Timing the Changes in Political Structures: A New Polity Database

Sara McLaughlin; Scott Gates; Havard Hegre; Ranveig Gissinger; Nils Petter Gleditsch

The Journal of Conflict Resolution, Vol. 42, No. 2. (Apr., 1998), pp. 231-242.

Stable URL:
http://links.jstor.org/sici?sici=0022-0027%28199804%2942%3A2%3C231%3ATTCIPS%3E2.0.CO%3B2-N

The Journal of Conflict Resolution is currently published by Sage Publications, Inc..

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at http://www.jstor.org/about/terms.html. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at http://www.jstor.org/journals/sage.html.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is an independent not-for-profit organization dedicated to creating and preserving a digital archive of scholarly journals. For more information regarding JSTOR, please contact support@jstor.org.

http://www.jstor.org/
Fri Apr 14 12:51:54 2006

Timing the Changes in Political Structures

A NEW POLITY DATABASE

SARA McLAUGHLIN
Department of Political Science
Florida State University
SCOTT GATES
Department of Political Science
Michigan State University
HÅVARD HEGRE
International Peace Research Institute, Oslo
RANVEIG GISSINGER
Department of Sociology and Political Science
Norwegian University of Science and Technology
NILS PETTER GLEDITSCH
Department of Sociology and Political Science
Norwegian University of Science and Technology
International Peace Research Institute, Oslo

This article introduces the Polity IIId ("d" is for dates) data set. The Polity IIId project codes the precise dates of changes in political structure identified by Polity III for all independent countries in the international system from 1800 to 1994. By moving from annual measurements of authority and polity characteristics, the Polity IIId data are more appropriate for event-based analysis. The authors discuss the implications of the new data set for event count and event history models of democracy and war, democratization and war, regime type and civil war, and causes of change in political structure.

MEASURING DEMOCRACY

Democracy has long been an important concept in the social sciences. Scholars have incorporated a regime-type variable into their analyses of the democratic peace (Gates 1983; Rummel 1983; Bremer 1992; Maoz and Russett 1993), the civil peace and ethnic conflict (Muller and Weede 1990; Auvinen 1997), environmental degradation (Gleditsch and Sverdrup 1995; Midlarsky 1997), military intervention and foreign

JOURNAL OF CONFLICT RESOLUTION, Vol. 42 No. 2, April 1998 231-242
© 1998 Sage Publications, Inc.

policy (Bueno de Mesquita, Siverson, and Woller 1992; Siverson 1995; Gelpi 1997), and regime duration (Gurr 1978; Gurr, Jaggers, and Moore 1990; Bueno de Mesquita and Siverson 1995), among others. Measures of democracy have been developed and applied by contemporary scholars. Some of the more sophisticated measures of regime type have become popular data sets among scholars investigating aspects of societal governance and regulation. These include Bollen's (1980, 1993) multivariate measurement model-based indicator, the Freedom House (annual) survey of political and civil rights around the world, Arat's (1991) human rights-based indicators, Vanhanen's (1990, 1997) election-based measures, and Coppedge and Reinicke's (1990) multivariate approach. The most widely employed measure derives from the Polity database (Gurr 1978 [Polity I]; Gurr, Jaggers, and Moore 1990 [Polity II]; Jaggers and Gurr 1995 [Polity III]).

A limitation common to all of these data sets is that they provide only annual information about regime characteristics.[1] Precise dating of regime changes and transformations is not available. This annual format creates difficulties for any event analysis. This shortcoming is noted by Jaggers and Gurr (1995), who comment that "the annualization format of the Polity II (and Polity III) data has made it difficult to precisely match regime type with event-based social behavior, such as international conflict" (p. 470).[2] The data set introduced in this article, Polity IIId, overcomes this limitation by explicitly measuring the month and day of changes in political structure.[3]

With the annual format, each transition in Polity III was coded as though the transformation took place on January 1 of the year of transition. In cases involving coups or elections, as well as in other cases in which precise dates are identifiable, the advantage of more accurate coding is quite evident. Specifically, it is possible to gauge whether the regime change preceded or followed other events such as the outbreak of war. But even in cases in which political transformations are more incremental or evolutionary, there is an advantage to ascribing some degree of precision beyond the first day of the year and to distinguishing those political transformations that can be identified to have taken place on a particular date from those that took place over a period of weeks.

