MEASURING POLITICAL DEMOCRACY : Case Expertise, Data Adequacy, and Central America[*]

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Bowman, Kirk, Fabrice Lehoucq, and James Mahoney. "Measuring Political Democracy: Case Expertise, Data Adequacy, and Central America," Comparative Political Studies, Vol. 38, No. 8 (October 2005): 939-70.

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Abstract:

Recent writings concerning measurement of political democracy offer sophisticated discussions of problems of conceptualization, operationalization, and aggregation. Yet they have less to say about the error that derives from the use of inaccurate, partial, or misleading data sources. Drawing on evidence from five Central American countries, the authors show this data-induced measurement error compromises the validity of the principal, long-term cross-national scales of democracy. They call for an approach to index construction that relies on case expertise and use of a wide range of data sources, and they employ this approach in developing an index of political democracy for the Central American countries during the 20th century. The authors' index draws on a comprehensive set of secondary and primary sources as it rigorously pursues standards of conceptualization, operationalization, and aggregation. The index's value is illustrated by showing how it suggests new lines of research in the field of Central American politics.

Keywords: democracy; regime indices; measurement; Central America; data sources

Article:

To date, most scholars address the challenge of measuring political democracy by focusing on three methodological issues: the *conceptualization* of democracy through the formulation of explicit definitions, the *operationalization* of these definitions through the construction of specific measures, and the *aggregation* of these measures into overall country scores through specified rules (Munck & Verkuilen, 2002; see also Adcock & Collier, 2001; Bollen, 1980, 1990; Coppedge & Reinicke, 1990; Przeworski, Alvarez, Cheibub, & Limongi, 2000; Schmitter & Karl, 1991).

In this article, we argue that a different and more basic problem threatens the validity of existing over-time indices of democracy: data-induced *measurement error*. This kind of error occurs when analysts incorrectly code cases because of limitations in the underlying data on which they

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rely as description of empirical reality. Typically, data-induced measurement error grows out of the use of inaccurate, partial, or misleading secondary sources. Although analysts acknowledge and briefly discuss this kind of problem (e.g., Bollen, 1990; Munck & Verkuilen, 2002), its consequences remain underappreciated. We suggest that data-induced measurement error may be the most important threat to the valid measurement of democracy. We further propose that the remedy to this problem involves the use of area experts in the coding of cases. Our claim is that area expertise greatly helps researchers plumb the accuracy of sources, pass judgment on meager or contradictory findings, and locate new raw data—essential measurement tasks that existing indices often fail to accomplish.

To develop this argument, we focus on the five countries of Central America during the 20th century: Costa Rica, El Salvador, Honduras, Guatemala, and Nicaragua. The Central American region is well suited for our purposes for three reasons. First, each of us has conducted research in and about the region during the past decade. From this experience, we are in a good position to explore the difference that case familiarity can make when coding democracy measures. Second, as Brockett (1992) suggests, gross and systematic errors have appeared in the codes for the Central American countries in previous large-N data sets. Third, the substantial cross-national and longitudinal variation in political democracy among the Central American countries makes this a useful region for exploring the concrete effects of data- induced measurement error on research findings concerning patterns of democratization.

Through an analysis of the Central American countries, we show that the principal, long-term cross-national scales of democracy—the Gasiorowski (1996), Polity IV (Marshall & Jaggers, 2002), and Vanhanen (2000) indices—are often inaccurate, a result that we also believe applies to indices that classify democracy for shorter periods of time. Although the reasonably high positive correlations among these and other indices suggest that they are reliable, we argue that miscoding derived from limited knowledge of cases may threaten their validity to a degree greater than the more commonly discussed problems of conceptualization, operationalization, and aggregation.

The inconsistency among the different over-time indices motivates our effort to construct a new index for the Central American countries between 1900 and 1999. To create this index, we draw on the full range of available secondary sources in English and Spanish, including difficult to obtain monographs published in the isthmus and rarely cited doctoral dissertations. When these sources are incomplete or contradictory, we turn to local newspapers, government documents, and U.S. diplomatic correspondence to determine whether, for example, an election was rigged or foreign intervention made a mockery of popular sovereignty.

Our index focuses on five dimensions of political democracy: broad political liberties, competitive elections, inclusive participation, civilian supremacy, and national sovereignty. We derive these dimensions by operationalizing Bollen's (1990) general conceptualization of political democracy. Each of the five dimensions is then treated as a necessary condition for political democracy. With this framework, we do not use standard additive approaches for coding and aggregating dimensions. Instead, we offer a new approach that relies on fuzzy-set rules for coding and aggregating necessary conditions (see Ragin, 2000). We suggest that this alternative orientation can productively redirect future efforts to measure democracy. Moreover,

we show how our index helps to set new research agendas in the field of Central American politics.

EVALUATING LONG-TERM INDICES OF DEMOCRACY

There are important conceptual and methodological differences across the three leading long-run scales of democracy: Mark Gasiorowski's (1996) regime typology classification, the Polity IV data set (by Monty G. Marshall, Keith Jaggers, and Ted Gurr; see Marshall & Jaggers, 2002), and Tatu Vanhanen's (2000) index of democracy. Given such differences, it is perhaps not surprising that the scales produce contradictory findings about levels of democracy in Central America. In this section, however, we explore the extent to which these differences might be best explained in terms of data- induced measurement error.

BASIC PROPERTIES

Although democracy is an essentially contested concept (Gallie, 1956), many political scientists believe that for empirical purposes, the term should be defined minimally and procedurally. A common definition of political democracy is, roughly, "fully contested elections with full suffrage and the absence of massive fraud, combined with effective guarantees of civil liberties, including freedom of speech, assembly, and association" (D. Collier & Levitsky, 1997, p. 434). In addition, many analysts add the criterion that elected governments must have effective power to govern. Austere definitions such as these facilitate causal analysis by treating excluded potential attributes (e.g., public policies, socioeconomic factors) as potential causes or consequences of democracy.

Debate, however, exists about how to operationalize democracy and aggregate individual measures into overall scores. For example, Gasiorowski (1996, p. 471) disaggregates democracy into three dimensions: (a) competition, (b) participation, and (c) civil and political liberties. He measures democracy directly in light of these three features rather than further disaggregating them, a decision that Munck and Verkuilen (2002, p. 20) argue creates measurement problems. In Gasiorowski's approach, a democratic regime is defined by high levels across all three dimensions. By contrast, a semidemocratic regime has a substantial degree of political competition but restricts competition or civil liberties. For semidemocratic regimes, Gasiorowski also seems to add a new dimension focused on whether elected officials have the capacity to govern. Although it is not entirely clear, a country appears to be coded as authoritarian if it lacks competition or if it excessively limits participation and/or liberties.

In contrast, the Polity IV index views democracy in light of two very broad dimensions: democracy and autocracy (Marshall & Jaggers, 2002). Each of these broad dimensions is then operationalized by five more specific measures: competitiveness of political participation, regulation of political participation, competitiveness of executive recruitment, openness of executive recruitment, and constraints on the chief executive. The dimensions are coded along an ordinal scale that reflects assumptions about their relative weight. In turn, the weighted scores for measures are summed together to arrive at an aggregate 10-point scale for the two broad dimensions. Polity IV then combines both dimensions into a final −10 to +10 score by subtracting autocracy from democracy.

