

Volume 2 • Number 2 • July 2013



All Azimuth

A Journal of Foreign Policy and Peace

www.foreignpolicyandpeace.org

Published by Center for Foreign Policy and Peace Research, İhsan Doğramacı Peace Foundation

The Center for Foreign Policy and Peace Research was created under the auspices of the İhsan Doğramacı Peace Foundation.

The main purpose of the Center is to help develop agendas and promote policies that contribute to the peaceful resolution of international and inter-communal conflicts taking place particularly in the regions surrounding Turkey. It also aims to analyze and interpret contemporary policies from a critical, comparative but, at the same time, constructive and peace-oriented perspective.

The Center, in order to achieve its purpose, prepares research projects and programs, works to provide a suitable dialogical environment for social scientists, publishes research outcomes, holds conferences, round-tables, and workshops on national and international levels, offers fellowships, appoints candidates for the İhsan Doğramacı Peace Award, and publishes All Azimuth: A Journal of Foreign Policy and Peace.

The Center, in its activities, observes the highest academic standards, norms, and freedoms. In doing so it attaches significance to the theoretical and methodological aspects of foreign policy analysis and works to construct bridges between policy and theory. Together with All Azimuth, the Center also aims to provide a platform for homegrown conceptualizations of international relations and foreign policy research.

Chief Editors

Ali L. Karaosmanoğlu, Center for Foreign
Policy & Peace
Ersel Aydınli, Bilkent University

Editors

Esra Çuhadar Gürkaynak, Bilkent University
Pınar İpek, Bilkent University
Müge Kınacıoğlu, Hacettepe University
Özgür Özdamar, Bilkent University

Copy Editor

Rana Nelson

Publisher

Center for Foreign Policy and Peace Research
İhsan Doğramacı Peace Foundation
Ankara, Turkey

ISSN 2146-7757

All Rights Reserved

Printing House

Elma Teknik Basım Matbaacılık
Çatal Sokak 11/A Maltepe / ANKARA
Tel: (90-312) 229 92 65

Printing Date

22.08.2013

Editorial Board

Şahin Alpay, Bahçeşehir University
Meliha Altunışık, Middle East Technical University
Mohammed Ayoob, Michigan State University
Hüseyin Bağcı, Middle East Technical University
Nimet Beriker, Sabancı University
Daniel Druckman, George Mason University
Cooper Drury, University of Missouri-Columbia
Willem Frederik van Eekelen, Former Minister of
Defense of the Netherlands & Former Secretary General
of the WEU
Atila Eralp, Middle East Technical University
Onur Gökçe, Bilkent University
Metin Heper, Bilkent University
Patrick James, University of Southern California
E. Fuat Keyman, Sabancı University
Müge Kınacıoğlu, Hacettepe University
Ludger Kühnhardt, Bonn University
Heath W. Lowry, Princeton University
Ersin Onulduran, Ankara University
Ziya Öniş, Koç University
Nihat Ali Özcan, Economic Policy Research
Foundation of Turkey
Haluk Özdemir, Kırıkkale University
İlter Turan, İstanbul Bilgi University
Peter Volten, Center for European Security Studies
Nuri Yurdusev, Middle East Technical University
S. Enders Wimbush, The German Marshall Fund of
the United States, Washington, D.C.

This journal is indexed and abstracted by:

CIAO
EBSCO
European Sources Online
Gale
Index Copernicus International
JournalSeek
Left Index
Middle Eastern and Central Asian Studies
ProQuest
Ulrich's

Published two issues per year. Articles are subject to review by anonymous referees. Submissions should be made in English by e-mail and should conform to the instructions on the inside back cover and the journal's website.



All Azimuth

TABLE OF CONTENTS

V2, N2, July 2013

In This Special Issue 3

ARTICLES

A Guide to Event Data: Past, Present, and Future 5
Philip A. Schrodt and James E. Yonamine

Data Quality for Measuring Political Protest and Government Change 23
Charles Lewis Taylor

An Empirical Assessment of the Role of Emotions and Behavior in
Conflict Using Automatically Generated Data 31
Steve Shellman and Sean O'Brien

A Pilot Study of Quantifying Turkey's Foreign Affairs: Data Generation,
Challenges and Priliminary Analysis 47
Musa Tüzüner and Gonca Biltekin

COMMENTARY

Roundtable Discussion on Event Data 71

In This Special Issue

In this special issue of *All Azimuth* the main focus is given to quantitative methodologies in International Relations, specifically, event data analysis. In December 2011, the Intelligence Studies Research Center and the Center for Foreign Policy and Peace Research in Ankara jointly organized a workshop in which leading academics from the United States, Norway, Germany and Turkey introduced event data methodology in detail, and presented and discussed the use of this method in foreign policy analysis, in terrorism and social movement studies and for monitoring and forecasting crises. The participants' final discussions explored different ways of responding to the challenges confronted in foreign policy studies, and provided a platform for discussing the necessity of increasing and diversifying Turkish foreign policy studies in light of Turkey's rising regional and global roles.

The issue begins with an article by James E. Yonamine and Philip A. Schrodt, in which they first provide a general introduction to what "event data" actually are. They specifically address the methodology's history, trends, challenges and usage in the study of political conflict to show how event data have played a significant role in quantitative conflict studies. By examining event data projects over the last four decades, they find increasing methodological sophistication at all levels, from collecting and coding to aggregating and analyzing data. They claim that data mining approaches, agent-based models and social media such as Facebook, Twitter and blogs could be useful in creating further innovations and improvements in event data methodology.

In the second article, Charles Lewis Taylor discusses the importance of valid and reliable event datasets to accurately measure and effectively analyze political protest and government change. He describes how 'good' the data need to be while providing criteria for what constitute 'good' data. He argues that lack of quality in event datasets will lead to false assumptions about political phenomena. He discusses various methods for ensuring that datasets are as complete as can be expected to better derive theoretical explanations.

Steve Shellman and Sean O'Brien's piece describes the project they conducted using automated event data extraction techniques for creating a dataset on sentiments and emotions. They believe that together with events data, emotions data can enable political scientists to understand government and dissenter decisions in conflicts from broader—political and psychological—perspectives. They created datasets for the Philippines and Egypt, covering the period between 2001 and 2012. Data analysis shows that an increase in dissident hostility increases societal fear of the dissidents and societal disgust toward the government. On the other hand, the data also suggest that a decrease in dissident hostility increases societal anger towards the dissidents. Based on these findings, the authors provide an assessment of their new approach for future conflict studies.

The fourth article, by Musa Tüzüner and Gonca Biltekin, discusses quantifying Turkish foreign affairs behavior by state and non-state actors. It provides an overview of their pilot study of building the Turkish Foreign Affairs Event Dataset (TFAED). The authors discuss the problems and challenges they faced in launching the first global-event data generation initiation on Turkey and in actually constructing the dataset. The purpose of the study was to understand the possible pros and cons of running a full-scope study in Turkey and to try and anticipate the possible complications that could emerge. The resulting dataset, based on data from a single global news source, covers a 23-year period in Turkish foreign affairs. The

article concludes with a preliminary analysis of the event dataset and of its possible future uses.

The final piece in this issue of *All Azimuth* is a detailed summary of the roundtable discussion panel that constituted the final session of the event data workshop held on 2-4 December 2011.

Dr. Musa Tüzüner
Special Issue Guest Editor
July 2013, Ankara, Turkey

A Guide to Event Data: Past, Present, and Future*

Philip A. Schrodt
Pennsylvania State University

James E. Yonamine
Allstate Insurance

Abstract

The goal of this paper is to provide a general overview of event data and its importance in the study of political conflict. In doing so, we illustrate how the level of methodological sophistication in the data collection, coding, and analyzing process has progressed from the earliest event-data projects in the 1970s to the most current ones today. Additionally, we highlight ongoing debates in the discipline as well as address key challenges that practitioners of event data will have to overcome to generate increasingly accurate and nuanced analyses in the future.

Keywords: Event data, NLP, conflict, forecasting

1. Introduction

Within quantitative conflict studies, two primary forms of data exist: structural data and event data. The central goal of this paper is to provide a broad overview of the history, trends, challenges, and uses of event data—both the process of data collection and analysis as well as the events themselves as a specific data type—in the study of conflict. To do so, we begin with a discussion of the history and limitations of more commonly used structural data, which will help illustrate the vital role that event data should play in the future of empirical studies of political violence.

In the 1960s and 1970s, international relations scholars began introducing empirical datasets and quantitative methodologies, most notably through the Correlates of War (COW)¹ project. Largely based on attempts to understand the two major drivers of international relations at the time—the causes of the two world wars and the current bi-polar dynamic of US-USSR relations—political scientists in the realist tradition began accounting for monadic and systemic level conditions, such as the number of major states and alliances in the system; measures of power such as population, GDP, coal and steel production, and various measures of military strength; and relatively fixed characteristics such as shared borders, language, and religion. In the 1980s and 1990s, interstate units of analysis moved to the dyadic and directed dyad level, with new structural variables reflecting neo-liberal concepts, such as

Philip A. Schrodt, Professor, Department of Political Science, Pennsylvania State University. Email: schrodt@psu.edu, eventdata@psu.edu. James E. Yonamine, Allstate Insurance. Email: Jay.yonamine@gmail.com.

*An earlier version of this paper was published at James E. Yonamine's website.

¹ Correlates of War Project (COW), "Militarized Interstate Disputes (v3.10)," accessed November 2011, <http://www.correlatesofwar.org/COW2%20Data/MIDs/MID310.html>.

shared alliances, regime type, trade, and joint institutions. Most recently, in response to the civil wars in Somalia, Afghanistan, Yugoslavia, and Rwanda, scholars created set of civil war variables to cover the late 1990s to the present, including ethnic diversity, religious diversity, natural resource wealth, former colonial status, and terrain (for example, the Armed Conflict and Location Event Dataset (ACLED), developed in 2010. Despite the increasing level of statistical nuance, most empirical studies of conflict of the last 30 years—both inter- and intrastate—have continued to rely almost exclusively on state-year structural variables.

Structural data are well suited to answer the types of empirical questions that have dominated the empirical conflict literature for the last 30 years, which for the most part derive from the relatively static theories of realism and its later variations:

- What conditions make interstate conflict more/less likely in a given year?
- If an interstate conflict occurs, what (directed) dyadic level variables will increase/decrease the intensity or duration of the conflict?
- If an interstate conflict occurs, what state-level variables will increase/decrease the intensity or duration of the conflict?

Structural variable-based studies have provided many insights into these types of questions and have uncovered important findings regarding the effects of variables such as regime type, natural resources, ethnicity, and geography on inter- and intrastate conflict. However, studies based solely on structural indicators have a number of analytical limitations. For example, structural variables usually change very slowly (if at all) and are either measured at the yearly level of temporal aggregation or simply fixed for the period being studied. This situation not only leads to potential problems in testing causal processes but also restricts predictions to the yearly level, which are often unhelpful to the policy community.

In addition, structural datasets do not account for the interactions that constantly occur between actors of interest in a specific location at a specific time. In many important contexts, analyses of these event interactions drive the relevant actors' planning for future interactions. For example, in any intrastate conflict, all actors with a stake in the conflict and its outcome (including at a minimum the conflict participants, the civilians in the conflict area, and increasingly, allies and the broader international community) form their future strategies based on their interpretation of past events between important players. While structural-level characteristics may condition the interpretation of those events, they are not the primary drivers of actors' strategic planning. Therefore, questions similar to the ones listed below, which are becoming increasingly important for the policy community and academia alike, cannot be answered with structural, state-year—level data:

- What is the likelihood that rebel group X will intensify its attacks against civilians next week/month/year?
- What is the likelihood that revolution in country X will spread to country Y within the next three months?
- If country Z experiences civil war, which rebel group is likely to initiate it?
- In what month is that civil war most likely to occur?
- How will foreign investors react in the short term to increases in terrorist attacks?
- What is the likelihood that a crisis between X and Y will escalate or be resolved? What specific actions by outside mediators will change those probabilities?

If these questions are to be answered using quantitative models, event data is required. The following example helps to define event data as a process and illustrate its importance:

Consider an analyst tasked with writing a report about the likelihood of an attack on an embassy in country A in the upcoming month. This analyst will likely first read as much available information as possible about politically relevant activities in the region. Have rebels been increasing attacks on other types of government buildings? Are recruiting efforts increasing? Have threats been made? Have past attacks occurred, and if so, what was the government response? After building a mental timeline of events (and often physically creating chronological timelines), the analyst uses his or her cognitive powers to synthesize that information to make a series of predictions. Indeed, this is how we as humans form almost all of our beliefs about future interactions: we collect and evaluate ‘data’ on past interactions and use our cognitive powers to make predictions based on that data.

Unfortunately, this informal approach to data collection, interpretation, and analysis does not provide consistent and accurate predictions of outcomes of interest; it is inherently subjective and tends to be highly inconsistent.² Consequently, there is room for more systematic modeling using either statistical or computational pattern-recognition methods. Such models require data that has been sampled at a much finer temporal grain than is found in the structural data, and this is where event data finds a role.

‘Event-data modeling’ in political science is both a process and a specific data type. Event data as a process is the formalization of the same three-step process that human analysts use intuitively and informally: 1) obtain stories, 2) code stories for relevant information, and 3) aggregate and analyze the resulting output with quantitative methodologies to understand trends and generate predictions. Event data as a specific data type is a set of records, each reflecting a specific event and containing codes indicating who | did what | to whom | when | [and sometimes] where |.

This paper provides a brief history of the way in which event-data projects have addressed the three steps in the event-data process. In doing so, we address debates within the discipline as well as emerging trends likely to dictate future adaptation in the field of event data.

2. Obtaining Stories

In general, we learn about an event through three media: we can visually witness it firsthand or on television, we can listen to the event from a radio report or word-of-mouth, or we can read about the event in a written account. To date, almost all international event datasets have focused on written accounts.³ Due largely to technological limitations of the era (i.e., the lack of electronic articles and computational power), McClelland’s World Event Interaction Survey (WEIS) and Azar’s Conflict and Peace Data Bank (COPDAB) projects relied on human analysts to physically collect newspaper clippings, press reports, and summary accounts from Western news sources to obtain news stories.⁴ In Leng’s Behavioral Correlates of War (BCOW)⁵ and in Militarized Interstate Disputes (MIDs),⁶ news reports

² Philip E. Tetlock, *Expert Political Judgment: How Good Is It? How Can We Know?* (Princeton, NJ: Princeton University Press, 2005).

³ News agencies occasionally transcribe verbal reports into actual articles. Software exists for doing content analysis on audio and video sources, but to date this has not been applied to political event data. See <http://academic.csuohio.edu/kneueendorf/content/cpuca/avap.htm>.

⁴ Charles A. McClelland, *World Event/Interaction Survey Codebook (ICPSR 5211)* (Ann Arbor: Inter University Consortium for Political and Social Research, 1976); Edward E. Azar, “The conflict and peace data bank (COPDAB) project,” *Journal of Conflict Resolution* 24 (1980): 140-152.

⁵ Russell J. Leng, *Behavioral Correlates of War, 1816-1975 (ICPSR 8606)* (Ann Arbor: Inter-University Consortium for Political and Social Research, 1987).

⁶ Faten Ghosn, Glenn Palmer, and Stuart Bremer, “The MID3 Data Set, 1993–2001: Procedures, Coding Rules, and

were combined with archive material such as books and chronologies. Although coders were instructed about what types of articles to gather, they relied on their subjective judgment to determine whether an article was ‘relevant’ and warranted inclusion into the archive of articles from which events were derived.

This manual approach began to be replaced with automated coding with the first iteration of the Kansas Event Data Set (KEDS) project in the late 1980s.⁷ By this time, two major computing developments had occurred. First, the advent of large-scale data aggregators such as LexisNexis, and, later, the Internet, allowed news reports to be obtained in machine-readable form. Second, computational power and natural language processing (NLP) methods had advanced to the point where processing large quantities of information was possible using personal computers. In its earliest version, the KEDS project automatically downloaded and archived Reuters leads from the NEXIS (precursor to the LexisNexis) service into an electronic database, then coded these using a custom computer program. Following the success of KEDS, other event-data programs, such as the Protocol for Nonviolent Direct Action (PANDA)⁸ project, adopted an automated data collection process.

By 2000, virtually all large-scale event-data projects in political science relied on automated news collection.⁹ In addition to data collection efforts becoming almost exclusively electronic and automated, the scope of media coverage also increased. However, until recently, KEDS and other academic event-data projects with global coverage relied primarily on Reuters and Agence France Presse (AFP) for news content. Only with the creation of the Defense Advanced Research Projects Agency (DARPA)-funded Integrated Conflict Early Warning System (ICEWS)¹⁰ project in 2009, which draws articles from 29 international and regional news sources, did an event dataset with global coverage attempt to utilize a more comprehensive list of global news outlets. The key difference between the ICEWS event-data coding efforts and those of earlier National Science Foundation NSF-funded efforts was the scale. As O’Brien —ICEWS project director—notes,

... the ICEWS performers used input data from a variety of sources. Notably, they collected 6.5 million news stories about countries in the Pacific Command (PACOM) AOR [area of responsibility] for the period 1998-2006. This resulted in a dataset about two orders of magnitude greater than any other [of] which we are aware. These stories comprise 253 million lines of text and came from over 75 international sources (AP, UPI, and BBC Monitor) as well as regional sources (India Today, Jakarta Post, Pakistan Newswire, and Saigon Times).¹¹

More recently, the massive Global Dataset of Events, Location, and Tone (GDELT)¹² has been developed, and is similar to ICEWS in that it draws on a comprehensive list of electronic news sources. However, instead of directly accessing local or small regional news sources, GDELT indirectly accesses stories from hundreds of smaller news sources by collecting all articles from GoogleNews (with the exception of sports stories).

Description," *Conflict Management and Peace Science* 21 (2004): 133-154.

⁷ Philip A. Schrodt and Christopher Donald, "Machine Coding of Events Data" (paper presented at the International Studies Association conference, Washington DC, 1990), <http://eventdata.psu.edu/papers.dir/ISA.90.pdf>; Philip A. Schrodt, Shannon G. Davis, and Judith L. Weddle, "Political Science: KEDS—A Program for the Machine Coding of Event Data" (1994), <http://eventdata.psu.edu/papers.dir/SSCR.pdf>.

⁸ J. Craig Jenkins and Doug Bond, "Conflict-Carrying Capacity, Political Crisis, and Reconstruction: A Framework for the Early Warning of Political System Vulnerability," *The Journal of Conflict Resolution* 45(1) (Feb., 2001): 3-31.

⁹ As of 2011, some specialized projects continue to use human analysts to collect stories.

¹⁰ Sean O'Brien, "Crisis Early Warning and Decision Support: Contemporary approaches and thoughts on future research," *International Studies Review* 12(1) (2010): 87-104.

¹¹ O'Brien, "Crisis Early Warning," 94.

¹² Kalev Leetaru and Philip Schrodt, "GDELT: Global Data on Events, Location and Tone, 1979-2012" (paper presented at the 2013 International Studies Association conference, April 3-6, San Francisco).

2.1. Obtaining stories: trends and challenges

If the emergence of the Internet was the first wave of electronically available information about politically relevant events, the rise of social networking sites in the last five years reflects a second wave. Not only have Facebook, Twitter, and blogs drastically increased the amount of available information, they have also decreased the amount of time that transpires between an event occurring and a written account of that event appearing online.

Consider the recent Arab Spring. The most effective way to obtain information about protest events, inter- and intra-group communications, popular sentiments, and potential diffusion of the uprisings in Egypt, Tunisia, Libya, Bahrain, Syria, and other countries was through processing information from Facebook and Twitter feeds. Furthermore (in theory at least) these media should reflect future political change because sentiment and organization necessarily occur before collective action. If current trends persist, social media will continue to play an increasingly important role in the spread of information.

However, although networking platforms contain large quantities of quality information, the majority of data is random noise—“wanna getta pizza?”—and at least some of it is deliberately false, planted by governments in an effort to disrupt resistance efforts. Moreover, unlike articles published by established news outlets, the useful information often does not follow standard journalistic structure, which further complicates the data acquisition process. Among the most pressing challenges to moving forward with automated data collection efforts will be to devise a method of parsing through noisy Facebook status updates and Tweets to extract quality information.

In addition to social media, three trends are evident in processing sources. The first is using text classification tools to eliminate stories that do not contain political events—for example, sports stories, movie reviews, and historical chronologies—before these go further into the system where they either might be miscoded (by machine) or will waste human coders’ time. The ICEWS, MID, and GDELT systems all use this approach. Second, the availability of news reports directly from the web (rather than through aggregators such as NexisLexis) makes automated, near-real-time coding systems possible, although web sources do not provide archives. Third, some projects are beginning to experiment with using machine translation to code material that is in languages other than English, while still using English language coders such as Text Analysis by Augmented Replacement Instructions (TABARI), launched by the KEDS project.¹³ This method will probably be more efficient than writing more language-specific codes and dictionaries, although these might still be useful for high-priority languages such as Chinese, Arabic, and Spanish.

3. Processing Articles

After acquiring and storing electronic news sources, the second step in the event-data process is to extract the relevant information from the article to build the actual event dataset. This step is comprised of two essential aspects: 1) developing a coding scheme or ontology and 2) using a systematic coding process to apply the coding rules to the news articles and enter them into a dataset.

¹³ Philip A. Schrod, “Automated Coding of International Event Data Using Sparse Parsing Techniques” (paper presented at the International Studies Association Conference, Chicago, IL, October 21-24, 2001): 4

3.1. Coding ontologies

All news articles provide information regarding multiple actors, actions, places, and times; these must be extracted and coded from articles in an objective and replicable fashion to form the event datasets. Here, Gerner et al.’s formal definition of an event is useful:

An event is an interaction which can be described in a natural language sentence which has as its subject and direct or indirect object an element of a set of actors, and as the verb an element of a set of actions, all of which are transitive verbs, and which can be associated with a specific point in time.¹⁴

Schrodt et al. further specify that “[i]n event coding, the subject of the sentence is the *source* of the event, the verb determines the *event code*, and the object of the verb is the *target*.”¹⁵ Coding ontologies or schemes are the rules by which the *source*, the *object*, and the verb presented in natural language in articles are converted into categorical actor and event codes suitable for empirical aggregation and analysis. Generally, two ontologies are used, one for actors and one for verbs, although other ontologies have been developed to code other characteristics of the sentence—for example, COPDAB and PANDA code for political ‘issues,’ while the Conflict and Event Mediation Event Observation (CAMEO) program¹⁶ and the Integrated Data for Event Analysis (IDEA¹⁷, built on PANDA) system have ontologies for general ‘agents.’

McClelland’s WEIS (1976) and Azar’s COPDAB (1982) were the first event-data ontologies. Reflecting the status of international relations at the time, both followed the realist tradition in assuming that states operate as unitary actors. This thinking means that all events between individuals are treated as occurring between the states of each individual’s respective citizenship. For example, if a group of Pakistani rebels attacks Indian civilians across the countries’ common border, both WEIS and COPDAB treat this as an attack of Pakistan against India.¹⁸

Consequently, the WEIS and COPDAB event-coding ontologies are also structured to capture important interstate interactions. The WEIS event ontology is based on 22 distinct cue (or parent) categories of actions (such as “Consult,” “Reward,” “Warn,”) that take on two-digit codes, and 63 sub-categories that indicate additional information and take on three-digit codes. For example, “Threaten” is one of WEIS’s cue categories and its two-digit code is 17. However, when more information is presented in the article regarding the type of threat, the event may be coded by sub-category, such as 172 if the threat is over economic sanctions, or 173 if the source threatens a specific type of force.

Table 1- Example of WEIS coding ontology

17. THREATEN	
171	Threat without specific negative sanctions
172	Threat with specific nonmilitary negative sanctions
173	Threat with force specified
174	Ultimatum: threat with negative sanctions and time limit specified

¹⁴ Deborah J. Gerner et al., “The Machine Coding of Events from Regional and International Sources,” *International Studies Quarterly* 38 (1994): 95.

¹⁵ Schrodt et al. “Political Science: KEDS,” 4.

¹⁶ Deborah J. Gerner, Philip A. Schrodt, and Omur Yilmaz, “Conflict and Mediation Event Observations (CAMEO) Codebook,” accessed November 2011, <http://eventdata.psu.edu/data.dir/cameo.html>.

¹⁷ Doug Bond, Joe Bond, Churl Oh, J. Craig Jenkins, and Charles L. Taylor, “Integrated Data for Events Analysis (IDEA): An event typology for automated events data development,” *Journal of Peace Research* 40(6) (2003): 733-745.

¹⁸ These systems did code a small number of militarized non-state actors such as the IRA and the PLO, as well as the UN, but the overall focus was on nation-states.

The Conflict and Peace Databank utilizes a similar verb typology to capture interstate events, but instead of 22 cue categories, it uses 16, and places them on a conflict-cooperation continuum to facilitate empirical analyses.

While WEIS and COPDAB were the most commonly used ontologies in the first phase of event-data analysis, quite a few additional systems have been developed. For example, the BCOW dataset codes historical as well as contemporary crises and has more than 100 distinct event codes, including “Assume foreign kingship.” The Comparative Research on the Events of Nations (CREON) dataset was customized for coding foreign policy behaviors,¹⁹ and the SHERFACS (named after its developer)²⁰ and CASCON (Computer-Aided Systems for Analysis of Local Conflicts)²¹ datasets code crisis behavior using a crisis-phase framework.

Although WEIS and COPDAB deserve much credit for spearheading the entrance of event data into mainstream political science, a number of shortcomings have become apparent over time. Gerner et al. report that the state-centric focus of WEIS and COPDAB make them ill-suited to account for sub-state level events between domestic actors. The scholars also explain that both WEIS and COPDAB’s verb typologies contain too few event categories:

For instance, WEIS has only a single cue category of *Military engagement* that must encompass everything from a shot fired at a border patrol to the strategic bombing of cities...COPDAB contains just 16 event categories, spanning a single conflict-cooperation continuum that many researchers consider inappropriate.²²

Reacting to these shortcomings, Bond et al. constructed the first version of the Protocol for the Analysis of Nonviolent Direct Action in 1988. The leading motivation behind PANDA was to more thoroughly account for domestic events, especially the non-violent type of action often found in protests and demonstrations, but overlooked by the WEIS and COPDAB schemes. Ten years later, Bond et al. created the more comprehensive IDEA, incorporating codes from Taylor’s *World Handbook of Social and Political Indicators*, WEIS, and MID. Furthermore, IDEA created additional codes for economic events, biomedical phenomena such as epidemic disease, and various additional jurisprudence and electoral events.²³

In 2002, Gerner et al. released the CAMEO coding framework.²⁴ Like PANDA and IDEA, CAMEO is designed to capture sub-state events and nuanced actor attributes. However, there are two differences between CAMEO and IDEA. First, while IDEA’s extensions preserve backwards compatibility with multiple earlier systems, CAMEO began only with WEIS (plus some of IDEA’s extensions) and combines WEIS categories such as “Warn”/“Threaten” and “Promise”/“Reward,” which were difficult to disambiguate in machine coding. Second, CAMEO’s actor codes utilize a hierarchical structure of one or more three-character codes that reflect the country or nation of origin and as much supplementary information as the article provides regarding region, ethnic/religious group, and domestic role (military,

¹⁹ Charles Hermann, Maurice A. East, Margaret G. Hermann, Barbara G. Salomere, and Stephen A. Salomere, *CREON: A Foreign Events Data Set* (Beverly Hills: Sage, 1973).

²⁰ Frank L. Sherman and Laura Neack, “Imagining the Possibilities: The Prospects of Isolating the Genome of International Conflict from the SHERFACS Datasets,” in *International Event Data Developments: DDIR Phase II*, ed. Richard L. Merritt, et al. (Ann Arbor: University of Michigan Press, 1993).

²¹ Lincoln P. Bloomfield and Allen Moulton, *CASCON III: Computer-Aided Systems for Analysis of Local Conflicts* (Cambridge, MA: MIT Center for International Studies, 1989).

²² Deborah J. Gerner, Philip A. Schrodt, and Omur Yilmaz, “Conflict and Mediation Event Observations (CAMEO) Codebook,” (paper prepared for the Annual Meeting of the International Studies Association, New Orleans, March 2002), http://eventdata.psu.edu/data_dir/cameo.html: 2.

²³ Taylor, Charles L. *World Handbook of Political and Social Indicators*. New Haven, CT: Yale University Press, 1972.

²⁴ Gerner et al., “CAMEO.”

government, etc.). Recently, the ICEWS project—using a variety of sources such as the *CIA World Factbook*'s²⁵ national government lists and lists of IGOs, NGOs, multinational corporations, and militarized groups—built on CAMEO's actor dictionary, eventually collecting over 40,000 names of political figures from countries around the world who had a position of prominence between 1990 and 2011. The GDELT project also relies on the CAMEO ontology.

3.2. Coding processes

In the early stages of event coding, the lack of readily available electronic news stories and sufficient computing power to support machine-coded efforts meant that human coding was the only viable coding option. That process was relatively straightforward. Coders—generally low- or unpaid undergraduate and graduate students—applied the rules from codebooks governing actor and event ontologies to a series of articles, and manually recorded events of interest. The entries were transferred to punch cards and eventually to magnetic tape.

Human coding has three main shortcomings: it is slow, expensive, and subjective. The average human coder can code around six to ten stories an hour on a sustained basis, and few people can reliably code more than a few hours a day because the process is so mind-numbingly boring. At such a rate, it takes a team of 10 coders at least three person-years to code 80,000 news stories. Paying coders \$10 an hour would cost \$100,000, and the costs for training, re-training, cross-checking, and management would at least double those costs. Additionally, due to the inherently subjective nature of human analytical processes, interoperability between analysts rarely exceeds 70% and often falls in the 30% to 40% range, particularly when coding is done across institutions and over long periods of time.²⁶

By the late 1980s, computer technology, both in terms of the availability of electronic news articles and computation power needed to run automated coding software, had advanced to the point that machine coding became feasible. The KEDS project was the first attempt within academia to use a computer to parse through electronic text and code relevant events into an event database, relying on dictionary-driven 'sparse parsing,' based on the WEIS typology.

Sparse parsing relies primarily on simple pattern matching in the text of an article to find specific words (e.g., "Israel," "attack," "bomb") or sets of words (e.g., "United Nations Secretary General," "promised to provide aid," "promised to seek revenge") that match entries in dictionaries corresponding to the actor and event ontologies. The system also knows some basic rules of English grammar: for example, it knows that a phrase in the form "Representatives of the US and France will meet with Israeli negotiators" involves two events—"US meets Israel" and "France meets Israel"—and that the passive voice construction "A US convoy was attacked by Iraqi insurgents" reverses the usual subject-verb-object ordering of English sentences so that it corresponds to "Iraq insurgents-attack-US."

Consider the following hypothetical sentence:

March 12, 1998 – Israeli troops launched offensive attacks against Palestinian insurgents on Monday, in the first of what is expected to be a new wave of counter-terrorism efforts.

²⁵ "CIA World Factbook," Central Intelligence Agency, accessed November 2012, <https://www.cia.gov/library/publications/the-world-factbook/index.html>.

²⁶ Consider two different analysts who code events from the same set of 100 stories. Interoperability scores reflect the percent of events that both analysts code identically (Slava Mikhaylov, Michael Laver, and Kenneth Benoit, "Coder Reliability and Misclassification in the Human Coding of Party Manifestos," *Political Analysis* 20(1) (Winter 2012): 78-91).

