Multi-Source Assessment of State Stability

Topic: *Topic* # 3-B Cyber norms and governance

The wave of revolutions in the Arab world, commonly referred to as the Arab Spring, took the world by surprise. To some extent the September 2012 consulate and embassy attacks were also unforeseen. Despite the rich literature on interstate conflict, state stability, revolution and regime change these events could not be predicted nor fully accounted for by the existing theoretical traditions in the social sciences. Clearly, social media was touted as critical to these revolutions. Traditional media also gave voice to public concerns and provided critical information. Social media is playing an increasing, albeit complex, role. It is used to provide rapid broadly available information on breaking events prior to traditional media, thus breaking control over information. Social media is used to organize events; however, it can be "spoofed" enabling groups to advertise "fake" meetings to trap potential participants, thus breaking trust. Finally, social media is a medium for cyber-warfare an example of which is when the "hackerist," Anonymous, used social media to cripple Israeli websites in response to threats to cut off Internet access in Gaza and the Territories and so limit Palestinians' access to social media. These recent events raise a number of questions about how access and usage of social media in comparison to traditional media can be used to promote change. In particular, how can these media be used to: 1) enable the diffusion of new ideas and actions that inhibit or promote violence, 2) support new agendas, 3) maintain or forge new alliances, 4) forge or break trust, 5) stabilize or destabilize situations, 6) alter lines of power, and 7) change an actor's influentialness.

We propose to develop new capabilities in predictive state stability modeling and improve our understanding of the fundamental issues surrounding state stability in a cyber-mediated environment. Our primary objective is to understand the way in which media – social and traditional – can be used to effect state stability or instability by individuals, groups and corporations. A secondary objective is to identify indicators that are useful in predicting state stability based on social media and traditional media that signal of changes in trust, norms, influentialness, lines of stability, and lines of alliance or competition to predict state instability. This research is expected to lead to a new operationally relevant predictive tool for assessing the impact of individuals, groups and messages in media on state instability; operationally relevant metrics for assessing trust, state stability, and alliance and changes in these factors; and will support the development and testing of a new media informed theory of state stability.

The proposed research addresses three central concerns relative to the relation of media and state stability: First, indicators of state stability/instability, trust, alliance and competition are identified and then the related metrics which can be applied to social and traditional media are developed and tested at the region, state and province level. Second, using statistical, network and visual analytics extracted geo-temporally tagged actor-topic networks and these metrics, are analyzed to assess and predict social behavior at the region, state and province level. Specific attention is paid to assessing who are the trusted information brokers, who are the vulnerable actors, what are the lines of balance, and characterizing the role of social versus traditional media in forging/breaking trust and forging/breaking lines of balance. Third, based on these findings we then turn to asking: 'How can these media be used to influence or inhibit change and so foster changes in state stability, trust, alliance and competition?'

Using mixed-source data (twitter, blogs, news, trade, geographic information, and archival ethnographic sources) a series of meta-networks linking people, groups, issues, activities, and locations are constructed, and metrics for assessing changes in trust, state stability, and alliance are extracted for a set of countries in the Middle East, Africa and the Pacific Rim. Analysis is done at the region, state and province level thus allowing for improved validation, multi-cultural assessment and a more nuanced understanding of change. A mixed-methods, multi-modeling approach is used to support theory development, testing, and model validation. Blending qualitative and quantitative techniques supports the automated coding of media data using text-mining techniques, in-depth analysis of outliers and overall interpretation utilizing culturally informed qualitative ethnographic assessments, and theory testing using traditional and new "big-data" statistical, network and visual analytics with particular attention to dynamic and incremental metrics for identifying critical actors, issues, messages and groups of interest.

This research lays the groundwork for a media-based state stability modeling system that is reusable, easily instantiable from empirical open source data, and adaptable to different socio-cultural environments. The approach and findings pioneered in this work will support all-source data-collection and analysis efforts for operational needs. The metrics for key indicators, social-topic network models and associated tools developed in this project will provide the DoD with a core operational capability to enhance predictive modeling for regime change, assess social and traditional media data, and assess changes in trust, stability and alliance. The proposed technology enhancements, particularly those for capturing, visualizing, analyzing, and fusing information from social media and traditional media are of immediate value to joint HA/DR operations, MISOC, public-relations operations, irregular warfare operations, intelligence efforts, and IO operations.

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