1. The first version of the Polity database contained only information about major and minor changes within the life of polities. Lichbach (1984) was the first to extend these major and minor changes into interpolated annual scores on regime characteristics, a tradition that has now become standard practice in the Polity project.

2. Gasiorowski (1993, 1996) does provide more precise dating, but his data set is limited spatially and temporally to regime transitions in 97 Third World countries after independence.

3. Previous versions of the Polity data (I, II, and III) include some information on the dates of political changes (especially the months in which changes occur), but the principal investigators chose not to include that information in the final data sets.

AUTHORS' NOTE: We thank the Norwegian University of Science and Technology, Trondheim, and the Norwegian Research Council, Oslo, for financial support for this project. We also are very grateful to Keith Jaggers, who helped initiate our study and provided continuity with the Polity project, to Ted Gurr for his continuing support, and to Mike Ward for his comments. Finally, special thanks are extended to Arve Østgaard, Turi Saltnes, David Schwartz, and Jeremy Water for their work on the coding. The data, as well as a detailed description of sources, are available by anonymous ftp from http://www.colorado.edu/IBS/GAD/spacetime/data/Polity.html. Polity IV, updated through 1996 and incorporating the transition dates in Polity IIId, will be deposited with the Inter-University Consortium for Political and Social Research in mid-1998 by Jaggers.

Social scientists study events. As political scientists, we tend to focus on political events such as elections, wars and other less violent international disputes, the implementation of particular policies, polity transformations, and other interesting "political" events. All events, by definition, are temporally linked. In general, social scientists (and most others) have assumed that uncovering anything related to the causes of certain events requires a clear temporal precedent. The temporal arrow goes in only one direction, and events that are subsequent do not influence those that are prior. There are many possible ways in which to analyze events, but we focus here on two types of analysis that are distinguished by the type of research question under investigation. Event count models (King 1989) have been widely employed in political science to analyze summed events of binary phenomena. For example, they can be used to study the number of terrorist incidents in a year or the number of coup d'états in Africa since World War II. Event count models can be estimated with Poisson, negative binomial, and generalized event count distributions (King 1989; McCullagh and Nelder 1989). Event history models, on the other hand, focus on the duration of events and nonevents such as the duration of illness in an individual or of conflict in a country. Such models gauge the risk or hazard rate that a country will move from being in one state of affairs to another. Cox regression (hazard) models are useful for such analysis (Raknerud and Hegre 1997). Critical to event analysis is the incorporation of time (and timing) into the analysis. Polity IIId facilitates this by identifying the dates of political changes.

This article shows how the Polity IIId data set was generated and illustrates how it may be used in event analysis. We begin with a brief description of the conceptual foundations of the Polity project. Next, we introduce the Polity IIId data, focusing on the criteria we used to code the start and end dates of changes in political structure. Then, we turn to analytical applications of the data, notably the study of the democratic peace.

THE CONCEPTUAL FOUNDATIONS OF THE POLITY PROJECT

The Polity project was conceptually developed by Gurr (1974) in his study of regime durability and change. A polity was defined as

> the basic political arrangements by which national political communities govern their affairs. . . . When a system changes abruptly and substantially on one or more of these dimensions [of authority patterns], the change is treated as the end of one polity and the beginning of the other. (p. 1483)

To analyze regime persistence, Gurr collected data on several authority characteristics for each polity in the international system between 1800 and 1971.[4] These characteristics were derived from Eckstein's theory of authority relations that applied to all social units, including polities. This early development of an analytic delineation of

4. Polity I collected data at only two points in time: the beginning and end of each polity.

authority relations was detailed in Eckstein and Gurr (1975). The Polity I project focused on the following five dimensions of a political system's authority:

> the influence relations between superordinate and subordinate strata; the degree of inequality between the strata; the institutional relations among superordinates; the competitiveness of the recruitment to superordinate positions; and the basis of political legitimacy, whether personal, substantive, or procedural. (Jaggers and Gurr 1995, 470)

Using these measures, Gurr (1974) was able to compare the durability of regimes across time and space.