Using the CAMEO verb typology and actor dictionaries, as well as rules that automatically concatenate the proper nouns “Israeli” and “Palestinian” with the generic agents “troops” and

Table 2- Example of CAMEO coding

Date	Source	CAMEO Code	Target	CAMEO Event
19980312	ISMIL	190	PALINS	(Use conventional military force)

“insurgents,” the TABARI-derived output for the example is presented below:

By the late 1990s, machine coding had almost entirely replaced human coding. Almost all time and costs are upfront with this method, in the dictionary and software development phase. Because these are open source, they are easily adopted and upgraded. In 2000, the KEDS projects became the dominant machine-coding system in event data. Extensions of TABARI’s sparse parsing approach are used in PANDA, IDEA, WEIS, and CAMEO. Automated event coding has proved to be fast, accurate, replicable, inexpensive, and easily updatable.

As of November 2011, TABARI was able to code 26 million stories for the ICEWS project in six minutes using a small parallel processing system. Numerous tests also demonstrated that it could match the accuracy of human coders. Since computers are able to rigidly apply coding rules, results are perfectly replicable. Moreover, because TABARI is open source, it is free to install and is easily manipulated to include customized dictionaries or coding rules. Because TABARI is open source, GDELТ utilizes it to process articles.²⁷

Additionally, GDELТ builds on standard TABARI coding to assign a specific latitude and longitude coordinate. To do this, GDELТ implements a ‘cross-walked’ approach, which first identifies CAMEO events in a [who | did what | to whom] format, and then scans the text to find the place name located nearest to the verb in the text. According to Leetaru and Schrodt, tests against ground-truthed datasets suggest that this approach works well²⁸

3.3. Processing articles: trends and challenges

Despite the current dominance of machine coding and its ability to increase coding speed by four or five orders of magnitude while maintaining high levels of accuracy and perfect reliability, debates over coding processes still exist.

For example, humans and computers are often reported to achieve the same level of coding accuracy, but closer inspection of the types of errors that each make reveals some important differences. Because humans are forced to make inherently subjective ‘judgment’ calls when coding events, an individual coder is rarely able to correctly code more than 70% of events when compared to a ‘master’ file.²⁹ Machine-coded efforts often achieve similar levels of accuracy—around 70%—when compared to the same master files, and when dealing with a complex sentence containing compound subjects and objects, machine coding will almost always construct all of the logically possible events, whereas a human coder may miss some.

However, when human analysts miscode an event, their incorrect code almost always reflects some aspects of the reality of the event, that is, it is still *partially* correct. In contrast,

²⁷ With some upgrades, as detailed in Kalev Schrodt, “GDELТ.”

²⁸ Leetaru and Schrodt, “GDELТ.”

²⁹ When performing training and inter-operability studies, a senior coder will generate a master file, which reflects that ‘true’ coding for a series of test articles. However, numerous experiments have shown that even master coders may disagree on detailed coding of about 10% to 15% of stories, although they will have nearly perfect agreement on the general ‘cue category’ codes.

when a machine makes a coding error, it is often a complete departure from reality. For example, a machine may mistakenly code “The Cuban fighter battled the Mexican until delivering a decisive, explosive knock-out blow in the fourth round to secure victory” as an interstate attack launched by Cuba against Mexico, when it really is a report from a boxing match. A human coder would almost never make that level of mistake. For these reasons, certain governmental agencies continue to rely on human coding. Human coding is also required when relevant information—for example, the identity of a likely but unproven perpetrator of a massacre—is spread across several sentences or when information needs to be summarized from multiple articles that may disagree on some details of the event.

Despite its imperfections, machine coding has several key advantages. First, with the major increases in the volume of news reports available on the web, only machine coding can maintain near-real-time updates. Second, machine coding allows for easy experimentation with new coding schemes: ICEWS went through multiple refinements of the CAMEO coding ontologies, particularly for actors, but was able to easily recode the entire dataset after each of these, whereas human recoding would have been prohibitively slow and expensive. Finally, machine coding does not require maintaining a large team of coders for when datasets need updating: once a final set of dictionaries has been developed, new data can be coded indefinitely with almost no additional effort.

Although machine-coding software is imperfect, major advancements have occurred in NLP and full syntactic parsing in recent years. For example, WATSON, IBM’s robotic system that easily defeated human contestants on *Jeopardy* in early 2011, is able to perfectly interpret nearly all verbally received questions. Google’s translation software is sufficiently accurate that it is used to perform real-time translations in combat situations. While these systems require far more computing power than is available in academic coding projects, no-cost open-source NLP that runs on personal computers can provide considerable pre-processing (for example, ensuring that the object of the verb is correctly identified), which can both simplify the processing and make it more accurate. Lockheed-Martin’s Jabari-NLP,³⁰ a Java-based advanced version of the original TABARI software and several open-source parsers, is an example of this approach.

4. Aggregating and Analyzing Event-Data Output

The first two sections have focused on efforts involved in the first two steps of the event-data *process*—obtaining news sources and coding their relevant content—in a replicable and objective manner. These steps culminate in generating event data as a data *type*, an example of which is provided below.

Table 3- Sample Event Codes from TABARI’s Turkey Dataset

Date	Source	Target	CAMEO Code	CAMEO Event
920104	WST	KURREB	72	(Provide military aid)
920107	TUR	IGOUNO	30	(Express intent to cooperate)
920108	IRQ	IGOUNO	10	(Make statement)
920113	TURMIL	KURREB	190	(Use conventional military force)

³⁰ David M. Van Brackle and Janet E. Wedgwood, “Event Coding for HSCB Modeling – Challenges and Approaches,” Lockheed Martin Advanced Technology Laboratories, accessed July 5, 2013, <http://www.atl.external.lmco.com/papers/1916.pdf>.

The third and final step in the event-data process involves analyzing the event-data output to gain insight into important trends and form accurate forecasts about events of interest. As Table 3 illustrates, event data as a data *type* is a combination of string and numerical components that reflect an event. However, most empirical models used in the social sciences are not equipped to handle this level of heterogeneity in data. Consequently, prior to performing quantitative analyses, researchers must first aggregate raw event data into a usable format.

4.1. Aggregating event data

To prepare an event dataset for quantitative models, researchers historically needed to address three primary aspects of event-data aggregation, but due to GDELT's provision of latitude and longitude coordinates, a fourth aspect now exists.

1. **Actors**—Contemporary event datasets such as those used in ICEWS provide a broad coverage of actors, and not all of these are relevant to the analysis. For example, a model attempting to forecast Arab-Israeli violence would likely not include events occurring between sub-Saharan African or East Asian states. In this case, the researcher may wish to focus only on events occurring between key actors in the Middle East, such as Israel, Palestine, Egypt, Lebanon, and the US.
2. **Actions**—In most empirical analyses, it is beneficial to aggregate the verb codes, for example, by using a *scale* that reflects the level of contentiousness or using a series of *counts* that indicates the number of important *types* of events that have occurred.³¹ The Goldstein Scale, which places all event codes on a conflict-cooperation continuum from -10 to +10, with -10 reflecting the most conflictual and +10 indicating pure cooperation, is the most common strategy of action aggregation.³² Due to complications arising from scaling, other studies convert verb codes to count variables. For example, Thompson and Duval build counts that reflect whether each event is an act of material conflict, material cooperation, verbal conflict, or verbal cooperation, an approach that the GDELT dataset calls a “quad count.”³³ Jenkins and Bond calculate ratios of counts that reflect more complicated concepts such as “conflict carrying capacity.”³⁴
3. **Temporal**—Researchers must determine the temporal unit(s) across which to aggregate the data. Researchers tend to aggregate across traditional demarcations of time, including daily, weekly, monthly, quarterly, and annual levels.^{35, 36} The literature has yet to settle on firm rules regarding temporal aggregation, meaning that researchers must rely on theoretical and empirical considerations on a study-by-study basis. A

³¹ Some studies, like Philip A. Schrod's “Early Warning of Conflict in Southern Lebanon Using Hidden Markov Models,” in *The Understanding and Management of Global Violence: New Approaches to Theory and Research on Protracted Conflict*, ed. Harvey Starr. (New York: St. Martin's Press, 1999), 131-162, use the raw event codes at the cue category level.

³² Joshua S. Goldstein, “A Conflict-Cooperation Scale for WEIS Events Data,” *Journal of Conflict Resolution* 36 (1992): 369-385.

³³ Robert D. Duval and William R. Thompson, “Reconsidering the Aggregate Relationship Between Size, Economic Development, and Some Types of Foreign Policy Behavior,” *American Journal of Political Science* 24(3)(1980): 511-525.

³⁴ Jenkins and Bond, “Conflict-Carrying Capacity,” 3-31.

³⁵ Vito D’Orazio, James E. Yonamine, and Philip A. Schrod, “Predicting Intra-State Conflict Onset: An Event Data Approach Using Euclidean and Levenshtein Distance Measures” (paper delivered at the Annual Meeting of the Midwest Political Science Association, Chicago, 31 March-3 April 2011).

³⁶ For example, if researchers are interested in Israel-Palestine actions and choose to analyze counts at the weekly level, they will sum the number of each count variable that occurs between Israel and Palestine each week, resulting in 52 observations per year. If they choose a monthly level, they will sum the number of each count variable occurring between Israel and Palestine that occurs each month, which results in only 12 observations per year.

number of studies, including Shellman's and Alt et al.'s, demonstrate that the level of temporal aggregation can actually drive empirical findings.³⁷ As such, studies using event datasets should perform robustness checks using a different level of temporal aggregation.

4. **Geo-spatial**—³⁸ Because latitude and longitude coordinates are highly specific, scholars tend to aggregate up to a coarser level of geo-spatial aggregation to facilitate analysis. Two primary approaches exist. The first approach geo-spatially aggregates events according to sub-state administrative units (such as municipalities, provinces, or districts) because most countries are divided into such units.³⁹ The second approach ignores administrative units and constructs sub-state, geo-spatial units (generally polygons) centered around the specific location where an event occurs.⁴⁰

4.2. Empirical analyses:

The final step in event data as a *process* is to apply empirical models to the properly aggregated event dataset. Because event data as a *data type* provides large quantities of fine-grained information, it allows researchers the flexibility to analyze a large range of issue areas, including but not limited to:

- general interstate conflict⁴¹
- Arab-Israeli conflict⁴²
- equity market fluctuations⁴³
- migration⁴⁴
- mediation⁴⁵

³⁷ Stephen M. Shellman, "Time Series Intervals and Statistical Inference: The effects of temporal aggregation on event data analysis," *Security Studies* 12(1) (2004): 97-104; James Alt, Gary King, and Curt S. Signorino, "Aggregation among Binary, Count, and Duration Models: Estimating the same quantities from different levels of data," *Political Analysis* 9 (2001): 21-44.

³⁸ Because GDELT was released only recently, all scholars performing sub-state geo-spatial aggregation still use human-coded data, with the exception being Yonamine (James A. Yonamine, "Predicting Future Levels of Violence in Afghanistan Districts Using GDELT," unpublished (2013), <http://jayyonamine.com/wp-content/uploads/2013/04/Predicting-Future-Levels-of-Violence-in-Afghanistan-Districts-using-GDELT.pdf>).

³⁹ Andrew Mangion-Zammit, Michael Dewar, Visakan Kadirkamanathan and Guido Sanguinetti, "Point Process Modeling of the Afghan War Diary," *Proceedings of the National Academy of Science* 109(31)(2012): 12414-12419; Mils B. Weidmann and Michael Callen, "Violence and Election Fraud: Evidence from Afghanistan," *British Journal of Political Science* 43(1)(2013): 53-75; Yonamine, "Predicting Future Levels," 2013.

⁴⁰ Paivi Lujala, Jan Ketil Rod, and Nadja Thieme, "Fighting over Oil: Introducing a New Dataset," *Conflict Management and Peace Science* 24(3) (2007): 239-256; Gudrun Ostby, Ragnhild Nordas, and Jan Ketil Rod, "Regional Inequalities and Civil Conflict in Sub-Saharan Africa," *International Studies Quarterly* 53(2) (2009): 301-324.

⁴¹ Joshua S. Goldstein and John R. Freeman, *Three-Way Street: Strategic Reciprocity in World Politics* (Chicago: University of Chicago Press, 1990); Joshua S. Goldstein, "Reciprocity in Superpower Relations: An Empirical Analysis," *International Studies Quarterly* 35(2) (1991): 195-209; Benjamin O. Fordham, "Strategic Avoidance and the Diversionary Use of Force," *The Journal of Politics* 67 (1) (Feb., 2005): 132-153.

⁴² Robert Shearer, "Forecasting Israeli-Palestinian Conflict with Hidden Markov Models," *Military Operations Research* 12(4) (2007) : 5-15; Philip A. Schrodt, Deborah J. Gerner, and Omur Yilmaz, "Using Event Data to Monitor Contemporary Conflict in the Israel-Palestine Dyad" (paper presented at the Annual Meeting of the International Studies Association, Montreal, Quebec, 2004); Schrodt, "Early Warning of Conflict in Southern Lebanon," 1999.

⁴³ Gerald Schneider and Vera E. Troeger, "War and the Economy: Stock Market Reactions to International Conflicts," *The Journal of Conflict Resolution* 50 (5) (Oct., 2006): 623-645; R. Eldor and R. Melnick, "Financial Markets and Terrorism," *European Journal of Political Economy* 20 (2004): 367-86; A. H. Chen and T.F. Siems, "The Effects of Terrorism on Global Capital Markets," *European Journal of Political Economy* 20 (2004): 349-66.

⁴⁴ Stephen M. Shellman and Brandon Stewart, "Predicting Risk Factors Associates with Forced Migration: An Early Warning Model of Haitian Flight," *Civil Wars* 9(2) (2007): 174-199.

⁴⁵ Philip A. Schrodt, Omur Yilmaz, and Deborah J. Gerner, "Evaluating "Ripeness" and "Hurting Stalemate" in Mediated International Conflicts: An Event Data Study of the Middle East, Balkans, and West Africa" (paper presented at the 2003 International Studies Association meeting, Portland); Philip A. Schrodt and Deborah J. Gerner, "Analyzing the Dynamics of International Mediation Processes in the Middle East and the Former Yugoslavia" (paper presented at the International Studies Association, Chicago, February 21-24, 2001).

- Yugoslavian conflict⁴⁶

The large amount of nuanced data also allows researchers to predict the outcomes above using sophisticated methodologies beyond the linear regression models that dominate the empirical conflict literature, such as:

- time series⁴⁷
- hidden Markov models⁴⁸
- sequence analysis⁴⁹
- vector auto regression (VAR)⁵⁰

4.3. Aggregating and analyzing event-data output: trends and challenges

Primarily due to the larger number of observations and high degree of nuance found in event datasets relative to datasets comprised of more static, structural variables, researchers utilizing the former tend to be at the forefront of methodological sophistication in the social sciences. In the future, it will be important for researchers to continue to innovate methodologically, especially in the following three areas:

First, data mining approaches—including but not limited to k-nearest neighbors (knn), support vector machines (SVMs), random forests, etc.—are well suited to finding potential non-linear clusters within event datasets. Moreover, certain data mining approaches, such as random forests, the lasso, and principal components analysis (PCA), can address dimensionality problems that may result as researchers build increasing numbers of features to aid in prediction.⁵¹

Second, agent-based models (ABMs) are becoming increasingly prominent tools to predict social interactions. However, ABM programmers often struggle to base agent parameters on actual human behavior. Event datasets may be able to inform agents in an ABM environment, thereby leading to more realistic simulations.

Third, the rapid expansion of Facebook, Twitter, and blogs has contributed to the fast growth of social network analysis. Methodological techniques able to merge event data and social network analysis are likely to become increasingly important in the future.⁵²

Despite continually increasing levels of methodological sophistication in event-data studies, human intuition still holds a number of strengths over more rigorous empirical approaches.

⁴⁶ Jon C. Pevehouse and Joshua S. Goldstein, “Serbian Compliance or Defiance in Kosovo? Statistical Analysis and Real-Time Predictions,” *The Journal of Conflict Resolution* 43(4) (1999): 538-546; Philip A. Schrodt, “Forecasting Conflict in the Balkans using Hidden Markov Models” (paper presented at the annual American Political Science Association conference, Washington, DC, August 31-September 3, 2000).

⁴⁷ Pevehouse and Goldstein, “Serbian Compliance or Defiance?”; Shellman, “Time Series Intervals 97-104; Barbara Harff and Ted Robert Gurr, “Systematic Early Warning of Humanitarian Emergencies,” *Journal of Peace Research* 35(5) (2001): 359-371.

⁴⁸ Joe Bond et al., “Forecasting Turmoil in Indonesia: An application of hidden Markov models” (paper presented at the annual meeting of the International Studies Association, October 6-8, 2004); Shearer, “Forecasting Israeli-Palestinian Conflict”; Schrodt, “Forecasting Conflict.”

⁴⁹ D’Orazio et al., “Predicting Intra-State Conflict Onset.”

⁵⁰ Goldstein, “A Conflict-Cooperation Scale”; John R. Freeman, “Systematic Sampling, Temporal Aggregation, and the Study of Political Relationships,” *Political Analysis* 1 (1989): 61-98.

⁵¹ Random forest models can handle more predictors than observations. Lasso and PCA are two techniques used to reduce dimensionality prior to performing empirical tests.

⁵² See August Hammerli, Regula Gattiker, and Reto Weyermann, “Conflict and Cooperation in an Actors’ Network of Chechnya Based on Event Data,” *Journal of Conflict Resolution* 50 (2006): 159-175 for an example of merging event data with network analysis.

Table 4- Comparison of Empirical Model and Human Analyses

Empirical models	Human analyses
Objective —empirical approaches are perfectly replicable.	Subjective —a human analyst may interpret the exact events differently depending on whether he/she is sick, under stress, needing to make a quick decision, and so forth.
Rigid —empirical models are only able to account for the variables they are provided based on training.	Flexible —human analysts can interpret sentiments that are difficult to quantify. Additionally, humans can generate more nuanced prediction, such as the specific content of a dictator’s upcoming speech.
Struggle to handle ‘rare’ events —empirical models struggle to predict the effects of events if they occur too infrequently in a dataset. Although empirical fixes for rare events exists, if an event occurs <i>extremely</i> rarely (fewer than 10 times in a 100,000 observation dataset), these approaches are no longer relevant.	Able to interpret ‘rare’ events —humans are able to predict broad ranges of consequences of important events that may happen infrequently, such as a global financial crisis or a large-scale terrorist attack on the US. Human analysts usually also have an extended professional education that involves learning a great deal of history, and thus they can put events into context over a period of time.
Inexpensive and fast after initial calibration —after selecting and training initial model specifications, empirical approaches can be implemented quickly and inexpensively on new data.	Ongoing expenses —human analysts require ongoing salaries to form predictions.
Struggle to predict ‘new’ phenomena —because empirical models must be calibrated on a set of training data, if the ‘new’ outcome of interest does not exist in the training data, it is impossible to calibrate a model to predict occurrences of the new event in the future.	Able to predict ‘new’ phenomena —the flexibility and subjectivity of human cognition allows analysts to predict outcomes that have not previously occurred, such as conflict diffusion across online social networks. Analogical reasoning based on historical archetypes can easily—if not always accurately—generalize past cases to new ones even when these do not match exactly.
Provide clear and falsifiable predictions —empirical models provide a specific point prediction (often with confidence intervals) and are unable to retroactively attempt to justify incorrect predictions.	Tend to make conditional, non-falsifiable predictions —human analysts often avoid making specific predictions that can be proven wrong. Instead, they prefer conditional “if x happens, y will follow, but if z happens, k will follow” predictions. When they are wrong, humans attempt to retroactively explain/justify their false predictions.

In the future, it is unlikely that empirical approaches will ever fully duplicate human analysts. Instead, human and empirical approaches will be used as complements to each other, ideally integrating the strengths of each approach.

5. Conclusion

‘Event-data modeling’ refers to both *process* and a specific data *type*. Event data as a *process* is the attempt to formalize the three general steps used to make predictions about difficult social events: 1) collect as much meaningful information as possible, 2) identify and extract the relevant events, and 3) analyze those events and form a prediction. Event data as a specific data *type* is the structure of data that results from the second step in this process, which contains rows (often 100,000+ observations) of daily level events with information regarding who | did what | to whom | where | and when. Unlike structural data, which tend to overlook actual interactions (such as meetings or threats) between important actors and are generally aggregated at the state-year level, event datasets focus exclusively on the actions that occur between actors relevant to a specific question because these tend to drive future outcomes.

Efforts by McClelland’s WEIS project and Azar’s COPDAB in the 1960s and 1970s spearheaded the use and acceptance of event data in empirical studies of conflict literature. However, due primarily to computational limitations of the time, these projects relied heavily

on human analysts to collect and code physical news articles. In the late 1980s and early 1990s, advances in computer power and the rise of the Internet allowed Schrodtt's KEDS project to automate both the data collection and event coding processes. By downloading electronic articles and coding their content with a sparse-parsing, machine-coding software, KEDS was able to drastically reduce the time and costs of building an event dataset while increasing replicability and maintaining similar levels of accuracy to human coders. Soon after, other prominent projects, such as Bond's PANDA, adopted the KEDS approach to automate the first two steps of the event-data process.

The third step, aggregating and analyzing the event-data output, has also become increasingly sophisticated. The large size and fine degree of nuance of event datasets provide two main advantages: first, researchers are able to identify trends and make predictions at sub-annual levels of temporal nuance. Second, researchers can move beyond the traditional linear models that dominate the empirical conflict literature to sophisticated machine-learning algorithms capable of uncovering more complex patterns within the data.

As the types of questions that interest scholars of political violence continue to become increasingly nuanced, event data as both process and type will likely play an increasingly important role in academia and in the policy world. However, the future importance of event data may be contingent on the ability of practitioners to make improvements in three general areas: first, the data collection process must expand to cover social networking sites, which provide information about event planning, sentiments, and network structures not found in traditional media. Second, machine-coding approaches need to become increasingly sophisticated to not only code actors and verbs more accurately but also to parse through the massive amounts of "noise" on Facebook, Twitter, and blogs. Third, methodologists should increasingly leverage machine learning, ABMs, and social network analysis approaches with event data to uncover patterns and form predictions that more traditional statistical approaches may be less equipped to handle.

Bibliography

- Alt, James, Gary King, and Curt S. Signorino. "Aggregation among Binary, Count, and Duration Models: Estimating the same quantities from different levels of data." *Political Analysis* 9 (2001):21-44.
- Azar, Edward E. "The Conflict and Peace Data Bank (COPDAB) Project." *Journal of Conflict Resolution* 24 (1980):140-152.
- Azar, Edward E., Richard A. Brody, and Charles A. McClelland, eds. *International Events Interaction Analysis: Some Research Considerations*. Beverly Hills: Sage Publications, 1972.
- Baumeister, Roy F., and John Tierney. *Willpower: Rediscovering the Greatest Human Strength*. New York: Penguin, 2011.
- Bloomfield, Lincoln P., and Allen Moulton. *CASCON III: Computer-Aided Systems for Analysis of Local Conflicts*. Cambridge, MA: MIT Center for International Studies, 1989.
- Bond, Doug, Joe Bond, Churl Oh, J. Craig Jenkins, and Charles L. Taylor. "Integrated Data for Events Analysis (IDEA): An event typology for automated events data development." *Journal of Peace Research* 40(6) (2003):733-745.
- Bond, Joe, Vladimir Petroff, Sean O'Brien, and Doug Bond. "Forecasting turmoil in Indonesia: An application of hidden Markov models." Paper presented at the annual meeting of the International Studies Association, Montreal, Quebec, October 6-8, 2004.
- Buhaug, Halvard, and Jan Ketil Rod. "Local Determinants of African Civil Wars, 1970-2001." *Political Geography*

- 25(6) (2006):315-335.
- Buhaug, Halvard, Scott Gates, and Paivi Lujala. "Geography, Rebel Capability, and the Duration of Civil Conflict." *Journal of Conflict Resolution* 53(4) (2009): 544-569.
- Cederman, Lars-Erik, and Kristian Skrede Gleditsch. "Introduction to Special Issue on 'Disaggregating Civil War.'" *Journal of Conflict Resolution* 24(4) (2009): 590-617.
- Chen, A. H. and T.F. Siems. "The Effects of Terrorism on Global Capital Markets." *European Journal of Political Economy* 20 (2004): 349-66.
- Correlates of War Project (COW). " Militarized Interstate Disputes (v3.10)." Accessed November 2011. <http://www.correlatesofwar.org/COW2%20Data/MIDs/MID310.html>.
- D'Orazio, Vito, James E. Yonamine, and Philip A. Schrodt. "Predicting Intra-State Conflict Onset: An Event Data Approach Using Euclidean and Levenshtein Distance Measures." Paper prepared for delivery at the Annual Meeting of the Midwest Political Science Association, Chicago, March 31-April 3, 2011.
- Duval, Robert D., and William R. Thompson. "Reconsidering the Aggregate Relationship between Size, Economic Development, and Some Types of Foreign Policy Behavior." *American Journal of Political Science* 24(3) (1980): 511-525.
- Eldor, R., and R. Melnick. "Financial Markets and Terrorism." *European Journal of Political Economy* 20 (2004): 367-86.
- Fordham, Benjamin O. "Strategic Avoidance and the Diversionary Use of Force." *The Journal of Politics* 67 1 (Feb., 2005): 132-153.
- Freeman, John R. "Systematic Sampling, Temporal Aggregation, and the Study of Political Relationships." *Political Analysis* 1 (1989): 61-98.
- Gerner, Deborah J., Philip A. Schrodt, and Omur Yilmaz. "Conflict and Mediation Event Observations (CAMEO) Codebook." Accessed November 2011. <http://eventdata.psu.edu/data.dir/cameo.html>.
- Gerner, Deborah J., Philip A. Schrodt, Ronald A. Francisco, and Judith L. Weddle. "The Machine Coding of Events From Regional and International Sources." *International Studies Quarterly* 38 (1994): 91-119.
- Ghosn, Faten, Glenn Palmer, and Stuart Bremer. "The MID3 Data Set, 1993-2001: Procedures, Coding Rules, and Description." *Conflict Management and Peace Science* 21 (2004): 133-154.
- Goldstein, Joshua S. "A Conflict-Cooperation Scale for WEIS Events Data." *Journal of Conflict Resolution* 36 (1992): 369-385.
- Goldstein, Joshua S. "Reciprocity in Superpower Relations: An Empirical Analysis." *International Studies Quarterly* 35(2) (1991): 195-209.
- Goldstein, Joshua S., and John R. Freeman. *Three-Way Street: Strategic Reciprocity in World Politics*. Chicago: University of Chicago Press, 1990.
- Hammerli, August, Regula Gattiker, and Reto Weyermann. "Conflict and Cooperation in an Actors' Network of Chechnya Based on Event Data." *Journal of Conflict Resolution* 50 (2006): 159-175.
- Harff, Barbara, and Ted Robert Gurr. "Systematic Early Warning of Humanitarian Emergencies." *Journal of Peace Research* 35(5)(2001): 359-371.
- Hermann, Charles, Maurice A. East, Margaret G. Hermann, Barbara G. Salamore, and Stephen A. Salamore. *CREON: A Foreign Events Data Sets*. Beverly Hills: Sage, 1973.
- Jenkins, J. Craig, and Doug Bond. "Conflict-Carrying Capacity, Political Crisis, and Reconstruction: A Framework for the Early Warning of Political System Vulnerability." *The Journal of Conflict Resolution* 45(1) (Feb., 2001): 3-31.
- Leetaru, Kalev, and Philip A. Schrodt. "GDELT: Global Data on Events, Location and Tone, 1979-2012." Paper presented at the International Studies Association conference, San Francisco, April 2013.
- Leng, Russell J. *Behavioral Correlates of War, 1816-1975 (ICPSR 8606)*. Ann Arbor: Inter-University Consortium for Political and Social Research, 1987.

- Lujala, Paivi, Jan Ketil Rod, and Nadja Thieme. "Fighting over Oil: Introducing a New Dataset." *Conflict Management and Peace Science* 24(3) (2007): 239–256.
- Mangion-Zammit, Andrew, Michael Dewar, Visakan Kadirkamanathan, and Guido Sanguinetti. "Point Process Modeling of the Afghan War Diary." *Proceedings of the National Academy of Science* 109(31) (2012): 12414–12419.
- McClelland, Charles A. *World Event/Interaction Survey Codebook (ICPSR 5211)*. Ann Arbor: Inter-University Consortium for Political and Social Research, 1976.
- McGowan, Patrick, Harvey Starr, Gretchen Hower, Richard L. Merrit, and Dina A. Zinnes.
- Mikhaylov, Slava, Michael Laver, and Kenneth Benoit. "Coder Reliability and Misclassification in the Human Coding of Party Manifestos." *Political Analysis* 20(1) (Winter 2012): 78-91.
- O'Brien, Sean. "Crisis Early Warning and Decision Support: Contemporary Approaches and Thoughts on Future Research." *International Studies Review* 12(1) (2010): 87-104.
- Ostby, Gudrun, Ragnhild Nordas and Jan Ketil Rod. "Regional Inequalities and Civil Conflict in Sub-Saharan Africa." *International Studies Quarterly* 53(2) (2009): 301–324.
- Pevhouse, Jon C., and Joshua S. Goldstein. Serbian Compliance or Defiance in Kosovo? Statistical Analysis and Real-Time Predictions." *The Journal of Conflict Resolution* 43(4) (1999): 538-546.
- Raleigh, Clionadh, Andrew Linke, Havard Hegre, and Joakim Karlsen. "Introducing ACLED: An Armed Conflict Location and Event Dataset." *Journal of Peace Research* 47(5) (2010): 651-660.
- Schneider, Gerald and Vera E. Troeger. "War and the Economy: Stock Market Reactions to International Conflicts." *The Journal of Conflict Resolution* 50 (5) (Oct., 2006): 623-645.
- Schrodt, Philip A. "Early Warning of Conflict in Southern Lebanon using Hidden Markov Models." In *The Understanding and Management of Global Violence: New Approaches to Theory and Research on Protracted Conflict*, edited by Harvey Starr, 131-162. New York: St. Martin's Press, 1999.
- Schrodt, Philip A. "Forecasting Conflict in the Balkans using Hidden Markov Models." Paper presented at the American Political Science Association Conference, Washington, DC, August 31-September 3, 2000.
- Schrodt, Philip A. "Automated Coding of International Event Data Using Sparse Parsing Techniques." Paper presented at the International Studies Association Conference, Chicago, IL, October 21-24, 2001.
- Schrodt, Philip A., Omur Yilmaz, and Deborah J. Gerner. "'Evaluating Ripeness" and "Hurting Stalemate" in Mediated International Conflicts: An Event Data Study of the Middle East, Balkans, and West Africa." Paper presented at the International Studies Association conference, Portland, Oregon, 2003.
- Schrodt, Philip A., Shannon G. Davis, and Judith L. Weddle. "Political Science: KEDS—A Program for the Machine Coding of Event Data." Accessed November 2012. <http://eventdata.psu.edu/papers.dir/SSCR.pdf>.
- Schrodt, Philip A., and Christopher Donald. "Machine Coding of Events Data." Paper presented at International Studies Association conference, Washington DC, 1990. <http://eventdata.psu.edu/papers.dir/ISA.90.pdf>.
- Schrodt, Philip A., and Deborah J. Gerner. "Analyzing the Dynamics of International Mediation Processes in the Middle East and the Former Yugoslavia." Paper presented at the International Studies Association conference, Chicago, February 21-24, 2001. <http://eventdata.psu.edu/papers.dir/Mediation.ISA01.pdf>.
- Schrodt, Philip A., Deborah J. Gerner, and Omur Yilmaz. "Using Event Data to Monitor Contemporary Conflict in the Israel-Palestine Dyad." Paper presented at the Annual Meeting of the International Studies Association, Montreal, Quebec, 2004.
- Shearer, Robert. "Forecasting Israeli-Palestinian Conflict with Hidden Markov Models." *Military Operations Research* 12(4) (2007): 5-15.
- Shellman, Stephen M. "Time Series Intervals and Statistical Inference: The Effects of Temporal Aggregation on Event Data Analysis." *Security Studies* 12(1) (2004): 97-104.
- Shellman, Stephen M., and Brandon Stewart. "Predicting Risk Factors Associates with Forced Migration: An Early Warning Model of Haitian Flight." *Civil Wars* 9(2) (2007a): 174-199.
- Sherman, Frank L., and Laura Neack. "Imagining the Possibilities: The Prospects of Isolating the Genome of

- International Conflict from the SHERFACS Datasets.” In *International Event Data Developments: DDIR Phase II*, edited by Richard L. Merritt, Robert G. Muncaster, and Dina A. Zinnes. Ann Arbor: University of Michigan Press, 1993.
- Taylor, Charles L. *World Handbook of Political and Social Indicators*. New Haven, CT: Yale University Press, 1972.
- Tetlock, Philip E. *Expert Political Judgment: How Good Is It? How Can We Know?* Princeton, NJ: Princeton University Press, 2005.
- Van Brackle, David M., and Janet E. Wedgwood, “Event Coding for HSCB Modeling – Challenges and Approaches.” Lockheed Martin Advanced Technology Laboratories. Accessed July 5, 2013. <http://www.atl.external.lmco.com/papers/1916.pdf>.
- Weidmann, Mils B., and Michael Callen. “Violence and Election Fraud: Evidence from Afghanistan.” *British Journal of Political Science* 43(1) (2013): 53–75.
- Yonamine, James E. “Predicting Future Levels of Violence in Afghanistan Districts Using GDELT.” March 2013. Unpublished. <http://jayyonamine.com/wp-content/uploads/2013/04/Predicting-Future-Levels-of-Violence-in-Afghanistan-Districts-using-GDELT.pdf>.