Vanhanen's (1997; 2000) definition of democracy is similar to many others, but he operationalizes it by using two indicators that are measured along an interval scale: degree of participation (percentage of total population that votes) and competition (percentage vote for minority parties). These percentages are multiplied and then divided by 100 for a final democracy score. For example, National Liberation Party (PLN) presidential candidate José Figueres won the 1953 Costa Rican elections with 62.5% of the vote and 20.7% of the total population having voted. The democracy score is computed as 37.5 (100 – 62.5) * 20.7 / 100 = 7.76. While acknowledging that his procedures may not be able to pick up differences between a mildly authoritarian regime and a harsh authoritarian one, Vanhanen (1997) argues that "it is better to use simple quantitative indicators with certain faults than more complicated measures loaded with weights and estimations based on subjective judgments" (p. 37).

THE RELIABILITY OF THE SCALES
A reliability test among these scales produces an important puzzle. Although the scales are highly correlated among all countries, they are often only weakly correlated among the Central American cases. Moreover, correlations indicate that error is nonsystematic, which suggests that coders end up measuring very different things.

Repeated tests have established a high degree of correlation between existing indices, even as each employs its own indicators and aggregation properties. A recent example comes from Vanhanen (2000, pp. 259-263), who compares his index of democracy with Polity and Freedom House scores. The correlations average .785 for index of democracy and Polity (combining Polity's democracy and autocracy scores) from 1909 to 1998 and .823 for index of democracy and Freedom House from 1978 to 1998. Given the differences in conceptualization, operationalization, and aggregation in these three scales, the high correlations appear to be quite striking (see also Hadenius, 1992, pp. 159-162; Przeworski et al., 2000, pp. 56-57).

Yet these indices disagree about how to code the Central American cases. Table 1 presents the simple correlations between the three scales for the 20th century. Nicaragua is the only country with high agreement. For the other four countries, the mean average of the 12 pairwise correlations is .42. Moreover, the correlations are even lower for the period from 1900 to 1949; the mean average of the 15 correlations (including Nicaragua) for the three scales for the first 50 years of the 20th century is .22.

One might argue that low correlations among scales stem from one "bad" index, a weakness that evaporates between two "better" indices. However, no evidence of this is apparent from the correlations. Indeed, for Costa Rica (1900 to 1999), Vanhanen (2000) and Gasiorowski (1996) classifications are correlated at .78, whereas Vanhanen and Polity IV (Marshall & Jaggers,

Table 1
Correlations Between Three Democracy Scales, 1900 to 1999

	Gasiorowski	Polity IV
Costa Rica (*N* = 100)		
Polity IV	.09	
Vanhanen	.78	.03
El Salvador (*N* = 100)		
Polity IV	.52	
Vanhanen	.25	.67
Guatemala (*N* = 100)		
Polity IV	.61	
Vanhanen	.18	.47
Honduras (*N* = 100)		
Polity IV	.22	
Vanhanen	.60	.59
Nicaragua (*N* = 100)		
Polity IV	.82	
Vanhanen	.78	.72

Sources: Gasiorowski (1996); Marshall and Jaggers (2002); Vanhanen (2000).

2002) exhibit the lowest correlation at .03. Yet for El Salvador, this pattern is reversed. Polity IV now has the highest correlations (.67 with Vanhanen and .52 with Gasiorowski). The Vanhanen and Gasiorowski indices have the lowest correlations for El Salvador. Vanhanen's index is part of three of the five highest correlations per country and also part of the four lowest correlations.

There are also many periods with particularly wide disparities. To present these disparities, we first standardize the three scales to a 0 to 20 index. Vanhanen's (2000) highest democracy scores for Central America are close to 20, with Costa Rica averaging 19.997 for the 1965 to 1998 period. So although the Vanhanen scores could potentially go much higher, we do not alter these scores. For the Polity IV (Marshall & Jaggers, 2002) scores, we create the customary summary measure by subtracting the autocracy score from the democracy score for a −10 to +10 scale and then adding 10 points for a final 0 to 20 index. We convert Gasiorowski's (1996) categories in the following way: 0 for authoritarian, 10 for semidemocracy and transitional regimes, and 20 for democracy.[1]

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[1] The Vanhanen (2000) data set ends in 1998, the Gasiorowski (1996) data set ends in 1992, and the Polity IV data (Marshall & Jaggers, 2002) go through 1999. For comparisons, we extend the last year of data for Vanhanen and Gasiorowski through 1999.

Table 2
Country-Years With Highly Disputed Scores

Country	Number of Highly Disputed Years 1900 to 1999	Pattern
Costa Rica	58	All before 1958
El Salvador	30	All but 1 after 1951
Guatemala	36	Spread throughout century
Honduras	49	All but 3 before 1963
Nicaragua	10	7 between 1979 and 1989

We then identify country-years in which there is at least a difference of 10 points between any two of the three scales. These are the years with no reasonable consensus, or highly disputed years. The results are presented in Table 2. For Nicaragua, major disagreement exists for only 10 years. But El Salvador and Guatemala have at least triple that number of years in sharp disagreement, at 30 and 36, respectively. And Honduras and Costa Rica have by far the largest numbers of contested years, with 49 and 58 (out of 100), respectively, even though they have far fewer highly disputed scores after 1963 (only 2 years between them). Indeed, there is at least one difference of 10 points or more between the three scales for 73% of the years 1900 to 1963 in Honduras and 100% of the years 1900 to 1957 for Costa Rica.

These inconsistencies also appear in indices that cover particular years during the post–World War II period. For example, Bollen's (1990) 0 to 100 scale for 1960 codes Guatemala as 69.8, higher than El Salvador (53.5) and about the same as Honduras (70.1). By contrast, we believe that Honduras was more democratic than Guatemala at this time and that El Salvador was at least as democratic as Guatemala. The Coppedge and Reinicke (1990) index for 1985 gives Honduras its highest ranking for all indicators, yet we believe the country was only a semidemocracy during this time. Likewise, we contend that this scale overstates differences in the quality of elections in El Salvador and Guatemala in 1965. The Arat (1991) index for 1948 to 1982 frequently overestimates the extent of democracy in El Salvador and Guatemala when compared to Honduras. Finally, the Hadenius (1992) index for 1988 significantly underestimates the level of democracy in Nicaragua when compared to the rest of the region.

We would suggest two explanations. First, high agreement among existing scales is a product of important numbers of stable autocracies and democracies. There is little disagreement that most advanced capitalist countries have been democratic and many African and Asian countries have been consistently authoritarian. Agreement about a large percentage of the cases fuels the high correlations, suggesting higher levels of scale reliability than actually exist. Second, existing indices get the facts wrong for an important set of cases that contain quite a few countries whose regimes are often in "purgatory"—regimes with often shifting authoritarian and democratic characteristics. As we shall see, classifying correctly these transitional cases is hard because of a paucity of credible accounts about the character of their politics.

THE CAUSES OF UNRELIABILITY

We are arguing, then, that the low correlations among indices for the Central American countries are primarily driven by different understandings of the empirical facts. To take perhaps the most telling example, Polity IV (Marshall & Jaggers, 2002) gives Costa Rica a perfect democracy score every year between 1900 and 1999. The erroneous idea that Costa Rica has been democratic since 1889—one made official by President Oscar Arias in 1989 when he celebrated the centennial of Costa Rican democracy—can be found not only in travel guides but also in scholarly writing and reference books (e.g., Dyer, 1979).