Polity II expanded the scope of the original data set to include annual codings of nine institutionalized authority characteristics for more than 150 countries from 1800 to 1986. Although Gurr eschewed the use of the Polity database to measure the degree of autocracy and democracy in historical polities, this later became the main use of the accumulated information. Scales of democracy, autocracy, and anocracy were created through the aggregation of authority characteristics reflecting the influence dimensions of authority, the recruitment of chief executives, and the centralization of government structure (Jaggers and Gurr 1995, 470). Polity III updated the data comprising the democracy and autocracy indicators for the post–World War II period (1946-1994). These data were merged with the information from Polity II for the period from 1800 to 1945.

POLITY IIId

Polity IIId returns to the original structure of the Polity data set with the polity as the unit. A polity is synonymous with a country in which there is no recorded change in the political structure. This definition of a polity is slightly different from that of Polity I, in which polities start or end only when "a system changes abruptly and substantially." In Polity IIId, polities also start or end when minor changes occur in a country's political structure. Using this definition, there are 176 countries (current or historical) and 1,358 polities in the Polity IIId data set. Organizing the data set this way allows precise start and end dates. We refer to an event that causes a polity to end and a new one to start as a change in political structure or political change for short.

As a point of departure, the Polity IIId project coded the month and day of all changes in political structure as recorded in the Polity III data set.[5] We took these changes for granted, without challenging the original coding of Polity III, with one exception that is described in what follows. More precisely, we define a change in political structure as (1) actual changes in the indicators that contribute to the democracy and autocracy indicators,[6] (2) entering or leaving a period of

5. Cases for Polity IIId were constructed using the Correlates of War country number codes. Some polities in Polity III for which country numbers were changed from Polity II were omitted.

6. This includes the regulation of participation, the competitiveness of participation, the competitiveness of executive recruitment, the openness of executive recruitment, and executive constraints. For more detailed descriptions of these measures, see *Polity II Codebook* (1989), Gurr, Jaggers, and Moore (1990), and Jaggers and Gurr (1995).

transition,[7] (3) acquiring or losing Polity status,[8] and (4) acquiring or losing Correlates of War (COW) system membership.[9] For each case that meets our criteria for a change in political structure, we coded information on the start and end dates of the polity, the sources of polity start and polity end, and the precision of the start and end dates. We also included a written description of the events surrounding the change.[10] All of the information coded for each political change refers to the factors leading to the end of one polity and the beginning of the next polity.[11]

For reasons that will become clear in the next section, we were puzzled at why the military coup d'état in Cyprus on July 16, 1974, did not lead to a regime change in Polity III. The explanation is that the annual coding scheme of Polity II/III does not allow more than one change in political structure per year. Because we took the changes coded in Polity III as our starting point, Polity IIId still could overlook short-lived polities. By and large, we have left this problem for future updates. As a systematic way of checking whether other short-lived polities had been removed in the same way in the update, we tallied all the cases of coding change from "in transition" in Polity II to "not in transition" in Polity III.[12] Including Cyprus in 1974, there were 12 such cases, and we anticipated coding changes for most of these. After a close investigation, we concluded that only the regime change in Cyprus warranted the insertion of a new polity. We inserted two consecutive transition polities for Cyprus following the coup d'état. The democratic regime in Cyprus is now coded as restored on February 14, 1975. In Polity III, Cyprus was coded as having a democracy score of 7 during the entire year.[13]

7. Polity III designates transition periods in several ways. A "transition polity" is a period of time in which "new institutions are planned, legally constituted, and put into effect. Democratic and quasi-democratic polities are particularly likely to be so established, in a procedure involving constitutional conventions and referenda" (*Polity II Codebook* 1989, 7). A period of "interruption" also is a transition period, which usually is the result of foreign military occupation and war. Finally, the project codes periods of "interregnum," in which the authority of the political system disintegrates. This can include incidents of civil war, internal factionalism, or external military intervention.

8. Polity status refers simply to the inclusion of a country in the Polity III data set. We distinguish polity status from Correlates of War (COW) status due to the differences in the time periods of the Polity and COW data sets.

