

UNIVERSITY OF CALIFORNIA, SAN DIEGO

The Utility of Quantitative Methods for Political Intelligence Analysis:

A Case Study in Latin America

A thesis submitted in partial satisfaction of the requirements for the
degree Master of Arts

in Latin American Studies

by

Robert M. Levinson

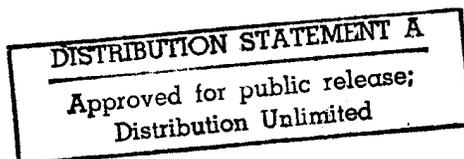
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The Thesis of Robert M. Levinson is approved

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1995

Dedication

This thesis and the effort, which produced it, is dedicated, as all things in my life are, to my wife Carmen Elena and my daughter Samantha Rene, without whose love, encouragement, understanding, and above all patience, none of this would have been possible.

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ABSTRACT OF THE THESIS

The Utility of Quantitative Methods for Political Intelligence Analysis:

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by

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Professor Peter Smith, Chair

The paper examines the suitability of current intelligence analysis developed during the Cold War era and finds a lack of quantitative techniques that are prevalent in academic social science research. Several areas where quantitative research might be applied successfully to intelligence analysis are proposed. A case study examining political instability in Latin America is utilized to demonstrate how these techniques might be applied. Data is taken from the World Handbook of Political and Social Indicators for nineteen Latin American countries. Two simple models are developed using bivariate and multiple regression techniques applied to time series analysis. A scenario for how these models might be applied in the intelligence collection, analysis, and policy formation process is postulated. The paper concludes that quantitative methods can have significant utility for the intelligence community in concert with current analytical methods. Suggestions are provided as to how these techniques might be incorporated into the intelligence community.

Chapter 1 Introduction

With the end of the Cold War, the US intelligence community is faced with a major dilemma. No longer able to concentrate on the clearly defined and readily identifiable threat posed by the former Soviet Union, the community must now spread its resources over a greater array of potential challenges. Threats posed by narcotics trafficking, nuclear proliferation, ethnic conflict etc. have supplanted the Warsaw Pact as threats to US national security. Other trends, such as world-wide trade liberalization and the growth of democratic political systems, while not posing direct threats to national security, also present new challenges to the community.

Today's intelligence analyst, perhaps more now than at any time during the past fifty years, has an extremely tough job. Using social science terminology, both the independent and dependent variables are increasing in number. While in the past the analyst was mainly concerned with understanding the behavior of the Soviet Union and its effect upon national security interests, today's analyst is being asked to evaluate new threats which have been elevated to prominence by policymakers in the post Cold War era. Indeed a major debate going on today within the intelligence community is its role in economic intelligence in other words, industrial espionage. Many feel that intelligence resources can be exploited to learn the business secrets of other nations in an effort to enhance US competitiveness. Though other nations, such as France, have not hesitated to use these capabilities, many intelligence professionals in the US are resistant. Although this

debate has yet to be fully resolved, the fact that it is occurring at all indicates the difficulty of pointing the community in new directions.

This growth in variables represents a "puzzle expansion," creating new problems for the US intelligence community tasked with providing analysis and forecasting to US policy-makers. It has become apparent that the community can no longer simply expand the number of targets and apply the same methodologies used before. Social scientists, on the other hand, are well equipped to deal with this changing world, having devoted significant effort and resources towards developing models and theories as to how societies behave. Assertions such as "Democracies don't make war upon one another," enable the social scientist to examine certain variables and reach certain conclusions about the current and future behavior of societies. For the social scientist, the expanded puzzle means that different variables need be taken into account. Switching gears from pre to post Somoza Nicaragua simply requires that instead of looking at variable X (Somoza's inclinations) to explain Y (political developments), the social scientist must now look at variable Z (voter intentions), Q (political parties), etc. While these variables might be more numerous and more difficult to observe, the basic methodology of attempting to understand the relationship between independent and dependent variables, remains unchanged.

In contrast to this, the intelligence community, having developed methods devoted exclusively to observing only one type of

independent variable, the behavior of individual actors or small groups of actors within the targeted society of inquiry, runs into real trouble. As the number of independent and dependent variables increases, the number of targets expands geometrically. The Central Intelligence Agency's (CIA) creation of an entire division, the Office of Leadership Analysis, devoted exclusively to the study of various world leaders, may now be of much lower marginal utility.¹ Things like ethnic conflict and weapons proliferation have much less to do with individual actors and more to do with an amalgamation of individuals, groups, historical, economic, and social forces all acting in concert. If individual leaders are less important, how much good will it do to examine each one in depth?

Undoubtedly this approach stems, at least partially, from the community's focus on its principal Cold War target, the Soviet Union. In that regime, understanding what the members of the Politburo were thinking was seen as the key concern. Indeed a whole field of "Kremlinology" and its practitioners, known as "Kremlinologists," grew up around this idea. Tapping into the car phones of Politburo members was seen as a major achievement; the exposure of this operation and its consequent loss as a source of information, constituted a major defeat. The whims, desires, and actions of average Soviet Citizens in such a non-participatory system were relatively insignificant. Even events in such far flung places as Nicaragua and Angola were seen as having their

¹ Caldwell, George. *Introduction to Analysis for Intelligence: An Intelligence Monograph* Washington, D.C.:Center for the Study of Intelligence, 1992.

roots inside those "grey men" reviewing the parade in Red Square every October.

Given that the majority of intelligence resources were focused on the Cold War, and that the realistic list of countries which might potentially threaten the national security of the United States was relatively small, it is understandable how such an "actor centered" approach developed. No doubt we can debate ad nauseam the utility of such an approach to analysis in light of the overestimation of the strength of the Soviet Empire prior to its downfall and other intelligence failures. However, it seems clear that an intelligence methodology suited to non- or semi-participatory political systems needs to be revised in areas where participation is expanding, such as Latin America or the former Soviet Union. (A new approach to even non-participatory systems might also be useful given the old methodology's tendency to miss developments at the grass roots level, e.g., Iran prior to the downfall of the Shah). While focusing on Kim Chong Il or Sadam Hussein will still be useful in understanding North Korea or Iraq, knowing what's on President Frei's mind is now only part of the picture in Chile.

In essence, since the number of individuals who effect events is expanding, the old approach of gathering intelligence and performing analysis would quickly result in an unwieldy effort, neither fiscally possible nor administratively manageable. In the past we might have tapped President Stroessner's phone in Paraguay, or talked to his mistress. Replicating this effort for the current president, influential

members of Congress, business leaders, and major social and political institutions is all but impossible. If we expand the target further to include voters we really run into trouble. Though old methods were useful when the independent variables were small in number, greater and greater difficulty is encountered as their number expands. How then can the intelligence community perform useful analysis of whole societies for policy makers?

The quantitative approach found in the social sciences offers several advantages for the intelligence analyst. By thinking in quantifiable terms the analyst can clarify his own analysis. Just what does it mean that a coup is likely? What is this coup likelihood dependent upon? What are the key variables? How can we measure them? Even if the analysis stems from an intuitive feeling about a situation, as, according to Moaz, almost all intelligence analysis does,² asking these type of questions can only help to clarify thinking. Additionally, quantitative approaches allow for comparison, giving meaning to expressions like country X is more unstable than country Y. Quantitative approaches also can facilitate clearer communication between analysts, providing a common ground and basis for discussion. Finally, and most importantly, at their core, statistics and intelligence analysis both have the same objective: the distilling of large amounts of data down to an easily understandable and presentable

² Moaz, Zeev. "Scientific Logic and Intuition in Intelligence Forecasts," in Singer, J. David and Stoll, Richard J. *Quantitative Indicators in World Politics: Timely Assurance and Early Warning*, New York: Praeger Publishers, 1984, p. 86.

form. Using a few numbers or a computer generated graph to communicate an idea can prove an invaluable tool.

Similar to the social scientist, the intelligence analyst seeks to answer several basic questions concerning a given area or series of events. What happened? What is happening right now? What will happen in the future? and Why did/is/will this happen/happening/happen? While social scientists are probably equally divided concerning which questions they seek to answer, intelligence analysts are primarily concerned with what will happen in the future. Even in cases where a written analysis is presented describing a past or current situation or development, almost universally some projection as to the likely future course of events will be included.

The good intelligence analyst always seeks to gain a deeper understanding of events, but his customer, the consumer of his analysis, the decision maker, wants to know to what he will have to react. The military doesn't care why the enemy will choose a particular avenue of advance, only which avenue will he choose. The Secretary, Director, or President doesn't care why a coup is happening in Chad, only when it will happen and what the likely effect will be. This is not to say that decision makers desire ignorance, only that typically they do not have time to develop expertise in every area for which they are responsible. They need simple reliable predictions so that they can make the appropriate decisions. Developing the basis for these predictions is the job of the analyst. Expanding the tools available to the analyst is the motivation for my enterprise.

Given the emphasis on forecasting mentioned above, it will be my focus to analyze data for the purpose of prediction not, as is often found in the social sciences, proving a particular hypothesis. As part of my method I will entertain particular hypotheses based upon previous work which attempts to describe the relationship between certain variables. The purpose here is solely in selecting which variables to examine. Certainly evidence supporting various hypotheses can be useful to the analyst, and we should not ignore this. But, and this needs to be clear, it is not my intention to evaluate the merits of these hypotheses as to their worthiness as causal theories. *The only hypothesis which I am seeking to validate is that the methodology I will be using has utility for the intelligence analyst.* In many ways my task is similar to the stock market analyst who observes that the price of stocks go up as the hemlines of women's skirts rise. Why this happens might have an interesting theoretical basis having to do with the amount of cloth purchased and its affect on the garment, wool, and cotton industries, or it might be totally coincidental. In either case, the fact that it happens at all with a certain degree of regularity is of itself extremely useful. If I find that by observing X, I can improve my predictions of Y with some degree of certainty, then I will have accomplished my goal.

As any experienced social scientist knows, it is unlikely that simple one to one correlations between variables will be found e.g. "When there are riots and demonstrations three years in a row there is always a coup." Neither the old approach to analysis of finding out

what a particular General is planning, nor any quantitative approach is likely to yield such a high degree of certainty. However, exploring the relationship between various events, given certain conditions, could prove useful. Rather than replacing traditional intelligence methods, this approach can augment them. If I know that General X is planning a coup, and I know that coups have been successful in the past, when conditions are as bad as they are right now in country Y, my analysis will be significantly strengthened. Just as the social scientist, the intelligence analyst does not seek certain causality, but probabilistic relationships. Just as the stock market analyst, the intelligence analysts seeks indicators which tell him which way the market is headed. Given X and Y is Z likely? unlikely? etc. The correct answers to these questions can prove exceedingly valuable.

Chapter 2 The Neglect of Quantitative Analysis

Before attempting to apply quantitative techniques to the intelligence analysis task, we should examine why these techniques have been neglected in the past. Since the academic community, though not performing exactly the same task, has developed myriad techniques which might seem useful for the intelligence analyst, it seems odd that these techniques have not been adopted. For a variety of reasons, which will be detailed below, the intelligence community has been reluctant, if not indeed hostile, to these methods.