Assessing the accuracy of claims about a century-old democracy in Costa Rica requires taking the time to read more than the most superficial sources. Moreover, painting a reasonably accurate portrait of politics for each specific year in modern Costa Rican history requires reading Spanish-language secondary sources, local newspapers, government documents, and U.S. diplomatic correspondence, as well as interviewing local experts and eyewitnesses (Bowman, 2002; Lehoucq, 1992; Lehoucq & Molina, 2002). This is how we find that between 1900 and 1955, the opposition launched 16 coups against the central government, largely in response to incumbents attempting to impose their successors five times on the presidency (Lehoucq, 1996). Conducting fine-grained research allows one to recognize, for example, that the minister of defense, Federico Tinoco, overthrew his predecessor, Alfredo González, who himself became president in 1914 as a result of an extraconstitutional compromise and without even having run an election campaign in the hotly contested 1913 general elections (Murillo Jiménez, 1981). In short, knowledge about Costa Rican history leads one to reject Polity IV's (Marshall & Jaggers, 2002) classification of this country, even if one accepts the underlying properties of the scale.

A major discrepancy between the indices concerns the "start" of democracy in Costa Rica, a fact indispensable for identifying the causes of democracy. Vanhanen's (2000) scale suggests the origin of a least semidemocracy is 1914. Before this time, Vanhanen scores the percentage of the Costa Rican adult population voting as close to 0 in the presidential elections, which results in a final democracy score of 0 for these years. This scoring is, however, simply wrong. There were approximately 21,401 votes cast in 1901; 38,329 in 1905; and 54,279 in 1909. The source of the problem may be that until 1913, Costa Rican elections were indirect (Molina, 2001; Oconitrillo García, 1982), just as they still are in U.S. presidential elections. Because Vanhanen's (p. 254) index does not punish the United States for having an electoral college, we can conclude only that this is also inappropriate for Costa Rica, where the number of electors was erroneously entered into the data set. Factual errors such as these in Vanhanen's "objective" index likely apply to a number of cases within Latin America (Seligson, 1997, pp. 280- 282).

Another example of disagreement—Nicaragua during the 1920s and early 1930s—makes the point that scarcity of information may prevent the straightforward coding of a case that possesses characteristics of both dictatorship and democracy. The Polity IV data set (Marshall & Jaggers, 2002) codes the entire 1920s and early 1930s in Nicaragua as at least partially democratic, whereas the Gasiorowski (1996) index sees the same period as completely authoritarian. For its part, Vanhanen's (2000) scale classifies the period as exhibiting very low levels of democracy until the elections of 1928, after which semidemocracy exists until 1935. Why do these scales reach such different conclusions?

In large part, disagreement between scales stems from overly general and, therefore, unhelpful secondary sources. Ciro Cardoso's (1986) chapter in the *Cambridge History of Latin America*, for example, barely analyzes the politics of these years. Like many other secondary sources (e.g., Pérez-Brignoli, 1989; Woodward, 1976), Cardoso's discussion does little more than mention the intense rivalry between Liberal and Conservative parties that characterized Nicaraguan politics during these years. Few researchers made much use of Dana Munro's (1918) classic account of these years or the U.S. Department of State's (1932) detailed study, both of which analyze Conservative party hegemony since the U.S.-sanctioned fall of Liberal President José Santos Zelaya in 1909. U.S. intervention is a key event in Nicaraguan political history because after promoting power-sharing agreements between both parties, the United States sent marines to Nicaragua to quell Liberal insurrections in the 1920s, which only fueled Liberal Augusto César Sandino's guerilla movement against U.S. meddling in national affairs. Reliance on these general accounts (the best regionwide account for the politics of this period is Taracena Arriola, 1993) leaves the analyst with little choice but to speculate about the effects of U.S. occupation and the quality of elections during this time.

In this case, the Vanhanen (2000) scale actually best measures the level of democracy. Yet to see why, one must go beyond the two quantitative measures Vanhanen offers. The U.S. Department of State (1932), Munro (1964), and Dodd (1992) suggest that before 1928, presidential control of registration, balloting, and vote tallying in the context of a polarized party system made elections largely ceremonial affairs that did little more than circulate power among incumbent—in this case, Conservative—party factions. In the elections of 1920, for example, these abuses include reports of ballot box stuffing, army intimidation of voters, the Conservative government's manipulation of the final vote count, and the certification of the final vote by Congress, where Conservatives held a comfortable majority of seats. Although the final official count gives the Conservatives 59,000 votes and the Liberals 28,000, the U.S. diplomat thought a fair election would have been too close to call (Munro, 1964, p. 423). Hence, there is strong reason to believe that in the absence of fraud, a different outcome would have occurred.

In contrast, the U.S.-supervised elections of 1928 and 1932 do represent a real advance for the quality of democracy (Dodd, 1992; Munro, 1964). Unlike previous elections, these contests were competitive and peaceful, with fewer reports of procedural abuses. In fact, the elections were the first in Nicaraguan history in which the winner could not be predicted in advance. We hesitate to classify this period as "democratic," given that some abuses were still reported and that without the United States, the competing parties likely would not have consented to fair competition. Nevertheless, the period from 1929 until the rise of the Somoza regime can be considered more democratic than recognized by, for example, the Gasiorowski (1996) index.

We see less disagreement among the scales for El Salvador during the first three decades of the 20th century. Although we believe that their authoritarian coding is correct, we are unsure how Gasiorowski (1996), Polity IV (Marshall & Jaggers, 2002), and Vanhanen (2000) reach this conclusion because secondary sources simply do not discuss the politics of the period. At best, the Polity IV and Gasiorowski indices rely on country overviews by Browning (1971), White (1973), and Lindo-Fuentes (1990) that say very little about political competition. None of these authors appears to have consulted Spanish-language sources, such as Figeac (1952), Flores Macal (1983), and Menjívar (1980), or even Wilson's (1970) doctoral dissertation. A close look

at these sources suggests that the case might just as easily have been coded as semidemocratic, but—and this is our central point—no one really knows because of the absence of information about the electoral processes during the first decades of the 20th century.

To code El Salvador, we read a broad array of secondary sources, including little-known works in Spanish and more recently completed books and doctoral dissertations (e.g., Ching, 1997; Lauria-Santiago, 1999; Samper Kutschbach, 1994). This alternative literature suggests that the socioeconomic structures of El Salvador before 1930 were much more like those of Costa Rica than the traditional historiography allows. Indeed, if the traditional historiography had mischaracterized the socioeconomic conditions of El Salvador, perhaps it also was wrong about political conditions in this country.

To settle this crucial issue, we read the primary sources about this period, especially the typically helpful (and rarely used) U.S. diplomatic records (U.S. Department of State, 1968, 1879-1906, 1910-1914). We find convincing evidence that the traditional historiography was correct in its interpretation of the period. For example, we discover that Salvadoran presidents during the early 20th century often picked their successors after close consultation with U.S. advisors, that the recorded votes of certain locations were not actually cast because political bosses submitted the votes for entire towns, and that violence was widespread during elections.

Scrutinizing the existing cross-national regime classifications suggests that scoring cases is far from straightforward. Placing them in categories presupposes a mastery of secondary sources. It demands judgment, especially when available information is fragmentary and contradictory. As our discussions of the Costa Rican and Nicaraguan cases suggest, thoroughness is the only way to score many cases accurately. Our discussion of El Salvador points out that classification may require uncovering new material and scrutinizing old sources to be able to discuss meaningfully a case about which little is actually known.