Data Quality for Measuring Political Protest and Government Change

Charles Lewis Taylor
Virginia Tech University

Abstract

For analyzing protest and government change, data need to be both reliably measured and valid for the task at hand. Data fundamentalists insist that nothing less than total capture of every event that has taken place is sufficient for analysis. That scenario is, of course, an impossibility. Rather, methods to measure the statistical probability that a sample is appropriate for its targeted universe allow empirical analysis to proceed.

Keywords: Reliability, validity, event indicators, political protest, government change

1. Introduction

Analyzing government change and political protest can contribute to understanding causes of conflict, which in turn may lead to its mitigation. For this analysis to be effective, however, reliable empirical data for testing theory are as important as the theoretical frameworks they are to test. Otherwise, we obtain only “grand theories firmly planted in mid-air,” as Karl W. Deutsch used to say. Assuring the quality of data, therefore, is itself a serious component of scholarship that raises the argument above the level of ideology. Measuring political phenomena is fraught with dangers derived from imprecise or false concepts as well as from clerical error. Assumptions and procedures in data coding affect analytical results and are therefore inherently theoretical in nature. Clear-headed thought in developing political measurements is thus required if progress is to be made in political understanding.

Data are judged by their validity and their reliability. Validity refers to cogency or soundness in reason. Are the procedures and rules for coding able to withstand counterarguments? Are they convincing? Do they work for the theoretical purpose at hand? Reliability refers to trustworthiness and accuracy. Are the data dependable? Can they be used with confidence? Are they sufficient for the questions being asked of them? Validity is one among several exercises in theory building. It requires speculative and theoretic contemplation. Reliability, on the other hand, is more a matter of meticulously disciplined work. It involves simply getting it right. If a dataset is to be effective for analysis, it must be constructed both with carefully designed concepts and closely controlled accounting.

2. How Good Do the Data Need to Be?

This question is meaningful only in terms of how the data are to be used. Are they suitable for the purpose to which they will be put? Considerably more detail will be needed for a fine-grained study than for an all-embracing comparison. Examining the exact sequence of

Charles Lewis Taylor, Professor, Department of Political Science. Virginia Polytechnic Institute and State University. Email: clt@vt.edu

conflict events during an eight-day riot will require far more complete data than investigating the differing levels of aggregate violence in a number of societies over a century. Data fundamentalists find this concept difficult to accept. They assume that sufficient diligence will produce absolute accuracy and believe that nothing less is acceptable for any analysis. Not only is there a truth out there, but it is a truth that can be determined with exactitude. Inevitably, personal perceptions of truth become the standard by which results are judged. This situation leads either to endless argument or to scholarly nihilism. The alternative that avoids this dilemma is to analyze human behavior in probabilistic terms. Working with partial knowledge and estimating the probable likelihood of error is usually the best we can expect. The development of the statistical approach to scientific analysis was based upon this understanding.

Charles Brockett missed this vital point in his evaluation of event data reported in the *World Handbook of Political and Social Indicators: Third Edition*. He claimed to discover “gross and systematic errors” in the data because he found reports of some events that were not included. He asserted that analyses employing this source were flawed due to their use of “meaningless data” to measure mass political violence. Although he made these charges on the basis of very short-term observations (over scattered years in the 1970s) of one data series (political deaths) for a very small number of cases (five Central American countries), he reified his figures into a benchmark of real truth against which to measure the entire 30 years, 139 countries, and 18 event series of the *World Handbook*. “A prodigious undertaking, providing annual events data for 1948-77, it is not good enough,” he concluded.¹ Good enough for *what* he did not address.

In addition to ignoring the fact that such a tiny, non-random sample is unrepresentative of the whole population of events, Brockett seems to have misunderstood the general nature of statistical analysis. In their devastating reply, Dixon, Muller, and Seligson made the point that

documented evidence of underreporting does not necessarily imply a precise accounting. Brockett’s investigation of deaths in Central America is a case in point. While he does supply convincing evidence of underreporting of deaths, he fails to provide enough detailed information to permit an accurate correction.²

Dixon et al. used a censoring technique that identified moderate rather than the excessive levels of violence claimed by Brockett.³ Because underreported cases could be reasonably expected to rank above the threshold that they determined, they set the score for these cases equal to that threshold. This technique allowed observing how the underreported cases affected their analysis. When they compared the effects of the adjusted data to those of the unadjusted data in a model predicting violence from land inequality, the estimates changed slightly and the overall fit declined marginally, but the general pattern remained pretty much the same. Making allowances for error and employing the best data available did not overturn the results. Dixon, Muller, and Seligson noted that “blanket charges of inaccuracy without supporting evidence can do little to advance inquiry” and that evidence of significant

¹ Charles D. Brockett, “Measuring Political Violence and Land Inequality in Central America,” *American Political Science Review* 86 (1992): 169; Charles Lewis Taylor and David A. Jodice, *World Handbook of Political and Social Indicators: Third Edition* (New Haven: Yale University Press, 1983).

² William J. Dixon, Edward N. Muller, and Mitchell A. Seligson, “Inequality and Political Violence Revisited: Response,” *American Political Science Review* 87 (1993): 990.

³ It would have been possible, they say, to eliminate cases plagued by documented irregularities, but this would have produced serious distortions since irregularities are located precisely in the times and places where disorder is known to be frequent. The optimal solution, of course, would have been to correct inaccuracies with better data, but that is easier said than done.

underreporting “is better used as a remedy than an indictment.”⁴

There are no methods by which to obtain a metric of everything that has happened. Historians have of course known this for centuries. There are no perfect scholars, and even if there were, no complete sources for political events exist. No scribe could ever record them all. Events happen more quickly and in more places than can be accommodated by available clerks. Hence, no dataset can be assured of containing every single event of conflict within its scope, whether it be a quantitative assessment for a couple of years of a country’s history taken from police blotters and local newspapers or a carefully compiled descriptive report drawn from several separate historical archives.

3. So What Do We Do?

A dataset needs to be characterized not so much by completeness as by comparability across time and space. Wooley points out that any dataset of political events is in reality a sample drawn from the universe of actual events that occurred, and that no absolute benchmark exists by which the quality of any particular sample can be judged.⁵ If we follow the logic of sampling theory, of course the more densely packed the dataset, the greater its likelihood of representing the actual patterns that exist in the total event population. Nevertheless, there is always the overwhelming probability that more events occurred than were reported, however large the sample.

The first requirement for probabilistic analysis is the reasonable assurance that the data sample is unbiased. A sample may or may not be random with regard to the various criteria that are important to the investigation at hand. Moreover, it will be drawn from an unknown population. A careful examination is required of the sources as well as the protocol by which the data are to be coded or otherwise manipulated. Analytical interest, of course, is in the patterns of events, the relationships among these patterns, and the connections between them and other relevant variables. Are the data a sufficient representation of the underlying population of events for testing probabilistic models that explain these patterns and relationships? The answer depends upon the requirements of the particular model. Dixon, Muller, and Seligson found no difference in relationship when they modified their data, but not all adjustments and retesting would allow statistical results to stand. It is the responsibility of the analyst to assess empirically the effects that data quality will have upon the analysis.

The questions of validity and reliability are of course related to the quality of the sources. How comprehensive is the source? What biases does it contain? Are events from reports recognized (whether by human coders or by automated coding) in terms relevant to theoretical concerns? Answering the last question requires developing base codes consistent with the theoretical framework: What needs to be measured and what is the logic for doing so? Finally, for large datasets that are most efficiently collected by automatically coding digital data, reliability has to do with the convergence of machine and human coders in assigning events to the proper event type and in identifying the associated attributes of these events.

Many of the early cross-national political event datasets were based upon print media. Crews of individual coders worked together to create and refine coding rules that could be

⁴ Dixon, Muller, and Seligson, “Inequality and Political Violence,” 990.

⁵ John T. Wooley, “Using Media-Based Data in Studies of Politics,” *American Journal of Political Science* 44 (2000): 156-173.

applied to journalists' reports of activities related to political protest and government change. The participants then checked inter-coder reliability by means of tests on sample material. Such a project was, of course, labor intensive and made even more so by the use of multiple sources, including sources in local languages. Adding to the required work, several scholars have sought local and international news sources. These, they argue, provide additional perspectives on political processes.⁶ Multiple sources increase the problem of dealing with duplicate reports of the same event, however. Simply adding event reports wherever found does not alone solve the comparability problem, but sources containing more event reports do offer the opportunity of more comparable reporting. Althaus, Edy, and Phalen made the case for using wire services rather than newspapers. Newspapers, they said, have a "news hole" of a specific size and the events reported have to fit into this space. Wire services have no news hole. Their continuous coverage can more easily expand or contract to cover what is actually happening. Wire services therefore include far more news than newspapers can afford to print.⁷

Reuters News Agency was singled out as a particularly good source that covers much that is missed by other news agencies.⁸ Althaus et al. argued that the multiple sources available through Reuters Textline Service in Nexis-Lexis do reduce bias and generate more density. In a test, they found Reuters Textline dwarfed several putative benchmarks in Northern Ireland, Poland, and the United States in the number of protest events that it covered. They found that the Radio Free Europe chronology included only 31.2 per cent of the events found in the Reuters' sources; Uncensored Poland News (Solidarity Newsletter) covered 3.7 per cent; the Bew and Gillespie Northern Ireland chronology covered 10.9 per cent; and the New York Times covered 11.4 per cent.⁹ Almeida and Lichbach found that internet sources provided much more complete coverage than the New York Times, Global Newbank, and the Seattle Times.¹⁰

Rucht and Ohlemacher rejected wire services on the basis of their then-inaccessibility and of the flood of information that would have to be screened, but over time, various schemes have been developed for machine-aided coding and eventually for direct computer coding.¹¹ Significant among these are systems developed by Philip Schrodtt and by Virtual Research Associates (VRA).¹² Eventually, agreement between human and machine coding has begun to approach 90 per cent, which is at a level about equal to the best results among trained human coders.

A major problem for human coders is the "black box" of the coder's mind. It is difficult

⁶ Henrik Sommer and James R. Scarritt, "The Utility of Reuters for Events Analysis in Area Studies: The Case of Zambia-Zimbabwe Interactions, 1982-1993," *International Interactions* 25 (1999): 1-31; Christian Davenport and Patrick Ball, "Views to a Kill: Exploring the Implications of Source Selection in the Case of Guatemalan State Terror, 1977-1995," *The Journal of Conflict Resolution* 46 (2002): 427-450.

⁷ Scott L. Althaus, Jilly A. Edy, and Patricia F. Phalen, "Using Substitutes for Full-Text News Stories in Content Analysis: Which Text is Best?," *American Journal of Political Science* 43 (2001): 707-724.

⁸ Mark Irving Lichbach, "The International News About Governability: A Comparison of the *New York Times* and Six News Wires," *International Interactions* 10 (1984): 311-340; Phillip A. Huxtable and Jon C. Pevehouse, "Potential Validity Problems in Event Data Collection," *International Studies Notes* 21 (1996): 8-19; Sommer and Scarritt, "The Utility of Reuters."

⁹ Althaus et al., "Which Text is Best?"

¹⁰ Paul D. Almeida and Mark Irving Lichbach, "To the Internet, From the Internet: Sources of Data About Antiglobalization Protest," *Mobilization* 8 (2003): 249-272.

¹¹ Dieter Rucht and Thomas Ohlemacher, "Protest Event Data: Collection Uses and Perspectives," in *Issues in Contemporary Social Movement Research*, eds. Ron Eyerman and Dario Diani (Beverly Hills: Sage, 1992), 76-106.

¹² Philip A. Schrodtt, "CAMEO: Conflict and Mediation Event Observations: Event and Actor Codebook," <http://eventdata.psu.edu/data.dir/cameo.html>; Virtual Research Associates, Integrated Data Events Analysis (IDEA), <http://vranet.com/data.aspx>.

to account for exactly how and why any single individual may respond to an event report. Coding manuals, coder training, and inter-coder reliability checks reduce the problem of random reactions, but coding errors do occur and are difficult to identify. In contrast, automated coding is highly consistent and thereby transparent in terms of error patterns. It is also flexible in that once errors are identified, codes can be altered and data rerun, creating a new dataset. In effect, automation replaces numerous moderately and low-skilled human coders with a few highly skilled programmers and protocol developers.

The Virtual Research Associates Reader is one project involved in the automated coding approach that makes use of Reuters Business Briefs. Participants include Doug Bond, Joe Bond, and Charles Taylor. Current examination of the validity of these data as dynamic indicators of intrastate conflict processes is encouraging. To be sure, media selection and misrepresentation present difficulties for conflict analysis, and although the source of the data is imperfect, it does provide a valid trace of conflict events in the aggregate. The question is not whether international news sources literally describe all events that occur but whether indices drawn from them represent cross-national patterns. The VRA project presents the results of a random sampling approach to assessing coding reliability for 50 conflict event types anywhere in the world.

Given the limitation of resources in the real world, there is always a trade-off between intricate measurements of narrower scope that usually produce a larger number of event reports for any specific time and place, and broader studies that allow greater comparative analysis. The broader the scope in time or space, of course, the greater the possibility for overlooking events of interest because the resources that can be devoted to each detail are relatively fewer. New developments, however, continue to mitigate even this problem.

Further Reading

- Barker-Plummer, B. "News as a Political Resource." *Critical Studies in Mass Communication* 12 (1995): 306-324.
- Barranco, J., and D. Wisler. "Validity and Systematicity of Newspaper Data in Event Analysis." *European Sociological Review* 40 (1999): 170-192.
- Beissinger, Mark R. *Nationalist Mobilization and the Collapse of the Soviet State*. London: Cambridge University Press, 2002.
- Boyd-Barrett, Oliver. *The International News Agencies*. Beverly Hills: Sage, 1980.
- Boyd-Barrett, Oliver, and Daya Kishan Thussu. *Contra-Flow in Global News: International and Regional News Exchange Mechanisms*. London: John Libbey, 1992.
- Boyd-Barrett, Oliver, and Terhi Rantanen, eds. *The Globalization of News*. Thousand Oaks, CA: Sage, 1999.
- Danzger, M. Herbert. "Validating Conflict Data." *American Sociological Review* 40 (1975): 570-584.
- Eisinger, P. "The Conditions of Protest in American Cities." *American Political Science Review* 67 (1973): 11-23.
- Franzosi, R. "The Press as a Source of Socio-Historical Data." *Historical Methods* 20 (1987): 5-15.
- Gans, H. *Deciding What is News*. New York: Pantheon, 1979.
- Hocke, Peter. "Determining the Selection Bias in Local and National Newspaper Reports on Protest Events." In *Acts of Dissent*, edited by Dieter Rucht, Ruud Koopmans, and Friedhelm Neidhardt, 131-163. Berlin: Edition Sigma Rainer Bohn Verlag, 1998.
- Hug, Simon. "Selection Bias in Comparative Research: The Case of Incomplete Data Sets." *Political Analysis* 11 (2003): 255-274.
- Hug, Simon, and Dominique Wisler. "Correcting for Selection Bias in Social Movement Research." *Mobilization* 3 (1998): 141-161.
- Kielbowicz, R., and C. Scherer. "The Role of the Press in the Dynamics of Social Movements." *Research in Social*

- Movements, Conflicts and Change* 9 (1986): 71-96.
- King, Gary, and Will Lowe. "An Automated Information Extraction Tool for International Conflict Data with Performance as Good as Human Coders: A Rare Events Evaluation Design." *International Organization* 57 (2003): 617-642.
- Koopmans, Ruud. "The Use of Protest Event Data in Comparative Research: Cross-National Comparability, Sampling Methods and Robustness." In *Acts of Dissent: New Developments in the Study of Protest*, edited by Dieter Rucht, Ruud Koopmans and Friedhelm Neidhardt. Berlin: Rainer Bohn Verlag, 1998.
- Koopmans, Ruud, and Dieter Rucht. "Protest Event Analysis – Where to Now?" *Mobilization* 4 (1999): 123-130.
- Leetaru, Kalev, and Philip A. Schrodt. "GDELT: Global Data on Events, Location and Tone, 1979-2012." Paper presented at the International Studies Association Meeting, San Francisco, April 2013. <http://eventdata.psu.edu/data.dir/GDELT.html>
- McCarthy, John D., Clark McPhail, and Jackie Smith. "Images of Protest." *American Sociological Review* 61 (1996): 478-499.
- McFarlane, Thomas, and Iain Hay. "The Battle for Seattle: Protest and Popular Geopolitics in The Australian Newspaper." *Political Geography* 23 (2003): 211-232.
- Mueller, Carol McClurg. "International Press Coverage of East German Protest Events, 1989." *American Sociological Review* 62 (1997): 820-832.
- Oliver, Pamela E., and Daniel J. Myers. "How Events Enter the Public Sphere: Conflict, Location, and Sponsorship in Local Newspaper Coverage of Public Events." *American Journal of Sociology* 105 (1999): 38-87.
- Oliver, Pamela E., and Gregory M. Maney. "Political Processes and Local Newspaper Coverage of Protest Events: From Selection Bias to Triadic Interactions." *American Journal of Sociology* 106 (2000): 463-505.
- Raleigh, Clionadh, Andrew Linke, Håvard Hegre, and Joakim Karlsen. "Introducing ACLED: An Armed Conflict Location and Event Dataset: Special Data Feature." *Journal of Peace Research* 47 (2010): 651-660.
- Rucht, Dieter, and Friedhelm Neidhardt. "Methodological Issues in Collecting Protest Event Data: Units of Analysis, Sources and Sampling, Coding Problems." In *Acts of Dissent: New Developments in the Study of Protest*, edited by Dieter Rucht, Ruud Koopmans and Friedhelm Neidhardt. Berlin: Rainer Bohn Verlag, 1998.
- Shapiro, Gilbert, and John Markoff. *Revolutionary Demands: A Content Analysis of the Cahiers de Doléances of 1789*. Stanford: Stanford University Press, 1998.
- Snyder, David, and William R. Kelly. "Conflict Intensity, Media Sensitivity and the Validity of Newspaper Data." *American Sociological Review* 42 (1977): 1105-1117.
- Swank, Eric. "In Newspapers We Trust: Assessing the Credibility of News Sources That Cover Protest Campaigns." *Research in Social Movements, Conflicts and Change* 22 (2000): 27-52.
- Tarrow, Sidney. *Struggle, Politics and Reform: Collective Action, Social Movements, and Cycles of Protest*. Ithaca: Cornell University Press, 1989.
- White, R. "On Measuring Political Violence in Northern Ireland." *American Sociological Review* 58 (1993): 75-85.

Bibliography

- Almeida, Paul D. and Mark Irving Lichbach. "To the Internet, From the Internet: Sources of Data About Antiglobalization Protest." *Mobilization* 8 (2003): 249-272.
- Althaus, Scott L., Jilly A. Edy, and Patricia F. Phalen. "Using Substitutes for Full-Text News Stories in Content Analysis: Which Text is Best?" *American Journal of Political Science* 43 (2001): 707-724.
- Brockett, Charles D. "Measuring Political Violence and Land Inequality in Central America." *American Political Science Review* 86 (1992): 169-176.
- Davenport, Christian, and Patrick Ball. "Views to a Kill: Exploring the Implications of Source Selection in the Case of Guatemalan State Terror, 1977-1995." *The Journal of Conflict Resolution* 46 (2002): 427-450.
- Dixon, William J., Edward N. Muller, and Mitchell A. Seligson. "Inequality and Political Violence Revisited: Response." *American Political Science Review* 87 (1993): 983-993.

-
- Huxtable, Phillip A., and Jon C. Pevehouse. "Potential Validity Problems in Event Data Collection." *International Studies Notes* 21 (1996): 8-19.
- Jenkins, J. Craig, Charles Lewis Taylor, Marianne Abbott, Thomas V. Maher, and Lindsey Peterson. "Global Conflict Data: The World Handbook of Political and Social Indicators IV." Mershon Center for International Security Studies. www.sociology.osu.edu/worldhandbook
- Lichbach, Mark Irving. "The International News About Governability: A Comparison of the *New York Times* and Six News Wires." *International Interactions* 10 (1984): 311-340.
- Rucht, Dieter, and Thomas Ohlemacher. "Protest Event Data: Collection Uses and Perspectives." In *Issues in Contemporary Social Movement Research*, edited by Ron Eyerman and Dario Diani, 76-106. Beverly Hills: Sage, 1992.
- Schrodt, Philip A. "CAMEO: Conflict and Mediation Event Observations: Event and Actor Codebook." <http://eventdata.psu.edu/data.dir/cameo.html>
- Sommer, Henrik, and James R. Scarritt. "The Utility of Reuters for Events Analysis in Area Studies: The Case of Zambia-Zimbabwe Interactions, 1982-1993." *International Interactions* 25 (1999): 1-31.
- Taylor, Charles Lewis, and David A. Jodice. *World Handbook of Political and Social Indicators: Third Edition*. New Haven: Yale University Press, 1983.
- Virtual Research Associates. Integrated Data Events Analysis (IDEA), <http://vranet.com/data.aspx>.
- Wooley, John T. "Using Media-Based Data in Studies of Politics." *American Journal of Political Science* 44 (2000): 156-173.

An Empirical Assessment of the Role of Emotions and Behavior in Conflict Using Automatically Generated Data*

Steve Shellman
Sean O'Brien
Strategic Analysis Enterprises (SAE), Inc.

Abstract

Automated event data extraction techniques have revolutionized the study of conflict dynamics through the ability of these techniques to generate large volumes of timely data measuring dynamic interactions among actors around the world. In this paper, we describe our approach for adapting these techniques to extract data on sentiments and emotions, which are theorized to crucially contribute to escalating and de-escalating conflict. Political scientists view political conflict as resulting from a series of strategic interactions between groups and individuals. Psychologists highlight additional factors in political conflict, such as endorsements and condemnations, the public's attitude toward its leaders, the impact of public attitudes on policy, and decisions to engage in armed conflict. This project combines these two approaches to examine hypotheses regarding the effects that different emotional impulses have on government and dissident decisions to escalate or de-escalate their use of hostility and violence. Across the two cases examined—the democratic Philippines and authoritative Egypt between 2001 and 2012—we found consistent evidence that intense societal fear of dissidents and societal disgust toward the government were associated with increases in dissident hostility. Conversely, societal anger toward dissidents was associated with a reduction in dissident hostility. However, we also found noticeable differences between the two regimes. We close the article with a summary of these similarities and differences, along with an assessment of their implications for future conflict studies.

Keywords: Natural language processing, automated events and sentiment extraction, conflict dynamics, emotions and behavior, conflict early warning

1. Introduction

A major hypothesis emerging from the social psychology literature is that individuals' choices are strongly influenced by their own and others' emotions. While experiments to that end have been conducted in labs around the world, there is a lack of empirical analyses focusing on how key actors involved in political crises react in response to different emotional impulses emanating from different types of actors. The research to date on how emotions impact conflict behavior has been largely descriptive in nature, lacking scientific rigor

Steve Shellman, PhD. CEO and Chief Research Scientist, Strategic Analysis Enterprises, Inc. Email: steve@strategicanalysiseneterprises.com. Sean O'Brien, PhD. Executive Vice President and Senior Scientist, Strategic Analysis Enterprises, Inc. Email: sean@strategicanalysiseneterprises.com.

*This study was primarily funded by the US Air Force Research Laboratory (AFRL). The data collected were jointly funded by the US National Science Foundation (NSF: BCS-0904921; SES-0516545) and the US Navy's Office of Naval Research (N00014-10-C-0338). We would like to thank Laurie Fenstermacher at AFRL for supporting our research efforts and for her comments, criticisms, and suggestions. We would also like to thank Hans Leonard, Marcia Zangrilli, and Michael Covington for their research assistance.

and unbiased empirical assessments. The primary purpose of this article is to describe our approach for breaking new ground in the study of emotions and their impacts on the strategic and tactical choices of individuals, groups, and governments while engaged in domestic and/or international political struggles. Our project uses new, innovative, and near-real-time automated tools to extract and measure expressions of emotion from text samples and assess how such emotions influence the behavior of governments and dissidents. Similar events in different countries or contexts can produce distinct emotional impulses, and knowing how leaders and mass movements are likely to react to these impulses is crucial to our ability to anticipate crises and their trajectories, such as those that have occurred most recently in the Middle East.

Much of the social-psychology literature focuses on how emotions influence one's behavior.¹ In this article, we examine this relationship from a different perspective by developing and testing hypotheses on how societal emotions affect government leaders' behavioral responses toward their opponents and constituencies. The effects of revolutionaries such as Mao Zedong and Che Guevara, along with US counter-insurgency doctrine, suggest that societal attitudes can have a decisive impact on the outcomes of conflict and irregular warfare.² The victor in these often-protracted engagements usually holds the support of the population. Popular support is often conceptualized in terms of the extent to which one favors, likes, or trusts a person or policy position. Yet, some leaders gain support through coercion. For example, groups may violently attack civilians to spread fear and panic within a wider audience to compel people to support their cause. Others, such as Hezbollah, provide social services to win over potential supporters. Governments and dissidents generally gauge public attitudes before taking action and then conduct themselves in ways that increase support—either through fear or trust. In this paper, we focus on the anger and disgust associated with unsupportive attitudes, as such expressions can also impact an actor's decisions. In short, we ask: How do societal emotions such as anger, disgust, fear, and trust influence government and dissident behavior?

Using automated natural language processing (NLP) techniques, we collected data on what citizens, dissidents, and governments were doing to (events data) and saying (sentiment/emotions data) about each other in the Philippines and Egypt over the period 2001 to 2012. We disaggregated the emotions and sentiment data of those three actor types, and evaluated several hypotheses linking emotions to the others' behavioral responses in the context of conflict and hostility.

In the first section of this paper, we articulate our conception of conflict as a series of strategic interactions between dissidents, governments, and the citizens whose allegiance they compete for. Next, we discuss the evolution of automated techniques to extract dynamic behavioral data from unstructured text. We introduce our approaches for automatically extracting dynamic events, sentiment expressions, and emotional responses between the key societal actors. Following our analyses of the data generated by these techniques in the context of Egypt and the Philippines, we close the article with a summary of our results and their policy implications.

¹ Icek Ajzen, *Attitudes, Personality, and Behavior* (Chicago: Dorsey Press, 1988); Catherine A. Cottrell and Steven L. Neuberg, "Different Emotional Reactions to Different Groups: a Sociofunctional Threat-based Approach to "Prejudice,"" *Journal of Personality and Social Psychology* 88 (5) (2005): 770-789.

² David H. Petraeus and James F. Amos, *U.S. Army/U. S. Marine Corps Counterinsurgency Field Manual* (Chicago: University of Chicago Press, 2007).

2. Conceptualization of Conflict

Political conflict can be viewed as resulting from a series of strategic interactions between groups and individuals.³ Conflict is not an illness a society “catches” like a seasonal cold; rather, it is a *process* whereby competing actors make interdependent strategic decisions that serve to escalate and de-escalate conflict. This process, which we depict in Figure 1, is characterized by a series of cost and benefit calculations. Political leaders, for instance, seek to obtain (or retain) political office so that they may allocate resources in accordance with their policy positions. Dissident leaders, much as their government opponents, seek to retain power in their organizations and control over their subordinates. Government and dissident leaders are constrained, enabled, or threatened by their internal and external coalitions, who judge their leaders’ performances by examining their interactions with their opponents and the resulting outcomes. Thus, monitoring changes in popular support, sentiment, rhetoric, and emotions becomes an important tool for maintaining power and influence.

Audience costs affect leaders’ tenure in office. These costs come in many forms, such as through losing elections and influence, assassinations, splits between dissident organizations and factions, and coups d’états. Shellman argues that leaders must minimize these costs by reducing hostility from their opponents and by instilling positive attitudes and emotions among their supporters.⁴ Leaders are also constrained by regime type. Autocratic leaders instill fear in the population and repress them into submission. Democratic leaders, by contrast, must obey the rule of law, and fear being ousted by the public, whether through popular election or other means, such as a military coup or rebellion.

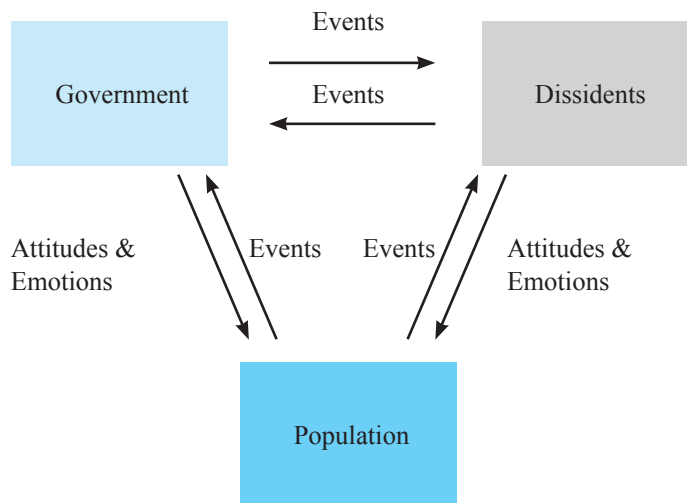


Figure 1: Conceptualization of Conflict as Strategic Interactions

³ David H. Lake and Robert Powell, "International Relations: A Strategic-Choice Approach," in *Strategic Choice and International Relations*, eds. David H. Lake and Robert Powell (Princeton, NJ: Princeton University Press, 1999); Stephen M. Shellman, Clare J. Hatfield, and Maggie J. Mills, "Disaggregating Actors in Intrastate Conflict," *Journal of Peace Research* 47 (1) (2010): 83-90; Stephen M. Shellman, *Taking Turns: A Theory and Model of Government-Dissident Interactions* (Saarbrücken: VDM Verlag, 2010); Stephen M. Shellman, "Leaders and Their Motivations: Explaining Government-Dissident Conflict-Cooperation Processes," *Conflict Management & Peace Science* 23 (1) (2006a): 73-90; Stephen M. Shellman, "Process Matters: Conflict and Cooperation in Sequential Government-Dissident Interactions," *Security Studies* 15 (4) (2006b): 563-599.