One method of analysis employed extensively in the social sciences is the use of survey and polling techniques. However, this approach is seen correctly by intelligence analysts as presenting several problems. Aside from the technical hurdles involved in such research (cost, time, personnel, etc.), the types of information typically of interest to the intelligence community do not normally lend themselves to this approach. Asking people "Are you planning a coup?" or "Is the US Embassy going to be attacked?" are questions highly unlikely to elicit useful responses even if we could figure out who we should be asking. Case in point: in 1988 a poll was taken of Peruvian political preferences which indicated that 75% of Peruvians preferred democracy over socialist revolution or military dictatorship as the most adequate type of government for their country. Yet two days after President Fujimori rolled out the tanks, 73% of those surveyed in the

capital supported this action.³ While the social scientist might then proceed to explain why this apparent change in attitudes occurred e.g. perhaps the fact that Fujimori was an elected civilian is significant; the intelligence analyst who told the policy makers that there was little support for a coup might find himself out of a job. Given the temporal nature of opinion poll data, and the logistical hurdles involved in conducting regular, timely surveys of this type for every country concerning every issue of interest, the task would undoubtedly prove overwhelming. Though there may be some utility in examining this type of data, it is not the answer for the intelligence community.

However, though surveys might be impractical, survey methodology does however utilize the scientific evaluation of empirical data. These statistical methods can be used to examine various trends for which data is already available, and explore how these trends have correlated with developments in which the intelligence community is interested. Surprisingly, given an estimated 30 billion dollar budget, the intelligence community has almost totally ignored this approach found so often in the social sciences.

The CIA's own "Political Analysis for Intelligence" makes no mention of a quantitative approach though it does cite heavily from theoretical works in political science⁴. Another intelligence community

³ Hagopian, Frances. "After Regime Change: Authoritarian Legacies, Political representation, and the Democratic Future of South America," *World Politics*, Vol. II(1992) p. 67:1-22

⁴ See note 1 above.

guide "The Intelligence Analyst's Notebook" totally ignores quantitative analysis.⁵ Further evidence of this neglect is given in former CIA Director, and political scientist by training, Robert Gates' remarks to the analysts in the Directorate for Intelligence concerning the avoidance of politicalization of analysis. Although he stressed quite vehemently the need for objectivity, logic, and the evaluation of evidence, nowhere did he mention at all the concept, one seemingly ideally suited to the avoidance of political bias, of checking to see what the numbers have to say.⁶ In a 1992 article in "Studies in Intelligence" (The CIA's in-house tradecraft journal), a piece on combatting "analytical mindset", implied a quantitative approach, speaking of 40, 50, or 60 percent likely predictions, but viewed most intelligence analysis as "... circumstances where rigorous testing of assumptions and evidence is not practical" and "...the more analytic judgements ... the less susceptible they are to management of the process according to the tenets of the scientific method."⁷ Perhaps the most damning evidence of this neglect is in itself quantitative in nature. In a study of 545 analytical documents produced by the State Departments Bureau of Intelligence and Research (INR) in 1972 classified

⁵ Mathams, R.H. *The Intelligence Analyst's Notebook*, Working Paper No. 151, Canberra: The Research School of Pacific Studies, The Australian National University, 1988, p.5.

⁶ Gates, Robert. Remarks made by the Director of Central Intelligence in the CIA auditorium, 16 March 1992.

⁷ Davis, Jack. "Combatting Mind Set," *Studies in Intelligence*, Vol. 36, No.5 (1992).

no higher than Secret, only 148 employed quantitative data. More importantly, in only one document was the data not a raw number such as a vote total or trade figure but a statistic used to show a relationship between two variables. Even this single case was a citation from a scholarly publication and not something the INR analyst had computed.

In response to studies such as the one mentioned above, the CIA did actually create a division in 1976 titled The Methods and Forecasting Division of the Office of Regional and Political Analysis, though no similar effort was made in either the State Department nor DOD. However, as the head of this office stated quite clearly, " The initial attitude of country analysts toward our unconventional proposals typically ranged from skepticism to hostility."⁸ At the time of his statement, the division head still felt his reports were being widely circulated and receiving some reception within the analytical community. Despite some optimism, he acknowledged that the true success would be achieved when the analysts themselves adopted the methods used by his office. Today his office no longer exists and the methods have fallen by the wayside.

Reasons for this neglect are both individual and institutional. On an individual level, most intelligence analysts, other than those in purely technical areas such as weapons systems analysis, begin their analytical careers armed mainly with an undergraduate education in history, political science, international

⁸ Heuer, Richard J. *Quantitative Approached to Political Intelligence: The CIA Experience*, Boulder: Westview Press, 1978, p. 3.

affairs, or area studies. Even though many go on to advanced graduate educations, they normally have received little formal training in quantitative analysis and thus find themselves rather uncomfortable with numbers, equations, and other technical matter seen as the purview of "geeks."

This lack of expertise in the quantitative realm spills over into a preference for analysis based largely on personal experience. Analysts are often assigned to a country or region based upon some prior connection to said area either through residence, study, or knowledge of the language. As such, they are expected to have an innate "gut" feeling about how things operate in their particular purview. A challenge to the opinion of an analyst who has had "time on the ground," based upon a bunch of numbers spit out by a computer run by some "geek," is unlikely to get very far.

This attitude can be traced to the history of both the CIA and military intelligence. The CIA grew out of the Office of Strategic Services (OSS) created during World War Two. While ostensibly an intelligence organization, the OSS's primary function was really what today would be called Special or Covert Operations. OSS agents primarily engaged in high risk, clandestine operations behind enemy lines of an unconventional military nature. Though intelligence collection was often a byproduct of these operations, their primary objective was usually military in nature e.g. organization of resistance and partisan groups. These former OSS operatives formed the nucleus of the fledgling CIA in the late 1940s. As a result, the Directorate of

Operations (DO) within the CIA came to dominate the agency. It was not until Robert Gates' appointment as CIA director after the demise of William Casey (an old OSS hand) that an analyst was put in charge. With the DO side of the house in control, the "guy on the ground" mentality was reinforced. The opinion of the Station Chief, a DO operative, located in country, would outweigh the opinions of the analyst. In order to compete effectively within the organization, analysts had to take this "guy on the ground" approach. Likewise, military intelligence officers have always been subordinated to commanders whose focus is on operations. The commander whose "butt was on the line" was likely to put far more faith in someone who has been there, than an analyst behind a desk.

A general view of much of the work of academia as having little relevance to the "real world" which pervades the community also makes the use of quantitative analytical techniques unlikely. The CIA's Handbook for Intelligence Analysis helps clarify this point, "The gap between political analysis as it is practiced in the academic world and the straightforward, concise information demanded by busy policy-makers is considerable. Even an experienced analyst would be well advised not to try to explain to the Secretary of State the historical significance of the commercial bourgeoisie, for example, in the time available before his eyes glaze over."⁹ This problem is not just found on the intelligence community side, but on the academic side as well. O'Leary and Coplin observed that "The kinds of relationships found in the great

⁹ See note 1 above, p. 10

majority of INR (Office of Intelligence and Research of the US State Department) analyses represent such complexity that no single quantitative work in the social sciences could even begin to test their validity."¹⁰

This divide between academia and the intelligence community is compounded by a perceived ideological rift between the two. The intelligence community leadership, dominated by those who came of age during the Vietnam era, largely maintain their views of academics as "long haired weirdos bent on bringing down the country." For their part, many academics, having also come of age during the 1960s view the intelligence community as the focus of much of the evil in the modern world. The intelligence community treasures secrecy, while academics place primacy on the free exchange of ideas. Whether real or imagined, these ideological barriers serve to prevent better cooperation between the two institutions.

However, what is key in understanding the neglect of quantitative analysis by the intelligence community is not the nature and attitudes of the individual analysts illustrated above, but the institutional structure within which intelligence analysis is performed. We might wish to perceive the intelligence community as a kind of large computer where pure data goes in and pure analysis comes out which is then delivered to policy makers. As Graham Allison has demonstrated,

¹⁰ O'Leary, Michael K., Coplin, William D., Shapiro, Howard B., Dean, Dale. "The Quest for Relevance: Quantitative International Relations Research and Government Foreign Affairs Analysis," *International Studies Quarterly* 18 (June 1974), p. 228.

then delivered to policy makers. As Graham Allison has demonstrated, this rational model of input and output seldom explains the entire picture. If we view intelligence analysis as the output of a variety of governmental organizations this becomes clear.¹¹ Allison proposed two alternative models for understanding the output of governmental organizations which are useful here.

Allison's first alternative to the rational view was the Standard Operating Procedures Model. This model attempts to explain how the output of governmental organizations is often as not the result of established patterns of behavior which have developed over time, rather than any careful analysis and conscious choice of the perceived best option. In the intelligence analysis context this idea is easily applied. Basically, intelligence analysis is done the way it is because it has always been done that way. The intelligence community is a large bureaucracy like any other and hence possesses a great deal of inertia and reluctance to change. As mentioned earlier, the intelligence community's analysis is "actor centered." This approach was found suitable for analysis in the past. Analysts were trained in this method, and collection systems were designed to provide information useful to these analysts. Though the world has changed substantially, the intelligence community has not. This is not to say that major attempts at reorientation have not taken place, but that these changes are organizational rather than methodological. Basically, old tools are

¹¹ Allison, Graham T. "Conceptual Models and the Cuban Missile Crisis," Ph.D. diss., Harvard University, August 1968.

being applied to new problems.

Even more instructive is Allison's second alternative to the rational model, namely Bureaucratic Politics. Using this model, intelligence analysis can be seen as the result of a struggle between various intelligence agencies competing for power and resources. It is easy to see why intelligence analysis produced by an analyst working for the US Air Force might focus on the threat posed by the development of a new fighter aircraft by country X. Logically it is in the Air Force's interest to play up this type of threat since it leads to the conclusion that better fighter aircraft (read more money) are needed. Similarly other services might seek to enhance their own agendas through their intelligence analysis. With billions of dollars at stake, it is easy to see why there exists substantial incentive to "massage" the analysis to serve parochial interests.

Though we are familiar with Twain's admonition that there are "Lies, damn, lies, and statistics," one of the beauties of quantitative analysis, is that it is difficult to "massage." Statistical methods can be checked and validated. The tenets of the scientific method require that results be replicable. The data and the calculations can be verified. Clearly, relying on this type of analysis poses risks for intelligence agencies seeking to advance particular interests in the bureaucratic politics give and take. It is far easier to fudge analysis grounded in subjective opinion, than that grounded in statistical analysis and the scientific method.