A NEW DEMOCRACY INDEX: CENTRAL AMERICA, 1900 TO 1999

In light of the data-driven inconsistencies of existing scales, we develop a new index of political democracy for the five Central American countries. Table 3 contains the five dimensions that we use to code cases: broad political liberties, competitive elections, inclusive participation, civilian supremacy, and national sovereignty. In this section, we discuss these dimensions alongside the issues of conceptualization, operationalization, and aggregation.

Table 3
Defining Dimensions of Democracy

Dimension 1: Broad Political Liberties
Can citizens organize political parties, unions, and interest groups?
Can citizens use media and other outlets to freely express their political views?

Dimension 2: Competitive Elections
Are the legal rules governing elections fair (e.g., timely and regular elections, proper candidate selection, secret ballot, equal weighting of votes)?
Are the rules enforced fairly (e.g., ballots counted, no intimidation or violence at polls)?

Dimension 3: Inclusive Participation
Is the franchise free from legal restrictions?
Does a significant part of the population actually cast ballots?

Dimension 4: Civilian Supremacy
Can elected officials govern without obstruction from the armed forces?
Can elected officials govern without extraconstitutional obstruction from other elected officials?

Dimension 5: National Sovereignty
Is the national government a self-governing polity?
Do elected officials implement policy without direct obstruction from foreign actors?

CONCEPTUALIZATION

We conceptualize democracy at the highest level of abstraction using Bollen's (1990) definition. According to Bollen, democracy is

> the extent to which the political power of elites is minimized and that of nonelites is maximized. By political power I am referring to the ability to control the national governing system. The elites are those members of society who hold a disproportionate amount of the political power. These include the members of the executive, judicial, and legislative branches of government as well as leaders of political parties, local governments, businesses, labor unions, professional associations, or religious bodies.... It is the relative balance between elites and nonelites that determines the degree of political democracy. (p. 9)

From our perspective, Bollen's definition has the distinct merit of being consistent with a wide range of operational definitions. Indeed, it avoids the temptation of including directly operational measures in the actual conceptualization of democracy.

OPERATIONALIZATION

Operationalization is the process through which a concept is disaggregated into measures that can be coded. It is distinct from the process of actually scoring cases, which involves matching empirical data to the specific measures, and which may itself require further disaggregation (see Adcock & Collier, 2001). Our operationalization of democracy again builds on Bollen's (1990)

work, which sees democracy as encompassing two dimensions: political liberties and political rights. These dimensions are designed to gauge the relative political power of elites and nonelites. Political liberties refer specifically to the extent to which individuals have the freedom to express opinions in any media and the freedom to form and participate in any political group. Political rights refer to the extent to which the national government is accountable to the population and each individual is entitled to participation in the government either directly or through representatives.

We treat political liberties as one measure of democracy; by contrast, we derive four distinct measures from the dimension of political rights (see Figures 1 and 2). In making this choice, we follow much of the political science literature, which sees political liberties as a single measure and political rights as encompassing a range of measures. It is worth noting that the best level at which one should code dimensions is almost never discussed in the literature. Our view is that one should code at any level at which conceptually critical dimensions are found, even if this means coding dimensions that fall at different levels (e.g., the dimension of political liberties is at a higher level vis-à-vis the concept of democracy than the other four dimensions).

It is necessary to disaggregate further to actually score cases on the dimension of political liberties. Figure 1 suggests that political liberties embody two components: organization and expression. In turn, both organization and expression can be disaggregated into constituent attributes that can be more directly observed. For example, with organization, we observe whether the state prevents citizens from forming political parties, unions, and interest groups. Likewise, with expression, we observe whether the state prevents the expression of political views in the media and through other channels.

Bollen's (1990) second dimension of political rights corresponds to four of our coded dimensions: competitive elections, inclusive participation, civilian supremacy, and national sovereignty (see Figure 2). To arrive at these measures, we first disaggregate political rights into two elements: access to power and accountability of government. Access to power refers to the way
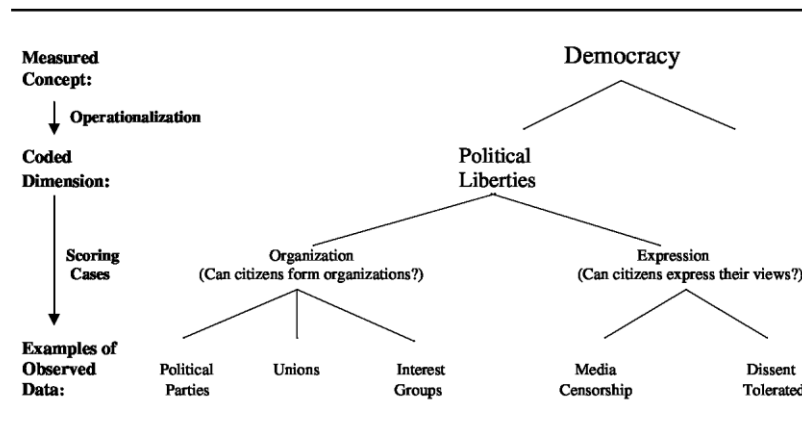

Figure 1. **Operationalization of democracy: Political liberties.**

in which political elites gain control of government. This element is primarily concerned with the quality of elections. Accountability of government examines how political elites, once in power,

carry out policies and make decisions. This element is concerned with the extent to which elites actually follow constitutional guidelines once in office and are permitted to do so by other powerful actors such as the military.

Access to power and accountability of government then are further disaggregated into four of our coded dimensions. Following Dahl (1971), we see two main dimensions associated with access to political power: the competitiveness of elections and the inclusiveness of participation. For the purpose of scoring cases, competitive elections can be disaggregated into legal procedures (i.e., the fairness of the legal rules that govern elections) and electoral practices (i.e., the degree to which electoral rules are followed). Inclusive participation refers to the extent to which citizens are legally entitled to vote, and cases can be scored on this dimension by examining the content and enforcement of suffrage laws as well as the percentage of the population that actually casts legitimate ballots.

The other element of political rights—accountability of government— disaggregates into our final two measures: civilian supremacy and national sovereignty. Cases are scored on civilian supremacy by observing evidence such as extent to which the military uses extraconstitutional means to constrain elected officials. Cases are coded for national sovereignty by observing the extent to which foreign powers constrain elected officials and directly determine the content of public policy.
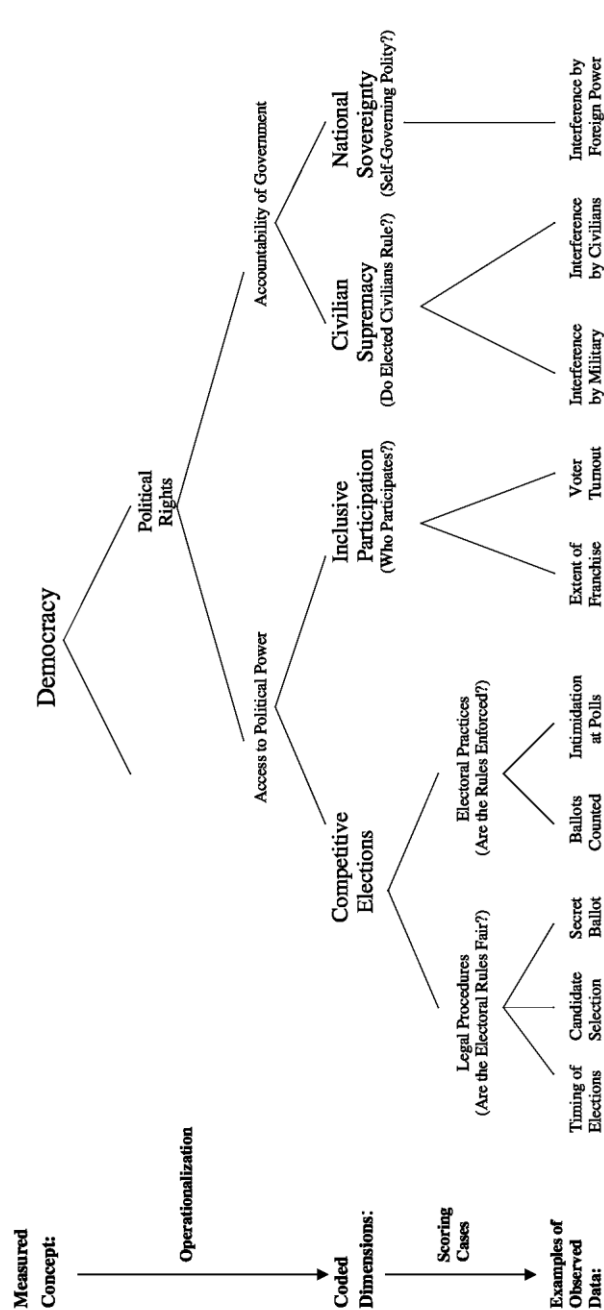
Measured Concept: Democracy