⁴ Shellman, "Leaders and Their Motivations"; Shellman, "Process Matters"; Shellman, *Taking Turns*.

3. The Evolution of Behavioral Conflict Data

While the conceptualization of conflict as a process has been theorized in academic literature for decades, until recently, efforts to test and evaluate hypotheses derived from these theoretical arguments have been hampered by a lack of available data to operationalize these key concepts. The 'behavioral revolution' in political science in the late 1960s led to the development of numerous conflict datasets, including the Correlates of War (COW) Project,⁵ the International Crisis Behavior (ICB) Project,⁶ and the Uppsala Conflict Data Program,⁷ among many others. Although embracing different definitions of conflict to suit the research interests of the principal investigators, these projects were united by their common goal of tracking the occurrence of conflict (primarily at the nation-state level) and its characteristics (e.g., battle deaths, distance between opponents, regime type, size of military forces).

For decades, these datasets served as the gold standard in quantitative analyses by which to identify the key correlates of conflict, which were almost exclusively performed using country-year as the unit of observation. By the late 1990s and early 2000s, several groups of scholars and government analysts⁸ were employing these datasets to generate fairly reliable forecasts of countries most likely to experience conflict and instability given their macro-structural conditions (e.g., regime type, demographic trends, level of commitment to political rights, human rights). Although these studies were impressive in the accuracy with which they could forecast nation-state risks for conflict (around 80% accuracy over five years), they suffered from two main limitations.

First, these macro-structural risk assessments were generated without taking into account how interactions between individuals and groups might influence the character and timing of conflict. They were instead concerned with identifying the conditions that make countries more or less susceptible to conflict. Although these conditions do indeed enable or constrain leaders and dissidents, they do not inform us about the *behaviors* these actors might exhibit under different circumstances, specifically in response to actions undertaken by their opponents. As a result, although macro-structural forecasts provide useful early warnings of nation-state conflict risks, they mask the mechanisms by which these conflicts can occur. Second, most of the key variables examined as potential correlates or drivers of conflict were measured annually, so forecasts over more-specific time frames (weeks or months) were impossible.

3.1. The development of automated data extraction techniques

The above problems were mitigated with the development of techniques to automatically extract and code dynamic event interactions from news reports. Phil Schrod's Kansas Event Data System (KEDS) was the first major project to demonstrate that NLP techniques

⁵ J. David Singer and Melvin Small, *The Wages of War, 1816-1965: A Statistical Handbook* (New York: John Wiley and Sons, 1972).

⁶ Jonathan Wilkenfeld, Michael Brecher, and Sheila Moser, *Crises in the Twentieth Century: Handbook of Foreign Policy Crises* (Oxford, England: Pergamon Press, 1988).

⁷ Peter Wallensteen and Margareta Sollenberg, "Armed Conflict 1989-98," *Journal of Peace Research* 36 (5) (1999): 593-606.

⁸ Daniel C. Esty et al, *Working Papers: State Failure Task Force Report* (McLean, VA: Science Applications International Corporation, 1995), accessed June 8, 2009, http://www.allacademic.com/meta/p312200_index.html; Daniel C. Esty et al., *The State Failure Task Force Report: Phase II Findings* (McLean, VA: Science Applications International Corporation, 1998), accessed June 8, 2009, <http://globalpolicy.gmu.edu/pitf/SFTF%20Phase%20II%20Report.pdf>; Sean P. O'Brien, "Anticipating the Good, the Bad, and the Ugly: An Early Warning Approach to Conflict and Instability Analysis," *Journal of Conflict Resolution* 46 (2002): 791-811.

could be used to generate daily measures of a wide array of conflictual and cooperative interactions between individuals and organizations, with accuracy equivalent to human annotators.⁹ With automated coding, the coding rules are transparent, the data are easily and quickly reproducible, and the data can be regenerated using alternative coding schemes. This development has radically changed the information that is now available to researchers and analysts. The KEDS project has spawned a number of similar projects, and this technology has spilled over into a variety of other areas of political science.

The Kansas Event Data System and its open-source successor, the Text Analysis by Augmented Replacement Instructions (TABARI) program, utilizing the Conflict and Mediation Event Observations (CAMEO) system, were originally used to collect information primarily on regional interactions among actors (primarily in the Levant). Although most event datasets were generated by coding state-to-state interactions, a major breakthrough in the coding of sub-state actors originated with the Protocol for the Analysis of Nonviolent Direct Action (PANDA) project in the early 1990s. In addition to coding sub-state actors, PANDA's focus was on acts of non-violence and low-level contentious politics. That actor system was then incorporated into Bond et al.'s Integrated Data for Event Analysis (IDEA) system, which performs global coding.¹⁰ Some of the IDEA data are available publicly but much remain proprietary.

Building on these projects, we developed our own suite of NLP techniques to automatically code dynamic behavioral indicators from text, which we refer to as *Xenophon*. *Xenophon* uses the same basic structure as TABARI/CAMEO, but the primary difference is that we take sentence structure (using a tagger and parser) into account, which allows us to better disambiguate the sources and targets of particular events. We also utilize a more extensive set of actor dictionaries relative to most of the previous work in this area, which allows us to make finer distinctions and disaggregate actions among individuals, groups, governments, and organizations.

3.2. Extending events data extraction for coding sentiments and emotions

With the ability to automatically extract dynamic events in near real time, we can create customizable behavioral indices, such as measures of protest, dissent, and violence. This feature enables us to examine hypotheses consistent with our theory of conflict, that is, as resulting from a series of strategic calculations between dissidents and government actors. However, as our theory postulates that these actors compete for winning people's hearts and minds, we needed measures of societal support for them. Moreover, to test some of our psychological hypotheses about how different behavior is driven by discrete emotions, we needed a way to capture different emotional expressions.

For the above reasons, we adapted our events-data framework to capture sentiment expressions and emotional responses by adjusting our techniques in two crucial areas. First, we replaced the verb or event taxonomy in our coding engine with a comprehensive taxonomy of sentiment words and phrases. This taxonomy includes variations of the most-

⁹ Philip A. Schrodt, Shannon G. Davis, and Judith L. Weddle, "Political Science: KEDS—A Program for Machine Coding Events Data," *Social Science Computer Review* 12 (3) (1994): 561-88; Philip A. Schrodt and Deborah J. Gerner, "Empirical Indicators of Crisis Phase in the Middle East, 1979-1995," *Journal of Conflict Resolution* 41 (1997): 529-552.

¹⁰ Doug Bond, Craig Jenkins, and Kurt Schock, "Mapping Mass Political Conflict and Civil Society: Issues and Prospects for the Automated Development of Event Data," *Journal of Conflict Resolution* 41 (1997): 553-579.

common sentiment expressions used in politically relevant discourse and that span the range of attitudes from *distain* to *admiration*. From these main expressions, we derived 1,464 different patterns of the way in which sentiments are expressed in common discourse. Second, we attached an *emotion* to each sentiment expression, based on Plutchik's Wheel of Emotions, displayed in Figure 2.¹¹

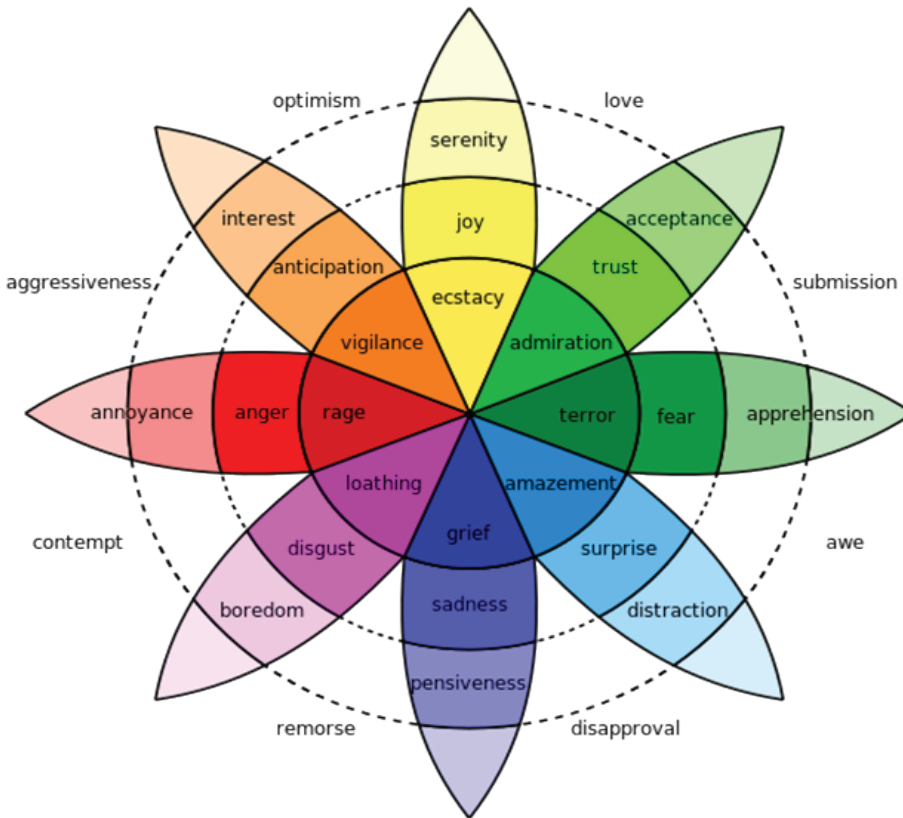


Figure 2: Plutchik's Wheel of Emotions

Plutchik postulated the existence of eight primary, discrete emotions: *joy* versus *sadness*; *anger* versus *fear*; *trust* versus *disgust*; and *surprise* versus *anticipation*. He uses the concept of a wheel to illustrate that these emotions can be expressed in different mixes and intensities. Table 1 provides some examples of how our *Pathos* sentiment engine transforms text from blogs or news reports into raw data measuring different sentiments and emotions.

In coding sentiment and emotional expressions, we have replaced the notion of *sources* and *targets*, commonly used in most event extraction frameworks, with more appropriate references to *evokers* and *reactors*. We also have placeholders for *monadic* sentiment expressions, which occur when an unidentified actor (such as the author of a blog posting)

¹¹ Robert Plutchik, *Emotion, a Psychoevolutionary Synthesis* (New York: Harper and Row, 1980).

Table 1- Examples of Sentiment and Emotions Extracted from Text

Evoker	Reactor	Sentiment	Pos/Neg	Emotion
		"The Swiss gov't lauded Suu Kyi for her courage."		
		"Mrs. Clinton angered Ali Abdullah Saleh."		
		"The Prime Minister was visibly angered."		
		"David Cameron appears happy."		
		"The King is appalled."		
		"The dictator is brutal."		
		"President Obama is honest."		
		"Chavez is appalling."		
		"The president was angry when he left."		
Evoker	Reactor	Sentiment	Pos/Neg	Emotion
Suu Kyi	Swiss gov't	LAUD	Pos	Joy
Mrs. Clinton	Ali Abdullah Saleh	ANGER	Neg	Anger
(monadic, undefined)	Prime Minister	ANGER	Neg	Anger
(monadic, undefined)	David Cameron	HAPPY	Pos	Joy
(monadic, undefined)	King	APPALL	Neg	Disgust
Dictator	Author	BRUTAL	Neg	Fear
President Obama	Author	HONEST	Pos	Trust
Chavez	Author	APPALL	Neg	Disgust

expresses a particular sentiment, or in cases where the object of one's sentiment is undefined. For example, in the statement "The president was angry when he left," we do not know with whom or about what issue the president was angry. With the adaptation of our automated events data extraction techniques for coding multi-adic expressions of sentiment and emotions, we now have the tools to collect the data necessary to evaluate hypotheses concerning the impact of emotions and attitudes on government and dissident behavior in the context of conflict and hostility.

4. Hypotheses

Emotions are critical to the natural goal-seeking process because they signal circumstances that threaten or further one's goals. Emotions direct and energize behavior toward remediating threats or exploiting benefits.¹² Emotions are also linked to habitual behavioral patterns; understanding the effects of emotions can prove useful for identifying and predicting how individuals will respond to various emotional stimuli. Kuppens et al. hypothesize that different events evoke different emotions and that different emotions provoke different actions. Fearful people tend to *avoid conflict* while angry people tend to *take action*.¹³ Matsumoto et al. argue that 'disgust' is the emotion that stems from 'repulsion' and tends to increase the desire to 'eliminate' the opposition.¹⁴ This theory suggests the following testable hypotheses:

H1: If dissidents are feared by the population, dissidents will continue their violent actions to perpetuate fear in the population (so that the population avoids conflict with them).

¹² Cottrell and Neuberg, "Different Emotional Reactions."

¹³ Peter Kuppens et al., "The Appraisal Basis of Anger: Specificity, Necessity and Sufficiency of Components," *Emotion* 3 (3) (2003): 254-269.

¹⁴ David Matsumoto, Hyeisung C. Hwang, and Mark G. Frank, "Emotional Language and Political Aggression," *Journal of Language and Social Psychology* XX (X) (2013): 1-17, accessed May 8, 2013, DOI: 10.1177/0261927X12474654.

H2: If people are angry at dissidents, dissidents will alter their behavior (e.g., lessen violent activities) to prevent actions by the general population that may be inconsistent with the dissidents' objectives.

Autocratic governments may react in similar ways. Fearful people mean submissive people. Angry people present potential threats to leaders. Machiavelli argues that it is better to be feared than loved. Thus,

H3: Autocratic leaders will increase violence in the face of fear and decrease violence in the face of anger.

Democratic leaders, on the contrary, can be removed from office by fearful populations through elections, a feature of democracy that does not require large-scale collective action nor the necessity of publicly declaring or denouncing support for a person or policy. As such,

H4: Democratic leaders will lessen violence when confronted by fearful populations.

Democratic leaders should respond similarly to angry and disgusted populations. Their tenure is more susceptible to people's negative emotions, and power is easier to lose when the masses revoke support. Governments and dissidents are also cognizant of how different groups within the population feel about each other and can react to such information. Thus, we might expect to observe the following:

H5: If dissidents know people are angry, fearful, or disgusted with the government, they will continue to increase their violent activities to attempt to take over the state.

H6: If democratic governments know people are angry, fearful, or disgusted with dissidents, they will increase their violent activities toward the dissidents to eliminate them.

H7: If autocratic repressive leaders know that society is angry, fearful, or disgusted with dissidents, they will lessen their own repressive activities against society so as to garner or retain societal support for the government.

There is no need to use repression when faced with unsupported dissidents; the dissidents will fizzle out without support from the masses.

At the opposite end of the spectrum, governments and dissidents may try to build trust within a population as a way of gaining support. If there are high levels of trust between the government and society, the likelihood of the government using violence against the population should be low. Similarly, dissidents will use less violence during periods of high trust between the population and the dissidents.

H8: As trust increases between the population and the government, or between the population and the dissidents, government and dissident violence alike should decrease.

5. Methodology

We examined these hypotheses using events data and emotions data collected for the Philippines and Egypt over the period 2001 to 2012. The events data came from a large Factiva corpus and the sentiment and emotions data came from Filipino and Egyptian bloggers identified on the World Wide Web. Because the Philippines is a democracy, and Egypt an authoritarian regime over our time period of analysis, we can examine the extent to which relationships between emotions and behavior operate differently in different regime types. We used our *Xenophon* events data extraction system to generate measures of hostility employed by government actors and dissidents. To do so we summed the negatively signed

CAMEO event codes associated with government and dissident actions¹⁵ to create a weighted hostility indicator. We used our *Pathos* system to extract measures of sentiment and emotions directed by societal actors toward dissidents and governments. Data on emotions were derived from the extracted sentiment expressions by assigning each sentiment word or phrase to a discrete category on Plutchik's Wheel of Emotions.¹⁶

Our goal was to examine the nature of these relationships over time. The time series exhibited a non-constant variance across the time period. Therefore, we estimated the relationships using Auto Regressive Conditional Heteroskedasticity (ARCH) models, which include a set of techniques well-suited for analyzing time-series data where the conditional variance changes over time.

6. Analysis and Results

We report the results for the Philippines and Egypt below. Note that the hostility variable is negatively signed, as are as the 'negative emotions' variables (fear, disgust, and anger). As such, positive and negative signs must be interpreted with care. Positive coefficients on negative emotions variables and hostility variables are associated with increases of violence, while negatively signed coefficients are associated with decreases in violence. Positive coefficients on positive emotions such as trust yield decreases in violence, while negatively signed coefficients indicate that trust increases violence.

We model government and dissident hostility levels. In addition to examining the impacts of emotions on behavior, our models control for the opponent's behavior (i.e., dissident behavior for governments and government behavior for dissidents). A recurring finding in the literature is that the relationship between repression and dissent is nonlinear. Specifically, empirical studies find that dissent is highest when repression exists at moderate levels.¹⁷ In the absence of repression, there is little justification to rebel. By contrast, when repression is high, the costs of rebellion may exceed the potential gains. To test this hypothesis we add a variable that squares government hostility in our models of dissident hostility. We find support for this hypothesis across Egypt and the Philippines in that the non-squared term and the squared term are statistically significant and oppositely signed in both dissident hostility models. Plotting the model-predicted values corroborates an inverted-U relationship between government repression and dissident hostility levels. Below, we discuss the emotions variables and their effects on government and dissident hostility levels across Egypt and the Philippines.

6.1. Egypt

Figure 3 depicts the extent to which our model is useful in explaining levels of dissident hostility directed at both the government and society. The model-predicted values of hostility correlate with actual values at .93, indicating that we have an excellent model of dissident hostility. Our model of government hostility (not shown) exhibits a similar level of performance.

¹⁵ Most dissident activity in the Philippines has been conducted by the Abu Sayyaf Group, Moro Islamic Liberation Organization, and Moro National Liberation Front. In Egypt, dissident organizations include the April 6 Youth Movement, Popular Committee for Supporting the Palestinians, Coalition of the Youth of the Revolution, Vanguard of Conquest, National Association for Change, Muslim Brotherhood, Revolutionary Socialists, and Intifada Solidarity Movement.

¹⁶ Plutchik, *Emotion*.

¹⁷ Stephen M. Shellman, Brian P. Levey, and Joseph K. Young, "Shifting Sands: Explaining and Predicting Phase Shifts by Dissident Organizations," *Journal of Peace Research* 50 (3) (2013): 319-336, DOI: 10.1177/0022343312474013.

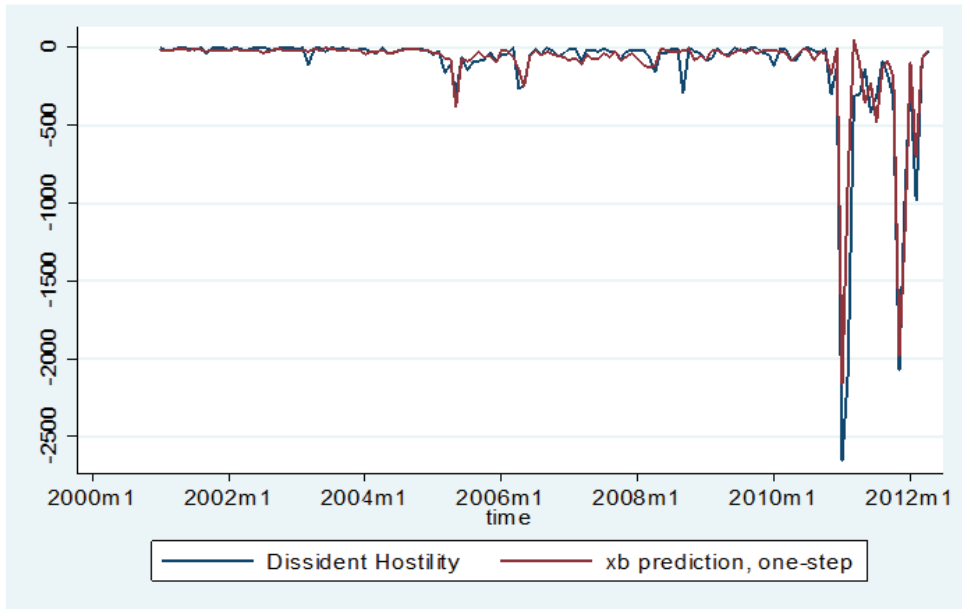


Figure 3: Model-Predicted Egyptian Dissident Hostility versus Actual Egyptian Dissident Hostility, 2001-2012

Table 2 displays the results of our time series estimating the effects of expressed emotions by societal actors toward government and dissident actors on dissident hostility in Egypt.

Table 2- Effects of Expressions of Emotions on Levels of Dissident Hostility in Egypt, 2001-2012

Dissident Hostility	Coefficient	Robust SE z	pr(z)	
Gov to Dis Hostility	0.4489497	0.0437715	10.26	0
Gov to Dis Hostility 2	-0.000505	0.0000274	-18.42	0
Society to Dissident Anger	-1.638102	0.6779109	-2.42	0.016
Society to Dissident Fear	28.36196	2.450034	11.58	0
Society to Dissident Trust	0.0001268	1.578252	0	1
Society to Dissident Disgust	-0.6539234	0.5264639	-1.24	0.214
Society to Government Anger	1.00773	0.268879	3.75	0
Society to Government Fear	-0.2789526	0.7501911	-0.37	0.71
Society to Government Trust	2.208435	0.5360677	4.12	0
Society to Government Disgust	6.968489	0.9480729	7.35	0
Cons	-13.4036	3.651676	-3.67	0
MA	-0.1316956	0.0169177	-7.78	0
ARCH	4.154678	2.486187	1.67	0.095
Note substantive effects shown below				

Consistent with H2, dissident hostility declines as societal anger toward dissidents increases. Consistent with H1, we observe a very strong, positive relationship between societal fear of dissidents and dissident hostility, indicating that as fear increases so does

violence. We also find support, consistent with H5, for the notion that dissidents respond to societal disgust toward their government with greater levels of hostility. Dissident violence against government institutions and symbols demonstrates that dissidents are equally disgusted with the government, and willing to take actions to overthrow the regime. Finally, consistent with H8, we observe that increased societal trust toward the government is associated with decreases in dissident violence. The coefficient on societal trust toward dissidents was also positive, yet it was not statistically significant. Taken together, these findings suggest that dissidents will exploit the emotions of fear and disgust in their effort to undermine government authority and people's faith in the government's ability to protect them from dissident actions, all of which furthers their aims.

Table 3 shows the results of the analyses to assess the impact of different societal emotions on levels of government hostility in Egypt. We find strong support for the notion that this autocratic government lessened its hostility toward dissidents in response to societal expressions of fear of dissidents, and somewhat less support for the notion that societal anger toward dissidents also reduces government hostility toward dissidents. These results are consistent with H7. However, there is a difference with respect to disgust. When society expressed disgust for the government, the latter lashed out with greater levels of hostility in an attempt to bring about greater submissiveness. This reaction is inconsistent with H7. When Egypt's population indicated trust in both the government and dissidents, the government reduced its displays of hostility toward dissidents. These findings are consistent with H8.

Table 3- Effects of Expressions of Emotions on Levels of Government Hostility in Egypt, 2001-2012

Gov to Dissident Hostility	coefficient	Robust SE	z	pr(z)
Dissident hostility	0,679991	0,012812	53,08	0
Society to Dissident Anger	-4,25168	0,693646	-6,13	0
Society to Dissident Fear	-38,5291	9,414314	-4,09	0
Society to Dissident Trust	2,108596	0,892052	2,36	0,018
Society to Dissident Disgust	-4,12852	2,003278	-2,06	0,039
Society to Government Anger	-0,3902	0,733479	-0,53	0,595
Society to Government Fear	-0,38079	2,106473	-0,18	0,857
Society to Government Trust	6,023762	2,206856	2,73	0,006
Society to Government Disgust	12,49639	1,989252	6,28	0
_cons	-22,712	7,342872	-3,09	0,002
MA	0,469103	0,075811	6,19	0
ARCH	0,989996	0,276628	3,58	0

6.2 The Philippines

To assess the extent to which regime type might alter our findings for government behavior as indicated by our hypotheses, we replicated the models for the Philippines over the period 2001 to 2012. Figure 4 shows our model's predicted values of Philippine dissident hostility versus actual values of Philippine dissident hostility. Although the model fit is somewhat weaker than that observed in Egypt ($r=.80$ vs. $.93$, respectively), it still suggests we have a good

model of dissident hostility in the Philippines. The government hostility model-predicted values (not shown here) correlate with actual government hostility at .83, indicating a well-performing model of government hostility as well.

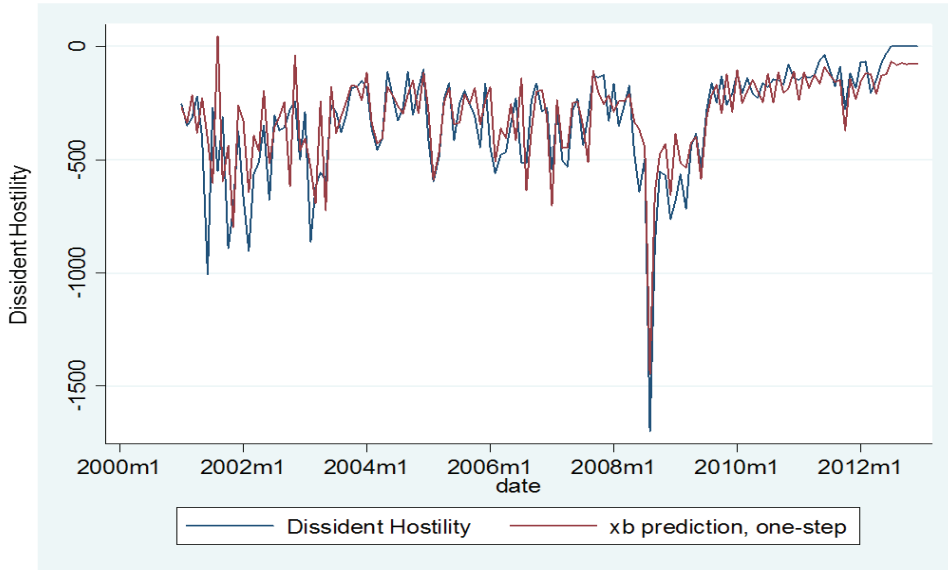


Figure 4: Model-Predicted Philippine Dissident Hostility versus Actual Philippine Dissident Hostility, 2001-2012

Table 4 displays effects for government hostility in the Philippines that are quite different from what was observed in Egypt (compare results to Table 3). As societal anger toward dissidents increased over the sample period, the Philippine government appeared to use that anger as a pretext for cracking down on dissidents through displays of increasing hostility toward them. Furthermore, when Philippine society displayed higher levels of fear and disgust toward the government, it responded by reducing its level of hostility. Because Egypt was an authoritarian regime through much of the analysis time frame, and the Philippines a democracy, these results suggest the value that democratic governments place on not alienating their people, even in the midst of a battle against violent opposition to their authority.

Table 4- Effects of Expressions of Emotions on Levels of Government Hostility in the Philippines, 2001-2012

Gov to Dissident Hostility	coefficient	Robust SE	z	pr(z)
Dissident hostility	0,502222	0,043315	11,59	0
Society to Dissident Anger	6,559452	1,40939	4,65	0
Society to Dissident Fear	1,82246	4,012846	0,45	0,65
Society to Dissident Trust	-1,16605	2,343723	-0,5	0,619
Society to Dissident Disgust	Dropped			
Society to Government Anger	-0,24874	0,68927	-0,36	0,718
Society to Government Fear	-6,94073	3,385746	-2,05	0,04
Society to Government Trust	-0,56976	0,899129	-0,63	0,526
Society to Government Disgust	-4,76318	3,139302	-1,52	0,129
_cons	-44,3678	13,74301	-3,23	0,001
MA	0,157884	0,058751	2,69	0,007
ARCH	-0,06068	0,019207	-3,16	0,002

Table 5 displays the results of the analysis to assess the impact of different emotions on Philippine dissidents' behavior. The results are markedly consistent with those found in Egypt. Intense societal fear of dissidents generated the largest statistically significant increases in dissident hostility (H1). By contrast, societal anger toward dissidents is followed by significant reductions in dissident hostility (H2). We further find support for H5, specifically, that dissidents exploit increases in societal fear of government actions by displaying higher levels of hostility toward the government.

Table 5: Effects of Expressions of Emotions on Levels of Dissident Hostility in the Philippines, 2001-2012

Dissident Hostility	coefficient	Robust SE	z	pr(z)
Gov to Dis Hostility	0,52881	0,162628	3,25	0,001
Gov to Dis Hostility 2	-0,00071	0,000225	-3,15	0,002
Society to Dissident Anger	-4,3229	2,342181	-1,85	0,065
Society to Dissident Fear	28,49071	10,04412	2,84	0,005
Society to Dissident Trust	-5,06235	3,712736	-1,36	0,173
Society to Dissident Disgust	Dropped			
Society to Government Anger	0,00629	0,700256	0,01	0,993
Society to Government Fear	11,86902	4,2934	2,76	0,006
Society to Government Trust	-0,78618	1,096972	-0,72	0,474
Society to Government Disgust	7,303007	6,225772	1,17	0,241
_cons	-123,235	21,37083	-5,77	0
MA	0,619732	0,069555	8,91	0
ARCH	1,137012	0,563449	2,02	0,044

In Figure 5, we display the substantive effects computed for societal fear and anger directed toward dissidents on dissident hostility in Egypt and the Philippines. The results suggest very consistent impacts, giving us greater confidence in the possible generalizability

of these results to other cases. In the Philippines, as societal expressions of fear toward dissidents moves from 0 to -20 (the maximum), dissident hostility increases by more than 700 on a scale of -1698 to 0, with a mean of -206 and a standard deviation of 239. That result is more than two standard deviations above the mean. Similarly, in Egypt, as societal expressions of fear toward dissidents move from 0 to -15 (the maximum), dissident hostility increases by almost 500 on a scale of -2700 to 0, with a mean of -118 and a standard deviation of 354. That result is more than one standard deviation above the mean change. The figures also show similarities with respect to slight decreases in dissident violence that result from increases in societal anger.