The Bureaucratic Politics model also highlights the penalties

reallocated. Trying to penalize an agency for producing something which said a coup is "possible" by claiming that it did not provide adequate warning would be difficult, thus shielding the agency from blame. If, on the other hand, the agency said that a coup had a probability of occurring of .2, failure would be evident. It may even be the case that the penalties for failure have risen so high that they override all other considerations. For example, the National Intelligence Estimates, the intelligence community's authoritative statement on a given problem, are reviewed and modified by all intelligence agencies prior to their publication. Thus, if the estimates are later found to be in error, no single organization can be blamed. Since the estimates contain no hard numbers, and few definitive statements, it is even difficult to determine if the estimates were truly in error, or simply misinterpreted.¹²

The secrecy surrounding the collection of intelligence also comes into play in bureaucratic politics. A major function of the intelligence community is to collect as well as analyze intelligence. Intelligence collection systems are designed to collect information which is not available through other means. Just as the military desires new weapons, so too do intelligence agencies covet new collection tools. Thus the methodology used by analysts may be driven by how information is being collected. Rather than the analyst directing the collector towards the types of information he needs, the

¹² Freedman, Lawrence. *US Intelligence and the Soviet Strategic Threat*, Boulder: Westview Press, 1977.

directing the collector towards the types of information he needs, the collector may be saying to the analyst, "analyze using this information because this is what I am collecting." In the CIA this is compounded by the dominance of the Directorate of Operations, since it is they who are the collectors. Quantitative analysis, based on open source economic, demographic, political, or other data, could invalidate the need for much of the collection apparatus already in place. Thereby, threatening, the money, power, and careers of those in the collection end of the business.

Given all of these individual and institutional barriers illustrated here, the quantitative approach is unlikely to win easy acceptance. However, barriers notwithstanding, the quantitative approach can be applied to relevant intelligence questions. Here we will examine its utility in forecasting political instability.

Chapter 3 Political Instability: The Dependent Variable

As mentioned previously, policymakers seem to be concerned about an increasing the number of problems. However, there seems to be at least one question which is both a legacy from Cold War days, and may be taking on greater importance in this new era. The question is one of political stability and instability (a precise definition will come as I operationalize the concept below). How strong is it? Is it likely to endure? What effect will a breakdown have? During the Cold War the intelligence community was obsessed with the stability of various regimes around the world. In some cases, when the regimes were seen as friendly to the United States, analysts looked for signs that their stability was secure or needed shoring up e.g. El Salvador. In other cases, when the regimes were seen as hostile to national interests, e.g. Nicaragua under the Sandinistas, analysts looked for signs of weakness which might be exploited to a hasten change to a regime with a more positive (read pro-US)-outlook.

In contrast to this past, when stability was sometimes good and sometimes bad depending upon whose stability we were talking about, today, I would argue, stability is seen by the US as a desirable quality in practically all regions. If we examine the post Cold War foreign policy crisis areas for the United States, such as Panama, the Persian Gulf, Somalia, Haiti, Yugoslavia etc., we find that all of these center not so much on the orientation of the particular regimes involved, but on the breakdown of a relatively stable situation. Noriega had been a

friend of the United States until domestic opposition, and his response to it, made him an embarrassment. Likewise, though the US shared little in common with Saddam Hussein, he was supported in his war against Iran for fear an Iranian victory might upset the delicate balance of power in the region. Later, when his actions threatened that same balance of power in the region, he became an enemy. In Haiti, President Aristide was openly Marxist and had a history of hostility towards United States, but the stability of his democratically elected regime was important enough to warrant a military occupation to restore his rule. Somalia and Yugoslavia perhaps best exemplify the problems when stability totally breaks down. Who is in charge is not nearly as important as the fact that nobody is really in charge.

Given the lack of the "us versus them" mentality of the Cold War, the United States seems perfectly able and willing to deal with just about any regime as long as there is a regime with which to deal. While we might have differences with North Korea or Vietnam, recent events make it clear that we can do business with them. Even in places where we desire substantial political change such as Iran, Cuba or China, there are few responsible policymakers who would argue that rapid explosive destabilizing change is desirable. A gradual, evolutionary transformation of these systems seems a far better alternative. When coupled with declining budgetary resources, and an increasingly diminished public appetite for foreign entanglements, it would seem the virtues of stability in a multi-polar versus a bi-polar world are quite evident. This question of stability is especially important in Latin

America where every regime, save Cuba, is headed by an elected civilian and is on generally friendly terms with the US. Therefore, forecasting breakdowns in political stability, thus enabling policy makers to prepare for and perhaps forestall them, takes on new importance.

Prior to attempting to predict political instability using quantitative methods, we must of course define the term in a way which can be operationalized. In the course of reading the literature on political instability one finds little agreement as to precise definition. O'Leary and Coplin define Political Instability as "... a condition affecting governments in which established patterns of authority break down, and the expected compliance to the government is replaced by political violence."¹³ The CIA seems to prefer defining political instability by its manifestations such as "riots, strikes, demonstrations, political assassinations, chaotic factional conflict, insurrection, and the focusing of government energy-at the expense of almost everything else-on just staying in power."¹⁴ Though the CIA also pays homage to Clark and Huntington who talk of "commotion potential."¹⁵ David Sanders, in his study of political instability, states, for purposes of operationalization, that, "The extent to which a political system may be characterized as 'unstable' at any given point in time varies in direct proportion to the extent to which the occurrence or non

¹³ See note 7, p. 45

¹⁴ See note 1, p. 25

¹⁵ See note 10, p.9

occurrence of changes in and challenges to the government, regime, or community deviates from the previous system specific 'normal' pattern of regime/government/community changes or challenges, a pattern which will itself vary over time."¹⁶

Several studies from the National Bureau of Economic Research define political instability variously as "the probability of imminent government change as perceived by the incumbent,"¹⁷ "the propensity of a change in the executive either by 'constitutional' or 'unconstitutional' means,"¹⁸ and a weighted sum of assassinations, violent deaths, successful coups, unsuccessful coups, and level of dictatorship.¹⁹ Interestingly enough, these three studies share some authors and references in common, yet chose to define political instability in slightly different ways each time.

Obviously one's definition of political instability depends upon what one is looking to explain or observe. In an attempt at simplicity, rather than relying upon complex theoretical notions and

¹⁶ Sanders, David K. *Patterns of Political Instability*, New York: Macmillan Press Ltd., 1981, p. 66.

¹⁷ Ozler, Sue and Tabellini, Guido. *External Debt and Political Instability*, National Bureau of Economic Research, Working Paper No. 3772, 1991, p.13.

¹⁸ Alesina, Alberto; Ozler, Sue; Roubini, Nouriel; and Swagel, Phillip. *Political Instability and Economic Growth*, National Bureau of Economic Research, Working Paper No.4173, 1992, p.3.

¹⁹ Alesina, Alberto and Perotti, Robert. *Income Distribution, Political Instability, and Investment*, National Bureau of Economic Research, Working Paper No.4486, 1993, p. 6.

difficult to conceptualize and/or observe phenomenon, I will construct my definition in as parsimonious a fashion as possible. In the physical world, the term "stability" implies low potential for change. The more stable something is, the less susceptible it is to change. Conversely, the less stable something is, the easier it is to change. When we wed the term 'political' with 'stability' we are attempting to say something about some change in politics. The politics of a country can change in many ways. New people can be elected, new constitutions can be written, leaders can die, new dictators can supplant the old, etc. All of these potential changes could conceivably be of interest to the intelligence community.

Since we are trying to serve a customer who is involved in policy making however, we should examine those types of changes which are most likely to effect him or her. We have already shown how current policymakers are able to deal with practically every regime in some fashion. Consequently, minor changes in politics of a given country, are unlikely to be of much interest. The policymaker is much more likely to be concerned with broad changes in the political system which necessitate a change in policy on the part of the US. By the word 'system' we mean the whole set of mechanisms, structures, and institutions, by and through which the political process operates. These include, but are not limited to, public officials, electoral processes, legislative, executive, and judicial functions, influence of various elites, representation of specific interests, institutions, constitutional structures, etc. How these various institutions and

individuals are put together and operate to achieve policy outcomes constitutes a political system. The political system is also characterized by a set of rules, both formal and informal, which regulates who participates in policy making and leadership selection, as well as the limits upon the exercise of power by individuals and institutions. In today's world, systemic changes are those which are most likely to necessitate changes in US policy. Existing relationships, treaties, assistance programs, etc. will most certainly be affected when a systemic change occurs. Thus, we will examine stability in reference to the entire political system.

Clearly it is structural change in the system as a whole we are concerned with, rather than change in individual components of the political system itself. Changes in individual components are only significant to the degree which these changes influence the structure of the entire system. For example, Castro taking over the governance of Cuba is not the same as Bill Clinton being elected President of the United States (though some talk show hosts might argue this point). While both events might result from some degree of political instability, since there was some systemic change in both cases, it is obvious that far more changes of greater degree occurred to bring Fidel Castro to power, than occurred to bring Bill Clinton into the White House. One represents a fundamental structural change in the system, while the other represents simply a transfer of the office of chief executive. Pre-Castro Cuba must have been far more politically unstable than Pre-Clinton USA since the degree of systemic structural change was

more pronounced in the former than the latter. Similarly, while there have been frequent changes in the governments of post-war Italy, the overall political system as a whole has retained the same structure. Therefore, not only is the potential for change important, but the degree of that change is also significant. Using this idea, political instability will be defined as the potential for change in the structure of the political system of a given country. The greater that potential for change, the more unstable that system.

It is important to note that political instability, as I define it here is independent of the form of the government. Both dictatorships and democracies can be unstable or stable. The key lies not in how the political system is structured, though some structures might be more stable than others, but in how high is the potential for change in the structure of each particular system. It is also important to understand that political instability peaks at the point just prior to actual systemic structural change occurring. Once the new system begins to take shape, instability begins to decline, the degree to which is dependent upon how stable is the replacing system.²⁰

²⁰ While it may seem trivial, this max instability point is not necessarily found when the old political system breaks down. Should no new system supplant the old immediately, instability during this period when no system exists is at its highest. In the case of the Chilean coup in 1973 the military government instantly replaced the Allende government, and therefore the breakdown point and the peak instability point were collocated. However, in the case of Somalia, no new system has emerged to replace the Barre regime, and therefore instability has reached a high plateau which may endure for some time.

Chapter 4 The Cases and Data

Now that we have decided what to analyze and how to define it, we need to select cases from which to draw our data. In order to test the utility of the quantitative approach for intelligence purposes, I will use the Latin American region as a case study. As stated earlier, trade liberalization and democracy are two of the major forces expanding the "puzzle" for the intelligence community. Nowhere is this more true than in Latin America. If one were to survey analysts and scholars of Latin America in an effort to determine their views concerning the most significant regional trends in recent years, one would likely find the growth of democratic political systems and the liberalization of economies at or near the top of the list.

Expanding democracy implies, by definition, the diffusion of political power and influence among a greater number of a nations citizenry. As a nation moves along the continuum from dictatorship to democracy, more and more citizens participate in, or at least have the right to participate in, the political process. This participation may be direct through voting or running for office. It may also be indirect, by simply publicly voicing concerns, protected by the rubric of enhanced civil liberties extant in a more democratic system. Consequently, the political system can hardly avoid, though it may resist, becoming more responsive to the popular will. Of course the desires of all citizens may not carry equal weight, nor elicit equivalent responses. But it is

certain that those holding public office will have to deal with the concerns of a greater number of constituents in a democracy than their counterparts in a dictatorship.

Economic liberalization likewise implies diffusions of power in the economic, rather than political, sphere. As the state extricates itself from the economy, it gradually turns a greater share of economic power over to individuals and non-governmental institutions. Economic conditions become less a product of government policies, bureaucrats, and policymakers, and more a result of the amalgamation of numerous transactions and decisions of individuals and groups interacting with market forces.