9. Although many applications of the Polity data employ COW system membership status as a case selection mechanism, the Polity data include cases before 1816, the first year of the COW system membership data. In some cases, nations are included in Polity at times when they are not recognized by COW as separate actors (e.g., Norway in the period 1814-1905). Conversely, some small countries that do not meet the Polity cutoff of 500,000 population are included in COW (e.g., Bahamas in the period 1973-1994).

10. The primary sources used to identify polity start and end dates included information contained in the Polity III files (*Annual Register* [various years], Freedom House [various years], *Statesman's Yearbook* [various years]), *Keesing's Record and World Events* (various weeks and months), and Langer (1972).

11. The end date of one polity is coded as the exact date of the event associated with the change in political structure, and the start date of the next polity is coded as the next day.

12. These were Guatemala in 1957, Chile in 1973, Argentina in 1982, Mauritania in 1978, Upper Volta in 1969, Ghana in 1976 and 1977, Zaire in 1965 and 1966, Lesotho in 1986, and Nepal in 1980. Most of these were minor variations in autocratic rule. Following our ordinary coding procedures, the polity overthrown by the 1973 coup d'état in Chile was dated to end on September 11, 1973—the day of the coup. But we found no reason to insert any transition polity preceding or following the coup, as the change from Polity II to Polity III would imply.

13. The institutionalized democracy scale in Polity III is an ordinal scale that ranges from 0 (*least democratic*) to 10 (*most democratic*). A common cutoff point on this scale has been to consider countries that score 6 or greater on this scale as democratic.

TABLE 1
Frequency Distribution of the Precision of Polity End Dates

	1816-1945		*1946-1994*		*Entire Period*	
	n	*Percentage*	n	*Percentage*	n	*Percentage*
Exact date	393	71.2	437	54.2	829	61.0
Assigned date	56	10.1	161	20.0	217	16.0
Approximate date	23	4.2	16	2.0	39	2.9
Missing	80	14.5	35	4.3	115	8.5
Polity still in existence	0	0.0	157	19.5	157	11.6
Total	552	100.0	806	100.0	1,358	100.0

The identification of dates of changes in political structure was easier in the post–World War II period. This was a function both of improved news sources and the updating carried out in the Polity III project, which helped to eliminate errors in the previous versions. To give users of Polity IIId an indication about the precision of the polity start and end dates, we coded the dates as "exact," "assigned," "approximate," or "missing." Table 1 provides a frequency distribution of the precision of polity end dates in Polity IIId. For the entire period, more than 60% of the cases were coded with exact polity end dates (months and days). The percentage of polity end dates coded as exact was greater prior to World War II.

An example of a change coded with an exact polity end date is the military coup d'état in Chile in 1973. In Polity III, General Pinochet's overthrow of President Allende was coded as occurring in the beginning of 1973. This was changed to September 11, 1973. At that point, Chile is coded as changing from democracy score 6 to 0. Another example is the so-called pan-Arab revolution in Iraq that overthrew King Faisal II on July 14, 1958, abolished the 1925 constitution, dissolved the legislature, and declared a republic. This is reflected as a decrease in Iraq's democracy score from 1 to 0, and that change is now correctly dated. This example also shows that a major political event such as the Iraqi revolution is not necessarily reflected in great changes in the institutional characteristics measured by the Polity project.

Not all cases of change in political structure could be dated exactly. The precision of the polity end dates was coded as assigned in those cases in which (1) more than one event could be attributed to the change in political structure (in such cases, we selected one of the events), (2) the particular event persisted for more than one day (e.g., a series of elections), or (3) the coders were uncertain whether or not the particular event identified was indeed the source of the change in political structure identified by earlier versions of the data. As Table 1 shows, 16% of the cases were assigned polity end dates. Although 10% of the end dates were coded as assigned from 1816 to 1994, the figure rose to 20% from 1946 to 1994. It is not clear to us why the accuracy of the dating is lower for the most recent period. Conceivably, the greater availability of current news sources has made us more aware of the ambiguity of historical events. For the older period, we have relied more on the summary accounts with a "settled" historical interpretation.