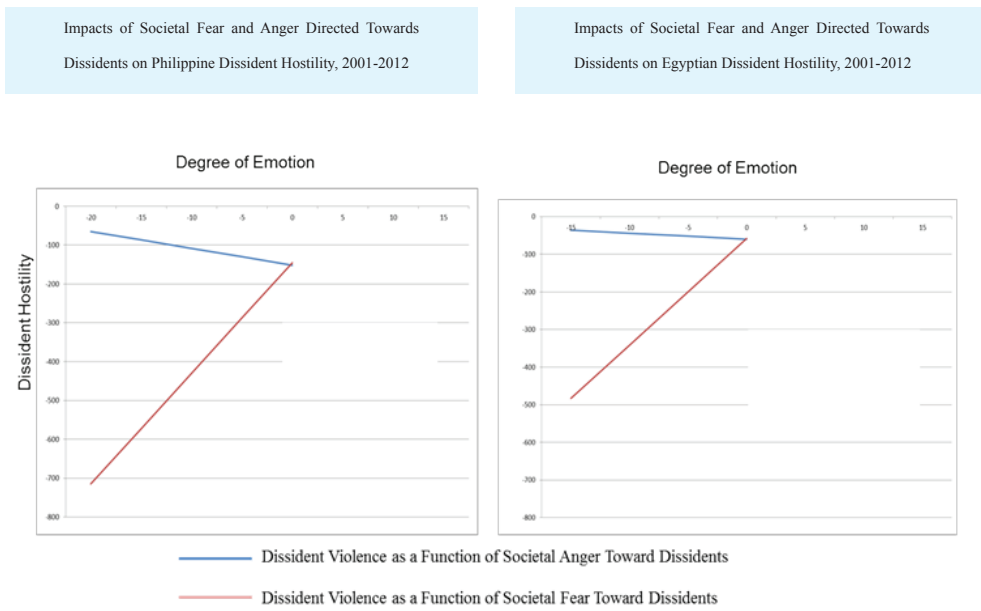


Figure 5: Impact Assessments of Fear and Anger on Dissident Hostility in the Philippines and Egypt, 2001-2012

6.3. Endogenous relationships

It could be the case that fear is not perpetuating hostility but that hostility is perpetuating fear. Much the same could be said for anger and disgust and how they are evoked by different types of behaviors. As part of a US Air Force Research Lab project, we tested for reverse causation and found that neither government nor dissident hostility levels influenced societal expressions of fear, disgust, or trust. However, expressions of anger were influenced by hostility levels. Perhaps we need to disaggregate hostility into violent tactics and nonviolent tactics, and further divide violent tactics into attacks on civilians and attacks on state authorities. More-nuanced measures might better explain the variation in emotionally charged sentiments. That said, knowing that the aggregate variables do not exhibit endogenous correlations within time-series statistical models lends additional credence to our uni-directional study and findings.

7. Summary and Conclusions

Political scientists view political conflict as resulting from a series of strategic interactions between groups and individuals. Psychologists highlight different factors in political conflicts, such as endorsements and condemnations, the public's attitude toward its leaders, the conflict's impact on policy, and decisions to engage in armed conflict. This project combines these two approaches to examine hypotheses relating to the effects that different emotional impulses have on government and dissident decisions to escalate or de-escalate their use of hostility and violence. Across the two different cases examined—the democratic Philippines and authoritative Egypt—we found consistent evidence that intense societal fear of dissidents and societal disgust toward the government were associated with increases in dissident hostility. Conversely, societal anger toward dissidents was associated with a reduction in dissident hostility.

However, there were noticeable differences between the two regimes. The democratic Philippines appears to view negative social attitudes toward dissidents, principally anger, as a pretext to justify cracking down on dissidents through escalating repression. It eased up on its repression in such cases where society began to fear the government or display disgust toward it. A democratic government's reflexive recoil from societal anger and disgust makes sense to the extent that democratic leaders require the support of the people to attain or retain political office. Conversely, the authoritative Egyptian government reacted to similar forms of disgust by intensifying its repression of society, displaying a need to achieve population submission lest the people rise up in opposition.

The results reported in this article, while tempered by the limited set of cases examined, suggest the importance of continued efforts to uncover the mechanisms by which governments and opposition movements generate various emotional impulses, and, in turn, how these emotions affect the decision calculus of their opponents. The data discussed here could be further disaggregated to examine particular groups in the Philippines, such as the Abu Sayyaf, the Moro Islamic Liberation Front, and the New People's Army. One could also explore how emotions affect levels of cooperation among a wider variety of actors. One could further investigate endogenous relationships, such as the influence that behavior has on societal emotions. Shedding additional light on these relationships, and the contexts and boundary conditions (i.e., regime type) under which they apply, would help the research community better anticipate how these factors can serve to escalate or de-escalate violence and hostility.

Bibliography

- Ajzen, Icek. *Attitudes, Personality, and Behavior*. Chicago: Dorsey Press, 1988.
- Bond, Doug, Craig Jenkins, and Kurt Schock. "Mapping Mass Political Conflict and Civil Society: Issues and Prospects for the Automated Development of Event Data." *Journal of Conflict Resolution* 41 (1997): 553-579.
- Cottrell, Catherine A. and Steven L. Neuberg. "Different Emotional Reactions to Different Groups: a Sociofunctional Threat-based Approach to "Prejudice"." *Journal of Personality and Social Psychology* 88 (5) (2005): 770-789.
- Ekman, P. "An Argument for Basic Emotions." *Cognition and Emotion* 6 (3-4) (1992): 169-200.
- Esty, Daniel C., Jack Goldstone, Ted Robert Gurr, Pamela Surko, and Alan N. Unger. *Working Papers: State Failure Task Force Report*. McLean, VA: Science Applications International Corporation, 1995. Accessed June 8, 2009. http://www.allacademic.com/meta/p312200_index.html.
- Esty, Daniel C., Jack Goldstone, Ted Robert Gurr, Barbara Harff, Marc Levy, Geoffrey D. Dabelko, Pamela T. Surko, and Alan N. Unger. *The State Failure Task Force Report: Phase II Findings*. McLean, VA: Science Applications

- International Corporation, 1998. Accessed June 8, 2009. <http://globalpolicy.gmu.edu/pitf/SFTF%20Phase%20II%20Report.pdf>.
- Kuppens, Peter, Iven Van Mechelen, Dirk J.M. Smits, Paul De Boeck. "The Appraisal Basis of Anger: Specificity, Necessity and Sufficiency of Components." *Emotion* 3 (3) (2003): 254-269.
- Lake, David H. and Powell, Robert. "International Relations: A Strategic-Choice Approach." In *Strategic Choice and International Relations*, edited by David H. Lake and Robert Powell. Princeton, NJ: Princeton University Press, 1999.
- Lerner, Jennifer S. and Keltner, Dacher. "Fear, Anger, and Risk." *Journal of Personality and Social Psychology* 81(1) (2001): 146-159.
- Matsumoto, David, Hyisung C. Hwang and Mark G. Frank. "Emotional Language and Political Aggression." *Journal of Language and Social Psychology* XX (X) (2013):1-17. Accessed May 8, 2013. DOI: 10.1177/0261927X12474654
- O'Brien, Sean P. "Anticipating the Good, the Bad, and the Ugly: An Early Warning Approach to Conflict and Instability Analysis." *Journal of Conflict Resolution* 46 (2002): 791-811.
- Petraeus, David H., and James F. Amos. *U.S. Army/U. S. Marine Corps Counterinsurgency Field Manual*. Chicago: University of Chicago Press, 2007.
- Plutchik, Robert. *Emotion, a Psychoevolutionary Synthesis*. New York: Harper and Row, 1980.
- Schrodt, Philip A., and Deborah J. Gerner. "Empirical Indicators of Crisis Phase in the Middle East, 1979–1995." *Journal of Conflict Resolution* 41 (1997): 529-552.
- Schrodt, Philip A., Shannon G. Davis, and Judith L. Weddle. "Political Science: KEDS—A Program for Machine Coding Events Data." *Social Science Computer Review* 12 (3) (1994): 561-88.
- Shellman, Stephen M. "Leaders and Their Motivations: Explaining Government-Dissident Conflict-Cooperation Processes." *Conflict Management & Peace Science* 23 (1) (2006a): 73-90.
- Shellman, Stephen M. "Process Matters: Conflict and Cooperation in Sequential Government-Dissident Interactions." *Security Studies* 15 (4) (2006b): 563-599.
- Shellman, Stephen M. *Taking Turns: A Theory and Model of Government-Dissident Interactions*. Saarbrücken: VDM Verlag, 2010.
- Shellman, Stephen M., Clare J. Hatfield, and Maggie J. Mills. "Disaggregating Actors in Intrastate Conflict." *Journal of Peace Research* 47 (1) (2010): 83-90.
- Shellman, Stephen M., Brian P. Levey, and Joseph K. Young. "Shifting Sands: Predicting Phase Shifts by Dissident Organizations." *Journal of Peace Research* 50 (3) (2013): 319-336, DOI:10.1177/0022343312474013.
- Singer, J. David and Melvin Small. *The Wages of War, 1816-1965: A Statistical Handbook*. New York: John Wiley and Sons, 1972.
- Wallensteen, Peter and Margareta Sollenberg. "Armed Conflict 1989-98." *Journal of Peace Research* 36 (5) (1999): 593-606.
- Wilkenfeld, Jonathan, Michael Brecher, and Sheila Moser. *Crises in the Twentieth Century: Handbook of Foreign Policy Crises*. Oxford, England: Pergamon Press, 1988.

A Pilot Study of Quantifying Turkey's Foreign Affairs: Data Generation, Challenges, and Preliminary Analysis

Musa Tüzüner

Center for Foreign Policy and Peace Research

Gonca Biltekin

Bilkent University

Abstract

This paper provides a simple introduction to event data analysis, a quantitative data collection and analysis approach that has been used extensively for compiling broad datasets of foreign policy and other international behaviors. The authors define the steps undertaken in creating the Turkish Foreign Affairs Event Dataset (TFAED). This pilot study, which uses a single news source and covers a 23-year period (1990-2013) of foreign affairs in Turkey, was completed to evaluate the feasibility, time, cost, and possible problems that might be encountered with a full-scope study. The paper describes the obstacles encountered during the pilot study's initial phases and discusses a sample of the preliminary findings. The paper concludes with potential uses of the dataset.

Keywords: Turkish foreign policy, Event data, Turkish foreign affairs, Quantitative methods

1. Introduction

In recent years, there has been growing debate about the nature of the evolution of Turkish foreign policy and whether it constitutes dramatic new changes. Despite numerous research inquiries, primarily of a qualitative nature, there remain few firm, consensus-based answers to pivotal questions about Turkish foreign policy, such as its current ideological and physical direction, the nature and type of its main actors, and its primary motivations. Such questions may be addressed by examining Turkish foreign policy and its presumed newness with methods and tools (including previously neglected quantitative ones) that would enable us to look at the subject matter in a more longitudinal and holistic manner and provide opportunities for broad comparative analyses. The idea for creating the Turkish Foreign Affairs Event Dataset (TFAED) by using event data analysis arose out of such observations and concerns.

The TFAED project employs event data analysis to build up a 23-year dataset (1991-2012) of Turkish foreign affairs. Using this dataset, the project will then hypothesize on various primary inquiries about the subject matter, for example, the axis-shift debate, the zero-problems-with-neighbours policy, the role of non-state actors in Turkey's foreign affairs, and Turkish-Israeli relations. By focusing on these issues and many more, the project is hoping to identify new behavioral patterns, emerging new actors, and the dynamics of new directional tendencies in Turkish foreign policy. With further analyses of such characteristics,

* Musa Tüzüner, PhD, Research Fellow, Center for Foreign Policy and Peace Research. Email: mtuzuner@kent.edu. Gonca Biltekin, PhD Candidate, Bilkent University. Email: goncabi@bilkent.edu.tr.

it also seeks to identify possible structural elements in Turkish foreign policy that can be utilized for homegrown conceptualization efforts.

In the following sections, we provide a simple introduction to gathering event data and define the steps already undertaken in building TFAED. We completed a pilot study that uses a single news source to evaluate the feasibility, time, cost, and possible problems that might be encountered in a full-scope study. In the second part, we discuss the obstacles encountered during the initial phases. We then provide a sample of the preliminary findings that arose out of this pilot study.

2. Building TFAED

Event-data research has a long history in several academic disciplines,¹ and has been used extensively in international relations research. The approach first saw a rapid growth in the 1960s and 1970s, with pioneering projects such as the World Event/Interaction Survey (WEIS)² and the creation of the Conflict and Peace Data Bank (COPDAB).³ Both of these efforts aggregated individual events by converting them into a measure of cooperation or conflict.

With the introduction of machine-coding programs in the 1990s, the time and workforce needed for comprehensive datasets have been significantly reduced. The earliest such software program was the Kansas Event Data System (KEDS),⁴ which helped spawn Text Analysis by Augmenting Replacement Instructions (TABARI)⁵, VRA-Reader, and Java-based Text Analysis by Augmenting Replacement Instructions (JABARI).⁶ All of these programs provide relatively easy ways of extracting data from international wire news sources by coding the lead sentences in press releases.

Past major event-data projects on political or security issues have covered a wide range of events, from those at the global level (e.g., COPDAB, WEIS, Integrated Data for Event Analysis (IDEA)⁷, Protocol for the Analysis of Nonviolent Direct Action (PANDA),⁸ and the more-recent Global Data on Events, Location and Tone (GDELT))⁹ to those focused on particular regions (e.g., the Intranational Political Interactions (IPI) Project¹⁰ and the

¹ A long tradition of such research exists in history and sociology, with the latter including a particularly rich literature on collective action and social movements (reviewed in R. Franzosi, "The Press as a Source of Sociohistorical Data," *Historical Methods* 20, no. 1 (1987): 5-16; D. Rucht, R. Koopmans, F. Neidhardt, eds., *Acts of Dissent* (New York: Rowman & Littlefield, 1999); S. Olzak, "Analysis of Events in Studies of Collective Actions," *Annual Review of Sociology* 15 (1989): 119-141.

² Charles A. McClelland, *World Event/Interaction Survey (WEIS) 1966-1978* (ICPSR5211) (Ann Arbor, Michigan: Inter-University Consortium for Political and Social Research, 1978).

³ Edward E. Azar, "The Conflict and Peace Data Bank (COPDAB) Project," *The Journal of Conflict Resolution* 24, no. 1 (1980): 143-152.

⁴ Philip A. Schrodt, Shannon G. Davis, and Judy L. Weddle, "Political Science: KEDS - A Program for the Machine Coding of Event Data," *Social Science Computer Review* 12, no. 3 (1994): 561-588.

⁵ Phillip A. Schrodt, TABARI Textual Analysis by Augmented Replacement Instructions Version 0.8.4 Manual available at <http://eventdata.psu.edu/tabari.dir/tabari.manual.0.8.4b1.pdf>.

⁶ See Virtual Reserach Associates' website (<http://vranet.com/>) for more information on VRA-Reader. JABARI, a proprietary work of the Lockheed Martin Advanced Technology Laboratories, is based on TABARI. See Philip A. Schrodt and David Van Brackle, "Automated Coding of Political Event Data" in *Handbook of Computational Approaches to Counterterrorism*, ed. V.S. Subrahmanian, 2013, 23-49, Springer Science and Business Media, NY.

⁷ Doug Bond et al., "Integrated Data for Events Analysis (IDEA): An Event Typology for Automated Events Data Development," *Journal of Peace Research* 40, no. 6 (2003): 733-745.

⁸ Doug Bond and Joe Bond, 1995. *Panda Codebook*. Cambridge, MA: The Program on Nonviolent Sanctions and Cultural Survival, Weatherhead Center for International Affairs, Harvard University.

⁹ Kalev Leetaru and Philip A. Schrodt "GDELT: Global Data on Events, Location and Tone, 1979-2012" (paper presented at the annual International Studies Association convention, San Francisco, April 3-6, 2013).

¹⁰ David R. Davis, Brett Ashley Leeds, and Will H. Moore, "Measuring Dissident and State Behaviour: The Intranational Political Interactions (IPI) Project" (paper presented at the Workshop on Cross-National Data Collection, Texas A&M University, November 21, 1998).

European Protest and Coercion dataset).¹¹ Other datasets have been created to cover more-focused types of events, such as global terrorism (e.g., the International Terrorism: Attributes of Terrorist Events dataset (ITERATE)¹² and the Terrorism Knowledge Base (TKB))¹³ as well as domestic or regional terrorism (e.g., the Terrorism in Western Europe dataset (TWEED)¹⁴ and PCSTERROR (Project Civil Strife-Terror)).¹⁵

When we look at event-data studies in general, we observe that some event data concerning Turkey has been gathered (see the KEDS¹⁶ and VRA websites), usually as part of region-specific studies that generally focus on conflicts. For example, when the KEDS project gathered data about conflicts in the Balkans, data about Turkey's Kurdish conflict were also coded. As part of the same project, a dataset about Turkey was established¹⁷ focusing on conflicts between domestic actors.¹⁸

Event-data studies at Harvard University have also been dominated by a focus on conflict; a study profiling conflict zones around the world used data about Turkey, Afghanistan, and Libya.¹⁹

While the above datasets provide some information, there is no event dataset specifically designed for understanding Turkey's foreign relations, neither in Turkey nor abroad.

2.1. Preparations

Once Aydınlı and Tüzüner's idea of quantifying Turkish foreign policy behavior evolved into a project to build a dataset, the first thing to do was to recruit research assistants and assemble the work team. This task was the hardest part of the project. We determined that we needed a team of three to four research assistants to begin the project. The project is expected to last three to four years, so we planned to gradually double the number of recruits, because over time, we expected that some would move on to other things such as relocating to a different city, acquiring a new job, studying abroad, etc.

Because there have been no similar studies in Turkish universities, research assistants interested in this study were hard to find. Most Turkish graduate students familiar with the event-data method (and there were few) had pursued their Master's degree abroad and worked under supervisors there. Because it would be difficult to work with students overseas, we

¹¹ Ronald A. Francisco "The Relationship between Coercion and Protest: An Empirical Evaluation in Three Coercive States" *The Journal of Conflict Resolution*, Vol. 39, no. 2 (1995): 263-282. See <http://www.nsd.uib.no/macrodataloguide/set.html?id=52&sub=1> for entire dataset. See also Llewellyn D. Howell and Gillian Barnes, "Event Data for Region-Specific Interactions: A Research Note on Source Coverage," in *International Event-Data Developments: DDIR Phase II*, eds. R. L. Merritt, R. G. Muncaster, and D. A. Zinnes (Ann Arbor: The University of Michigan Press, 1993), 45-54.

¹² See the ITERATE Webpage at Duke University: <http://library.duke.edu/data/collections/iterate.html>.

¹³ Brian K. Houghton "Terrorism Knowledge Base: A Eulogy (2004-2008)" *Perspectives on Terrorism* 2, no. 7 (2008): 18-19.

¹⁴ Jan Oskar Engene, "Five Decades of Terrorism in Europe: The TWEED Dataset," *Journal of Peace Research* 44, no. 1 (2007): 109-12

¹⁵ S. M. Shellman, "Quantifying Violence and Nonviolence: Terrorism & Political Violence Events Data Sets," *Electronic Newsletter of the ECPD-SG on Extremism & Democracy* 9, no. 2 (2008), accessed August 19, 2011, http://www.tufts.edu/~dart01/extremismanddemocracy/newsletter/Article7_4.html.

¹⁶ See the Pennsylvania State University Event Data Project website at <http://eventdata.psu.edu/index.html>. The KEDS project moved to PSU in January 2010.

¹⁷ Ömür Yılmaz, "Turkey Data Set," accessed August 19, 2011, <http://web.ku.edu/~keds/data.html>. (The Turkey Data Set covers Turkey for the period January 3, 1992 to July 31, 2006 using the CAMEO coding scheme. It is based on Agence France Presse reports.)

¹⁸ Ömür Yılmaz, "The Kurdish Insurgency in Turkey: Pre- and Post-Ocalan" (paper presented at the annual meeting of the International Studies Association 48th Annual Convention, Chicago, 28 February 2007), accessed August 19, 2011, http://www.allacademic.com/meta/p179221_index.html; Ömür Yılmaz, "Turkish Military: the Key to Credible Commitment to Democracy" (paper presented at the annual meeting of the International Studies Association, San Diego, California, March 22, 2006), accessed August 19, 2011, http://www.allacademic.com/meta/p100868_index.html.

¹⁹ D. Bond and W. B. Voegelé, "Profiles of International Hotspots" (unpublished manuscript, 1995), Center for International Affairs, Harvard University, accessed August 19, 2011, <http://vranet.com/papers.html>.

wanted to find ones residing in Turkey. However, because creating datasets is not something most Turkish students are aware of, we had to show them what it entailed, and choose those who were truly interested. The first assistants were recruited through sharing this idea of building up a dataset on Turkey with other academics and grad students. It has been two years since we recruited the first two research assistants, and since then we have been able to recruit six more. Some have already begun project work, and the rest will soon follow.

Before building a dataset in the event-data method, the researcher should decide whether he or she will employ human coding or machine coding. For the purposes of this study, we used machine coding (Schrodt's free-access TABARI (Version 8.4b1)) because it is less costly and less time consuming than human coding.

The next task for the researcher is to decide on the news source for the raw/textual data. Previous event datasets have been generated using *The New York Times* (WEIS), Reuters (IDEA and KEDS), and Agence France Presse (AFP) (CAMEO-Levant Dataset).²⁰ For two reasons, we decided to use AFP for this project. The first reason relates to some limitations that TABARI has: it can only parse English-language text and necessitates a certain format for text input, which can only be generated using additional formatting programs prior to coding. While the formatting programs are not complex, programming expertise is required to create them from scratch. Currently, free-access formatting programs for text by AFP are provided by Schrodt's team at Pennsylvania State University's Event Data Project Website (downloadable from the LexisNexis database (<https://www.lexisnexis.com/hottopics/lnacademic/>)) and for text by Reuters from Factiva (<http://global.factiva.com/sb/default.aspx?lnep=hp>). However, several of our attempts to download Reuters news text from the Factiva database failed, probably due to Factiva's recent decision to provide .html links instead of the actual text. This situation rendered Reuters news text unavailable to us for reformatting and thus, for coding by TABARI.

The second reason we chose AFP was because trials with Reuters and AFP showed that AFP focuses more on political events and Reuters mainly reports events relevant to business and economics.²¹ For example, in the United States International Intelligence Behavior Dataset (USIIB)²² project, the authors compared reports on intelligence from Reuters and AFP between January 1, 2009 and December 31, 2009 and showed that AFP provided more news reports than Reuters, irrespective of the search term used.

We also considered using news reports from Anadolu Agency (AA), which is Turkey's official news agency. It provides English-language reports and it might have been efficient for extracting Turkey-related news, but no reformatting program exists for its reports. Moreover, although AA was established in the 1920s, it only began posting online news reports in October 2009. In our contact with AA authorities, we found that there is an ongoing attempt to create online databases for all AA archives, but that has not yet been achieved.²³ While we chose to use AFP for the pilot study, we will create reformatting programs for news reports from other sources, including AA, when we implement the full-scale project. Figure 1 shows the usual format of AFP news reports.

²⁰ For a full Levant dataset see the PSU Event Data Project at <http://eventdata.psu.edu/data.dir/levant.html>.

²¹ Philip A. Schrodt and Deborah J. Gerner, *Analyzing International Event Data (2001/2012)*: 23-24, <http://eventdata.psu.edu/papers.dir/automated.html>.

²² Ersel Aydinli and Musa Tuzuner, "Quantifying intelligence cooperation: The United States International Intelligence Behavior (USIIB) dataset" *Journal of Peace Research* 48, no. 5 (2011): 673-682.

²³ Hüseyin Köşger, Anadolu Agency Foreign News Assistant Editor, June 8, 2012.

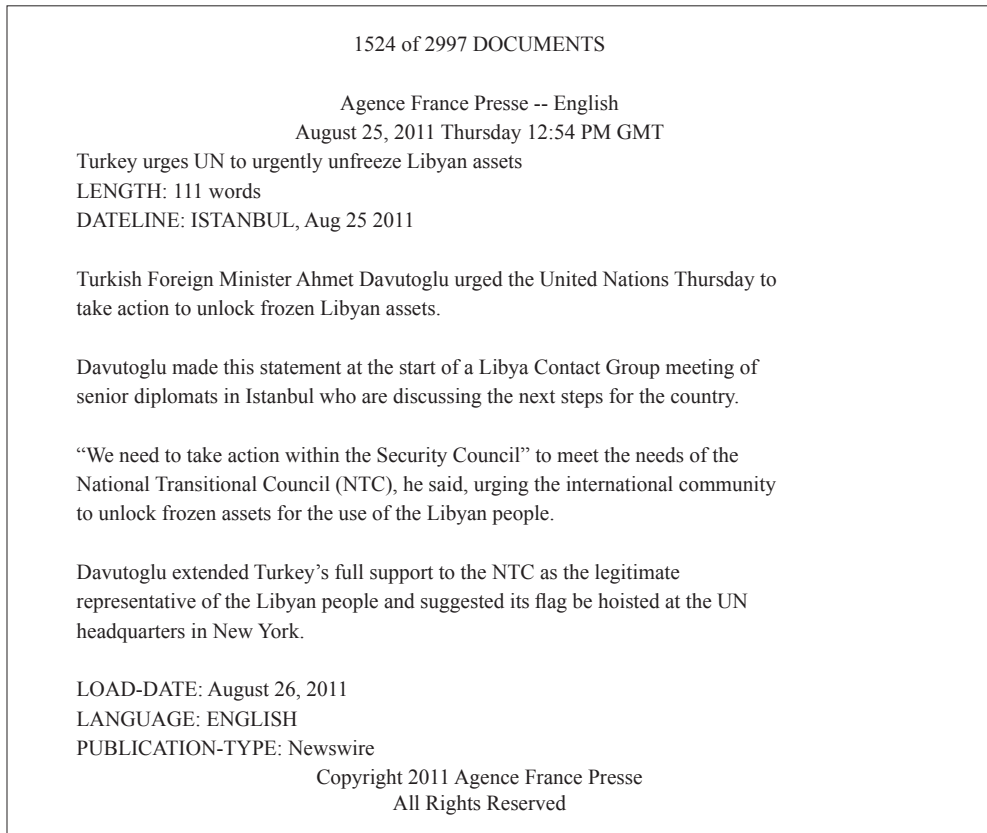


Figure 1: AFP News Report, Unformatted

In the following section, we define the steps to build TFAED, which consist of developing actor lists and search terms to find relevant news reports, downloading relevant news and transforming it into machine-readable forms, and last, coding in terms of actors, events, and target actors according to pre-established standards.

2.2. Developing actor lists

To begin building the dataset, we needed to determine all state and non-state actors in Turkey. For this phase we had two assistants. One focused on government actors and the other on non-government actors. They determined which actors were active between 1999 and 2010 by studying websites of government organizations, newspapers, and official documents, and compiled a list of over 200 actors. The actor lists were then reassessed by three other assistants to improve methodological validity. At that point, we expanded the timespan from 1990 to 2012, to keep the dataset current. Compiling the actor lists took approximately two months. During that time, Turkey underwent government changes due to the June 2011 elections, which resulted in different people being assigned to certain positions, and several ministries being renamed and restructured. This situation necessitated updating some actor names.

2.3. Developing key search terms

Once the actors were determined, the next step was to establish key search terms that

would enable us to find relevant news about the actors cited in AFP through the LexisNexis database. The two assistants were given brief training in the database and in developing key search terms. Next, they learned how to search the database and began to work intensively to find news about the actors they were responsible for. After four months of scanning the news between 1990 and 2012, the assistants had developed a list of key search terms for government and non-government actors.

The phrases used in news reports to denote an actor are usually different from that person's official title. For example, in the AFP reports for the Prime Minister of the Republic of Turkey, the following phrases (and more) are used: Turkish PM, Turkey's PM, Turkey PM, Turkish Premier, The Turkish and Iraqi premiers, Turkey's Poet Premier, Turkey's Prime Minister, Turkish Prime Minister. Moreover, there are recurrent spelling mistakes, such as Tukey's Prime Minister, Turkish Prime Mininster, and Turkey's Premiere. All phrases, including the typos, have been tagged to an actor.

2.4. Downloading AFP news reports

To determine the appropriate search terms, we made several inquiries in the LexisNexis Academic database through the different options available in its Advanced Search. For example, the term "Turk!" searches for all words that begin with "Turk" (without the exclamation point, only news items that mention "Turk" as a whole word would be returned, not, for example, "Turkish" or "Turkey"). When the news source is selected as "Agence France Presse," the section search determined as "LEAD," and the date specified as "between 1 Dec, 2012 to 31 Dec 2012," the query returns 458 news reports. These also include, however, news reports about the city of Turku in Finland, Turkana herdsmen in Kenya, Saudi Arabian writer Ahmed Turki, former Slovenian President Danilo Turk, the Turkmen people in Iraq, and Turkmenistan. While all these actors can be given a proper code in the TABARI coding process, downloading news reports irrelevant to a particular project should be avoided to conserve time and memory space. For the full-scale project, therefore, we will use separate search strings for each actor; but for the pilot study we decided to use a single search string. After several trials, we determined the following search line to be the most efficient: "Turkey OR Turkish OR Turk OR Istanbul OR Ankara OR İzmir."

Once the search line was determined, we chose Advanced Search and selected Agence France Presse as the news source. We did not determine a section search to ensure that every report that included the search terms would be returned. LexisNexis does not show full results for queries that bring more than 3,000 news reports. To restrict the results to under 3,000 for each query, we entered date specifications consisting of three- to six-month periods from January 1, 1990 to December 31, 2012. LexisNexis allows for 500 news reports at most in a single document for download. For each period, among the options available, we downloaded the news reports found through search terms in text format and full document view.

Because sports stories use words such as "attack, defensive, fight," etc., TABARI mistakes them for reports of conventional violence. The reformatting program, however, recognizes certain sports terms (e.g., "basketball" or "football") and automatically eliminates such stories. It also eliminates news summaries, which are repetitions of the previous week's news reports.

2.5. Reformatting news reports

We saved all documents in a single folder. To reformat them, we also put the following three programs in that folder: NewNexisFormat.pl, nexisreverse.pl and LNAFP.seqsort.pl.²⁴ In the Terminal (for Mac) or Command Prompt (for Windows), we located that folder. The Nexis downloads have a file name in the form “Agence_France_Presse_-English2012-09-14_16-31.TXT,” so we enter the command “ls Agence_Fr* > format.files” to generate a list of all documents beginning with “Agence_Fr.” Then we enter the command “perl NewNexisFormat.pl TFP” to chop each downloaded document into separate paragraphs, excluding paragraphs that begin with quotation marks. The news story in the previous example is thus transformed into the format shown in Figure 2.

<p>110825 AFPN-0018-01 ISTANBUL, Aug 25 2011 Turkish Foreign Minister Ahmet Davutoglu urged the United Nations Thursday to take action to unlock frozen Libyan assets.</p> <p>110825 AFPN-0018-02 ISTANBUL, Aug 25 2011 Davutoglu made this statement at the start of a Libya Contact Group meeting of senior diplomats in Istanbul who are discussing the next steps for the country.</p> <p>110825 AFPN-0018-03 ISTANBUL, Aug 25 2011 Davutoglu extended Turkey's full support to the NTC as the legitimate representative of the Libyan people and suggested its flag be hoisted at the UN headquarters in New York.</p>
--

Figure 2: Formatted News Report

The program then gives each paragraph a tag line, as in Figure 3.

(Date) (News Source)-(Number Of Report)-(Number Of Paragraph) (Place), (Month Day Year)

Figure 3: Paragraph tag line

At this phase, the program runs with the dates and headlines of the various stories scrolling past as they are processed. If there is a format problem in the original downloaded document, the program stops working. For example, the program assumes that the story begins two lines after a line containing “DATELINE.” This word is present in most but not all downloads. With an extensive search, we determined that various news stories in the late 1990s do not contain it, so we manually entered the dateline in the proper place. In another instance, although the stories included a dateline, several news reports about Turkey from July 1996 to January 1997 were not filtered by the reformatting program. We also found out that the program assumes that the first line in each news report is “Agence France Presse –English.” In the aforementioned period, AFP decided to change this heading to “Agence France Presse” only. To thus ensure we were finding all applicable news stories, we opened the file in a word processor (easy to do because the downloaded reports are simple text documents), found all mentions of “Agence France Presse” and replaced them with “Agence France Presse –English” so that all reports would have the same first line. By doing this, we found 2,088 additional stories.