As this participation in both the economic and political spheres expands, the understanding and forecasting of events in the region becomes far more dependent upon how the various historic, social, economic, and political forces affect larger and larger groups of people. To illustrate this point, let us imagine we are attempting to forecast political developments in Nicaragua during the period of the Somoza dictatorship. If we can develop an understanding of what we think Somoza himself will do, we probably will have a good idea of which outcomes are likely. Now let us imagine we are trying to perform the same forecast today. Our knowledge of President Violetta Chamorro's behavior will be of far less utility than was our knowledge of Somoza in the past. Put simply, Somoza's actions were a far bigger piece of the puzzle during his tenure, than are Chamorro's actions today. In order to understand democratic Nicaragua today, we must develop some

understanding of various political factions, significant political figures, the media and myriad other factors which all come into play in a democratic system. Given a similar trend towards political liberalization currently going on throughout the region, an examination of Latin America's recent past could prove useful in determining its future.

I have chosen to confine my analysis to 19 Latin American nations for several practical as well as theoretical considerations. I recognize that any conclusions I might draw are confined to this region and should not be generalized to the world as a whole. However, since what I am seeking to validate is a methodology, and not particular hypothesis concerning the causes of instability, it is the method, and not the results, which should have broader application.

Another practical consideration is that a regional approach mirrors the structure of the intelligence community's analysis sections. In the Central Intelligence Agency, the Defense Intelligence Agency, and the State Department's Bureau of Intelligence and Research, analytical divisions are broken down by region along the lines of Latin America, Former Soviet Union, Eastern Europe, Western Europe, Middle East, Sub Saharan Africa, and East Asia, etc., and then further subdivided, usually by country or small groups of countries. In some cases there are cross-cutting functional analysis organs focusing on areas such as weapons proliferation, terrorism, narcotics etc. , but even they tend to be further sub-divided by region and country.

Congruent with the above mentioned practical considerations

are valid theoretical ones. In essence an area approach in this type of cross-national analysis is attempting to establish, as Arend Lijphart states "crucial controls".²¹ Sanders conceptualizes these controls as variables relating to "historical experience;" a concept which he notes is "frequently ignored in quantitative cross national research, largely because it is not amenable to precise quantitative operationalization."²² . Most importantly for a study of this type, Bruce M. Russett, using a cluster analysis on an element of the database which I will use, found strong empirical foundation for the notion of what he called "Socio-cultural Homogeneity" among regions including Latin America ²³.

Based upon the concepts mentioned above, I have selected the following nations for my analysis: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, The Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay,

²¹ Lijphart, Arend, "Comparative Politics and the Comparative Method," *The American Political Science Review*, Vol. LXV, No. 3, (September, 1971) p. 689. Noting the objections of Mill, Durkheim, and Rustow; Lijphart argues persuasively that while no two countries or groups of countries match the theoretical ideal of being identical in all respects, save one; they can be similar enough to draw valid conclusions.

²² See note 13, p. 155. Sanders does recognize that this concept has important limitations such as including South Africa in the region of Sub Saharan Africa but still finds it generally useful. Additionally, Sanders' own empirical foundations did find substantial regional variations which would seem to support the utility of the concept.

²³ Russett, Bruce M., "Delineating International Regions," in J. David Singer, ed. *Quantitative International Politics: Insights and Evidence*, New York: Free Press, 1968, p. 317

Peru, Uruguay, and Venezuela. All of the above nations are at least similar in several major ways. They all were colonized by either Spain or Portugal during the 15th and 16th Century and achieved independence in the 19th century (though Cuba was occupied by the US until early in the 20th and Panama was part of Colombia until 1904). All contain or contained some indigenous population though the economic and political systems are dominated by Spanish or Portuguese speaking elites. Catholicism is overwhelmingly the majority religion and the Catholic Church the most significant religious institution in all countries. All constitutions delineate presidentialist vice parliamentary political systems, though historically all have vacillated between various forms of dictatorship and democracy. Additionally, the majority, though not all of the nations, have experience with export economies, import substitution industrialization, foreign debt crisis, and heavy handed US influence. Empirically, the above list conforms quite closely to Russet's Latin America, said to be a region of socio-cultural homogeneity.²⁴

²⁴ See note 23. Russet's analysis was based on the 1964 edition of the World Handbook of Social and Political Indicators. At that time Argentina was placed in the group of "Western Community" states while Uruguay, Puerto Rico, Cuba, Spain, Portugal and Chile were considered "Semi-developed Latins" due to their higher levels of economic development which distinguished them from the majority of Latin America. Since that time, while Argentina, Chile, and Uruguay are the most economically developed nations in Latin America, their levels of economic development, as indicated by per capita GNP, are far closer to the rest of Latin America than to any of the "Western Community". Likewise, while Spain and Portugal's levels of economic development lag behind the rest of the "Western Community" the gap between their per capita GNPs and Argentina's, is far greater. Russet's analysis also placed the Philippines in the Latin America grouping. In this case I

I extracted a subset of the data from the World Handbook of Political and Social Indicators Volume II²⁵ which provides detailed event data on 17 political variables for 131 countries for the period 1948-1982. Ideally, more current data would have been used since it is precisely the period between 1980 and the present when the most noticeable movement toward economic and political liberalization is taking place. Still, if anything, the variables found to be significant during the period encompassed by the data, should prove even more significant in the more politically and economically liberal environment of recent years. Unfortunately no more current political event data is available. A description of the variables used is found below. For a description of coding procedures see Appendix 1.

1. Protest Demonstration - A nonviolent gathering for the purpose of protesting against a regime, its leaders, its ideology, its policy, or actions.

2. Regime Supported Demonstration - A nonviolent gathering for

linkage with the US, Puerto Rico was also excluded from my analysis.

²⁵ Russett, Bruce M. *World Handbook of Political and Social Indicators (WHPSI)*, 3rd ed. Vol. II, New Haven: Yale University Press, 1983. Available in machine readable format through the Interuniversity Consortium for Political Science Research. Other data-bases were explored such as Polity II but the WHPSI provided the most comprehensive political event data sets in machine-readable form for the period 1948-1982. Additionally the WHPSI seems to be the most commonly used data-base in previous research of this type. Unfortunately no more current data set of this type was found

the purpose of expressing support for a regime, its leaders, its ideology, its policy, or actions.

3. Political Strike - A work stoppage or stoppage of normal academic life by students for the purpose of protesting against a regime, its leaders, its ideology, its policy, or actions not to include strikes directed at primarily economic goals, e.g. higher wages.

4. Riot - A demonstration or disturbance that becomes violent.

5. Armed Attack - An act of violent political conflict carried out by an organized group with the object of weakening or destroying the power exercised by another organized group.

6. Political Assassination - politically motivated murder of a national leader, high government official, politician, or politically prominent figures not holding office.

7. Deaths from Political Violence - Deaths as a result of political violence such as Riots, Armed Attacks, Assassinations and Executions

8. Governmental Sanction - Action taken by the government to neutralize, suppress, or eliminate a perceived threat to the security of the regime.

9. Removal of Sanctions - Action taken by the government to remove measures designed to neutralize, suppress, or eliminate a perceived threat to the security of the regime.

10. Political Execution - An event where a person or group is put to death under orders or at the instigation of the national authorities for political purposes.

11. Election - Collective choice through voting procedures for public office holders at the national level or national referenda.

12. Executive Renewal - Act that reconfirms the tenure of the incumbent national executive through the country's conventional procedures.

13. Regular Executive Transfer - Persons not holding national executive office to obtain such office through legal or conventional procedures.

14. Unsuccessful Regular Executive Transfer - An abortive attempt made by persons not holding national executive office to obtain such office through legal or conventional procedures.

15. Unsuccessful Irregular Executive Transfer - An

unsuccessful organized attempt to remove and replace the national executive outside conventional procedures.

16. Irregular Executive Transfer - A successful organized attempt to remove and replace the national executive outside conventional procedures.

17. Executive Adjustment - A change in the composition of the top governmental leadership.

The handbook does provide data divided both daily and quarterly. I chose to employ annual aggregate data for the sake of simplicity. An intuitive sense would also seem to indicate that periods of high political instability seem to have some temporal duration beyond a single day or quarter²⁶. Finally, returning to the purpose of my endeavor, political intelligence forecasts normally seek to project a minimum of one year into the future. Owing to the limited rapidity of policy making and implementation processes, the utility of forecasts projecting events in the very near future (less than 1 year) is minimal. The nineteen countries mentioned above multiplied by the 35 years of

²⁶ An area for further research beyond the scope of this paper would be to examine the daily data in an effort to determine the exact length of periods of high political instability. It would then prove interesting to compare the length of these periods cross-nationally, cross-regionally, and cross-temporally and endeavor to explain any variations found.

available data, yielded 665 country-year²⁷ observations which should prove a sufficiently high number of cases (N) for my purposes.

Having compiled the data, I then encountered the problem of dealing with what Sanders calls "system specific patterns." As Sanders points out, a simple raw frequency count approach to comparing cross-national data of this type implies a "single universally applicable 'normal' pattern, namely one in which no destabilizing event occurs²⁸. In other words, simply because country A exhibits more of phenomenon X (thought to represent some measure of instability) than country B, does not necessarily mean that country A is more unstable than country B. The relative importance of phenomenon X may be greater in B than in A.

For example, according to the data, in 1955 Colombia experienced 23 armed attacks and 714 violent deaths, while Costa Rica experienced 18 armed attacks and 56 violent deaths. If we assume that violent deaths and armed attacks are useful measures of political instability, a pure frequency count approach would tell us that Colombia in 1955 was significantly more unstable than Costa Rica. However, a more thorough examination of the two countries would tell us that the 1955 figures are below average for Colombia and well above average for

²⁷ Most other studies of this type tend to compress the data into much larger time periods, looking at average instability over three, five, ten, or greater year periods. While this may be useful in gaining an understanding of what makes countries more or less unstable over time, the year-to-year fluctuations are my interest for prediction purposes. Likewise, Sanders' work found little utility in using monthly data for purposes of prediction.

²⁸ See note 22, p. 73.

Costa Rica. Controlling for relative size of population may help remedy some of this problem e.g. converting violent deaths to violent deaths per 1000 persons. However, certain variables such as coups, political sanctions, and elections would seem to be meaningless when put in these terms.

Therefore, in order to put the data in a form which could be useful for comparison, all the data were standardized by country and a Z score was recorded for each variable during each country year.²⁹ Each variable was put into standard units which can now be used for effective comparison. Returning to the example above, the standardized data for 1955 now yields $-.035$ (Standard Units (SU)) Armed Attacks and $.868$ (SU) violent deaths for Colombia and 1.764 (SU) Armed Attacks and 5.590 (SU) Violent Deaths for Costa Rica. These standardized units now enable us to compare Colombia and Costa Rica in 1955. We see that the Armed Attacks and Violent deaths in Costa Rica appear to be far more noteworthy in relative terms than those in Colombia. Given the historically high levels of violence in Colombia, and the conversely low levels in Costa Rica, this comparison of Standard Units makes far more

²⁹ A mean was calculated for each country for each variable using the 35 country-year observations. This mean was then subtracted from each observed value. The result was then divided by the standard deviation (root-mean-square) for each country yielding a standard unit number which indicated how many standard deviations each observed value is away from the mean. A positive sign indicates a value above the mean, while a negative indicates a value below the mean. Other methods such as differencing the data based on previous observations and examining residuals from a trend plotted over time could also have been used but were not for the sake of simplicity.

sense than a raw frequency count approach.³⁰ The standard unit score for each variable indicates how far the raw score deviates from both national and temporal norms.