The political events that occurred in India in 1975 provide a good example of an assigned polity end date. On June 12, 1975, the high court ruled Indira Gandhi's election to the *Lok Sabha* in 1971 null and void. Turmoil surrounding elections in June 1975 led to a declaration of a state of emergency on June 26, approved by parliament on July 22. Numerous opposition leaders were arrested, and press coverage of the events was heavily censored. In this case, more than one date could be selected as the transition from one polity to a less democratic polity (the democracy score declining from 9 to 7). Polity IIId assigns the polity end date to June 26, the day the state of emergency was declared; although not completely exact, it is considerably more precise than the January 1, 1975 coding in Polity III.

The Polity IIId project coded the precision of a polity end date as approximate when a month could be identified but a specific day could not. Some of the sources provided some indication about when the events transpired, but not always in sufficient detail. Nearly 3% of all polity end dates from 1816 to 1994 are classified as approximate. The percentage of approximate end dates is slightly higher in the pre–World War II period. An example is Portugal's decrease in democracy from 3 to 0 in 1907, when King Carlos I abolished the Cortes (the legislative body), suspended the constitution, and established a royalist dictatorship. Polity IIId coders were able to determine that the king became a dictator in May 1907 but were unable to identify the precise day. In this case, the day is coded as missing, but the timing still is more precise than the Polity III coding of January 1, 1907. More detailed historical research might reduce the indeterminacy even further.

Some changes in political structure could not be dated at all. The project coded the precision of polity end dates as missing if the coders could not find any information about the events surrounding the political change and were unable to code even the month in which the change occurred.[14] For the entire period (1800-1994), 8.5% of the polity end dates are coded as missing, and this share also is higher in the pre–World War II period. An example of a missing polity end date is the decrease in Zimbabwe's democracy score from 6 in 1982 to 3 in 1983. Crackdowns by the government in 1983 led to a decrease in political participation and executive constraints on Prime Minister Mugabe, but no precise date could be associated with the change from one polity to another in 1983.

Finally, 157 polities still are in existence and therefore have no end dates. They make up 12% of all polity endings over the entire period.[15]

14. Some of the dates assigned in earlier versions of the Polity project were arbitrary, especially in cases in which institutional changes occurred gradually over a long time period. The higher proportion of missing cases in the pre–Word War II period can be attributed partly to this arbitrary assignment of dates in long-term changes. Even after consulting multiple data sources, we were unable to document some of the changes.

15. The Polity IIId data set also codes the sources of political change. The categories include creating (or dissolving) larger unit, starting (or ending) military occupation, beginning (or end) of colonial relationship, coup d'état, revolution, and other. The general category of other was by far the most common source of polity start or end. Coup d'états also frequently were associated with the change from one polity to another.

THE DEMOCRATIC PEACE

The central finding of the democratic peace literature is that democracies rarely, if ever, fight wars with one another and that double-democratic dyads are much less likely than other dyads to become entangled in militarized disputes.

The most obvious problem with annual coding of regime and change in political structure when examining event-based social phenomena is the potential for a temporal mismatch. Such a mismatch might occur when an event such as a war or a militarized interstate dispute (MID) is dated precisely, as in the COW project, and when any regime change is coded annually. For example, Norway is implicitly coded as an occupied country from January 1, 1940, by Polity III with its annual coding format. This leads to a misleading classification of the German invasion on April 9, 1940, as a war between an autocracy and an occupied country. A better known anomaly is the apparent outbreak of war on July 20, 1974, between Turkey and Cyprus, both classified as democracies.[16] The war was preceded by a military coup d'état that temporarily ended democracy in Cyprus (Gleditsch and Hegre 1997, 286). This obviously should not be classified as a war between democracies. Polity IIId corrects these and other temporal anomalies.

Table 2 identifies how the more precise dating of regime transformation affects the accounting of wars and international conflict between different regime types. Polity IIId reduces the number of wars between democracies by two by eliminating the two outbreaks of war between Turkey and Cyprus in 1974.[17] Of the remaining eight war dyads between democracies, six refer to the well-known case of Finland versus Western democracies during World War II in which there was no war action at all (Gleditsch 1995, 315). The two other cases are the Spanish-American war in 1898 and the Lithuanian-Polish war in 1919. The number of wars between democracies and autocracies increases, as does the number of wars between autocracies.[18]

Table 2 also shows similar results for MIDs. The number of democracies entangled in disputes with one another falls by eight cases; in addition, there is a reduction in the number of MIDs in politically mixed dyads, an increase in the number of disputes between autocracies, a major reduction in the number of dyads involving at least one regime in transition, and a very slight increase in the number of dyads involving missing cases.