Operationalization →

Coded Dimensions:

Political Rights
- Access to Political Power
  - Competitive Elections
    - Legal Procedures (Are the Electoral Rules Fair?)
      - Timing of Elections
      - Candidate Selection
      - Secret Ballot
    - Electoral Practices (Are the Rules Enforced?)
      - Ballots Counted
      - Intimidation at Polls
  - Inclusive Participation (Who Participates?)
    - Extent of Franchise
    - Voter Turnout
- Accountability of Government
  - Civilian Supremacy (Do Elected Civilians Rule?)
    - Interference by Military
    - Interference by Civilians
  - National Sovereignty (Self-Governing Polity?)
    - Interference by Foreign Power

Scoring Cases →

Examples of Observed Data:

Figure 2. Operationalization of democracy: Political rights.

AGGREGATION

Most indices of democracy assume that a high score on one measure can at least partly compensate for a low score on another indicator. This assumption is built into all aggregation procedures that use an additive approach, even those with weighted measures.

Yet we believe that approaches that view indicators as substitutable attributes are limited. For example, the presence of highly competitive elections cannot compensate for the complete absence of inclusive participation. Rather, if few citizens can participate in an electoral process, it makes little difference if the process is otherwise fair. Likewise, even if all citizens can participate in an electoral process, it makes little difference if the process is completely unfair.

The removal of either of these attributes cancels out the presence of the other; the average of the two is meaningless.

We see the five dimensions outlined above as necessary conditions for democracy. The conditions must be strongly present for a case to be considered a democracy; if any one of them is absent, the case cannot be considered a democracy. In addition, we view the five conditions as jointly sufficient for democracy. This means that when all five are strongly present, we consider the case to be a democracy.

Aggregation approaches that treat the defining attributes of democracy as a group of necessary conditions that are jointly sufficient are rarely used and almost never explicitly identified as such in the literature (but see Munck & Verkuilen, 2003; Przeworski et al., 2000, pp. 19-22). Moreover, no existing index develops methods for working with aggregation rules based on necessary and sufficient conditions. Here we draw on logical procedures from fuzzy-set analysis (see Ragin, 2000).

We code the five attributes for each country-year using a three-value system: 1.00, .50, and 0.00. The 1.00 value corresponds to more or less full membership in a given dimension, the .50 value represents a crossover case that is partially in and partially out of a given dimension, and the 0.00 code represents a case that is more or less outside of a given dimension.

To receive a value of 1.00 on a dimension, a country must meet the following general thresholds:

1. *Broad Political Liberties:* No evidence that state actors systematically prevent citizens from forming political parties, unions, and interest groups; likewise, no evidence that state actors systematically prevent the expression of political views in the media.
2. *Competitive Elections:* Elections are regularly and constitutionally held with proper candidate selection, secret ballot, and one vote per person. No reports of significant fraud, intimidation, or violence.
3. *Inclusive Participation:* The constitution formally establishes universal suffrage rights for all adults. A significant portion of the eligible population casts legitimate ballots.
4. *Civilian Supremacy:* No evidence that the military uses extraconstitutional power to constrain the authority of elected civilians; likewise, no evidence that elected officials systematically violate their legal spheres of authority.
5. *National Sovereignty:* No evidence that foreign actors directly determine the content of major public policies; likewise, no evidence that foreign actors shape major domestic policies by threatening to overthrow the domestic government.[2]

When a country does not meet the threshold for full membership on a given dimension, it is coded as either .50 or 0.00. In our framework, a country receives a .50 code on a dimension if it meets the following general thresholds:

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[2] It is understood that international financial organizations, private investors, and advanced industrial countries place enormous constraints and pressures on developing countries. Likewise, past agreements with other nations will restrict policy options in the future. No country has the autonomy to enact economic policies without consequences from financial markets and pressures from foreign powers.

1. *Broad Political Liberties:* Evidence may suggest that the state restricts some forms of political organization, but important and large segments of the population are still free to establish political groups, unions, and parties. Likewise, evidence may suggest that the state obstructs the presentation of some opposition views in the media, although the media is still largely open to diverse opinions.

2. *Competitive Elections:* Elections are regularly and constitutionally held with legitimate candidate selection, secret ballot, and one vote per person. There may be some reports of fraud, intimidation, or violence, but these allegations are not greater than the margin of difference between winners and losers.

3. *Inclusive Participation:* Suffrage rights encompass at least a broad spectrum of the male population, such that most middle-class and working-class men can vote. A significant portion of the eligible population casts legitimate ballots.

4. *Civilian Supremacy:* Evidence may suggest that the military uses extraconstitutional power to constrain elected officials on certain political issues. Likewise, evidence may suggest that elected officials violate their legal spheres of authority, although these spheres of authority are still generally respected.

5. *National Sovereignty:* Evidence may suggest that foreign actors directly determine public policy on certain issues, although the domestic authorities still have enough autonomy to shape policy decisions and sometimes override foreign pressures. No reports that external actors shape policy by threatening to remove the domestic government.

If a country does not meet these diminished thresholds, it receives a value of 0.00 for a given dimension. Thus the 0.00 code acts like a residual category in that not passing the 1.00 and .50 thresholds on a given dimension results in a 0.00.

To aggregate dimensions into overall scores for democracy, we follow the rules of fuzzy-set logic, which are specifically designed for the analysis of necessary and sufficient conditions (see Ragin, 2000). Because each condition is necessary for democracy, a case (i.e., a country-year) receives an aggregate score equal to its lowest score across the five dimensions. For example, if a given case has scores of 1.00, 1.00, 1.00, .50, and 0.00 on the five dimensions, it receives a score of 0.00 for democracy, because this is the lowest value among the scores. To receive an overall score of 1.00, the country must have a score of 1.00 for each of the five dimensions, given that these dimensions are necessary for democracy. A case will receive a value of .50 when it receives at least one .50 code and does not receive any 0.00 codes. This approach assumes that a case is only as strong as its weakest attribute. The mathematical underpinnings of this assumption stem from the use of the logical "and" in fuzzy-set inference: the logical "and" is accomplished by taking the minimum membership score among intersecting sets (see Ragin, 2000, pp. 173-174; see also Goertz & Starr, 2003).