³⁰ Of course this does imply that a standard deviation from the mean maintains the same significance cross-nationally, which is not necessarily true. However, at a minimum it does highlight how much a given event deviates from an established pattern.

Chapter 5 The Instability Index

With the cases selected, and the data in a useable form, we now need to develop an index system in order to measure political instability as defined above and apply the analysis. Like most good political science concepts, political instability does not lend itself easily to measurement. In previous empirical research in this area the process of index development includes the following steps: 1. Various theoretical notions of the components of political instability are forwarded, 2. Various events or other observable phenomena which would seem to be valid (on theoretical grounds) measures of these components are then aggregated and recorded, 3. These measures are assembled into some kind of scaled measure of the various components. For example Sanders breaks down political instability into Regime Change, Government Change, Violent Challenge, and Peaceful Challenge components.³¹ O'Leary and Coplin use Elite Instability and Communal Instability as the key components of political instability.³² Other authors such as Gurr and Lichbach vary the concept slightly and measure what they term political conflict using Extent and Intensity of Conflict and Rebellion as their components.³³ Hibbs study of Mass Political Violence measures Collective

³¹ See note 22, p. 68.

³² See note 7, p. 45.

³³ Gurr, Ted Robert, and Lichbach, Mark Irving. "Forecasting Domestic Political Violence" in *To Augur Well: Early Warning Indicators in World Politics*, Beverly Hills and London: Sage Publications, 1979, p. 156.

Protest and Internal War. ³⁴ Duvall and Shamir break their notion of political conflict down along the lines of Turmoil and Rebellion.³⁵

While all of these indices may be useful for academic endeavors, they fail to serve my purposes here. They are problematic primarily because in order to understand the measures in a meaningful way, one must have some understanding of the theoretical notions supporting them. Though this does not pose a problem for the scholarly researcher familiar with the literature in the field, the intelligence analyst, attempting to present a forecast to a policymaker, would have difficulty explaining the difference between communal and elite instability. Additionally, the indices mentioned above are multidimensional, thus adding another layer of complexity. What does it mean when turmoil is high but rebellion is low? Therefore, in order to be useful, the index used here should not rely upon an understanding of theory. It should also provide a single measure capturing the various aspects of political instability.

As previously mentioned, instability, as defined here, peaks just prior to a new political system supplanting an old one. Unfortunately we can not turn on our "political instability meter" and take a reading at various points in time. However, using the definition

³⁴ Hibbs, Douglas A. *Mass Political Violence: A Cross National Causal Analysis*, New York: John Wiley and Sons, 1973, p. 16.

³⁵ Duvall, Raymond and Shamir, Michael. "Indicators from Errors: Cross-National, Time Serial Measures of the Repressive Disposition of Governments," in Charles, Lewis, and Taylor *Indicator Systems for Political, Economic, and Social Analysis*, Cambridge: Oelegeschlager, Gunn & Hain Publishers, Inc., 1980, p.162.

we have established, we can locate specific points in the past where political instability was high or low. In other words the potential for change in the political system was high or low. According to the definition, Cuba just prior to Castro's takeover in 1959 must have been politically unstable since structural systemic change, the potential for which had to have been high, occurred. Similarly, countries like Sweden, Costa Rica, and the United States seem to be politically stable according to our definition. The most obvious high points for political instability are those periods like Cuba in 1959 when one political system broke down and another replaced it. Essentially, as Sanders points out³⁶, this is a postdictive approach since we are looking backward through time to determine points where our index should register high. While postdictive analysis contradicts the notion of forecasting, in this case we are simply using it to develop the index rather than attempting any forecast. Once these points of high instability have been identified, we can look for measurable phenomenon occurring during these periods and investigate whether or not there is some commonality among them. Should these commonalities exist, it is logical to assume that these common phenomena covary with political instability and can be used to form an index.

The following country-years would seem to represent a good cross section of various periods of high political instability in the region. Argentina 1955, Brazil 1964, Chile 1973, Colombia 1948, Costa

³⁶ See note 19, p. 89.

Rica 1948, Cuba 1959, The Dominican Republic 1965, El Salvador 1979, Guatemala 1954, Panama 1968, and Peru 1968. Undoubtedly some would add, while others would subtract from this list, and I make no claims that it is comprehensive. However, since substantial structural systemic political change occurred in these countries at these points in time³⁷, if there are commonalities to be found, they should be identifiable through examination of these cases. Clearly these cases are some of the most extreme examples of systemic political change which has taken place in Latin America. By using these cases we are hoping to tease out those variables which register high when instability is high. Other unstable periods could be used, but the use of the most extreme periods highlights the key variables more clearly. The reasoning behind the selection of only those cases which occurred in the year 1948 and beyond is due to the lack of availability of detailed event data prior to that point.

Having selected the country-years mentioned above as likely high points for political instability, I then treated these 11 country-years as a sample of my entire data set and examined the statistics of the sample noted in Table 1 below:

³⁷ These country-years are associated with the following major events: Argentina 1955 - the fall of President Juan Peron, Brazil 1964 - The overthrow of President Goulart by the military, Chile 1973 - The fall of Allende, Colombia 1948 - The beginning of the civil war, Costa Rica 1948 - The end of the civil war, Cuba 1959 - Fidel Castro takes power, The Dominican Republic 1965 - Invasion by the United States, El Salvador 1979 - the beginning of the civil war, Guatemala 1954 - The US-backed coup overthrowing President Arbenz, Panama 1968 - The overthrow of President Arias by the military, Peru 1968 - The left-wing military coup.

TABLE 1
Instability High Points

	MEAN*	STANDARD ERROR	Z SCORE**
PROTEST DEMONSTRATIONS	.328	.370	.886
REGIME DEMONSTRATIONS	2.102	.670	3.137
RIOTS	1.674	.421	3.976
ARMED ATTACKS	1.728	.659	2.622
ASSASSINATIONS	.346	.303	1.142
POLITICAL STRIKES	.943	.407	2.317
EXECUTIVE RENEWALS	.109	.313	.348
EXECUTIVE ADJUSTMENTS	1.241	.314	3.952
UNSUCCESSFUL REGULAR EXECUTIVE TRANSFERS	-.077	.027	-2.852
SUCCESSFUL REGULAR EXECUTIVE TRANSFERS	1.398	.523	2.673
UNSUCCESSFUL IRREGULAR EXECUTIVE TRANSFERS	.737	.507	1.454
SUCCESSFUL IRREGULAR EXECUTIVE TRANSFERS	2.632	.631	4.171
ELECTIONS	.172	.363	.473
IMPOSITION OF POLITICAL SANCTIONS	2.270	.656	3.460
POLITICAL EXECUTIONS	1.497	.802	1.867
LIFTING OF POLITICAL SANCTIONS	1.778	.590	3.014
VIOLENT POLITICAL DEATHS	2.169	.814	2.665

* By design the means for each variable in the entire 665 country-year data set are all equal to zero.

** Calculated by dividing the mean by the standard deviation.

A Z score of greater than three in Table 1 indicates that there is a less than 1% chance that the differences between the means of these variables for the 11 high instability cases and the means of the same variables calculated for the entire universe (zero by design), occurred by chance. In statistical parlance these differences can be considered highly significant and the null hypothesis (that there is no difference between the sample and the entire data set) can be rejected. In lay terms, there is something going on with these eleven cases, with respect to the indicated variables, which makes them different from the entire data set.

Since the eleven cases were selected on the basis of perceived periods of high political instability, it is logical to assume that the variables whose Z scores were greater than three will register significantly higher during all periods of high instability. An examination of these variables confirms the logic of this assumption. The variables indicated are, in descending order of Z scores: Successful Irregular Executive Transfers, Riots, Executive Adjustments, Imposition of Political Sanctions, Regime Demonstrations, and Lifting of Political Sanctions. Successful Irregular Executive Transfers would seem to be the most obvious measure of political instability since it confirms both that the incumbent executive was unable to sustain himself in office, and that the regular political processes normally used to transfer office had broken down. Therefore, Successful Irregular Executive Transfers, a concrete observable event, is positively correlated with the non-observable concept, political instability, which we are trying

to capture with the index. This may seem somewhat circular logic since the majority of the 11 unstable cases used to develop the measure were characterized by successful irregular executive transfers. However, it would be difficult to dispute that years in which irregular executive transfers occur are, by definition, politically unstable. Riots indicate a substantial amount of dissatisfaction with the regime prompting people to go beyond the threshold of non-violent protest. Executive Adjustments, Imposition of Political Sanctions, Regime Demonstrations and the lifting of Political Sanctions all can be considered various types of measures taken by the regime to enhance stability.

Other variables which were significant at the 5% level (Z scores greater than 1.96) Armed Attacks, Political Strikes, Successful Regular Executive Transfers, and Violent Deaths would also seem to make sense. Most interestingly, an abnormally low level of Unsuccessful Regular Executive Transfers, was nearly highly significant at the 1% level (Z score of -2.852). Given that Successful Irregular Executive Transfers, and Successful Regular Executive Transfers were both high during periods of high political instability, this abnormally low level of Unsuccessful Regular Executive Transfers could be interpreted to mean that those seeking a transfer of executive power during these periods were likely to be successful either through regular means, or by throwing in with those employing irregular means. A plausible scenario during periods of high political instability. Executive Adjustments were found to be highly correlated with Successful Irregular Executive

Transfers, and Regime Supported Demonstrations and Lifting of Political Sanctions were both found to be highly correlated with Imposition of Political Sanctions. Therefore, they appeared to be measuring the same aspect of political instability and were dropped from the final measure.

Based upon the data, and the assumptions noted above, I employed a simple sum approach whereby Political Instability = Successful Irregular Executive Transfers + Riots + Imposition of Political Sanctions³⁸. Even though this index does not rely on theoretical foundations, it appears to encompass quite nicely some of the theoretical notions deemed important by previous authors. The concepts of regime stability and dissent are included by using successful irregular executive transfers and riots as key components. The inclusion of the imposition of political sanctions variable might best be thought of as a reflection of the regimes own perception of its stability since the imposition of sanctions is clearly an effort to shore up weakened stability.³⁹

The approach used to construct the index detailed above has several advantages for use in intelligence work. First, it is relatively simple to understand, since the measurement is based upon

³⁸ A more detailed summary of this approach to measurement construction is provided in Frei, Daniel and Ruloff, Dieter. *Handbook of Foreign Policy Analysis: Methods for Practical Application in Foreign Policy Planning, Strategic Planning and Business Risk Assessment*, Verlag Ruediger, Switzerland: Martinus Nijhoff Publishers, 1984, p. 52.