Most dyadic analyses of the democratic peace statistically account for only three types of dyads (democratic, mixed, and autocratic). By reducing the number of dyads with one or two countries in transition or missing regime data, Polity IIId expands the sample size of relevant cases for analysis.

16. We define a democracy as a regime scoring 6 or more on the democracy index. We also ran analyses defining a democracy as a regime that scores 3 or more when taking the difference between the regime's score on the autocracy scale and its score on the democracy scale (i.e., democracy score minus autocracy score is greater than or equal to 3). The results were very similar.

17. There was a second outbreak of violence on August 14, so this is classified as two outbreaks of war in the COW data set.

18. We define an autocracy here as the absence of democracy, meaning that an autocracy is a regime scoring lower than 6 on the democracy scale. This number is not directly affected by the country's score on the autocracy scale.

TABLE 2
Regime Codings for War Dyads and Militarized Interstate Dispute Dyads, 1816-1994: Polity III versus Polity IIId (absolute numbers)

	War Dyads		*Militarized Interstate Dispute Dyads*	
Regime Combination	*Polity III*	*Polity IIId*	*Polity III*	*Polity IIId*
Two democracies	10	8	162	150
Mixed dyad	116	129	1,313	1,273
Two autocracies	94	111	1,102	1,148
One or two in transition	69	49	267	211
One or two missing regime data	56	48	151	153
Total	345	345	2,935	2,935

NOTE: Democracies are defined as those regimes scoring 6 or higher on the democracy dimension of Polity III or Polity IIId. Cases with one in transition and one missing regime data are classified as missing regime data.

Students of the democratic peace have known for some time about the anomalous cases of war between democracies, but the number of anomalous wars between other regime types has not been known. Nor have we known the extent to which the lack of precise dating of regime change has affected our analysis of interstate disputes. We could not know in advance whether the greater precision of Polity IIId would strengthen or weaken the democratic peace thesis. In fact, we find that the relationship between democracy and peace at the dyadic level is strengthened somewhat. What might be called "the autocratic peace" (the tendency for autocratic dyads to have a lower propensity for violent conflict than the mixed dyads, although not as low as the democratic dyads) is weakened both for wars and for MIDs. However, calculations not reproduced here show that at both levels of violence, the politically mixed dyads still are the most conflict-prone ones, even with the revised regime data (Raknerud and Hegre 1997).

More important, Polity IIId may help us to address some problems inherent in a dyad-year framework of analysis, a framework that has become nearly a fixture of quantitative analyses of the democratic peace. Most such analyses assume that all dyad-years are statistically independent from one another. However, this is not true. Three types of dependence between cases can affect our analysis of the dyadic democratic peace: conflict that continues beyond a single year, conflict that alters the probability of conflict between other dyads in a given year, and "enduring rivalries" (recurrent conflicts) involving cases in which one conflict is causally related to a subsequent conflict. When the independence assumption is violated, the statistical significance of the results is likely to be overestimated.

Scholars have attempted to deal with this problem in a variety of ways. Bremer (1992) argues that "the question of how wars begin is fundamentally different from the questions of why wars grow in size, duration, or severity" (p. 320). His solution to the problem of case dependence is to analyze only the characteristics of each conflicting dyad member at the beginning of the conflict. In this way, Bremer excludes

from his analysis all subsequent dyad-years involving conflict between the two states. He also excludes all other dyads that join a multilateral conflict. There are two problems with this approach. First, this method effectively treats all conflicting dyads that fight longer than a year as peaceful dyads after the initial year of conflict. Second, his approach fails to include most participants in a multilateral conflict; indeed, World War II is treated as a war between Germany and Poland, and all other war participants are treated as if they were peaceful—hardly an accurate depiction of the actual events. Clearly, this is very problematic, but the alternative—to ignore case dependence—is hardly better.