No AFP news articles about Turkey exist in LexisNexis before April 1991, and for reasons not known to us, there are no AFP news reports about any country for February 1992, March 1992, August 1992, or October 1995. Because these are missing in the original news source,

²⁴ All three reformatting programs can be found on the PSU Event Data Project website.

they cannot be retrieved through AFP. In our full-scope project, we may be able to find news items for these dates through other sources.

After chopping with `NewNexisFormat.pl`, a filelist of the newly generated files is created with the `"ls TFP* > filelist"` command. The command `"perl nexisreverse.pl"` is entered so that only the first paragraph of a story is retrieved (i.e., with the "number of paragraph" in the story's tagline as "-01"). The resulting TABARI input sentences are then united in a single file called "reverse.output." At this point, the separate paragraphs (records) are usually not ordered chronologically so we enter the command `"perl LNAFP.seqsort.pl reverse.output"` to sort the records if they are out of order. The sorted output is placed in a file named "seqsort.reverse.output," however, this last program still puts records of stories from the 2000s at the beginning of the document, followed by stories from the 1990s.

```
110825 AFPN-0014-01
Hardened fighters stream into Tripoli as Libya's rebels try to deliver a
knockout punch to Moamer Kadhafi's remaining forces and to flush out the
strongman, dead or alive.

110825 AFPN-0015-01
Turkish Foreign Minister Ahmet Davutoglu urged the United Nations Thursday to
take action to unlock frozen Libyan assets.

110825 AFPN-0016-01
Silvio Berlusconi on Thursday met the head of Libya's rebel National
Transitional Council for talks aimed at securing Italian business interests
in post-conflict Libya.
```

Figure 4: Formatted AFP News Leads

After the formatting, the news reports are reduced to the format shown in Figure 4.

In total, 91,542 news reports between April 27, 1991 and December 31, 2012 were reshaped into the above format. Almost half of these reshaped records do not contain actors from Turkey because the mentions of Turkey are in later paragraphs, which were cut out in the filtering process. To avoid reports of the same event, we chose to code only the first paragraph of each story instead of using full-text coding.

2.6. Updating CAMEO project dictionaries

TABARI recognizes sentence structures in the subject-verb-object form using dictionaries for those parts of speech, as well as for adjectives. It then determines whether each element of a sentence is an actor or event, and codes it accordingly.

Because CAMEO dictionaries were originally generated for scanning all global actors, its actor dictionary does contain terms for Turkey's actors, but they are limited in number and differentiation for the purposes of our study. The scope of a dictionary is determined by each researcher's focus, thus we are adding to CAMEO's actor dictionary to ensure TABARI will recognize all actors from Turkey. Table 1 compares previously generated datasets and TFAED.

Table 1- Comparison of Dictionaries Used by Other Datasets

	LEVANT DATASET	OMUR YILMAZ'S TURKEY DATASET	TFA DATASET
TIME FRAME	Apr 1979-to Nov 2011	Jan 1992 to Jul 2006	Apr 1991 to Dec 2012
TOTAL ACTORS	6099 lines	3950 lines	43125 lines
TURKISH ACTORS	59 Lines	564 lines	6012 lines
TOTAL VERBS	15787	N/A	17675
TOTAL NOUNS	820 nouns	280 nouns	2254 nouns
TOTAL ADJECTIVES	114 adjectives	50 adjectives	324 adjectives, 328 agents
TURKISH ACTOR CODES	12 codes	49 codes	405 codes

For actor dictionaries, extensions are made by adding command lines for additional phrases to be coded as TUR***. We coded most phrases that begin with “Turkey’s...” and “Turkish...” according to their roles, rather than simply as “TUR.” This method allows us to differentiate between actors. For example, CAMEO originally coded the phrase “A boy of Turkish origin” as “TUR,” a code which it also gives to “Turkey’s artists” and “Turkish officials.” In our expansion of the actor dictionary, “A boy of Turkish origin” is coded as “TRK” (ethnically Turkish); “Turkey’s artists” are coded as “TURCUL” (cultural actors from Turkey); and “Turkish officials” as “TURGOV” (Government of Turkey). We also established different codes for government agencies, ministries, associations and foundations, armed rebel groups, opposition parties, civilians, ethnic and religious groups, Turkish cities, and different branches of the military.

Because this study focuses on actors from Turkey or people of Turkish origin in other countries (both as targets and sources), we used new specific codes for all actors from Turkey. For all other individuals, countries, and organizations, we retained the original CAMEO codes. For transnational actors affiliated with Turkey, however, we used a different scheme. Individuals, businesses, vessels with Turkish nationality, multinational corporations whose headquarters are in Turkey, non-governmental transnational movements or organizations that originated in Turkey, Turkish branches of non-governmental organizations, members of ethnic or religious groups who are Turkish nationals, and refugees from other countries who have settled in Turkey are all coded as actors from Turkey, hence their respective codes begin with “TUR”. Their codes differentiate at the second tier; rather than assigning “NGO” to all non-governmental actors, these organizations are further differentiated by their type: “ASS” if an association, “FOU” if a foundation, “AID” if a relief agency, “RES” if a think tank or research group, “MED” if private media, “CVL” if a non-affiliated individual, etc. We also coded each Turkish city separately.

For governmental actors, we differentiated between president, prime minister, and individual ministries, as well as between state-owned enterprises and media. Political parties in office or that take part in the government are coded using their Turkish initials as the last three letters, for example, the Justice and Development Party is “TURGOVAKP” and the Democratic Left Party is “TURGOVDSP”. Opposition parties are coded as “TUROPPMHP” (Nationalist Movement Party), “TUROPPDYP” (True Path Party), etc. In the actor dictionary, for phrases that denote political parties, separate codes are given for different time frames. For example, when “Democratic Left Party” appears in the record, TABARI looks at the date of the event to determine whether it should assign the event as “TURGOVDSP” or

TUROPPDSP.” “TURGOV” is only retained for general phrases, such as “Turkish officials” or “Turkish authorities,” which are created automatically from our agent file (see next paragraph).

Table 2- Comparison of Codes

PHRASE	TFAED CODE	CAMEO CODE
TURKISH_RED_CRESCENT	[TURAID]	[NGOTUR]
TURKISH_GOVERNMENT	...[TURGOVDSP/TURGOVANP/ TURGOVMHP < 980529- 021101] [TURGOVAKP >021102]	[TURGOV]

We expanded CAMEO’s verb dictionary to include over 2,000 new patterns and updated the verb codes to comply with the newest CAMEO Codebook standard.²⁵ We also generated an agent’s file, which is composed of generic nouns like “police,” “student,” “woman,” etc., with each noun corresponding to a code. When TABARI finds an “agent” adjacent to an actor in a news report it combines both codes to specify it. For example, suppose there are codes for “Turkish” (TUR) and “Danish” (DNK) in the actor dictionary and for “police” (COP) in the agent dictionary. If the news report contains the phrase “Danish police and Turkish police will cooperate...” then TABARI codes the actors as DNKCOP and TURCOP respectively, even though the actor dictionary does not contain “Danish police” and “Turkish police.” For this purpose, we scanned the noun codes from previous actor dictionaries and moved the relevant nouns into a separate document. We use our updated version of the CAMEO dictionary to look for nouns that may be useful for constructing an agent dictionary.

2.7. Machine coding lead sentences

After the necessary additions, thousands of reformatted news reports were ready for machine coding. For each input, TABARI generates corresponding event data. In some cases, the input does not contain all the items in the regular event-data format, that is, “who did what to whom and when.” In such cases, no event data is generated from that record. In other cases, however, a single record such as a multilateral meeting contains more than one event datum because all actors are interacting with each other. The final formatting of AFP news before and after TABARI coding is shown in Figure 5.

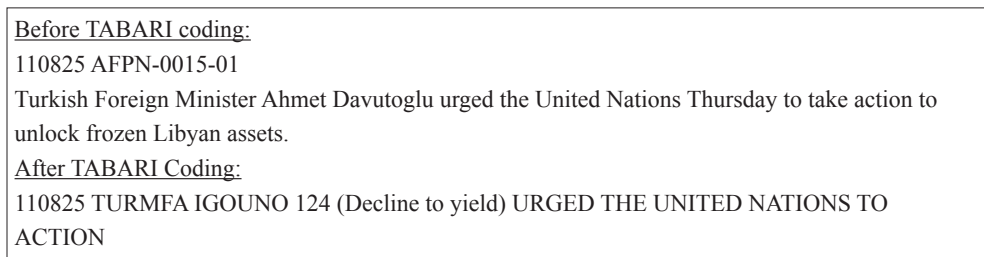


Figure 5. Coded AFP News Lead

²⁵ See Cameocodes Wiki Space, 2009: <http://cameocodes.wikispaces.com>.

After machine coding, manual changes are done to the “raw reports,” that is, those that TABARI failed to read. These errors usually occur either because there are too many verbs (TABARI distinguishes only a given number of verbs at most in a single sentence) or because dictionaries do not contain the relevant terms (for actors, verbs, etc.) With the manual additions, all reports have now been converted into event data.

2.8. Processing event data

To process the resulting event data, we used an open-access R program, specifically, the Events package created by Will Lowe in January 2012.²⁶ This package allows the researcher to aggregate event data in terms of date, source or target type, and event type. It also enables the researcher to create scales by assigning numerical values to each event type or to use pre-established scales such as CAMEO’s or WEIS’s Goldstein scale.²⁷

There are various options for aggregating event data in terms of actor type, and the selection depends on one’s empirical object of study. For bilateral interstate relations, for example, aggregating data in terms of a country’s relations with other countries in a particular region or continent is possible. For intrastate relations, aggregating data in terms of interactions among a country’s domestic actors is possible. The data can also be aggregated in terms of the actor’s initiative, that is, either who initiated the action (source) or who the action is directed at (target). Therefore, for any form of bilateral relationship, there are at least two groups of data: from Actor A to Actor B, and from Actor B to Actor A.

Data can also be aggregated in terms of time and event type.²⁸ For the former, weekly, monthly, quarterly, and yearly aggregations can be made, and for the latter, there are basically two strategies. The first is to assign a number value to each event type, making a scale. The second is to differentiate between cooperative and conflictual events and between verbal and material actions. Then, for each dyad and time frame, the events that correspond to the resulting combinations (namely, “Verbal Conflict,” “Material Conflict,” “Verbal Cooperation,” and “Material Cooperation”) are counted. Other aggregation possibilities also exist, such as grouping event types in terms of content (namely, political, economic, or military).

After the data are aggregated, various visualization options can be considered to display it. Time-series graphs are the most common form of display. In a recent project, a dataset was created that also included actors’ geographical locations, making it possible to display the data in map form.²⁹

3. Problems Encountered

While conducting this pilot study, the research team encountered many challenges. One was institutional indifference, with lack of knowledge and interest great obstacles. Another was finding funding to support the project. Last, finding suitable research assistants that would work for the project’s duration was one of the greatest challenges encountered.

²⁶ “R: A language and environment for statistical computing,” R Foundation for Statistical Computing, <http://www.R-project.org/>; “Events: Store and manipulate event data,” R Project, <http://CRAN.R-project.org/package=events>.

²⁷ Joshua S. Goldstein, “A Conflict-Cooperation Scale for WEIS Events Data,” *Journal of Conflict Resolution* 36 (1992): 369-385

²⁸ James E. Yonamine, “Working with Event Data: A Guide to Aggregation Choices,” (unpublished paper), accessed 25 April, 2013, <http://jayyonamine.com/wp-content/uploads/2012/06/Working-with-Event-Data-A-Guide-to-Aggregation-Choices.pdf>.

²⁹ Leetaru and Schrodt, “GDELT.”

3.1. Institutional indifference

While developing the idea and project of quantifying Turkish foreign policy behavior, we observed that institutions have neither knowledge about nor interest in this subject. For example, we attempted to inform state institutions about the possible benefits of doing research in this area and explained that the analyses drawn from the dataset could contribute enormously to Turkey's policy making, but to no avail. Not only were they uninterested, they made substantial criticisms, arguing that because the dataset was created through news sources, it would include private information and hence be undesirable.

Indifference was not confined to state institutions; there was also a considerable lack of interest in academic circles. During our literature review, we observed that scholars working on Turkish foreign policy have not previously used this method and have generally preferred qualitative methods. Moreover, one academic who *had* used event data in her studies abroad and become quite knowledgeable about it, gave up using it after she came back to Turkey because her research interests changed.

We also encountered problems during our efforts to raise funds for the project through Scientific and Technological Research Council of Turkey (TUBITAK) grants. The main issue was in trying to shape our project to make it fit TUBITAK requirements. The bulk of the work for a project such as TFAED is in the coding process. Because the project is very comprehensive, it requires at least four "assistant researchers" and two "scholarship students" (TUBITAK terminology) to assist overall. Among the complications was TUBITAK's requirement that any scholarship students funded by the project should align their dissertation subject with the project. Including six people as "scholarship students" posed significant problems because it was impossible to find six who were interested in writing their dissertations on Turkish foreign policy and event data. The alternative was to hire a research firm and cover the costs under the expenditure item "service procurement." Unfortunately, this was not possible either because there is no firm in Turkey with the relevant expertise.

Finally, after discussions with TUBITAK, we reached a solution: the project coordinators would recruit and train research assistants who would then be hired under "service procurement." If the project is ultimately accepted by TUBITAK, then at least this personnel problem will have been solved.

3.2. Financial problems

We have also expended considerable effort to procure government support for events and gatherings such as the December 2011 Event Data Workshop, which indirectly benefited the TFAED project. The Turkish government did support this event and granted the necessary permissions and approvals, but the funds were delayed because of bureaucratic obstacles, which in turn delayed organizing the workshop.

3.3. Fleeing assistant

Those who work on our project must be trained in event data methodology. They must also be able to use certain software programs and be skilled in machine coding. Moreover, the project requires long-term commitment (three to four years) and endurance. If there are conflicting interests in the assistant's life, the former may be an issue. The latter is also important; the assistant may find the routine tedious, but he or she should be committed to continue with the project.

In Turkey, social science graduate students are not usually oriented toward quantitative methodology and statistical methods (exceptions are in economics, psychology, and, to a much lesser extent, sociology), nor are they experienced in long-term projects that demand commitment. During the interviews we conducted with potential assistants, some of them flinched and fled after being told about the nature of this project. Moreover, some assistants who had already begun work on the project showed signs of reluctance after they realized that the work would take a long time to complete. Such experiences, however, have helped us develop new ways to explain the project and to train assistants to reduce potential intimidation and flight.

4. Preliminary Findings

In the last decade, Turkey's foreign policy actors, the foreign actors they engage with, and the relations they have established have not only numerically increased but grown ever more complicated. The primary impetus for this project emerges out of curiosity and a substantial disagreement among Turkish foreign affairs scholars about fundamental questions regarding Turkey's activism,³⁰ such as the geographical focus of Turkey's foreign affairs, the role of non-state actors in Turkish foreign affairs, Turkey's behaviors toward Israel, and Turkey's zero-problems-with-neighbours policy. We present data relevant to these questions, which could subsequently be explored through rigorous statistical methods to analyze patterns in time, actors, and event types. The purpose of this paper is to demonstrate the potential uses of an event dataset specifically designed to portray Turkey's foreign affairs, rather than to make more elaborate inferences.

4.1. Axis shift

Over the last ten years, one of the questions that scholars studying Turkey's foreign affairs have asked is whether the ruling AKP's foreign policy reflects a definite change from the past in terms of its geographical focus. The "new" focus of Turkey's international relations has been variously defined as "the Muslim World," "the neighbourhood," or "the whole world."³¹ It has been argued that the bilateral dynamics between Turkey and the EU/US have changed,³² and that Turkey has been seeking ways to strengthen its relations with non-Western societies.³³

Figure 6 shows Turkish government and non-state actors' actions toward any foreign actor, including actors in Turkey who are not Turkish, for example, Chechens, Kurds, or Syrian refugees. The graph shows that while the Turkish government was particularly active in early 2003, late 2004, and late 2009, its overall activity level has not significantly changed since the second half of the 1990s.

³⁰ Ersel Aydın, Gonca Biltekin, and Musa Tuzuner, "Time to Quantify Turkey's Foreign Affairs: Setting Standards for a Maturing International Relations Discipline" (forthcoming); Ersel Aydın, Gonca Biltekin, and Musa Tuzuner, "Quantification of Turkey's Foreign Affairs via Event Data" (paper presented at the Workshop on Quantifying Security Studies and Foreign Policy Analysis in Turkey and the Greater Middle East, December 2-4, 2011, Istanbul).

³¹ Mesut Özcan and Ali Resul Usul, "Understanding the 'New' Turkish Foreign Policy: Changes within Continuity, Is Turkey Departing From The West?" *Uluslararası Hukuk ve Dış Politika* 6, no. 21 (2010): 101-123; Bülent Aras and Hakan Fidan, "Turkey and Eurasia: Frontiers of a New Geographic Imagination," *New Perspectives on Turkey* 40 (2009): 195-217.

³² Tarık Oğuzlu and Mustafa Kibaroğlu, "Is the Westernization Process Losing Pace in Turkey: Who's to Blame?" *Turkish Studies* 10, no. 4 (2009): 577-593; Tarık Oğuzlu, "Middle Easternization of Turkey's Foreign Policy: Does Turkey Dissociate from the West?" *Turkish Studies* 9, no. 1 (2008): 3-20; Fiona Hill and Omer Taspinar, "Turkey and Russia: Axis of the Excluded?" *Survival* 48, no. 1 (2006): 81-92; Ziya Meral and Jonathan Paris, "Decoding Turkish Foreign Policy Hyperactivity," *The Washington Quarterly* 33, no. 4 (October 2010): 75-86.

³³ İbrahim Kalın, "Turkey and the Middle East: Ideology or Geo-politics?" *Private View* (2008): 29.

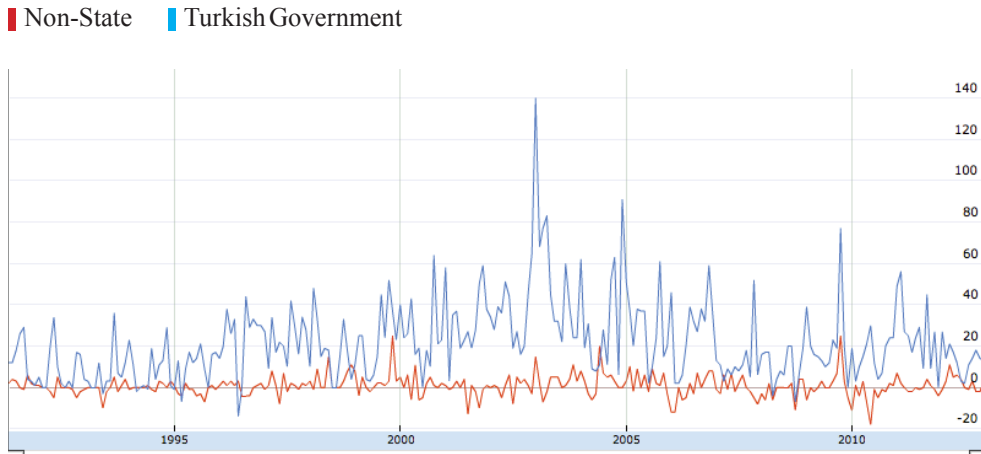


Figure 6: Turkish Government and Non-State Actors to World Regions (Cooperation-Conflict), 1991-2012

To more closely examine Turkey’s geographical focus over the last 22 years, we aggregated the world’s countries into seven geographical regions. If an intergovernmental or transnational organization’s membership is region-specific (as is the EU’s), we included the organization in the corresponding region. We did not include ethnic or religious groups whose nationalities were not identified in news reports, nor did we include transnational organizations/movements. We also eliminated the behaviors of non-state actors from Turkey toward non-Turkish actors so as to capture only the Turkish government’s behavior. We aggregated the types of actions along two categories (cooperation vs. conflict) and counted them on a monthly basis. Then, we subtracted total conflictual event counts from total cooperative event counts for each month. Finally, we separated the data into two periods (1991-2002 and 2003-2012) for more detailed visualization. As evident from Figures 7 and 8, European countries have long been an important cooperation partner for Turkish governments. Consistent with Turkey’s attempts to attain EU membership, most peaks in Turkish governments’ bilateral interactions are with Europe. That trend continues well into 2007, after which relations with other regions become more prominent.

One such region is the Middle East. While there were considerable cooperative actions with the Middle East in the pre-AKP period, since 2003 relations have seen a remarkable boost. On the other hand, conflict with the Middle East has also increased compared to earlier periods.

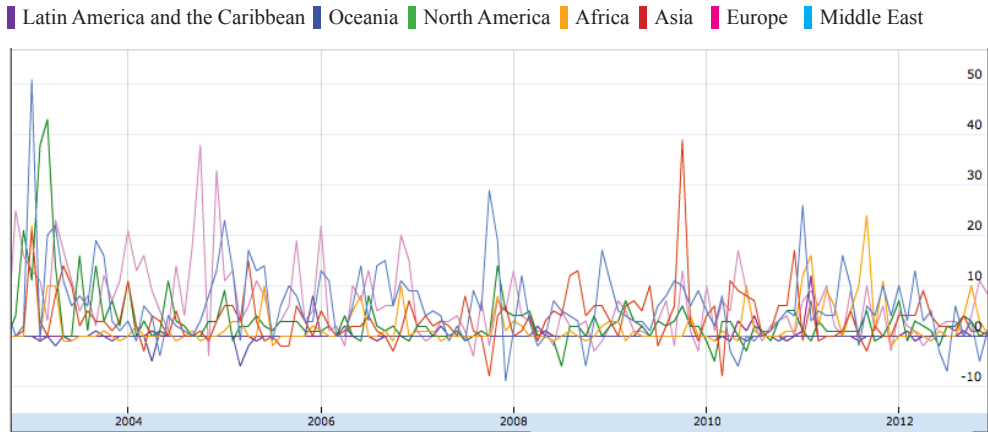


Figure 7: Turkish Government to World Regions, 2003-2012

A closer look at the two periods reveals that the AKP period (2003-2012) has also been different in terms of relations with Africa. While there were occasional conflicts with African countries in late 1990s and early 2000s, relations rarely took a negative turn between 2003 and 2012, and peaked positively in mid-2011. With North American countries, however, it has been the reverse. While the figure shows almost no downturns before 2003, it seems there have been occasional conflicts with that region since 2008.

Oceania and Latin America are the least-reported regions with respect to their relations with the Turkish government in both periods, but there has been more interaction with Latin America and less interaction with Oceania in the latter period compared to the pre-AKP period.

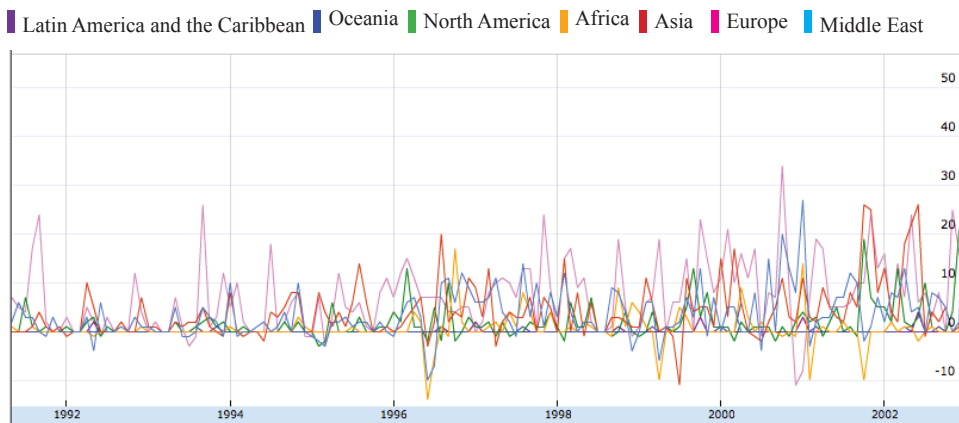


Figure 8: Turkish Government to World Regions, 1991-2003

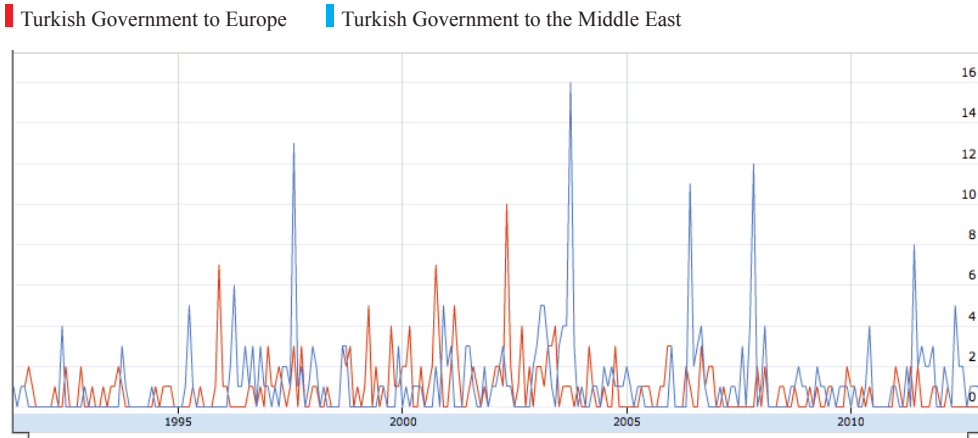


Figure 9: Turkish Government to Europe vs. Turkish Government to the Middle East, 1991-2012

Considering the debates about Turkey's diminishing relations with Europe and its improving relations with the Middle East, a comparative look at the Turkish government's material cooperation with the two regions may provide some insight. Figure 9 shows materially cooperative actions from the Turkish government to both regions in monthly counts.

The increasing prominence of the Middle East in Turkish foreign policy is more apparent after 2004. It is interesting to see that even at the height of Turkey's relations with the EU (in 2005, when accession talks began) material cooperation was apparently relatively low with Europe. On the other hand, as the event data is only gathered from news reports, they might inadequately represent ongoing lesser-level bureaucratic interactions because these have less journalistic value.

4.2. Non-state actors in Turkish foreign affairs

With the democratization and Europeanization processes, it has been argued that non-state actors, such as business and research organizations and others, have become increasingly active in foreign matters.³⁴ To explore this claim, we aggregated our data into three actor groups: Turkish government, Turkish non-state actors, and non-Turkish actors. Figure 10 shows Turkish non-state actors' actions toward the world (including all religious and ethnic groups not identified with any single country). Events are not aggregated in terms of type, but counted on a monthly basis to determine the overall initiative.

³⁴ Sedat Laçiner, "Yeni Dönemde Türk Dış Politikasının Felsefesi, Fikri Altyapısı ve Hedefleri," in *Yeni Dönemde Türk Dış Politikası: Uluslararası IV. Türk Dış Politikası Sempozyumu Tebliğleri*, eds. Osman Bahadır Dincer, Habibe Özdal, and Hacı Necefoglu (Ankara: USAK, 2010); Altay Atlı, "Businessmen as Diplomats: The Role of Business Associations in Turkey's Foreign Economic Policy," *Insight Turkey* 13, no.1 (2011): 109-128; Ziya Öniş, "Multiple Faces of the 'New' Turkish Foreign Policy: Underlying Dynamics and a Critique," *Insight Turkey* 13, no. 1 (2011): 47-65; Kemal Kirişçi, "The Transformation of Turkish Foreign Policy: The Rise of the Trading State," *New Perspectives on Turkey* 40 (2009): 29-57; İbrahim Kalın, "Turkey and the Middle East," 29; Mustafa Kutlay, "Economy as the 'Practical Hand' of 'New Turkish Foreign Policy': A Political Economy Explanation," *Insight Turkey* 13, no. 1 (2011): 67-88.

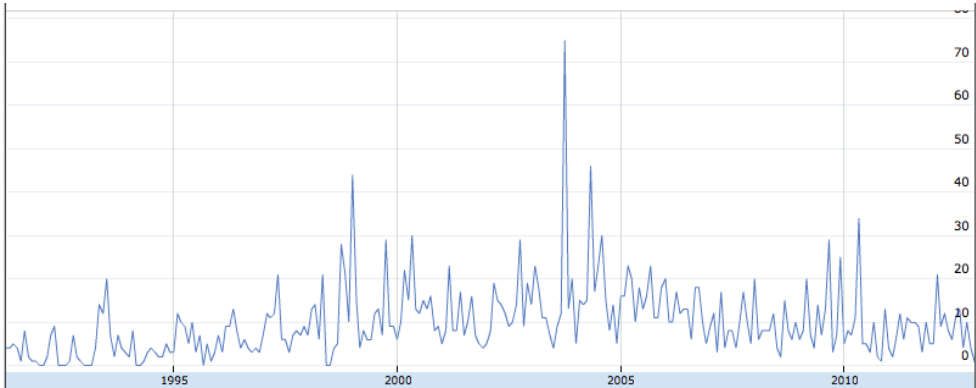


Figure 10: Turkish Non-State Actors to World, 1991-2012

According to our data, despite occasional peaks in late 2003 and 2004 (which account for more than 40% of all actions in those months), Turkish non-state actors have not been particularly active in foreign affairs. While their impact on government policy formulation might have increased, their foreign behavior has not significantly increased. To track non-state actors' overall weight (i.e., how much foreign affairs action in Turkey is *conducted* by non-state actors), we counted all their actions toward the world and divided them by all event counts from all Turkey's actors to the world. (see figure 11) (Non-state actors' overall *effect* on Turkish foreign affairs can only be portrayed by also considering some other factors (such as their impact on policy formulation), which is beyond the scope of this study.)

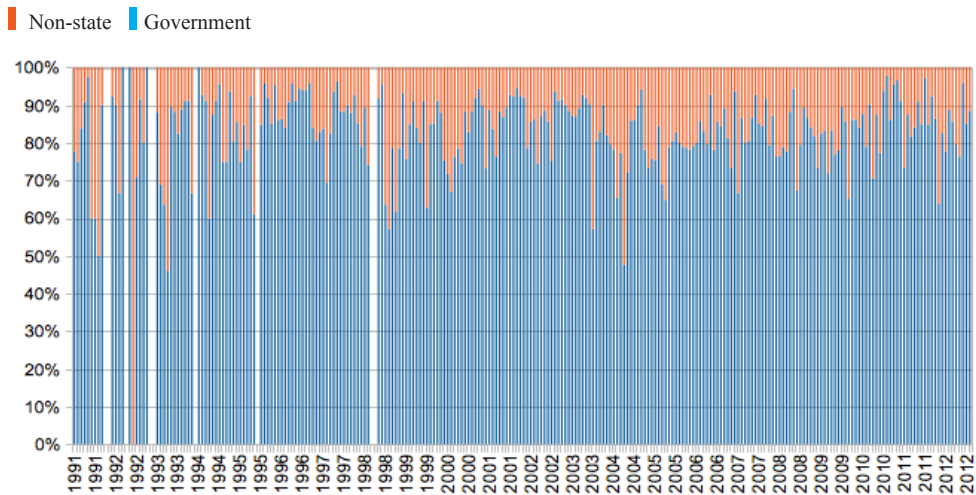


Figure 11: Non-State Actors' Overall Weight in Turkish Foreign Affairs

4.3. Turkey-Israel relations

Recently, Turkey's relations with Israel have taken a significant downturn compared to the late 1990s. Observers have argued that Turkish-Israeli relations have deteriorated especially since the AKP has come to power.³⁵ Prime Minister Erdoğan's criticisms concerning Israel's

³⁵ Tarık Oğuzlu, "The Changing Dynamics of Turkey-Israel Relations: A Structural Realist Account," *Mediterranean Politics* 15, no. 2 (2010): 273-288.

policy in the West Bank and Gaza as well as about the 2010 Israeli attack on Turkey's Gaza aid flotilla have caused setbacks between the countries.³⁶ Consequently, the most dramatic shifts in Turkish foreign policy can be witnessed in Turkey-Israeli relations.³⁷

Some scholars have pointed out that positive public opinion in Turkey toward Palestinians makes Turkish decision makers especially sensitive to the level of conflict between Israel and Palestine, which in turn affects relations between Turkey and Israel.³⁸ Another scholar explains the volatility in relations as emanating from a lack of "material infrastructure" as well as having a "social basis."³⁹ Therefore, Turkey-Israeli relations take place in a mostly discursive sphere.