This fuzzy-set approach leads us to measure democracy on a level similar to both nominal trichotomous measurement and ordinal three-value measurement. Thus we can refer to three types of regimes—democratic, semi- democratic, and authoritarian—and to three different levels of democracy. More generally, the appropriate level of measurement for democracy hinges on the goals of specific research (D. Collier & Adcock, 1999). Hence, we do not assume that our level of measurement is inherently superior or inherently inferior to alternative levels.

THE BLM INDEX OF CENTRAL AMERICA

The appendix offers our index—what we call the BLM index of Central America. It provides the 0.00, .50, or 1.00 code for democracy for each country-year. The scores for the five underlying dimensions that were aggregated are provided on our Web site (http://www.blmdemocracy.gatech.edu/). Some of the more important primary and secondary sources used to generate these codes are available as country bibliographies at the same Web site.

In constructing this index, at least two of the three authors of this article reviewed each country-year. Disagreements arose regarding the codes for several particular measures, and these differences generally reflected either a limitation in the measure or a limitation in an author's knowledge of the facts. If the problem was with the resolving power of a measure, we sought to better define the measure until a consensus could be reached.[3] If the problem arose not because of the measure but rather because of divergent understandings of the empirical facts, we reviewed all evidence and argued about the facts. In some cases, these arguments motivated one or more of us to pursue new primary research as we sought to "defend" our interpretation of events. In the end, this sometimes painstaking process allowed us to reach full consensus on the 500 country-years and 2,500 measures covered in the index.[4]

PATTERNS IN THE DATA

Table 4 reports the correlations between the BLM index and the other three indices during the 20th century. The mean correlations for all five countries during the century are .47 with Polity IV (Marshall & Jaggers, 2002), .51 with Gasiorowski (1996), and .53 with Vanhanen (2000). The correlations for the first 50 years (1900 to 1949) are considerably lower than for the second 50 years (1950 to 1999) in 13 out of 15 cases (save Polity IV and Vanhanen for Guatemala). Indeed, the BLM index is negatively correlated with other indices in 4 of the 15 paired comparisons for the 1900 to 1949 period. This trend is to be expected, as quality English-language secondary sources are especially scarce for the early 20th century.

Because we have data for all five underlying dimensions, it is possible to make generalizations about specific combinations that produce semidemocracy and authoritarianism. Four patterns may be noted here. First, no authoritarian country-year is scored a 1.00 on four dimensions and a 0.00 on only one dimension. Rather, all authoritarian country-years receive less than 1.00 on at least two dimensions. Hence, there are no examples of authoritarian regimes in Central America that are fully democratic except on a single dimension.

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[3] Thus we moved back and forth between the case data and the development of our measures. When a measure led to a score that seemed problematic in light of what we knew about the case, we were willing to revisit the measure and sometimes refine it to fit the specific context. Our belief is that this kind of mutual adjustment or "iterated fitting" is more likely to produce accurate results than approaches that fail to make corrections for poor linkages between concepts, indicators, and scores (see Adcock & Collier, 2001).

[4] The fact that we sometimes committed errors in our initial coding of cases suggests that the final BLM index is not infallible; we do not claim to have completely avoided data-induced measurement error, only to have substantially reduced it when compared to existing data sets.

Table 4
Correlations Between BLM Democracy and Three Other Scales, 1900 to 1999 and 1990 to 1949

Country and Years	Gasiorowski	Polity IV	Vanhanen
Costa Rica 1900 to 1949	.52	.33	.32
Costa Rica 1900 to 1999	.82	.06	.85
El Salvador 1900 to 1949	–.02	.42	–.04
El Salvador 1900 to 1999	.82	.60	.31
Guatemala 1900 to 1949	.71	.72	.66
Guatemala 1900 to 1999	.79	.72	.21
Honduras 1900 to 1949	–.05	.30	.67
Honduras 1900 to 1999	.65	.46	.74
Nicaragua 1900 to 1949	–.06	.29	.74
Nicaragua 1900 to 1999	.87	.84	.88
Mean	.51	.47	.53
Number of times highest	3	2	5
Number of times lowest	2	3	5

Sources: Gasiorowski (1996); Marshall and Jaggers (2002); Vanhanen (2000).

Second, among authoritarian country-years with a single 0.00 code, the most common dimension to receive the 0 code is competitive elections (28 years), followed by broad political liberties (9 years), civilian supremacy (4 years), and national sovereignty (2 years).[5] Inclusive participation is at least partly present (i.e., coded .50 or 1.00) for all country-years, such that no case is authoritarian because of suffrage/participation limitations alone.

Third, among semidemocratic regimes with a single .50 code and four 1.00 codes, the cases fall into distinct groups. In Costa Rica, the absence of inclusive participation during two decades (i.e., 1928 to 1947) in the first half of the century made this country a semidemocracy, even though suffrage rights were universal for all males, an uncommon characteristic at the time for competitive political systems (Lehoucq & Molina, 2002). During the late 20th century, the inability of civilians to exercise full power vis-a-vis the military was responsible for a semidemocracy in Honduras (1991 to 1996) and Guatemala (1994 to 1999). Restrictions on political liberties made Nicaragua a semidemocracy under the Sandinistas (1985 to 1989) and during the Figueres administration in Costa Rica (1951 to 1957). No period was a semidemocracy by virtue of a single .50 code on either competitive elections or national sovereignty.

The fact that many semidemocracies are not full democracies because of shortcomings on a single dimension suggests that one might wish to classify these country-years using specific subtypes of democracy (see D. Collier & Levitsky,1997). In Costa Rica from 1928 to 1947, when suffrage was diminished, one might refer to a "limited democracy." For late-20th-century Honduras and Guatemala, where civilian supremacy was not fully present, one might refer to "guarded democracies." And for cases such as Nicaragua under the Sandinistas, where political liberties were restricted, one might refer to "restricted democracies." All these types are

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[5] The country-years in which only competitive elections receive a 0 code are Costa Rica (1900 to 1902;1907 to 1908), El Salvador (1927 to 1930), Guatemala (1920 to 1926;1944), and Honduras (1927 to 1928;1935 to 1937;1949 to 1955). The cases completely missing only broad political liberties are El Salvador (1984 to 1991) and Nicaragua (1936). The cases completing missing only civilian supremacy are El Salvador (1964 to 1966) and Costa Rica (1948). The cases completely missing only national sovereignty are Honduras (1900 to 1901).

semidemocracies, but the specific label underscores the particular dimension that is not fully present.

Finally, all five dimensions play a unique role in leading at least some cases to be coded as either a semidemocracy or an authoritarian regime. However, the number of country-years for which a single dimension is decisive in determining the .50 or 0.00 code are not evenly distributed. From a total of 500 country-years, the breakdown is as follows: broad political liberties (16 years), competitive elections (28 years), inclusive participation (20 years), civilian supremacy (16 years), and national sovereignty (2 years). The complete absence of competitive elections is especially important in moving cases from semidemocracy to authoritarianism (see also Lehoucq, 2004). The partial absence of inclusive participation was critical in moving Costa Rica from democracy to semidemocracy in the first half of the 20th century. The inclusion of the national sovereignty dimension changes the scoring of only Honduras from 1900 to 1901 (which otherwise would have been semidemocratic).