Raknerud and Hegre (1997) and Beck and Tucker (1996) provide two different answers to the problem of case dependence. Raknerud and Hegre (1997) use a Cox regression model that treats the interactions between each member of an interstate dyad as a continuous process. The essential idea behind Cox regression techniques is to estimate the probability of war in a dyad given that there was a war outbreak somewhere else in the system. This allows for the use of continuous time in which the time between war outbreaks is treated separately with a nonparametric function. Raknerud and Hegre use this event history modeling technique to assess the hazards of war. The more precise dating of regime change in Polity IIId allowed Raknerud and Hegre to avoid temporal mismatches.

Beck and Tucker (1996) account for case dependence with a generalized additive model (GAM) using a dyad-year approach (see also Beck, Katz, and Tucker 1997). They account for case dependence with a cubic smoothing spline of elapsed time since a dyad last experienced a militarized dispute. This smoothing incorporates time into the analysis, but unlike Cox regression event history analysis as used by Raknerud and Hegre (1997), time is evaluated discretely in Beck and Tucker's (1996) GAM analysis. Beck and Tucker also use Polity III data, but annual measures of polities' regime scores constitute a crude measure by which to smooth temporal effects. Polity IIId will enable them to correct future GAM analyses and to use smaller discrete units of time, say dyad-months, and correct temporal anomalies.

Polity IIId also could be used in many other research applications such as the study of the consequences of democratization and international conflict or civil conflict (Hegre et al. 1997; Mansfield and Snyder 1995a, 1995b; Ward and Gleditsch 1998; Thompson and Tucker 1997). Temporal mismatches and missing political changes (where several occur in a single year) are bound to have a distorting impact on such analyses. Analysis of the consequences of democratization, however, need not be limited to the study of conflict. With more precise dating of regime change, the economic consequences of democratization (or any other type of regime change) also could be studied. Because most economic data are aggregated quarterly, Polity IIId offers a nice alternative to annual aggregation.

REFERENCES

Arat, Zehra. 1991. *Democracy and human rights in developing countries*. Boulder, CO: Lynne Rienner.
Annual Register: A Record of World Events. Various years. New York: Longman.

Auvinen, Juha. 1997. Political conflict in less developed countries 1981-89. *Journal of Peace Research* 34:177-95.

Beck, Nathaniel, Jonathan N. Katz, and Richard Tucker. 1997. Beyond ordinary logit: Taking time seriously in binary time-series-cross-sections models. Paper presented at the annual meeting of the American Political Science Association, Washington, DC, September.

Beck, Nathaniel, and Richard Tucker. 1996. Conflict in space and time: Time series-cross section analysis with a binary dependent variable. Paper presented at the annual meeting of the American Political Science Association, San Francisco, August.

Bollen, Kenneth. 1980. Issues in the comparative measurement of political democracy. *American Political Science Review* 45:370-90.

———. 1993. Liberal democracy: Validity and method factors in cross-national measures. *American Journal of Political Science* 37:1207-30.

Bremer, Stuart. 1992. Dangerous dyads: Conditions affecting the likelihood of interstate war, 1816-1965. *Journal of Conflict Resolution* 36:309-41.

Bueno de Mesquita, Bruce, and Randolph M. Siverson. 1995. War and the survival of political leaders: A comparative analysis of regime type and accountability. *American Political Science Review* 89:841-55.

Bueno de Mesquita, Bruce, Randolph M. Siverson, and Gary Woller. 1992. War and the fate of regimes: A comparative analysis. *American Political Science Review* 86:638-46.

Coppedge, Michael, and Wolfgang Reinicke. 1990. Measuring polyarchy. *Studies in Comparative International Development* 25:51-72.

Eckstein, Harry, and Ted Robert Gurr. 1975. *Patterns of authority: A structural basis for political inquiry.* New York: John Wiley.

Freedom House. Various years. *Freedom in the world.* New York: Freedom House Press.

Gasiorowski, Mark. 1993. *The Political Regime Change dataset.* Baton Rouge: Louisiana State University, Louisiana Population Data Center.