Figure 12 shows the actions of all Turkish actors toward Israel. Event types are aggregated in four categories on a monthly basis. We labeled some peaks to highlight important turning points in the countries' relations. It seems that an increasing level of conflict between Israel and Palestine has affected Turkey's relations with Israel in the pre-AKP and AKP periods, with Turkey responding vociferously to Israeli actions. Turkey's mediation efforts from 2003 to 2005 and in early 2010 concerning the Middle Eastern conflict are also apparent in the figure.

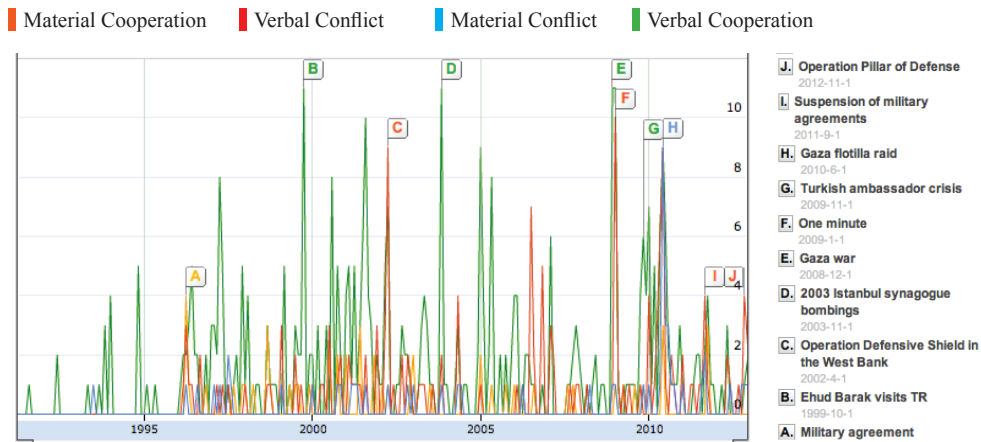


Figure 12: Turkey to Israel, 1991-2012

Figure 13 provides a closer look at the material and verbal actions from Turkey toward Israel. The material conflict monthly event counts and verbal conflict monthly event counts are inverted. The data shows that in the pre-2003 period, Turkey's relations with Israel were denser both verbally and materially (rarely a month passed with no actions from Turkey toward Israel) than they were in the post-2003 period. While material relations were mostly cooperative, there were some verbal confrontations. In the post-2003 period, the overall number of material interactions has declined and there have been more verbal and material conflicts between Turkey and Israel.

³⁶ Stephen F. Larrabee, "Turkey Rediscovered Middle East," *Foreign Affairs* 86, no. 4 (2007): 110

³⁷ Joshua Walker, "Learning Strategic Depth: Implications of Turkey's New Foreign Policy Doctrine," *Insight Turkey* 9, no.3 (2007): 32-47.

³⁸ Saziya Burcu Giray, "Turkish Policy towards the Israeli-Palestinian Conflict," in *Muslim Attitudes to Jews and Israel: The Ambivalences of Rejection, Antagonism, Tolerance and Cooperation*, ed. Moshe Maoz (Eastbourne: Sussex Academic Press, 2012): 174.

³⁹ Gökhan Bacık, "Turkish-Israeli Relations after Davos: A View from Turkey," *Insight Turkey* 11, no. 2 (2009): 31-41.

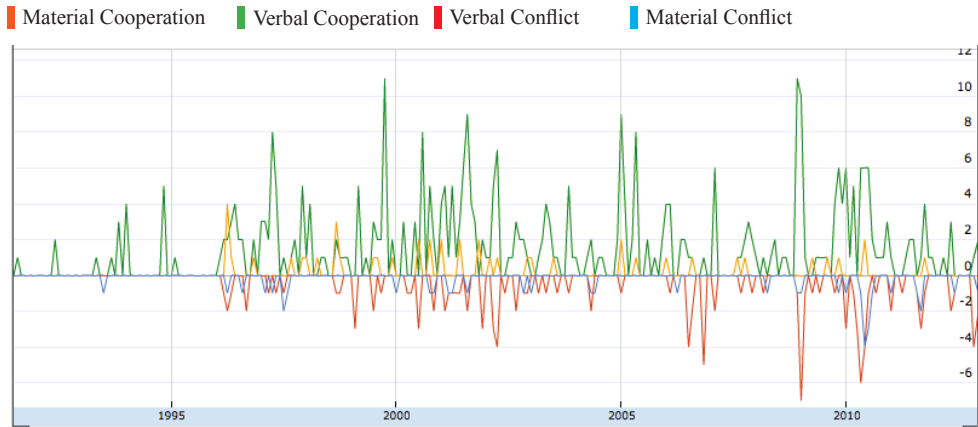


Figure 13: Turkey to Israel, 1991-2012

4.4. Zero-problem neighbourhood

One of the major novelties in recent Turkish foreign policy discourse has been Davutoğlu's principle of "zero problems with neighbours." It is argued that Turkey's relations with its neighbours have been on a more cooperative track than in the past, and include bilateral political, economic, and military relations.⁴⁰ With a liberal outlook, Turkish policymakers have sought to increase Turkey's ties with neighbouring countries, which, in at least one scholar's view, has turned into a complex interdependence.⁴¹ Accordingly, bilateral dialogue rather than more coercive options has been the primary instrument of interaction.⁴²

Figures 14 and 15 show various dimensions of Turkey's relations with its neighbours, who consist of individuals, groups, and organizations from every country with which Turkey shares a territorial border. Event types are aggregated into twelve categories on a monthly basis: first as conflict-cooperation, then as verbal and material, and last as military, economic, and political. Military actions are defined as all appeals, expression of intents, demands, threats, rejections, agreements of a military or intelligence nature, provision of military aid or refusal of such, as well as direct and non-direct violent actions or their de-escalations. Economic events are all appeals, expression of intents, demands, threats, rejections, agreements of an economic nature, provision of economic or humanitarian aid or refusal of such, as well as boycotts, strikes, blockades, embargoes, and damages to property, or their de-escalations. Political events are all other events, including all actions of a judicial and legal nature. All conflict events are inverted. Figure 14 shows the material actions and Figure 15 shows verbal actions.

⁴⁰ Ahmet Davutoğlu, "Turkey's Zero-Problems Foreign Policy," *Foreign Policy*, May 10, 2010, accessed May 9, 2013, <http://jft-newspaper.aub.edu.lb/reserve/data/s11244/s11244.pdf>.

⁴¹ Kadri Kaan Renda, "Turkey's Neighbourhood Policy: An Emerging Complex Interdependence," *Insight Turkey* 3, no. 1 (2011): 90.

⁴² Renda, "Turkey's Neighbourhood," 105.

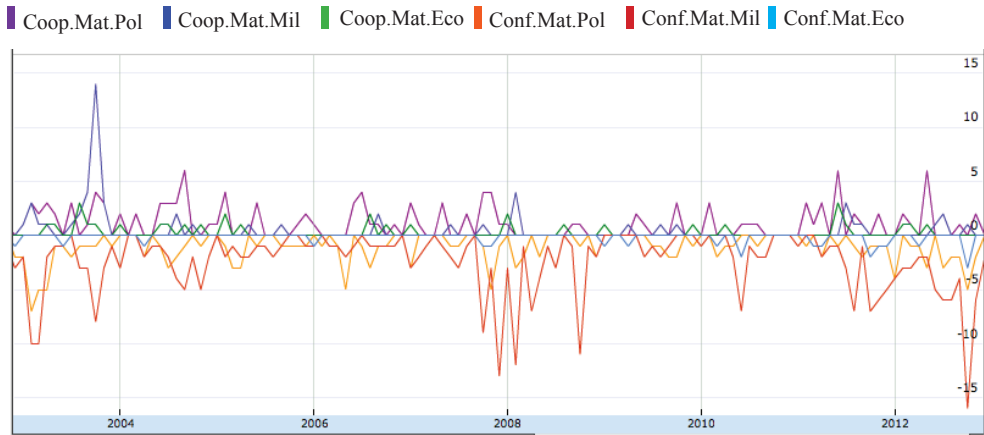


Figure 14: Turkey to Neighbours (Material Conflict vs. Material Cooperation), 2003-2012

When we look at the material event counts, military conflicts with neighbours have been most visible in late 2007 and early 2008, when the Turkish military conducted military operations against the Kurdistan Workers’ Party (PKK) in northern Iraq, and in October 2012, when Turkey responded to Syrian attacks on its border. Turkey’s material cooperation with its neighbours has had more of a political character than a military or economic one. With respect to verbal actions, from 2011 onwards, Turkey has been more likely to verbally confront its neighbours.

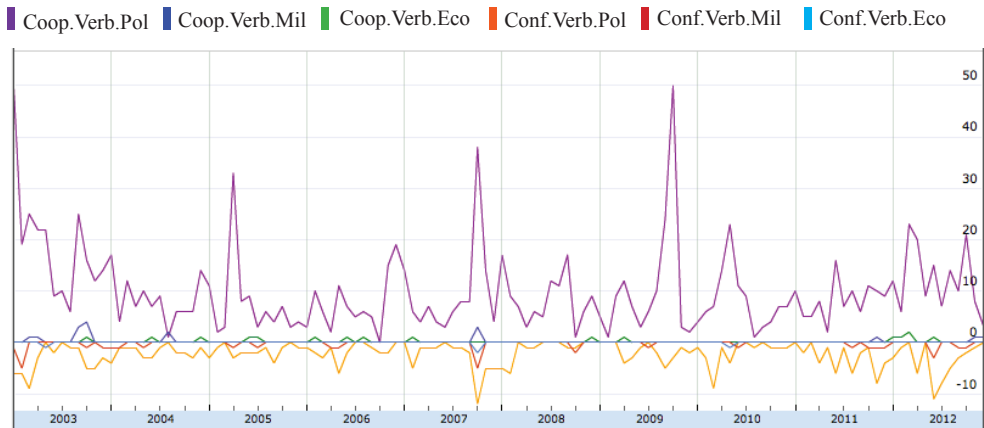


Figure 15: Turkey to Neighbours (Verbal Conflict vs. Verbal Cooperation), 2003-2012

Whether or not Turkey has managed to turn its activism into economic, diplomatic, and political capital is also an interesting question.⁴³ To gain a sense of how Turkey’s neighbours have responded to its new activism, see Figures 16 and 17.

⁴³ Renda, “Turkey’s Neighbourhood,” 104-105.

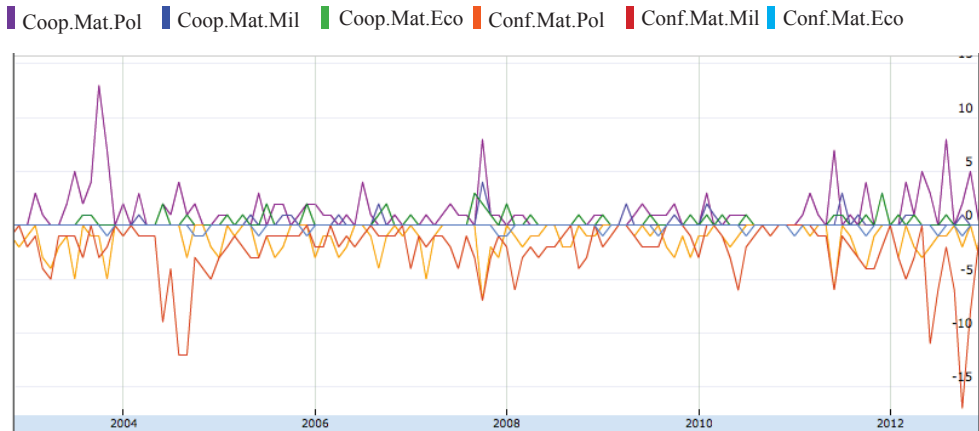


Figure 16: Neighbours to Turkey (Material Conflict vs. Material Cooperation), 2003-2012

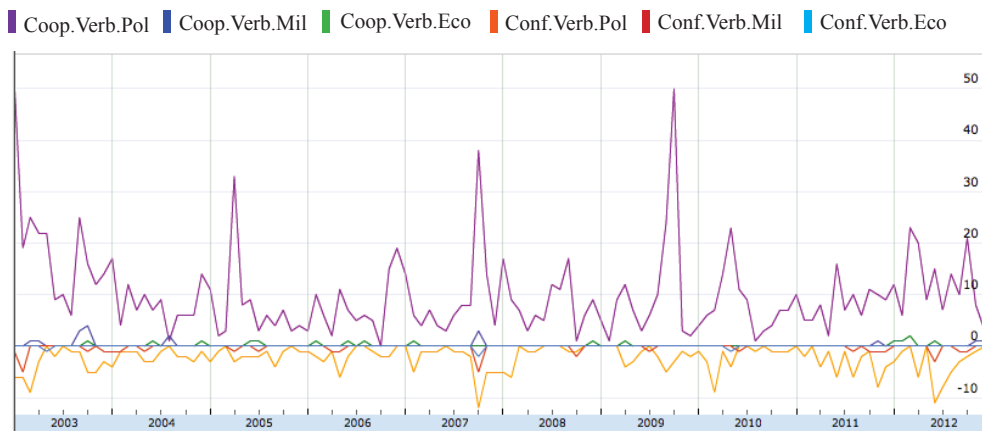


Figure 17: Neighbours to Turkey (Verbal Conflict vs. Verbal Cooperation), 2003-2012

When we compare Turkey's actions toward its neighbours, and its neighbours' actions toward Turkey, it seems that bilateral relations have been more or less reciprocal. Since 2011, neighbours' material military confrontations with Turkey have gradually increased, peaking in late 2012. Usually, politically cooperative gestures from neighbours accompany these confrontations.

5. Conclusion

As this pilot study of the TFAED project shows, this dataset has the potential to answer, in a quantitative manner, various fundamental questions about Turkey's foreign affairs. Because detailed generic codes are produced with respect to actors, and coding categories are extensive, researchers are able to regroup data in diverse ways, for example, according to actor type, event type, and timespan. These groupings make it possible to test various hypotheses and compare them with each other.

The dataset enables researchers to answer general questions regarding Turkey's foreign

policy behavior in a more reliable manner. Is the nature of Turkey's relations with Country X/Region Y cooperative or conflictual? Has such cooperation/conflict been military, economic, or cultural? Is cooperation with Country X greater than cooperation with Country Y? Is conflict with Country X physical or verbal?

Grouping the data according to timespan will help researchers make historical comparisons with respect to the behaviors of the same actor. It will also be possible to identify patterns in Turkish foreign policy before and after important events, such as the *Mavi Marmara* incident, the war in Iraq, the 2003 and 2007 general elections, the beginning of EU membership accession talks in 2005, etc. Moreover, some less dramatic yet equally important time periods might be identified.

Via this dataset, research questions about Turkey's domestic inter-actor cooperation and conflict can be analyzed over time and across various domestic groups, as well as their relations with foreign actors. Tests for dependence between domestic and foreign relations can be conducted to see if any domestic relations affect or are affected by foreign relations.

Some statistical models can be applied to the data to predict the future course of events between two actors. Such predictive capability may prove beneficial to policymakers to devise strategies for coping with potential crises and problems.

Finally, the dataset may prove beneficial for conceptualization through inductive reasoning. Once the patterns, trends, and orientations are identified with respect to the above questions, any shift with respect to them will generate causal questions, which in turn will instigate the formation of new conceptual tools. Therefore, TFAED can also be used for exploring new venues for generating theoretical frameworks in addition to testing the hypotheses generated from existing ones.

Bibliography

- Aras, Bülent, and Hakan Fidan. "Turkey and Eurasia: Frontiers of a New Geographic Imagination." *New Perspectives on Turkey* 40 (2009): 195-217.
- Atlı, Altay. "Businessmen as Diplomats: The Role of Business Associations in Turkey's Foreign Economic Policy." *Insight Turkey* 13, no.1 (2011): 109-128.
- Aydınlı, Ersel and Musa Tuzuner, "Quantifying intelligence cooperation: The United States International Intelligence Behavior (USIIB) dataset." *Journal of Peace Research* 48, no. 5 (2011): 673-682.
- Aydınlı, Ersel, Gonca Biltekin, and Musa Tuzuner. "Quantification of Turkey's Foreign Affairs via Event Data." Paper presented at the Workshop on Quantifying Security Studies and Foreign Policy Analysis in Turkey and the Greater Middle East, İstanbul, December 2-4, 2011.
- Aydınlı, Ersel, Gonca Biltekin, and Musa Tuzuner. "Time to Quantify Turkey's Foreign Affairs: Setting Standards for a Maturing International Relations Discipline" (forthcoming).
- Azar, Edward E. "The Conflict and Peace Data Bank (COPDAB) Project." *The Journal of Conflict Resolution* 24, no. 1 (1980): 143-152.
- Bacık, Gökhan. "Turkish-Israeli Relations after Davos: A View from Turkey." *Insight Turkey* 11, no. 2 (2009): 31-41.
- Bond, D., and W. B. Voegelé. "Profiles of International Hotspots." Unpublished manuscript, 1995. Center for International Affairs, Harvard University. Accessed August 19, 2011. <http://vranet.com/papers.html>.
- Bond, Doug, Joe Bond, Churl Oh, J. Craig Jenkins, and Charles Lewis Taylor. "Integrated Data for Events Analysis (IDEA): An Event Typology for Automated Events Data Development." *Journal of Peace Research* 40, no. 6 (2003): 733-745.
- Bond, Doug, and Joe Bond, 1995. *Panda Codebook*. Cambridge, MA: The Program on Nonviolent Sanctions and

- Cultural Survival, Weatherhead Center for International Affairs, Harvard University.
- Cameocodes. "Cameocodes Wiki Space." Accessed August 19, 2011. <http://cameocodes.wikispaces.com>.
- Davis, David R., Brett Ashley Leeds, and Will H. Moore. "Measuring Dissident and State Behaviour: The Intranational Political Interactions (IPI) Project." Paper presented at the Workshop on Cross-National Data Collection, Texas A&M University, November 21, 1998.
- Davutoğlu, Ahmet. "Turkey's Zero-Problems Foreign Policy." *Foreign Policy*, May 10, 2010. Accessed May 9, 2013. <http://jft-newspaper.aub.edu.lb/serve/data/s11244/s11244.pdf>.
- Engene, Jan Oskar. "Five Decades of Terrorism in Europe: The TWEED Dataset." *Journal of Peace Research* 44, no. 1 (2007): 109-112.
- Francisco, Ronald A. "The Relationship between Coercion and Protest: An Empirical Evaluation in Three Coercive States." *The Journal of Conflict Resolution*, Vol. 39, No. 2 (1995):263-282.
- Franzosi, R. "The Press as a Source of Sociohistorical Data." *Historical Methods* 20, no. 1 (1987): 5-16.
- Giray, Saziya Burcu. "Turkish Policy towards the Israeli-Palestinian Conflict." In *Muslim Attitudes to Jews and Israel: The Ambivalences of Rejection, Antagonism, Tolerance and Cooperation*, edited by Moshe Maoz, 169-185. Eastbourne: Sussex Academic Press, 2012.
- Goldstein, Joshua S. "A Conflict-Cooperation Scale for WEIS Events Data." *Journal of Conflict Resolution* 36 (1992): 369-385.
- Hill, Fiona, and Omer Taspinar. "Turkey and Russia: Axis of the Excluded?" *Survival* 48, no. 1 (2006): 81-92.
- Houghton, Brian K. "Terrorism Knowledge Base: A Eulogy (2004-2008)." *Perspectives on Terrorism* 2, no. 7 (2008): 18-19.
- Howell, Llewellyn D., and Gillian Barnes. "Event Data for Region-Specific Interactions: A Research Note on Source Coverage." In *International Event-Data Developments: DDIR Phase II*, edited by Richard L. Merritt, Robert G. Muncaster, and Dina A. Zinnes, 45-54. Ann Arbor: University of Michigan Press, 1993.
- Kalın, İbrahim. "Turkey and the Middle East: Ideology or Geo-politics?" *Private View* (2008): 26-35.
- Kirişçi, Kemal. "The Transformation of Turkish Foreign Policy: The Rise of the Trading State." *New Perspectives on Turkey* 40 (2009): 29-57.
- Kutlay, Mustafa. "Economy as the 'Practical Hand' of 'New Turkish Foreign Policy': A Political Economy Explanation." *Insight Turkey* 13, no. 1 (2011): 67-88.
- Laçiner, Sedat. "Yeni Dönemde Türk Dış Politikasının Felsefesi, Fikri Altyapısı ve Hedefleri." In *Yeni Dönemde Türk Dış Politikası: Uluslararası IV. Türk Dış Politikası Sempozyumu Tebliğleri*, edited by Osman Bahadır Dincer, Habibe Özdal, and Hacı Necefoğlu. Ankara: USAK, 2010.
- Larrabee, Stephen F. "Turkey Rediscovered Middle East." *Foreign Affairs* 86, no. 4 (2007): 103-114.
- Leetaru, Kalev, and Philip A. Schrodt. "GDELT: Global Data on Events, Location and Tone 1979-2012." Paper presented at the International Studies Association meetings, San Francisco, April 2013.
- McClelland, Charles A. *World Event/Interaction Survey (WEIS) 1966-1978 (ICPSR5211)*. Ann Arbor, Michigan: Inter-University Consortium for Political and Social Research, 1978.
- Meral, Ziya, and Jonathan Paris. "Decoding Turkish Foreign Policy Hyperactivity." *The Washington Quarterly* 33, no. 4 (October 2010): 75-86.
- Oğuzlu, Tarık, and Mustafa Kibaroglu. "Is the Westernization Process Losing Pace in Turkey: Who's to Blame?" *Turkish Studies* 10, no. 4 (2009): 577-593.
- Oğuzlu, Tarık. "Middle Easternization of Turkey's Foreign Policy: Does Turkey Dissociate from the West?" *Turkish Studies* 9, no. 1 (2008): 3-20.
- Oğuzlu, Tarık. "The Changing Dynamics of Turkey-Israel Relations: A Structural Realist Account." *Mediterranean Politics* 15, no. 2 (2010): 273-288.
- Olzak, S. "Analysis of Events in Studies of Collective Actions." *Annual Review of Sociology* 15 (1989): 119-141.
- Öniş, Ziya. "Multiple Faces of the 'New' Turkish Foreign Policy: Underlying Dynamics and a Critique." *Insight Turkey* 13, no. 1 (2011): 47-65.

- Özcan, Mesut, and Ali Resul Usul. "Understanding the "New" Turkish Foreign Policy: Changes within Continuity, Is Turkey Departing From The West?" *Uluslararası Hukuk ve Dış Politika* 6, no. 21 (2010): 101-123.
- R Foundation for Statistical Computing . "R: A Language and Environment for Statistical Computing." <http://www.R-project.org/>.
- R Project. "Events: Store and Manipulate Event Data," <http://CRAN.R-project.org/package=events>. HYPERLINK.
- Renda, Kadri Kaan. "Turkey's Neighbourhood Policy: An Emerging Complex Interdependence." *Insight Turkey* 13, no. 1 (2011): 89-108.
- Rucht, D., R. Koopmans, and F. Neidhardt, eds. *Acts of Dissent*. New York: Rowman & Littlefield, 1999.
- Schrodt, Philip A., Shannon G. Davis, and Judy L. Weddle. "Political Science: KEDS - A Program for the Machine Coding of Event Data." *Social Science Computer Review* 12, no. 3 (1994): 561-588.
- Schrodt, Phillip A. TABARI Textual Analysis by Augmented Replacement Instructions Version 0.8.4 Manual, 2012, available at <http://eventdata.psu.edu/tabari.dir/tabari.manual.0.8.4b1.pdf> .
- Schrodt, Philip A., and Deborah J. Gerner. *Analyzing International Event Data (2001/2012)*. <http://eventdata.psu.edu/papers.dir/automated.html>.
- Schrodt, Philip A., and David Van Brackle. "Automated Coding of Political Event Data" in *Handbook of Computational Approaches to Counterterrorism*, V.S. Subrahmanian (ed.) 2013, 23-49, Springer Science and Business Media, NY.
- Shellman, S. M. "Quantifying Violence and Nonviolence: Terrorism & Political Violence Events Data Sets." *Electronic Newsletter of the ECPR-SG on Extremism & Democracy* 9, no. 2 (2008). Accessed August 19, 2011. http://www.tufts.edu/~dart01/extremismanddemocracy/newsletter/Article7_4.html.
- Walker, Joshua. "Learning Strategic Depth: Implications of Turkey's New Foreign Policy Doctrine." *Insight Turkey* 9, no.3 (2007): 32-47.
- Yılmaz, Ömür. "Turkish Military: the Key to Credible Commitment to Democracy." Paper presented at the annual meeting of the International Studies Association, San Diego, California, March 22, 2006. Accessed August 19, 2011. http://www.allacademic.com/meta/p100868_index.html.
- Yılmaz, Ömür. "The Kurdish Insurgency in Turkey: Pre- and Post-Ocalan." Paper presented at the annual meeting of the International Studies Association 48th Annual Convention, Chicago, February 28, 2007. Accessed August 19, 2011. http://www.allacademic.com/meta/p179221_index.html.
- Yılmaz, Ömür. "Turkey Data Set." Accessed August 19, 2011. <http://web.ku.edu/~keds/data.html>.
- Yonamine, James E. "Working with Event Data: A Guide to Aggregation Choices." Unpublished paper. Accessed 25 April, 2013. <http://jayyonamine.com/wp-content/uploads/2012/06/Working-with-Event-Data-A-Guide-to-Aggregation-Choices.pdf>.

Roundtable Discussion on Event Data

Ersel Aydınlı: It seems like I have all the microphones, but that doesn't mean that I will do all the talking! We have only one question, in light of yesterday's presentations and discussions that I think we have to respond to here today: how do we really apply event data to Turkish foreign affairs and foreign policy, security affairs and Turkish IR? With the help of everybody here, Turkish scholars and our international guests, we would like to spend this opportunity looking for some suggestions to respond to this. We have of course technical issues, event data related issues, as well as topical or subject-matter related issues—Turkish foreign affairs, foreign policy, and so on. Would anybody like to go first?

Özgür Özdamar: (Bilkent University) I would like to start out by saying thanks to the organizers because this has been a great conference for all of us to both learn about event data and also to think about future projects involving Turkish Foreign Policy. We were asked to prepare a bit for this workshop, so while I was reading articles about event data, I began thinking about how we can apply this to Turkish Foreign Policy studies. These are just the first things that came to my mind and they are very crude ideas, but I think I could categorize them in two ways: The first would be more a test of the event data methodology itself and the other would be about looking at the past of substantive issues concerning Turkish Foreign Policy *by using* event data.

Another thing that came to my mind is that of a more descriptive study of Turkey's foreign relations by using event data. For example, using event data to understand such questions as who are we in contact with the most and in what ways, or who are we in cooperation with the most, or what kind of conflictual relations do we have the most? Even that kind of a simple descriptive study, as far as I know, has not been done here. Moreover, there are some substantial questions concerning Turkish Foreign Policy and I think that event data can help us understand them. One of them, for example, is the much debated Davutoğlu foreign policy, whether it has decreased cooperation among neighbors or not. The argument often goes that since 2002, both the AKP foreign policy and the current Foreign Minister, Davutoğlu's foreign policy has decreased the cooperation with Turkey's neighbors. The countering argument is that it *increased* cooperation with neighbors compared to before, but there is no test using this type of data.

Finally, the other thing that comes to my mind is, as we debated a lot in the last maybe three or four years is what we call in Turkish the "*Eksen Kayması*," or basically, axis shift. The question is whether Turkish Foreign Policy is shifting its axis from pro-Western to pro-Eastern. It seems like so many scholars feel like they have to pick a side. But if you use a methodology like event data, if you rely on hard data, you can really understand whether Turkish foreign policy is indeed changing its direction or is it the same, or is it in one way shifting but in another way not.

Pınar İpek: (Bilkent University) I just want to add to what Özgür Hocam has already said about the lack of data, even at the descriptive level. From my field of political economy, the relationship between business or globalization and its impact after the dissolution of the Soviet Union on Turkish Foreign Policy is highly discussed by IR scholars. But they don't generally look at the impact of globalization in terms that could be studied in a comparative manner. For example, in the 1980s, especially, looking at the similar cases of Turkey with various Latin American or some Asian countries, they could look at the liberation of the markets. Then there is the question of business and foreign policy, for example, analyzing the role of business in foreign policy towards Africa. The role of business as an independent variable I think would be very interesting to study using event data. Why? Because from rational behavior we would assume businesses would behave similarly, right? What is the optimal goal—to maximize profit and to survive in the competitive market? So, yes, by sector they may differ, but overall the behavior or goals should be similar. On the other hand, the strategies may differ. If we looked at the aggregate level, associating types of behavior among the businesses in terms of style, we may observe interesting variations or similarities. There are a number of possible groups to look at. We have, for example, MUSIAD, we have TUSKO, and we have TUSIAD. While TUSIAD is more EU-oriented big business, and liberal, TUSKO is more conservative, more an Anatolian tiger type. Then we could compare TOBB versus MUSIAD. They all cover different sizes of companies and so on. When we think about these business associations, the role of data collection is a big issue. You would think that the business sector would be more cooperative and they would have handy data to share with you, but it's not always the case, as I've found myself, unfortunately, in trying to get data from TUSIAD. So, the idea of using public event data seems like an interesting and potentially very useful way of gathering data and answering some important questions.

Balkan Devlen: (Izmir University of Economics) Again thank you very much for organizing this interesting workshop. Just adding a couple of things to what Özgür and Pınar have said. I keep thinking about two things; one is the creation of such a dataset. First of all, it should be able to carve a space in Turkish foreign policy but would it also be used on the international academic scene as well? Basically, is there a possible language issue if you're using only Turkish language sources? So I'm also thinking a second track could also be a limited prototype kind of analysis created with just Turkish language sources. Such a project could actually garner funding support from some of the defense related agencies in Turkey to create a Turkish language news extracting program for event data. So, I think a two track approach in which one relies more on international news wire things for Turkish interactions but also another that relies on Anadolu Ajans or other Turkish sources, to be able to see whether we actually detect any differences or not. That might be one way to conceptualize and one way to go forward.

Another idea I was thinking of was picking an issue to explore with event data to actually demonstrate to Turkish academics how an event dataset could be used and be useful for explaining certain foreign policy issues. An example could be the Turkish Cyprus issue. Everybody out there has written on this, so everybody knows the basics of it, but using concrete data to actually analyze and pose questions about this issue makes sense and could shed light on further development. As a prototype work, it could show the usefulness of event data to the general public and then gather more researchers to work on it.

Belgin Şan-Akça: (Koc University) Just following up on what Balkan was talking about, especially with respect to the interaction between, for instance, domestic politics and foreign affairs. In the past decade or so, one of the major debates has been that the Turkey-Israeli alliance was shattering and this is problematic. Yet some people were saying, no, that is not true, the current political party in the government is just trying to present this picture, which may not actually be the real interaction going on between Israel and Turkey. With cases like these, I believe event data will be very informative to capture the real live interactions between actors, in this case, Israel and Turkey.