³⁹ The fact that political sanctions exist at high levels during periods of high political instability may indicate declining marginal utility of such sanctions in preventing a further deterioration of stability.

relatively simple to understand, since the measurement is based upon three easily observable phenomena. Second, no high powered mathematics are involved, and employing a commercially available computer statistical software package on a 386SX PC⁴⁰ proved more than adequate.⁴¹ Third, this type of index system is derived from the data itself and thus avoids many potential biases inherent in any system based upon theoretical concepts of political instability. Finally, the technique is readily transferable to construction of indices for other concepts.

An analyst seeking to measure a variety of concepts such as economic decline, ethnic conflict, arms race intensity, etc. could use this system. First he or she would define the concept. Then the historical record would be examined to identify periods in the past when the presence of the desired concept appears to have been high from an intuitive standpoint. Observable phenomena whose presence was significantly high during these periods and low during others would then be assumed to covary with the concept in question. The covarying phenomena would then be used to construct a measurement. While there may be some disagreement as to the selection of time periods used to construct the index, a sound definition of the concept should alleviate most of these problems.⁴²

⁴⁰ Berk, Kenneth N. *Data Analysis with Student Systat*, New York: Course Technology Inc., 1994.

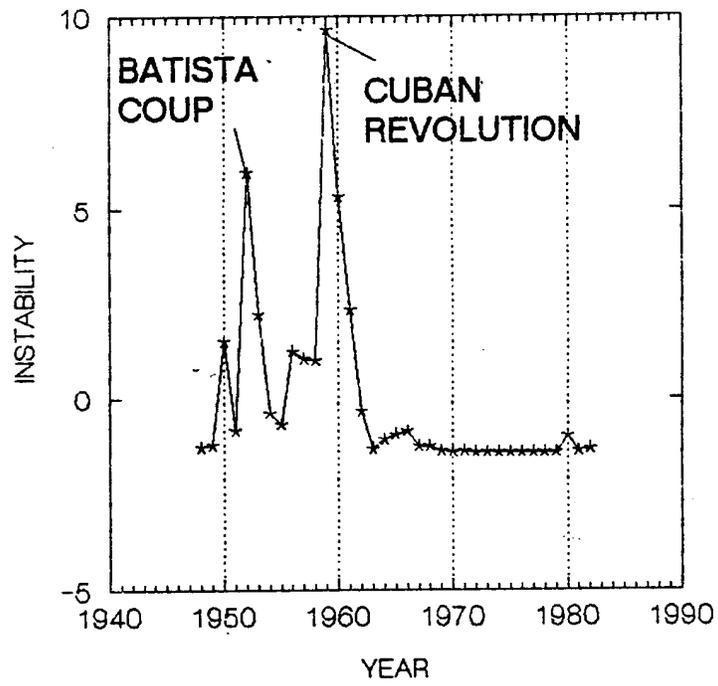
⁴¹ Freedman, Pisani, Purves, Adhikari, *Statistics*, New York: W.W Norton & Company, 1991, p. A-86.

⁴² Several more complex measurement techniques were attempted, variously employing variables significant at the 5% level, weighted sums

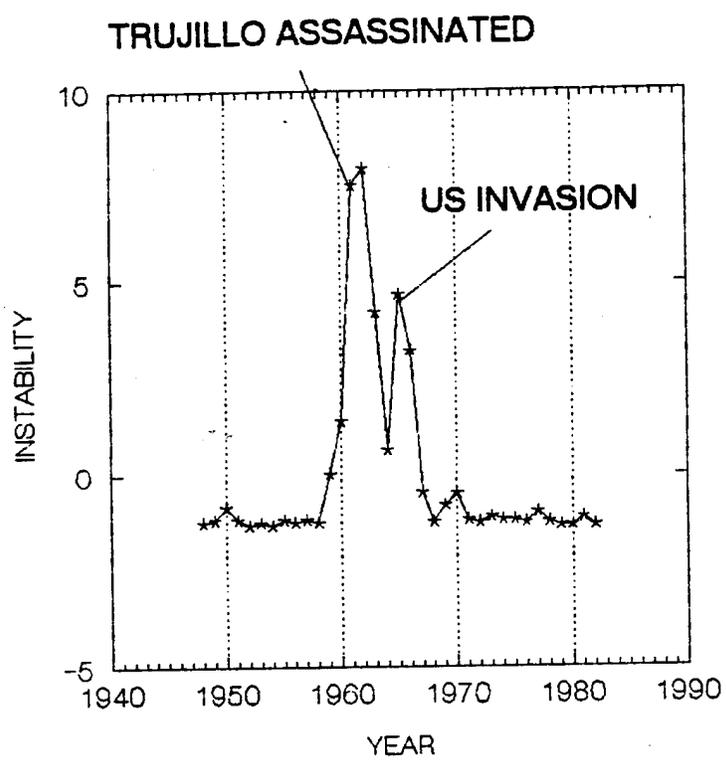
Now we must check our index system to ensure that it captures the concept we are seeking to measure. That is, does it register high when instability appears to be high and low when instability appears to be low? Based upon the graphs shown below, it appears that the measurement system is up to the task.

using the Z scores and t scores (two tailed remainder under the normal curve) as multipliers, as well as factor analysis using the entire data set. All of these attempts yielded measures which were highly correlated with the additive sum approach. Therefore, seeking to maintain as simple an approach as possible, the additive sum approach was used.

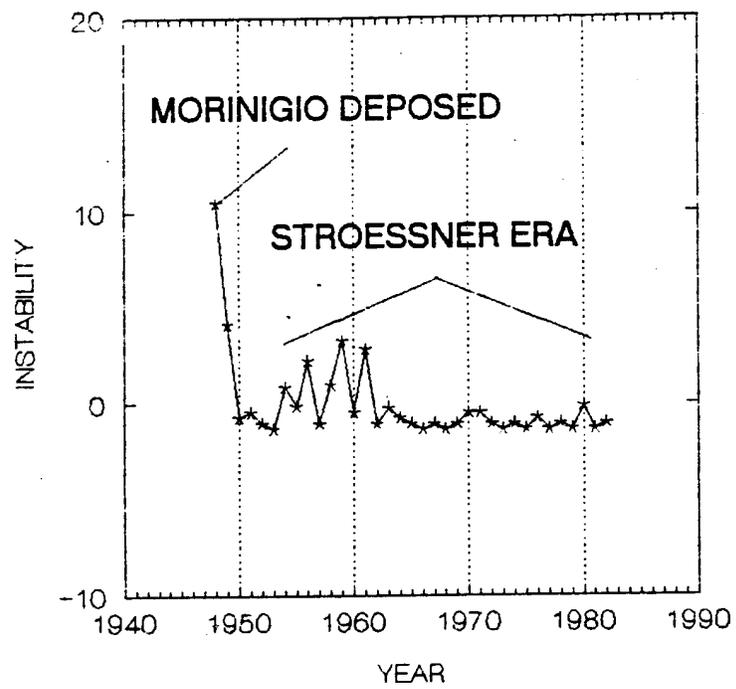
CUBA INSTABILITY (GRAPH 1)



DOMINICAN REPUBLIC INSTABILITY (GRAPH 2)



PARAGUAY INSTABILITY (GRAPH 3)



As expected, since these periods were employed in computing the original measurement, the Cuban Revolution in 1959 and the US invasion of the Dominican Republic are readily identifiable in Graphs 1 and 2. Additionally, the Coup which brought Batista to power in 1952 as well as the assassination of Trujillo in 1961, periods not used to develop the original measure, jump out as spikes when instability is plotted as a function of time. Finally, as shown in Graph 3, the measure proves its utility by capturing variations in Paraguayan political stability noting the overthrow of President/General Morinigo who had held power since 1940 as well as the initial instability and subsequent extreme stability of the Stroessner era.⁴³

Logically, the next problem is giving meaning to the measure. Saying that in 1959 Cuban instability was X number of Levinson's Standard Instability Units, holds little meaning unless we have a fuller understanding of these units. Since a given country-year's instability score is based on a composite of standardized units, rather than a raw frequency count, it essentially measures the distance away from the average level for that country. Equating this distance away from the average with the level of instability implies that on average each country is stable since an instability score of zero represents the average. In real terms this means that each country has a tolerance level for Successful Irregular Executive Transfers, Riots, and

⁴³ Other graphs were checked against Keesing's *Index of World Events* and the New York Times Index to ensure that the measure was behaving in a manner consistent with the historical record.

Imposition of Political Sanctions which may be lower or higher depending upon the characteristics of each individual country. It is only when these levels are above this tolerance level (average) that more instability will register. When these levels are near zero, the system is registering as stable⁴⁴. Thus, if a country experienced a single riot nearly every year, the other two factors held constant, no increase in instability will be noted. However, if one year the same country experiences 5 riots, then a higher level of instability will be recorded. For example, Payne has argued that Coups, one type of Successful Irregular Transfer, in Peru are "essential to the functioning of the political system" since they represent a mechanism for promoting the circulation of elites, as do elections in democratic systems.⁴⁵ Therefore, if Payne is correct, only an unusually high number of coups in a given time period represents instability in the system.

The index's primary utility is comparative either cross-nationally or cross-temporally. While we may not be able to exactly define the difference between an instability score of seven and one of eight, we can say that eight is more unstable than seven. If Country A has an instability score of 5 and country B has an instability score of 10 in a given year, then country B's level of instability can be said to

⁴⁴ Theoretically, a country-year could register a high negative value indicating some kind of "super stability". However, no instances of this occurred since the country-years found to be negative ranged from only -.004 to -2.509 and were tightly clustered around a mean of -1.128 with a standard deviation of .506.

⁴⁵ Payne, J. "Peru the Politics of Structured Violence," *Journal of Politics*, Vol. 27 (1965), : 362-374

be twice as far away from the average level found in country B as country A's level is away from its respective average. The sign of the value is also important. 68% of the country-year observations registered as negative, which makes sense since we would expect that most countries are stable most of the time. Therefore, while the value of the instability score may be difficult to conceptualize in absolute terms, the direction, magnitude, and sign, of the changes in the value will tell us much.

Additionally, it is now possible to reverse the measure and look for commonalities among various values of instability. What is going on in country-years which register a five versus a ten? or is there a threshold beyond which systems are highly likely to collapse? might prove useful questions. For example, a survey of the instability scores shows that the threshold point for political breakdown is a minimum score of nine. Therefore if the prediction model yields a forecast value at or near nine, a breakdown of some kind has a high potential of occurrence, given the confines of the model.

Chapter 6 The Independent Variables

Now that we have constructed the index of instability which can be used as our dependent variable, it is time to examine possible independent variables which can be used to develop a model capable of prediction. To do this we will examine some causal hypotheses which endeavor to explain instability. Then an implied relationship between various independent variables and the dependent variable (instability) will be derived. This relationship will then be tested to see if it is supported by the data. Once this is accomplished, we can attempt to develop a model capable of prediction.

The hypotheses which I will examine are confined to those which imply a relationship between political events coded as variables in the data set and political instability. Political events are already observed, reported on, and studied in great detail by the intelligence community. Thus the construction of a database similar to the one used here would not be terribly difficult. Though economic and demographic data is routinely collected by agencies such as the UN and the World Bank, and could be used to develop independent variables, its reliability, especially for underdeveloped countries, is questionable and there exists no capability to independently collect this type of data within the intelligence community. Additionally, the impact of demographic and economic trends upon political instability is likely to take place over a long period of time. My search here is for indicators which are already reported on which serve to "tip off" the intelligence community to an impending change in political instability. Political

events are easily identifiable and of relatively short duration and are therefore excellent candidates for indicators. Long term study of economic and demographic trends may yield results concerning overall instability over time, but is less likely to capture year-to-year fluctuations of the kind useful for the intelligence community.