———. 1996. An overview of the Political Regime Change dataset. *Comparative Political Studies* 29:469-83.

Gates, Scott. 1983. Democratic regimes and war involvement. Paper presented at the annual meeting of the Midwest Political Science Association, Chicago, April.

Gelpi, Christopher. 1997. Democratic diversions: Governmental structure and the externalization of domestic conflict. *Journal of Conflict Resolution* 41:255-82.

Gleditsch, Nils Petter. 1995. Geography, democracy, and peace. *International Interactions* 20:297-323.

Gleditsch, Nils Petter, and Håvard Hegre. 1997. Peace and democracy: Three levels of analysis. *Journal of Conflict Resolution* 41:283-310.

Gleditsch, Nils Petter, and Bjørn Otto Sverdrup. 1995. Democracy and the environment. Paper presented at the annual conference of the International Studies Association, Chicago, February.

Gurr, Ted Robert. 1974. Persistence and change in political systems, 1800-1971. *American Political Science Review* 68:1482-504.

———. 1978. *Comparative studies of political conflict and change: Cross-national data sets.* Ann Arbor, MI: Inter-University Consortium for Political and Social Research.

Gurr, Ted Robert, Keith Jaggers, and Will Moore. 1990. The transformation of the Western state: The growth of democracy, autocracy, and state power since 1800. *Studies in Comparative International Development* 25:73-108.

Hegre, Håvard, Tanja Ellingsen, Nils Petter Gleditsch, and Scott Gates. 1997. Regime type, regime transformations, and civil war, 1945-1994. Paper presented at the world congress of the International Political Science Association, Seoul, Korea, August.

Jaggers, Keith, and Ted Robert Gurr. 1995. Tracking democracy's third wave with the Polity III data. *Journal of Peace Research* 32:469-82.

Keesing's Record of World Events. Various weeks and months from 1931. London: Keesing's. (Formerly *Keesing's Contemporary Archives*)

King, Gary. 1989. *Unifying political methodology.* Cambridge, UK: Cambridge University Press.

Langer, William L. 1972. *An encyclopedia of world history: Ancient, medieval, and modern.* Boston: Houghton Mifflin.

Lichbach, Mark Irving. 1984. *Regime change and the coherence of European governments* (Monograph Series in World Affairs). Denver, CO: University of Denver.

Mansfield, Edward D., and Jack Snyder. 1995a. Democratization and the danger of war. *International Security* 20(1): 5-38.

———. 1995b. Democratization and war. *Foreign Affairs* 74(3): 79-97.

Maoz, Zeev, and Bruce Russett. 1993. Normative and structural causes of democratic peace, 1946-1986. *American Political Science Review* 87:624-38.

McCullagh, Peter, and J. A. Nelder. 1989. *Generalized linear models*. 2d ed. London: Chapman & Hall.

Midlarsky, Manus. 1997. Democracy and the environment: An empirical assessment. Paper presented at the annual conference of the International Studies Association, Toronto, March.

Muller, Edward N., and Erich Weede. 1990. Cross-national variation in political violence. *Journal of Conflict Resolution* 34:624-51.

Polity II Codebook. 1989. Ann Arbor, MI: Inter-University Consortium for Political and Social Research.

Raknerud, Arvid, and Håvard Hegre. 1997. The hazard of war: Reassessing the evidence for the democratic peace. *Journal of Peace Research* 34:385-404.

Rummel, Rudolph. 1983. Libertarianism and interstate violence. *Journal of Conflict Resolution* 27:27-71.

Siverson, Randolph M. 1995. Democracies and war participation: In defense of the institutional constraints argument. *European Journal of International Relations* 1:481-89.

Statesman's Yearbook. Various years. London: Macmillan.

Thompson, William, and Richard Tucker. 1997. A tale of two democratic peace critiques. *Journal of Conflict Resolution* 41:428-51.

Vanhanen, Tatu. 1990. *The process of democratization*. New York: Crane Russak.

———. 1997. *Prospects of democracy: A study of 172 countries*. London: Routledge.

Ward, Michael D., and Kristian S. Gleditsch. 1998. Democratizing for peace. *American Political Science Review* 82(1).