Another side of event data analysis I'm also wondering about is if it is possible to actually look at the discourse and explore how certain events are being basically created by the political actors. That would also be extremely useful. In other words, not just looking at what is going on in reality, but also at what is being framed by the political actors. In terms of comparison, we may think about how issues actually are covered by the leaders or other political actors and think about the ways how we can do this through event data analysis.

On the other hand, as it was pointed out in the talk yesterday, there are some limitations. For instance, we know of some scholars who collected data on military casualties that the Turkish military has suffered since the PKK's violence began back in 1984. The argument is that the government is not revealing the real figures so one researcher needed to go around certain towns and basically survey people about whether they had lost any sons serving in the military. The same is also valid for the PKK—they may be down- playing the fatalities also. So there is also the limitation that we may be facing on the part of political actors in Turkey, and the accuracy of their reporting. How can we deal with these types of problems? This is very specific I know, but because we are talking about issues and topics in Turkish politics, this also is one of the problems that you may want to address. Especially since I think terrorism is going to be one of the significant topics covered in this project.

Ersel Aydınli: I'll jump in and say one thing. Turkish foreign affairs and foreign policy studies are of course one major dimension. But security issues are extremely important not only for Turkey but also for the region. Take for example transnational security issues; they present huge challenges in the area, e.g. human trafficking, sex trafficking, small arms trafficking and drug trafficking. The nexus between these transnational security challenges and domestic governments is another major issue to be explored, and perhaps we could think about the potential for event data type analysis in looking at such things.

In terms of specific security issues and Turkey, of course Turkey has been suffering with an insurgency problem over the last 30 years, the so-called Kurdish question. It not only involves terrorism but also ethnic insurgency, democratization, new kinds of actors, drug trafficking, bad governance, and so on. Over the past couple of years there has been some strange type of conflict resolution taking place, but as academics wishing to have a better understanding of conflict resolution processes, our studies are limited by not having adequate information; and we seem to have a weak starting point because we don't have data. Event data may help us start exploring answers to such questions as who really are the actors involved in this conflict resolution process? How many are they? Who is talking to whom?

Haluk Özdemir: (Kirikkale University) From what I hear, I think that there is a serious issue about event data building here. I mean if government actors don't share information with each other, how are they going to share it with others? And how can we build an event data out of all of these problems? My question is more basic actually: what do we expect from

our event data analysis? Are we expecting to have better questions or are we expecting better conceptual definitions or clarifications about conceptual issues? To me it looks like we are not going to have better questions out of having event data analysis. It looks like everyone is going to ask their own questions still and event data here might perhaps help us clarify our conceptual definitions. So I think we should ask these questions first before asking how we can apply event data analysis to Turkish Foreign Policy analysis: What do we expect from event data? If we expect the wrong things, we might face big disappointments at the end.

Saize Arsavun: (PhD student) I think that event data will be very helpful in terms of showing the patterns of foreign influence in Turkey. For instance, because I study European studies, I think it would help us to create a history of EU relations in terms of negotiations, economic relations, and so on, using these terms, and potential membership candidacy, and seeing at which times candidacy was stagnating and at which times it was more enhanced. We could then compare times that Turkey had better relations with the Middle East or the USA.

Joseph Bond: (VRA/Harvard) I have just a few quick thoughts, specifically regarding the consumer of events data. It seems to me all of the discussions so far have been based on the idea of academics as a consumer for this, and I'm wondering to what degree you expect the government to actually use and understand these data. Specifically, unless there are people buying it, unless there are buyers, it won't be used. If you take anything other than the one page executive summary to a policy maker who has got some influence, they are not going to be interested. I also think it may be helpful to look around and see what other governments are doing and how they are doing it. In Northeast Asia, for example, we have been developing a system for an agency that I can't really name, but their standard is that they are not looking only for regional data, but global data. I think if you look just regionally you are going to miss a lot of stuff. I initially think the source would have to be English language, and I think you would have to understand the biases of the sources. For example, Reuters is mainly business based, whereas AFP has better coverage. One could also look at RSS, blogs and so on. I think the basic fundamental needs are to look at global events data, make active extraction, and sectorial analysis, that is, divided up economical, political, and social. I think the ability should be to do full text search on terms like 'PKK'. One should be able to immediately pull up those directly. I also think the research questions should really drive everything, but the events data analysis, and the system, for lack of a better term, should be able to provide the academic or policy maker analysts with all of the information needed to address specific research questions.

Reşat Bayer: (Koc University) I agree that there is overall a need for more systematic collection regarding all social science matters including work on Turkey-related issues. Event data could be one way. With any sort of data collection, besides initial gathering, we also have the issue of updating these things, without which the usefulness of the science specific academic research question will fail. Is there going to be enough of either academic or policy initiative to continue its updating? And how might they actually go about doing this?

William Lowe: (University of Mannheim) I have been listening to a range of problems that have come up and will try to put things in useful order here. It seems like the substantial problems that people are talking about fall into three types, some of which require more work to do with data analysis. What I'll do is sketch out what I think those dimensions are and how to get through them. It seems that some of these questions are international and some of them more local and domestic. You have the language material issue, which

in some sense is easy. There is also an interest and a difference of focus issue; are you interested in business organizations and domestic operational or international operational, are you interested in security? That kind of thing. And finally, the other dimension is whether one is interested in events in the past or more contemporary up to date stuff, or even more ambitiously, forecasting, a sort of temporal scheduling thing. So, everyone has been sort of dropping more of the substantive questions to that three-way categorization.

I guess there are two ways you could be thinking about choosing a first project and making it more concrete. One thing we could follow is the much used method of looking at what will get you the things you need with the least effort. So it seems like something international, and something security related will be in some sense the easiest sort of topic to do. That would be the instrumental approach to a first project. I guess the more academically interesting thought would be to say, okay don't choose the easiest one, where the data is more relevant in the developmental time period, but choose something that would possibly have the most impact.

Curtis Signorino: (University of Rochester) All these comments suddenly seem like event data analysis is, it seems almost a little vague or nebulous or magical somehow, and that this concept will solve things for us. One of the things I like to hear is: what is the question that you want to address? Not just, let's collect a dataset of everything, because that is going to be impossible. What's the question we want to address frequently in analysis, what is the research problem, and it seems like there are many questions that people want to address. Once you have the question down, and once you determine whether your consumer is government, or academic, then you can use various things like; in academia, the theories you want to test define the sense of variables that you want to collect. Because again, you can't collect everything. From my own perspective, looking at public data, I wanted to estimate structural games and I went to have datasets to do that. What I found was people who had collected the data had massive amounts, but hadn't done it with an eye towards games or sequence. So much of the data I wanted actually never aggregated. So, what is the question and what is the initial theoretical framework, do you want to test competing theories at least for academics, or corporate Turkish structuring, what will you collect? Once you can answer those questions, there are all sorts of tools you can use, all sorts of either web extraction, either LexisNexis, or getting a bunch of research assistants, who you think will actually collect the data. And then there are tons of techniques that people have now to gradually deal with the analysis. But it seems to be the hard part to figure out what you actually want to collect and why.

The other concern I have comes down to who is the funder and how politics will play a part in how certain variables are coded, and will that affect the academic work. For example, with Northern Cyprus interstate disputes, one might imagine that Greece and Turkey might have different opinions on who either initiated the dispute in Cyprus. I can imagine funding by governments can be a very touchy issue.

Sean O'Brien: (Strategic Analysis Enterprises) The bureaucratic policies in Turkey are very similar to what we have in the United States, where not only do agencies not talk or share information with each other, but even within organizations. What is interesting is often you will find that people within these components desperately want that perspective because they won't share with other people, and no one is sharing anything. So what we find is a chicken and an egg issue. What we found in terms of funding is that nobody will give us funding unless we demonstrate there is a value. And it is difficult to demonstrate value until you have

funding. What I would recommend is, as it worked well with us, we chose an issue that could provide value to at least one of these agencies, so at least that provided a kind of missing perspective that they were not getting from others who are not sharing with them. In doing so, you really need to carefully analyze the bureaucratic political landscape, because I found, unfortunately, that when you open one of these doors, another closes behind you because you have created another bureaucratic enemy. But if you start small like that, and you get at least one constituency behind you, you can then add others as you go. It's kind of a slow process, but it is working with us. As long as you make yourself indispensable, they become sort of dependent on that analysis or that new perspective that you provide that they can't get elsewhere. And we found that's what guarantees the funding.

Ersel Aydinli: The customer related issue is very important because that is also linked to the sustainability issue. We seem to have an opportunity, but I don't know how long it will last. Turkish foreign policy is expanding in the Middle East and if we could ever tell policy makers, for example, there are massive numbers of non-state actors that are driving things in the Middle East, and we can make analyses that will let you know how much more important individual ones may become, country by country even, and how this might affect certain countries' foreign relations, they would love to know this.

For now, it looks like our debate revolves around three main issues: What are we going to really ask—in other words, what are our research questions? Next, the customer issue, how are we going to institutionalize the demand in our work? And finally, data related issues, problems with the data, technical questions and so on.

William Lowe: I was a little nervous when I was hearing the last couple of comments. Purely from an academic view, I think it might be useful to distinguish whether and to what extent you are a contractor, to what extent you are an agency, to what extent you are an academic here. What I mean from an academic point of view, one wanting to be able to offer people information about who the salient actors are going to be, and so on. That will be a primary thing, and one might be able to offer the more contractive agency type benefits as a by-product.

Ersel Aydinli: Synchronization I think is obviously the big challenge. We are in it for really academic purposes. Yesterday we tried to emphasize this. For example, if I personally had that type of data about the larger Middle East, I would like to work on alliance theory, and the sub-state actors in central alliance theory. Yes, but as you said, it has to be done in a way that academic necessities will be there, but an institutionalized sustainability of the whole thing, and the funding etc. has to be there too. And of course then the ethics come in to it. And you start thinking about all other things that all come into it.

William Lowe: What I was trying to say wasn't really thinking about the ethics here, but in the sense that having a research question would allow you to put this in a reasonable stance. In an academic research question, the more important idea is on the data collection, which could potentially be endless otherwise.

James Yonamine: (Pennsylvania State University) I think a lot of people are trying to get at technical questions, and if I had another half an hour to present I could have showed that there are many ways to formally extract data. Event data, in other words, actually capturing the "who did what" interactions. A lot of questions are coming out of Turkish foreign policy's evolution over time. And now you might be looking at these specific events, but it may not be as important as rhetoric and the speeches on content analysis approach. I think the key that is

going to tie a lot of this data together is that it's based on open source, extracted through some oral process that you have coded through a rigorous process, and is more or less objective. The second point I want to make is that I think it's going to be critical, whatever type of project you guys come up with, is to consider what an existing event data project could spit out very quickly. So, the IQ project has big dictionaries with many actors as we could find in almost every country in the world, and that can spit out data on Turkish interactions with every actor in that data set for the last 15 years and you could get data in literally a day. In general the better base for Turkish resources is to create something that is inherently value add-on programs. Whether that's linguistic, or additional subtitles I'm not sure, but I think that would be credible.

Pınar İpek: I think when we try to define major research questions like the three dimensions you have listed, we should consider the interactions between these different subfields in security. I think there is a tendency to treat them separately as if they were mutually exclusive, which they are not. So, we may try to come up with research questions that overlap. For example, security and development. Specifically within security there is terrorism. You may think the last relationship between security and terrorism is business, but I think there might be one and we might observe different factors related to Turkey and a new environment given the importance of energy infrastructure and the types of threats given to different involvement of actors. What are the differences in attacks when there is a foreign firm versus a state-to-state level relationship between firms? Or, what were the patterns of terrorism before a big foreign investor entered the picture and after? This is not just in Turkey. In central Asia right after the dissolution of the Soviet Union, I would argue it was influential agents, sub-level state agents, influencing American Policy. What if the pattern of security and development is affected by the existence of different sub-state actors, let's say TIKA in Syria, in Africa. Or in the lack of those sub-state actors. Even before and after, other actors were there, not just Turkish actors, but in American issues like in Iraq, there is tons of different agents supported by different foreign actors. So what are relations like after and before terrorism and security, or negotiations and level of negotiations before and after, was it interest maximization or is it lack of interest sharing?

Reşat Bayer: I want to come back to something that James actually pointed out a while ago which is this issue of value added base. When I was reading the Aydın, Tüzüner, Gültekin piece, basically one thing that was mentioned was that you already have a dictionary of actors. There is a list, a clearly complete list out there and perhaps something that could be a practical manner is to see what is already out there and to see in relations to these actors that you already specified, how much of these are already covered by some of the various sources that you already mentioned, like different people, and to see exactly how many actors are you bringing and how many have already been covered for the time span that you are interested in. Maybe you might find that the material is already covered well enough for you and your purposes. Then you might actually want to press on a different language issue or to further diversify the actors to include political economy, migration issues, and so forth on a more developed sense of security.

Ersel Aydın: The last suggestion I think is really key. One of the problems and therefore

one of the first things that we would have to do is to bring in all the existing works related to Turkey at least and then compare it with ours. In other words, to make a comparative data building.

As we all kind of agreed more or less, there are three clusters, and we've discussed how we need research questions, we need institutional support, and we need to develop the data collection, processing and all that—the technical issues.

Imagine that our broad research area is the foreign policy and security outlook of Eurasia; from Russia to North Africa, from the Balkans to China. Imagine that our task is to understand the foreign policy and security outlook, the patterns of foreign policy activities of these countries with each other and also, if possible, the security outlook on cooperative and conflictive matters. And imagine we have a customer, we have money. How should we go about doing this? What should we do? So, if this was our mission, and if we had five years, and money, how should we get it right and how should we start and proceed so that we wouldn't be disappointing either ourselves as academics or our customers. How can we ensure that the quantitative matters in event data would make a nice entrance into Turkish scholarship and Turkish analysis?

Balkan Devlen: I would like to add to what was said before. What we need to look at first is what is available out there, to see what sort of data we have in existing datasets. Then we need to see their deficiencies and to see in which we have limited data. Then we can focus on those issues. Second of all would be, again this is just an assumption, that one of the major deficiencies would probably be related to the scarcity of local resources from much of this region in this global data set. Therefore, developing a necessary mechanism to gather either local language or English language, but local sources in these countries, to provide richer data and then go forward with that I guess.

Pınar İpek: I would look at the major sources, for example, the newspapers, major coverage, and even the foreign ministries. I would try to come up with the most visible topics and then the actors at the sub-state level especially. And then start the research question with theories, academic levels, groups, and look at which topics will be cooperative and which topics will be conflictive as a start.

William Lowe: I guess it's kind of obvious in these projects, but when we look at projects; they look at what they are going to do at the end. So I guess the first thing I would say would be to figure out how you can release something to someone earlier on. What is the schedule, from the academic front all the way to the policy mechanism and possibly the tools for it? Keep the schedule slightly front loaded so that people can see things happening.

Belgin Şan-Akça: Referring back to what Curtis was saying earlier, definitely we can't collect data on everything, so there is a need to narrow it down. We have to think about the topics that are really on the security topics that will be appealing to government agencies, but from the beginning, the data development project in my opinion should be developed in such a way that it appeals both to academics and policy makers. Maybe one other strategy could be to think about which other organizations or institutions, this could be international organizations too, that this data could be appealing to, and start communicating with them. Try to understand their needs. I don't know how broad you want to take this scope, but it could be interesting to engage some European Union agencies as well.

If this is going to be merely funded by the government, I have doubts about two things. The first thing is there will be limitations on the scope of topics that we are covering. So they

may not be interested in topics such as human rights, but if the data is out there and funded by the government, for instance GTB data is funded to a great extent by the department of homeland security, it is widely used, but some people will argue that it is funded by the U.S. government, and we know some scholars who don't like things that are funded by government agencies. So, that could be one of the concerns. Obviously, we don't want the data to only be used by Turkish scholars, but also by an international audience.

On a technical front, someone was talking about for instance the Kansas State University system for event data analysis. I found it very complex and felt it would take a long to figure it out. So, from the beginning, whatever is done should be arranged in a way that has a more user-friendly approach.

Joseph Bond: I guess all I want to say is that I would encourage everyone in a project like this to inter-commission; to check out what is out there. I know for example there is a project called European Media Monitor, which is quite large and I think they have spent well over a hundred million dollars developing it. PC developed it. We worked with them, and it is an amazing system. I know from working in Africa, it is now used there. It operates in 27 languages, and it is quite an amazing effort. They do this social network analysis, and there is this component that is data analysis. There are incredible resources out there. So, I mean, don't reinvent them. A lot of these resources are free to anyone who wants to use them.

Curtis Signorino: Just a couple of thoughts; the one concern about the hypothesized consumer and the funding agency. If it is a governmental funding agency, with specific priorities, I think that everything that Sean suggested is really terrific advice. On the other hand, in the U.S., we are fortunate to have government funding agencies for academics like Natural Science Foundations that do help. Although there are not many cases of political science getting funded by these. But, in that case, the customer is really the rest of academia. I have served on NSF review boards, the reason something gets funded is because it provides that value added for the rest of academics to do their research. I think one of the things that is attractive in the American national election strategy is they provide the ability for other researchers to submit questions as part of the study. So it's a balancing act in this case for you guys. But, you might consider if you are interested in more buy-ins so to speak, from other academicians, to people in this room, other Turkish academics, we can include a regressor and an independent variable and dependent variable and what would you like to see us collect? We may not be able to do it because some variables are harder to collect than others, and we need a balancing act of being able to maintain the scope of a project, etc., but for that NSF system, where your customer is a bunch of other academics saying yes, you should fund this, that's a great way of getting some buy-in there.

Reşat Bayer: Also you should think about the issue of what sort of media types interest you. Yesterday there was reference to Twitter, Facebook, and others. Depending on the research question at hand, those might be very useful, or perhaps really not at all. But a different thing that is on my mind is the issue of constructing measures and how does one construct measures when you are dealing with Twitter or the Facebook world? What sort of special problems, if any, would that create for us? With the hundred and forty-four characters or whatever it is, what sort of constructional measure does there need to be engaged in based on the concepts you have on your mind and how to relate those two so that the concept and the constructions really do match up on a high level? And I wonder if these new elements such as Facebook, Twitter, etc., while useful for some purposes and policies, might be creating

much more difficult problems as well. Maybe the idea of Twitter and the Tunisian revolution really was slightly exaggerated perhaps. These are just things that came to my mind about this media question and how to think about constructing and thinking about concepts as well.

Ersel Aydınlı: Have they ever been included in any of these data sets? How was it?

Sean O'Brien: Not good. First of all, when we tried to get Twitter feed, Twitter now has a business model where they charge you a lot of money to get access to their feed. But we found someone who had paid that large sum of money and we just wanted to do some experimentation on it. We were experimenting with our sentiment analysis tools, so we wanted to extract people's sentiments towards different products and towards different issues. And we found it was just garbage for the most part. It was advertisements, it was spam, it was links to various different things, and out of five thousand Twitter instances, we found one legitimate sentiment expression. There are various business companies that claim to mine that information for corporations that want to know what people think about their products. And corporations apparently pay them for that, but when I ask these companies, how do you know whether the data is, or what you are extracting is accurate, they say, well we don't really know.

Ersel Aydınlı: You know, our president even has a Twitter account. When the number one person is into it, people seem to think that it must be influential.

Özgür Özdamar: I have a question about your hypothesized customer. I was just wondering. Well, that is kind of important because all of the other details that we are discussing now from Twitter, Facebook, to data feed from other things will actually be shaped by what kind of a customer you want, and what the customer is asking for. And I was wondering whether we should be also talking about that.

Ersel Aydınlı: Imagine that it's the Foreign Ministry, or imagine it's TUBITAK. You know, TUBITAK is our Turkish NSF. If it's TUBITAK, then it's more possible we can get this available for the scholars from now and within the next ten years. If it's the Foreign Ministry, you can imagine what they would want it for. The Foreign Minister is now building up a new Foreign Ministry; they have built an academic building, thinking that they are going to be the next Ottoman Empire or something. They have the money. They have interest in knowing more about this region, so it can be the Foreign Ministry, it can be TUBITAK.

Özgür Özdamar: Okay, I think that is really important to know that about our specific imaginary friend. All the other questions that we have been talking so much about will be guided by who our customer is.

Ersel Aydınlı: But, does it have to be that way? I'm not sure that it does. This is the first attempt, we will and we would have a lot of leverage still in how we would do it because it would be more like experimenting for them. They haven't done it before. They don't know what to expect really. I think they would trust us and say alright, am I going to be able to have a quick analysis about this region, these patterns? That is what they would be interested in. For example, a deputy secretary might say, can I just have my policy planning chief talk to you guys and get a quick analysis so that I could carry it to the Foreign Minister tomorrow, or in two days? Or imagine some event in which Turkey runs into a problem with Iran, can I get a quick understanding about even that event's sub-components in Iran? How are they relating to Iraq? How are they relating to the Iraqi Kurds? For example, they would be interested in such things. But if it is TUBITAK, that gives us of course a much larger kind of relay for our academic purposes as well.

Özgür Özdamar: Well, I think we are presuming what the customers would want from us. There are two ways to go for this. I mean, it is like the Steve Jobs way that says that people don't know what they need until you tell them, and this is kind of what we are doing here. But the other way is the more typical way; you hire a survey agency and have them go ask people what they want. So, I was just thinking for this session, we cannot bring in people immediately right now. We at least have people who are working for the government. Who are in the subset of academics and government officials? I was just wondering whether we should ask those people in the subset what could actually a government agency need from a bunch of people like us. Otherwise we have to try to get the understanding from the other way; we put words in other people's mouths.

Ersel Aydınlı: It's not necessarily us putting words in their mouths. We have been in touch with them, we talked to them on various occasions, and we have some idea of what they want. For example, you know every Foreign Ministry has bureaus. They have bureaus for, for example, intelligence policy. They know that it's not very active, and they would like to have a much more systematic, sustainable, long term institutionalized something that would be available. If you listen to them, they are not even interested in just getting it for themselves today, the Minister himself is a former academic in Turkey, and the deputy and undersecretary would like to have something even for the future. But you are right, we are also assuming a little, but we have to. But right now we are learning that, from this discussion, we should go check with them in a more systematic way.

Cihangir Baycan: (Turkish National Police). So, after a full day, although there are some challenges and difficulties for these data modeling, I have seen that we can have good data to look at the history of any events or the relationships. We can use those kinds of data and create our policies for our positions for the future events. We may not be able to forecast events, for example, when a demonstration will happen, but we may be able to create policies for *how* to act in different scenarios. In that way, I believe it could be very beneficial.

Sean O'Brien: I would just like to reinforce some things that were said here. First of all, it is possible to identify issues that are both of interest to the academic community, that attract NSF funding, but are also policy relevant and attractive for government funding. For instance, forecasting conflict is important intellectually, academically. There is a way to assess the adequacy of our models, and is also very relevant to government agencies. So if you were to choose an issue to begin with, one that allows you to leverage existing things off the shelves, whether through IQS, Tabari, VRA, and master those things, and identify some scenarios you could apply to Turkish foreign relations, and then demonstrate those to your potential customers, that would be something you could do with a little bit of time but very little money. To at least get started, to socialize people and begin to educate them a little bit. And then also identify the deficiencies in these things for which you seek funding to further enhance them so that they would be more useful and specific to the kinds of issues that you want to address and that the Turkish government would like to address.

Pınar İpek: Even in the funding stage, before even the proposal writing process, we should go to the major potential customers, like the Department of the Interior, the Ministry of Foreign Affairs, some diplomats from key regions, the media, and so on, and ask them, make a customer oriented type of needs survey. We seem to be turning to a wrong direction. As if we are trying to fit event data for what we can do with event data. It should be the other way around. What are the major transformations in the world, and how does Turkey fit into

that? And given that, does event data help my purpose? This is the framework any agency in the public policy sector would act in. I had some experience in the Ministry of Health in my early post-graduate work. They have enormous data across time. That is perhaps one of the interesting agencies that uses statistics. They prepare hospitals, and immunization centers, they analyze health threats by age groups, by seasons, by regions, and they try to share it with the Turkish health infrastructure to answer questions like, what kind of investment needs to be made in doctor training? What are the most frequently seen diseases in Turkey? Do we need that many cardiologists, or public health specialists, and so on? So, with a similar logic, we could ask, what are our problems? When can we use event data? The problems are given from the agency perspective.

Ertan Efeğil: If you consider research, foreign policy analysis theories, first of all they need policy options. For example, before crises, the policy people want to know what the policy options are. They need information about the case. If you provide that, they will be your customers.

Haluk Özdemir: I am again a little confused about what we are talking about here. Aren't we then collapsing into basically not two but three parts? Are we planning on using existing datasets for our analysis? Are we going to build a new dataset? Or are we going to contribute to the existing dataset in Turkish? So, I don't know which one we are discussing here. I think we need to clarify first what we are going to do because if you decide on this wrong, then the things we are going to discuss aren't going to be right either. I think we have mentioned all three possibilities and all three are different from each other.

Ersel Aydınlı: We would be doing all those actually. I don't think they are necessarily very separated from each other. We would be building up a data set, but by first visiting the other data sets and bringing relevant stuff from those into our own for our own type of questions. Our own questions that we generate from our own interests, or the customers' interests. And for again our own purposes, which would include not only serving to the policy makers, but also to the advancement of the quality of foreign policy and IR scholarship in Turkey. That is more or less how we would be doing it. We would build up probably our own data set. We really should not reinvent the wheel, but on the other hand we have to take all kinds of country specific interests into consideration. Therefore, I think that we would have to go for creating something custom designed for us. We shouldn't be copying a dictionary that already exists somewhere.

Haluk Özdemir: So we will just be looking at the Turkish literature? Turkish news sources and academic existing data sources?

Ersel Aydınlı: Most probably, but we don't know at this stage, we don't know how different they are. Imagine the question I proposed earlier is a real question we will look at. All kinds of complications can emerge. For example, we would want information about Iran, but there the newspapers are largely in Farsi. You would also have to have somebody who could tell you that which ones of those news sources are closer to the opposition, and which are fully supporting the government. Then there's the question of what other datasets exist for Iran, and what have they looked at. Which sources that they covered? Because it is so complicated, that is why we are having all these discussions. Then, the interested body, either the research council of Turkey or the government will agree to it or not. For now, we are trying to define the parameters of the proposal in a sense. So, that it would make sense to ourselves and also to the possible customers. We are also trying to identify our own human capital as we go.

Who are we? How much can we do? And that doesn't have to be exclusively in Turkish at all, we are imagining an international team still for this.

James Yonamine: I had an idea or thought that was along the lines of the last two discussions. And the question that was posed was, how are we going to pay for it, how are we going to go with owning our own data system? And I would suggest that the first question that was addressed to you a little bit before that, is how do we build an event data community within Turkey so that we know very thoroughly what is out there. One way to proceed is to get some questions from the government, and the academic community can put forward some questions. You can post them online and make a competition to see who can answer these questions best with what is already out there. In that way you can really understand the limitations of what exists. As for the point on medical forecasting, that is the easiest to do. Georgetown University already has a very rigorous program that is forecasting health issues in like sixty languages around the world. And the geometric European media monitor, they already provide very rigorous network analyses of interstate, potential interstate of European countries. Because there is so much research out there, I think that should be the first step.

Balkan Devlen: I think one thing that is emerging is that a good project should have differences and components that can actually move forward relatively independent of each other. With different things like funding, as Sean said, it's a chicken and egg problem. If you can actually divide these things into a couple of components, say one group dealing with the available data research with limited funded and limited human capital, and can actually provide a separate prototype and demo to shuttle, something sensational or something that would capture attention, but do this with the available resources, so they can move forward at the same time. You can have different components including creating a community, looking for a local language, computer programming aspects etc. that could be integrated eventually at a later stage, once you actually demonstrate such a value from these separate components, I think that would first make things much easier.

One simple approach for the policy makers would be just to use the available data to see if there was any escalation in terms of the discourse and in terms of the events that could have signaled an upcoming instability within Israeli-Palestinian relations. If you can see something like that, you can then say, look, there is this data that shows this. If you had known this and if you had actually used this, you wouldn't have been surprised after your return from Israel that a week later Israel would conduct an operation in Gaza. That would be something that would capture the attention of the policy makers. Then you can go on and say, we also have a proposal for you which we can actually develop this further and extend it and customize it for our needs. So that kind of model approach could gather more support and make things move a little bit further I think.

Özgür Özdamar: I also changed my mind about the first approach. I think it should be mixed, Balkan, and you actually are right. If you approach the policy makers in the way that I suggested, and asked them "what do you really need?" probably they would say my field analysts can already tell me all of this so I don't need your new methodology. Perhaps a mixed method like what Balkan describes here would be better. We should be more prepared and tell them, look, these are the things we can do, and you can even pick from these or if you need something new, you just tell me what kind of an approach you want. And I think that the most general way to describe what we discussed here is to say we can offer reliable data analysis about the regions surrounding Turkey, both the state and non-state actors. That

would be the way to present it. And I think also the Turkish officials would be interested in what is going on inside of Turkey and what Turkish actors, and different actors are doing internationally. Like the NGOs, or political parties, or governmental agencies because even the governmental agencies one of them does know what the other is doing exactly and in international relations or other things. So, I think a kind of a mixed approach would be of course useful.

Cihangir Baycan: I agree with Balkan and Özgür, they will react like, we know everything. Believe me, they know most things, or more things than the newspaper give you. But the key point to what we can serve to the policy makers is how to analyze it. How to create new perspectives. This can be the product of this event data analysis.

Ersel Aydınlı: I think we shouldn't keep you here too long. I really would like to thank all of you for coming to this workshop. Personally, I have a much clearer picture of how we need to proceed from here. And that is exactly one of the major reasons why we wanted to do this. It was also a great chance to bring people together, to create new contacts and new cooperation possibilities among us all.

Musa Tüzüner: I would like to also thank all the participants, our international and Turkish scholars, our research assistants, and the organizing agency members. We had a goal of bringing together international scholars to see what they are doing, with Turkish scholars. There has been a lot of information shared, and questions raised, so I think we are on the right path. Thank you all very much.

Manuscript Submission:

Manuscripts submitted for consideration must follow the style on the journal's web page (<http://www.foreignpolicyandpeace.org/doc/authors-guideline.doc>). The manuscripts should not be submitted simultaneously to any other publication, nor may they have been previously published elsewhere in English. However, articles that are published previously in another language but updated or improved can be submitted. For such articles, the author(s) will be responsible in seeking the required permission for copyright.

Manuscripts must be submitted by e-mail to: submissions@all-azimuth.bilkent.edu.tr

Editorial Office

Center for Foreign Policy and Peace Research
İhsan Doğramacı Peace Foundation
Bilkent University, G Building, Room: 157
06800 Bilkent, Ankara, Turkey
Tel: (90-312) 290 2985 (pbx)
Fax: (90-312) 290 3078
e-mail: editors@all-azimuth.bilkent.edu.tr
web: www.foreignpolicyandpeace.org

This journal is owned by Ersel Aydınlı, on behalf of the Center for Foreign Policy and Peace Research.

In This Special Issue 3

ARTICLES

A Guide to Event Data: Past, Present, and Future 5
Philip A. Schrodt and James E. Yonamine

Data Quality for Measuring Political Protest and Government Change 23
Charles Lewis Taylor

An Empirical Assessment of the Role of Emotions and Behavior in
Conflict Using Automatically Generated Data 31
Steve Shellman and Sean O'Brien

A Pilot Study of Quantifying Turkey's Foreign Affairs: Data Generation,
Challenges and Priliminary Analysis 47
Musa Tüzüner and Gonca Biltekin

COMMENTARY

Roundtable Discussion on Event Data 71



FPPR www.foreignpolicyandpeace.org
Ankara-Turkey