BLM VERSUS DATA SET OF MAINWARING, BRINKS, AND PÉREZ-LIÑÁN (MBP)
As a final illustration that the principal threat to democracy scales is data- induced measurement error and not conceptualization, operationalization, and aggregation properties, we present a brief comparison with the MBP (Mainwaring, Brinks, & P~rez-Linan, 2001) data set. MBP argue cogently for remarkably similar conceptualization, operationalization, and aggregation rules. They disaggregate democracy into four components that correspond closely with four of our five components (only the national sovereignty dimension is not covered). Although MBP do not explicitly base their aggregation rules in the logic of fuzzy-sets and necessary conditions, the aggregation mechanics are the same. Moreover, MBP have substantial expertise about the region and time frame of their index: Latin America from 1945 to 1999. Given these similarities, one would expect their scale to be highly correlated with our index for the 1945 to 1999 period.

The pairwise correlations are as follows: Costa Rica .59, El Salvador .73, Guatemala .96, Honduras .77, and Nicaragua .94. Thus the correlations for Costa Rica, El Salvador, and Honduras reveal discrepancies. Given the methodological similarities between our scales, these differences are almost certainly rooted in contrasting understandings of the reality of Central America.

It is difficult to evaluate the source material used by MBP (2001), as there is no documentation in their article. Comparing discrepant years between BLM and MBP, however, reveals some obvious and some not-so-obvious coding errors. For example, MBP code Costa Rica semidemocratic from 1945 to 1948 and fully democratic from 1949 to 1999. We would disagree. The Revolutionary Junta of the Second Republic governed the country for 18 months after winning power through a civil war in 1948. By MBP's own rules, this could not reach the level of a semidemocracy. In addition, archival research and other primary source research establish that electoral fraud, political violence, political persecution, and restrictions on competition were much higher from 1953 to 1958 than conventional wisdom holds (Bowman, 2001). The president of the country between 1949 and 1953 (Otilio Ulate) was likely not the winner of the 1948 elections (Lehoucq & Molina, 2002, pp. 218-222).

Honduras is another useful comparison. MBP (2001) score Honduras a semidemocracy from 1949 to 1954. There is some good evidence for this. The long-serving dictator Tiburcio Carfas resigned the presidency in January 1949. His successor, Juan Manuel Galvez, allowed greater opposition, freer speech, and some labor organization, and he oversaw the strengthening of the state apparatus (Argueta,1990, p. 76). Stokes (1950) expressed hope that the stability established under Carfas would lead to the emergence of a rural democracy in the country. LaFeber (1984) notes that under Galvez, "Honduras became more pluralistic and dynamic than ever before" (p. 132). And Martz (1959) asserts that President Galvez was one of the most democratic leaders in Central America, "one of the very, very few" (p. 129). Given these sources, one is tempted to give Honduras the benefit of the doubt and code it as semidemocratic during the Galvez years.

However, both the MBP (2001) and the BLM indices agree that in the complete absence of free and fair elections, a country can be neither a democracy nor a semidemocracy. And the 1948 Honduran elections were a complete farce. The opposition candidate fled the country, and with good reason. Carfas rigged the elections in favor of his vice president:

> Juan Manuel [Galvez] is the most honorable and honest man in my government. He is the only one to whom I can confer the power to soften the bitterness caused by my long term in the Presidential House; he is going to grasp a hot coal in his hands, which he will have to put out little by little. This is the only way to save the democratic institutions, the interests of the country, the lives and belongings of all of you. This is why I have arranged for him to arrive without obligations to the Presidency of the Republic. You should respect my decision made for the good of Honduras. (Carfas, as quoted in Argueta,1990, p. 75)

Galvez not only took office in the absence of competitive elections but also legitimized the coup that replaced him. He abandoned the country after the 1954 elections that favored the opposition, returning as president of the Supreme Court following the coup by his vice president (Julio Lozano).

In short, the discrepancies between our scale and the MBP (2001) scale are almost certainly a product of the use of different information sources, which in turn generates different understandings of the reality of Central America.

IMPLICATIONS FOR THEORY AND EXPLANATION
The new codes offered in the BLM index have important implications for understanding Central American politics and for testing explanations more generally. Here we briefly examine how our data lead to new lines of research on the region.

THE DEMOCRATIC OPENING OF THE LATE 1920s AND EARLY 1930s
Our data show that the late 1920s and early 1930s was a period of political opening for much of the region. Incumbents and their opponents developed semidemocracies in Guatemala (1927 to 1930), Honduras (1929 to 1934), and Nicaragua (1929 to 1935)—the first nonauthoritarian regimes in the histories of these countries. Costa Rica was already semidemocratic by the 1920s. Incumbents began permitting a free press to operate in El Salvador between 1927 and 1931, but they did not quite make the breakthrough to holding competitive elections (Wilson, 1970). This

regionwide opening is little known and rarely analyzed; it cannot even be discerned from existing indices of democracy.

What caused this movement toward democracy? And why did it come to an abrupt end? Although it is beyond the scope of this article to develop a full answer, we note that a structural hypothesis suggests that this period overlaps
with the rise of reform movements that emerged from the great export expansion of the late 19th and early 20th centuries (e.g., Mahoney, 2001; Taracena Arriola, 1993). These reform movements were based in urban sectors that prospered from commercial activities and export enclaves. Elsewhere in Latin America, R. B. Collier and D. Collier (1991) argue that it was precisely these commercial sectors—along with manufacturing groups and sometimes working classes—that reformed the state at the beginning of the 20th century. Another, more actor-centered hypothesis would argue that breakthroughs to democratic rule are a product of strategic stalemates in which no political force can use military force to crush its rivals. With the partial exception of Costa Rica, Central American politicians had been unwilling to relinquish the use of force in political competition (Munro, 1918).

The demise of Central America's early democratic experiment also allows us to revisit the debate regarding the effect of the Great Depression in Central America. Analysts such as Baylora-Herp (1983) argue that the depression produced brutal reactionary dictatorships in Central America, whereas others, such as Woodward (1976), argue that it did not lead to a fundamental regime change in the region. A structural hypothesis suggests that the depression undermined the position of urban sectors that led the charge for democracy in the 1920s, allowing authoritarian reversals to take place. Although we cannot evaluate this hypothesis here, the timing of the collapse of the Central American economies and the demise of the democratic opening is at least suggestive, even though economic crisis seems to have had no impact on the continued democratization of Costa Rican politics. Our point, however, is that only good data about the timing of the early democratic opening and closing in the region permit speculation about such links.

QUANTITATIVE STUDIES
The central empirical contribution of our data set involves better understanding the political reality of Central America. Beyond that, if the data set were used in statistical tests that sought to explain a somewhat larger range of countries, such as those of Latin America, the new scores we offer could have an important effect on findings. For example, some scholars argue that the relationship between economic development and democracy within Latin America does not follow the worldwide trend and, thus, that the Latin American countries can be usefully analyzed on their own terms (e.g., Mainwaring, 1999; Mainwaring & Perez-Linan, 2003). The simple correlation between level of economic development and democracy in 1990 for the 20 Latin American countries is –.18 using Polity IV data (Marshall & Jaggers, 2002) to measure democracy.[6] By contrast, when the BLM codes are introduced to replace the Polity IV codes for the five Central American countries, the correlation becomes a flat 0. Although the magnitude of change is not dramatic, it can nevertheless affect one's conclusions. Moreover, if scholars

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[6] Economic development is defined as GDP per capita, and data are derived from Mark 6.1 of the Penn World Tables (Heston, Summer, & Aten, 2002). We define Latin America as the 18 Spanish-speaking countries of the hemisphere plus Brazil and Haiti.

generate new scores for other Latin American countries, which currently may not be adequately measured in the most popular large-N data sets (see Seligson, 1997), the change may become quite significant.

