series of external events coordinated through one of the technologies	2. Organize trace data according to specific planned and unplanned events, thematically code interactions and apply network analysis to group informatics transformed interaction data.
o RQ3: To what extent can regional, local, national and international discourse group emergence be detected and understood using a Group Informatics approach?	Electronic trace data captured from Facebook, Twitter & Online discussion forums	Apply existing group informatics methods (Goggins, Mascaro, Valetto & Gallagher, 2012) to perform exploratory analysis of local, regional, national and international discourse groups.
§ How do individuals decide how to identify interactions in the use of Twitter such as including technological affordances such as @ mentions or hashtags?	1. Interview 20 Twitter users who are found to have contrasting positions in the social network generated through exploratory analysis. For example, users with high betweenness centrality in a topic and users with high degree.	Prior to interviews, identify patterns of technological affordance use by a set of users who focus on planned and unplanned events in the physical world. Our pilot studies have included the Penn State sexual abuse scandal and college football rivalries in the US.
§ How do individuals decide how to join particular Facebook Groups for discourse and how do they find discourse of interest to them?	1. Interview 20 Facebook users who are found to have contrasting positions in the social network generated through exploratory analysis. For example, users with high betweenness centrality in a topic and users with high degree	Organize interviewed users for motivational themes for joining, and perform network analysis of group informatics transformed interaction data.

Research Questions	Data	Analysis
§ What are the antecedents to discourse coalescing around specific social media embodied groups and organizations?	Electronic trace data captured from Facebook, Twitter & Online discussion forums	Reflexive analysis of planned and unplanned events in social media. This includes iterating analysis algorithms and an ongoing comparison of the corpora of event related electronic trace data over time, focused on the identification of patterns.

Table 1 - Proposed Research Questions, Data Collection and Analysis

Significance

Comparative analysis of the intersubjective construction of international, national, regional and local culture across different social media platforms has never been systematically accomplished before. Description of these processes and interactions is essential for the definition of future Comparative Informatics research questions, and to increase our understanding of mutually constitutive nature of culture in a connected world. Our findings will have implications for societies, organizations, local communities and governments.

The results of our study will contribute to the design of social media platforms that serve public, organizational, and cultural construction and expression through social media in the future. Through our work, the values and cultural biases inherent in any design may be targeted in a way that advances social media infrastructure in the future toward understanding and what we have called productive discourse. These expected outcomes will include a framework for what Carroll and others describe as "positive design" (Carroll et al., 2009) in a comparative informatics research context.

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