Most importantly, since it is political instability which we are examining, if economic and other trends significantly impact our dependent variable, we would expect these impacts to register in some kind of political event. If we conceptualize political instability as being the result of a process where A leads to B leads to C leads to Political Instability, C must be political in some fashion. Economic decline, population growth, social mobilization etc. may indeed all affect political instability. However, in order for them to do so, it must ultimately be through some political mechanism. Governments don't fall because the economy is going south, they fall because people dissatisfied with the economy engage in political activity which forces the regime down. It is these political mechanisms on which we will focus.

As the first step, we will examine phenomena which seem to be associated in some fashion with instability during the same year. As mentioned before, we are eventually seeking to develop a model capable of prediction, but by beginning with examination of contemporary relationships we are likely to find candidates for components of a predictive model. For example if we find that assassinations by the government seem to be associated with low instability in the same year,

it might then be possible to look at assassinations this year to forecast their effect on instability next year.

Several different hypothesis have been forwarded regarding the effects of certain types of political events on instability. The first of these will be called the safety valve hypothesis (H1A).⁴⁶ According to this hypothesis certain types of peaceful political dissent may act as a 'safety valve' which allows dissatisfaction to be channeled through legitimate channels, thereby relieving pressure on the political system. Alternatively, these same types of behaviors might have a snowball effect, increasing the pressure on the political system and enhancing instability. This alternative will be called the pressure cooker hypothesis (H1B). By regressing Instability on Protest Demonstrations and Political Strikes, and examining the sign of the coefficients for these variables, we can determine if either of these hypotheses is supported by the data.

Closely related to the safety valve and pressure cooker hypothesis are the democratic stability (H2A) and instability hypothesis (H2B). These hypotheses postulate that democratic behaviors either enhance stability in a mechanism similar to that postulated by the safety valve idea, or by allowing open dissent, instability is increased. By using Successful Regular Executive Transfers, Unsuccessful Regular Executive Transfers, and Elections as independent variables we can gauge support for H2A and H2B.

⁴⁶ See Jackson and Stein, *Issues in Comparative Politics*, New York: Saint Martins Press, 1971.

Another hypothesis which can be examined is the effect of violent behaviors intentionally designed to destabilize the system. Obviously, those who perpetrate armed attacks, assassinations, and other politically motivated deaths, as well as executive overthrow attempts, are usually seeking to change the current political system in some fashion. Should these behaviors have the desired effect, we would expect to see some increase in instability. This may occur either through the regime's inability to deal with these acts directly, or through an overreaction on the part of the regime, provoking more citizens to act in open opposition. Here again the converse of this hypothesis may also be true. These attempts at destabilization may provoke a desire from both the populace and the regime to enhance the stability of the political system. This could then lead to the exact opposite of the intended effect and increase rather than decrease stability. The above two hypotheses will be termed the intentional destabilization hypothesis (H3A) and the stabilizing reaction hypothesis (H3B).

Finally we come to actions on the part of the regime through which it hopes to enhance stability. These may be either through greater repression such as executions, some type of liberalization such as the lifting of political sanctions, increased propaganda efforts through regime sponsored demonstrations, or modifying the executive either through executive adjustments or executive renewal. Since we are already using the imposition of political sanctions as part of the measure of instability, it is probable that executions are unlikely to

have a stability enhancing effect. However, since executions are in a sense the most extreme type of political sanction, it is possible that killing opponents of the current regime is effective at enhancing stability where less extreme measures fail to do so. Once again, it is possible that efforts by the regime to enhance stability of the system may backfire and lead to greater instability. These hypotheses will be called stabilization effort hypothesis (H4A) and the destabilizing reaction hypothesis (H4B).

In addition to examining actual political events, it would also prudent to simply examine the effect of time on instability. Therefore, another hypothesis to be examined is whether or not instability is increasing or decreasing over time. Since the observations in question run from 1948 through 1980⁴⁷, it is plausible that the region changed significantly during this period in ways which might have either enhanced or dampened instability. If there is a significant instability trend over time we may be able to forecast instability simply by knowing what year we wish to forecast. We will call these the instability increasing (H5A) and decreasing (H5B) over time hypotheses. The above hypotheses, their independent variables, and the predicted sign of the coefficients is summarized in the table below. By examining the bivariate regressions indicated we can determine whether or not any of these hypothesis are supported.

⁴⁷ Data from 1981 and 1982 were withheld from the analysis in order to preform cross validation of the models.

Table 2

Hypothesis	Independent Variables	Predicted Sign of Coefficient
H1A	Protest Demonstrations	-
	Political Strikes	-
H1B		+
		+
H2A	Successful Regular Executive Transfers	-
	Unsuccessful Regular Executive Transfers	-
	Elections	-
H2B		+
		+
		+
H3A	Armed Attacks	+
	Assassinations	+
	Unsuccessful Irregular Executive Transfers	+
	Violent Deaths	+
H3B		-
		-
		-
		-
H4A	Executions	-
	Lifting of Political Sanctions	-
	Regime Supported Demonstrations	-
	Executive Renewals	-
	Executive Adjustments	-
H4B		+
		+
		+
		+
		+
H5A	Year	+
H5B		-

The above regressions yielded the significant results shown in table 3 below.

Table 3

Hypothesis	Independent Variable	Coefficient	R ²
H1B	Protest Demonstrations	.964	.174
	Political Strikes	.981	.182
H2B	Successful Regular Executive Transfers	.684	.086
	Unsuccessful Regular Executive Transfers	.266	.007
	Elections	.252	.012
H3A	Armed Attacks	.999	.183
	Assassinations	.284	.014
	Unsuccessful Irregular Executive Transfers	.682	.090
	Violent Deaths	.792	.127
H4B	Executions	.486	.028
	Lifting of Political Sanctions	1.205	.286
	Regime Supported Demonstrations	.911	.169
	Executive Renewal	*	*
	Executive Adjustments	.998	.193
H5B	Year	-.044	.035

* Not significant at the 95% level.

The coefficients indicate the value of the b term in the equation form $\text{Instability} = a + b(\text{Independent Variable})$. Thus the b value indicates the number of units in the independent variable which produce a one unit change in the dependent variable (instability). The R squared term indicates the percent of variation in instability explained by a variation in the independent variable. For example, the

variation in the lifting of political sanctions explains 28.6% of the variance in instability. The higher the R squared term, the greater the correlation between a change in the independent variable and a change in the dependent variable. An R squared value of one would indicate a perfect correlation between the independent and dependent variables.

From the table we see that Hypotheses H1B, H2B, H3A, H4B, H5B all receive some support from the data, though since the R squared terms are relatively low none of the independent variables taken individually is a very useful indicator of political instability. This is not unexpected since we combined the variables with the strongest relationship to instability to construct our index of instability in the first place. Were other variables strongly related to instability they might have been included in the measure as well. If an analyst were to focus on only a single type of event such as political strikes, he would not have a very clear picture of political instability.

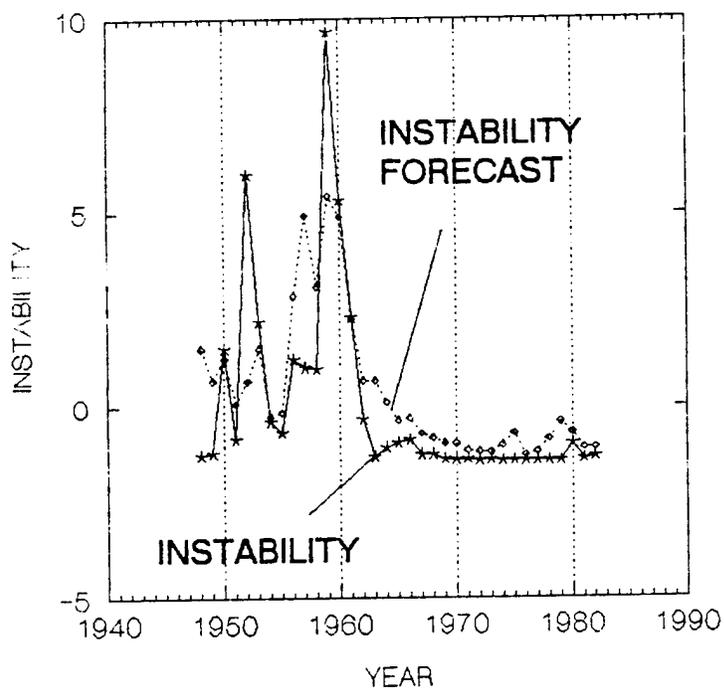
Although none of the independent variables is very useful individually, it is possible that we can combine them all into a single model which might yield better results. By performing a regression where all combinations of the independent variables are tested and terms which are not found to be significant are discarded, we can evaluate this possibility. This regression yielded the following model:

Instability = 32.965 - .017(Year) + .434(Protest Demonstrations) +
.429(Political Strikes) + .204(Successful Regular Executive Transfers) -
.245 (Unsuccessful Regular Executive Transfers)+ .224(Armed Attacks) +
.130 (Assassinations) + .127(Unsuccessful Irregular Executive Transfers)
+ .574 (Lifting of Sanctions) + .321 (Regime Supported
Demonstrations)+.482(Executive Adjustments) + .190(Violent Deaths)

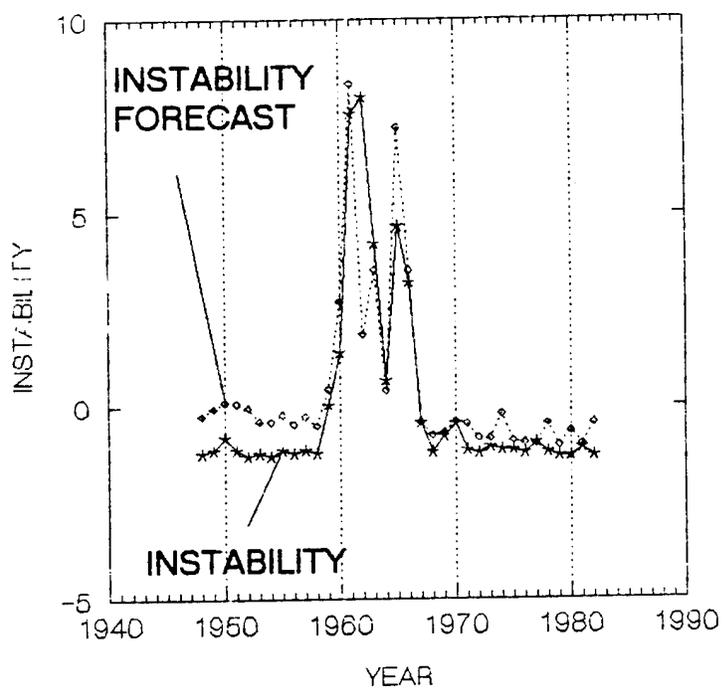
This multiple regression model performs much better than any of the individual bivariate regressions yielding a raw R squared term of .574 or explaining 57.4% of the variation in instability. Consequently, if as intelligence analysts we watch all of the variables collectively we get a much better idea of the instability picture. The standard error of estimate for the above model tells us that 95% of our expected values for instability are likely to be within +/- 2.958 units of actual instability. This still is rather poor since the entire observed range of instability in the universe is from -2.509 instability units to 11.163 instability units. If we consider the observed historical limits as theoretical minimums and maximums, and we wish to make a prediction with 95% accuracy, the range of that prediction must encompass 43% of the possible values for instability. Telling the policymaker that instability in Bolivia has a 95% chance of being somewhere between three and nine, where zero is stable and nine indicates a breakdown, is unlikely to result in a promotion for the analyst.