We believe it is an open question whether new and better indices for a broader range of countries would alter established cross-national relationships that are intended to apply to all countries in the world. On one hand, the most robust relationships may be relatively impervious to even extensive changes in coding. For instance, even if all the countries of Latin America were to have completely different democracy scores, the central findings of large-N research on economic development and democracy would remain unchanged.[7] On the other hand, changes in democracy scores based on expert coding would likely affect long-term, large-N studies concerning less robust relationships, such as democracy and inequality, or democracy and political violence. The magnitude of these changes would depend on the degree to which the measurement problems we describe apply to a large range of countries.

There are good reasons to believe that data-induced measurement error does apply to a considerably larger range of countries, especially those that share three features characteristic of Central America. First, "small countries" may be subject to the measurement error discussed here because they do not attract significant scholarly attention, even though they are a majority of all countries. Stereotypes concerning the character of their politics are often prevalent in the literature, and these stereotypes provide a weak basis for coding democracy measures. Second, it is hard for nonspecialists to classify "transitional countries" correctly because of frequent regime changes. Unlike countries that exhibit substantial political stability, where one may achieve measurement accuracy even if data are weak or absent for particular years, scholars will often not find easily available and useful data for coding cases with multiple periods of abrupt political change. Third, countries that combine features of democracy and features of authoritarianism are more difficult to classify. With these cases, separate measures are not highly correlated with one another and, thus, the absence of data for a single measure can jeopardize overall conclusions about the extent of democracy.

CONCLUSION
Country and regional experts are often skeptical of the scores offered by large-N, over-time indices of democracy. They worry that these indices incorrectly score "their" cases. This article provides an empirical basis for believing this skepticism is well founded. We demonstrate that the quality of the secondary data—and coder knowledge of those data—is a major problem that bedevils index construction. No matter how valid the conceptual, measurement, and aggregational properties, collecting adequate data to correctly code various indicators is inherently challenging and has led to serious error in the existing scales.

We would like to close with a recommendation for creating future large-N indices of democracy. In the past, grant-funding agencies have sponsored cross-national data collection efforts led by a

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[7] The correlation between economic development and democracy for a universal sample of 112 countries in 1990 is .59--GDP data from Mark 6.1 of the Penn World Tables (Heston et al., 2002) and democracy scores from Polity IV (Marshall & Jaggers, 2002). If the democracy score for all 20 Latin American countries is changed to the highest possible value, the correlation is still .54; if the democracy score for those 20 countries is changed to 0, the correlation is still .64.

single principle investigator who works with graduate student research assistants and perhaps a small team of collaborators. We would suggest that this model has outlived its usefulness. An alternative and more effective approach would be to fund principle investigators who contact country specialists to answer questions about democracy. To be effective, these experts would have to not only help score the various indicators proposed by the principle investigator but also help him or her operationalize the concept itself in light of their case expertise. It is clear that this process is far more complicated than the approach used in the past. But the present article suggests that it may be feasible and, moreover, that it could substantially improve the validity of future indices by helping analysts avoid data-induced measurement error.

APPENDIX
The BLM Index of Democracy for Central America, 1900 to 1999

Year	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua
1900	0	0	0	0	0
1901	0	0	0	0	0
1902	0.5	0	0	0	0
1903	0.5	0	0	0	0
1904	0.5	0	0	0	0
1905	0	0	0	0	0
1906	0	0	0	0	0
1907	0.5	0	0	0	0
1908	0.5	0	0	0	0
1909	0.5	0	0	0	0
1910	0.5	0	0	0	0
1911	0.5	0	0	0	0
1912	0.5	0	0	0	0
1913	0.5	0	0	0	0
1914	0.5	0	0	0	0
1915	0.5	0	0	0	0
1916	0.5	0	0	0	0
1917	0	0	0	0	0
1918	0	0	0	0	0
1919	0	0	0	0	0
1920	0.5	0	0	0	0
1921	0.5	0	0	0	0
1922	0.5	0	0	0	0
1923	0.5	0	0	0	0
1924	0.5	0	0	0	0
1925	0.5	0	0	0	0
1926	0.5	0	0	0	0
1927	0.5	0	0.5	0	0
1928	0.5	0	0.5	0	0
1929	0.5	0	0.5	0.5	0.5
1930	0.5	0	0.5	0.5	0.5
1931	0.5	0	0	0.5	0.5
1932	0.5	0	0	0.5	0.5
1933	0.5	0	0	0.5	0.5
1934	0.5	0	0	0.5	0.5
1935	0.5	0	0	0	0.5
1936	0.5	0	0	0	0
1937	0.5	0	0	0	0
1938	0.5	0	0	0	0
1939	0.5	0	0	0	0
1940	0.5	0	0	0	0
1941	0.5	0	0	0	0

Year	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua
1942	0.5	0	0	0	0
1943	0.5	0	0	0	0
1944	0.5	0	0	0	0
1945	0.5	0	0.5	0	0
1946	0.5	0	0.5	0	0
1947	0.5	0	0.5	0	0
1948	0	0	0.5	0	0
1949	0.5	0	0.5	0	0
1950	0.5	0	0.5	0	0
1951	0.5	0	0.5	0	0
1952	0.5	0	0.5	0	0
1953	0.5	0	0.5	0	0
1954	0.5	0	0	0	0
1955	0.5	0	0	0	0
1956	0.5	0	0	0	0
1957	0.5	0	0	0	0
1958	1	0	0	0.5	0
1959	1	0	0	0.5	0
1960	1	0	0	0.5	0
1961	1	0	0	0.5	0
1962	1	0	0	0.5	0
1963	1	0	0	0.5	0
1964	1	0	0	0	0
1965	1	0	0	0	0
1966	1	0	0	0	0
1967	1	0.5	0	0	0
1968	1	0.5	0	0	0
1969	1	0.5	0	0	0
1970	1	0.5	0	0	0
1971	1	0.5	0	0.5	0
1972	1	0	0	0.5	0
1973	1	0	0	0	0
1974	1	0	0	0	0
1975	1	0	0	0	0
1976	1	0	0	0	0
1977	1	0	0	0	0
1978	1	0	0	0	0
1979	1	0	0	0	0
1980	1	0	0	0	0
1981	1	0	0	0	0
1982	1	0	0	0.5	0
1983	1	0	0	0.5	0
1984	1	0	0	0.5	0

APPENDIX (continued)

Year	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua
1985	1	0	0.5	0.5	0.5
1986	1	0	0.5	0.5	0.5
1987	1	0	0.5	0.5	0.5
1988	1	0	0.5	0.5	0.5
1989	1	0	0.5	0.5	0.5
1990	1	0	0.5	0.5	1
1991	1	0	0.5	0.5	1
1992	1	0.5	0.5	0.5	1
1993	1	0.5	0.5	0.5	1
1994	1	1	0.5	0.5	1
1995	1	1	0.5	0.5	1
1996	1	1	0.5	0.5	1
1997	1	1	0.5	1	1
1998	1	1	0.5	1	1
1999	1	1	0.5	1	1

Note: Country-years are coded vis-à-vis their fuzzy-set membership in the category of political democracy: 1 = fully in (democracy), 0.5 = crossover—neither in nor out (semidemocracy), 0 = fully out (authoritarianism). Sources and underlying data are available at the authors' Web site (http://www.blmdemocracy.gatech.edu/).

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