When we test the model using the data from 1981 and 1982 we withheld, we find that our expected values of instability were less well correlated with actual values than we would have expected from the model (R squared decreased from .574 to .476) However, as graphs 4,5, and 6 show, the overall predicted values on instability still track fairly well with the actual values.

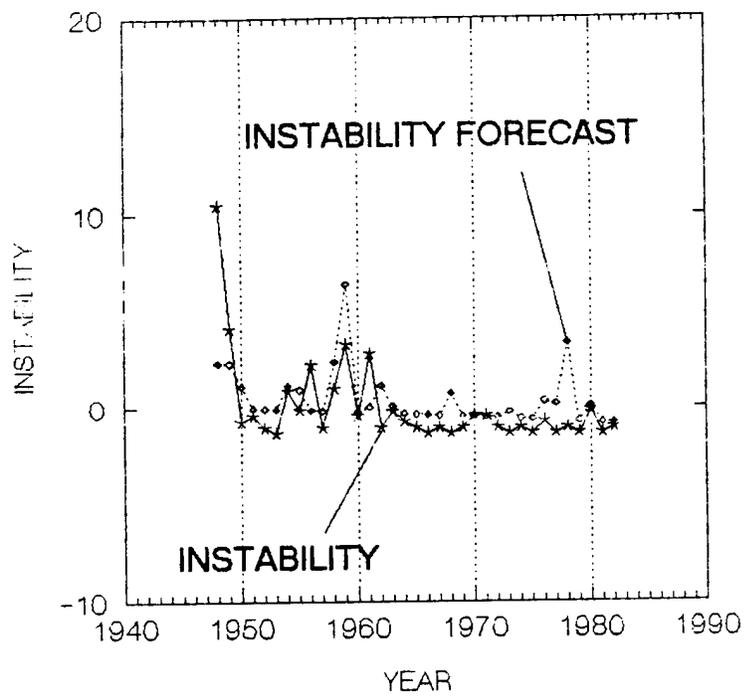
CUBA INSTABILITY FORECAST (GRAPH 4)



DOMINICAN REPUBLIC INSTABILITY FORECAST (GRAPH 5)



PARAGUAY INSTABILITY FORECAST (GRAPH 6)



Augmenting the model's utility as a forecasting tool we can also find it useful by inferring certain implications. Though our true goal is not hypothesis validation, there is some evidence that the regime's efforts to stabilize itself either through executive adjustments, sponsoring demonstrations, or the lifting of sanctions has the opposite of the desired effect. A general downward trend in instability over time is also indicated. Perhaps most importantly, peaceful forms of protest may have a far more destabilizing effect than violent forms of dissent since the coefficients on the protest demonstrations and political strikes variables are higher than those on armed attacks, assassinations, and violent deaths. Of course all of these conclusions are tentative since mere association does not prove causality. It may be the case that the causal arrow is running in the opposite direction and the various events are the result of instability rather than the cause of it.

In keeping with keeping with the science of statistics, we may learn more from the model by considering what it doesn't show than what it does. Since the coefficient on executions was positive in the bivariate regression and lost significance in the multiple regression, we can draw the conclusion that there is no evidence to support the theory that executions enhance stability. While a theory may be consistent with the data and still be wrong; a theory can not be inconsistent with the data and still be right. Descriptive inferences, both those which support hypotheses and those which reject them, such as

the ones above, can be useful for the intelligence analyst. Contrary to what intuition would dictate, the analyst observing a regime which is increasing political executions, might now conclude that things are likely to get less stable rather than more.⁴⁸

Now that we have at least identified some potential indicators of political instability, using time series analysis, we can attempt to construct a truly predictive model⁴⁹. Since our goal is to develop an accurate forecast of the future based on data we observe in the present, the independent variables will now temporally precede the dependent variable (instability). Therefore for any potential effect upon the dependent variable by the independent variable to be noted, this effect would have to persist for a minimum of one year.

In addition to the hypotheses and variables tested previously, when using time series analysis we can also evaluate whether or not past instability is an indicator of future instability. This might be termed the instability inertia hypothesis (H6A). Just as objects which are at rest tend to remain at rest, and objects which are in motion tend to

⁴⁸ Such inferences might also be used to bolster moral arguments condemning violent methods on the part of regimes and revolutionaries. While evidence of this type is unlikely to persuade the regimes or the revolutionaries themselves, it may be useful for the intelligence analyst when asked by the policymaker if a particular group is deserving of support.

⁴⁹ If we were to examine the data using daily or monthly intervals we may find that we already have a predictive model, though only capable of predictions less than one year in the future. For reasons stated previously smaller time periods were not examined. However, such short term forecasts could still prove useful for crisis management, giving insight into how events might unfold when instability is already high.

remain in motion, it seems quite logical that countries which are unstable at time point A are likely to be unstable at subsequent time point B. This concept is closely related to Huntington's notion of the instability syndrome which essentially says that instability breeds instability.⁵⁰ While this idea may seem tautological on the surface, it can be useful when using time series analysis. The hypothesis asks the question 'If instability has been high in the past, is it likely to be high in the future?'

Alternatively, it could also be true that instability breeds stability. That is to say that high political instability is unlikely to be sustainable, and would therefore indicate a future return to stability. This will be termed the regression towards stability hypothesis (H6B). Given that 68% of the country-years registered as zero or below on the instability measure, stability rather than instability appears to be the norm. This observation implies that there may be some tendency towards a return to stability after brief periods of instability.

Both of the hypotheses mentioned above imply a relationship between present instability and past instability. Should the instability inertia hypothesis (H6A) be true, the data should show a positive correlation between instability in one country-year and previous country-years. Conversely, if a negative correlation is found between instability in one country-year and previous country years, than

⁵⁰ Huntington, Samuel P., *Political Order in Changing Societies*, New Haven: Yale University Press, 1968, p.50.

the stability inertia hypothesis H6B) would be supported. Using time series analysis we can simply determine whether or not the existence of either of the above relationships is supported by the data. Basically an auto correlation will be preformed where instability is regressed on the value of instability in previous years. The previous hypotheses, as well as H6A and H6B were tested in bivariate regressions using time lags of at least one year. The variables which were found to be significant and their coefficients are summarized in Table 4 below:

Table 4

Hypothesis	Independent Variable	Time	Coefficient	R ²
H1B	Year (not lagged)		-.045	.043
H2B	Protest Demonstrations	(t-1)	.395	.030
		(t-2)	.224	.009
		(t-3)	.222	.009
	Political Strikes	(t-1)	.400	.031
		(t-2)	.470	.041
		(t-3)	.226	.009
		(t-4)	.391	.027
H4A	Armed Attacks	(t-1)	.301	.017
	Unsuccessful Irregular Executive Transfers	(t-1)	.326	.022
H5B	Lifting of Political Sanctions	(t-1)	.238	.011
		(t-2)	.223	.010
H6A	Instability	(t-1)	.225	.054
		(t-2)	.129	.018

* Cases where previous year values were not available were not included in the regressions e.g. instability in 1948 could not be regressed on instability 1947 since it was not included in the data.

** t is year of dependent variable (instability).

Based on the results shown in Table 4, the Decreasing Instability, Pressure Cooker, Intentional Destabilization, Destabilizing Reaction, and Instability Inertia hypotheses all received some support from the data. As we postulated, previous instability showed some relationship to current instability. However, this relationship was not particularly strong, indicating that this year's instability is not a terribly good predictor of next year's. This is important since it highlights the temporary nature of political instability and cautions analysts not to be complacent about countries which have shown little instability in the past. It also suggests that variables, other than past political instability, need to be examined to explain current and future instability.

Most interesting is the behavior over time of the effect of Political Strikes. All other variables which are statistically significant show a decreasing effect as the time between the event and the observation increases, as one would expect. However, the effect of political strikes seems to oscillate, having a greater effect when lagged two years rather than one year, and again at four years rather than three. This implies some type of cyclical behavior by the effect of political strikes which is difficult to ascertain. Perhaps, since political strikes have a substantial economic impact upon those who engage in them, the degree of compliance oscillates from year to year. Those who strike this year may not strike next year because they can't afford it. Because the variable indicates only the number of strikes,

rather than the degree of compliance, we can not ascertain this from the data. More research into this area might prove useful.

Were our interest to validate or discard the hypotheses stated above, we could conclude that each of them, as tested by our data, receives some support. Additionally, since the independent variables precede the dependent variable temporally, the case for causality is somewhat stronger. In the previous regressions using coincident independent and dependent variables we really showed only an association. Using lagged independent variables eliminates this possibility.

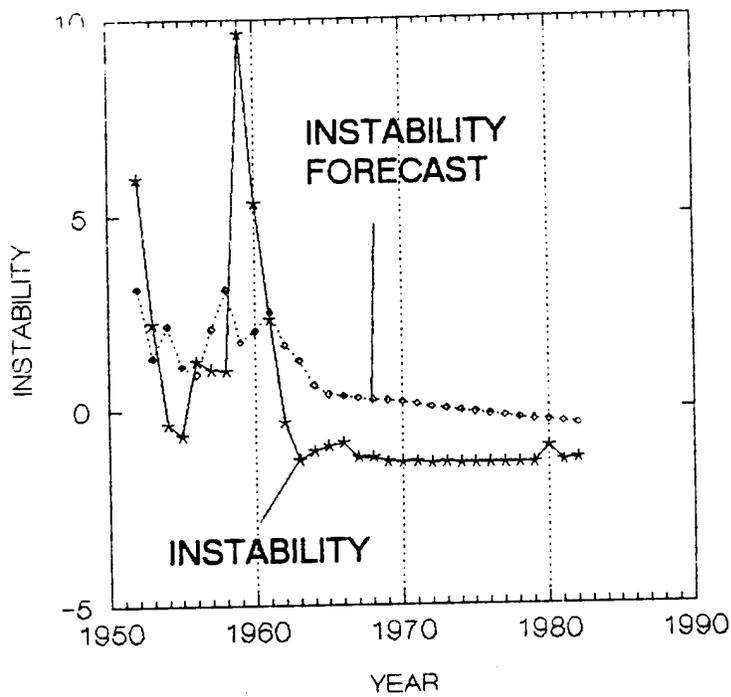
As before, none of the bivariate regressions shows any of the independent variables to be very good predictors of instability. However, since we are seeking to develop a predictive model, we can once again examine the combined effects of all of the variables. Using a multiple regression, all possible combinations of the independent variables were tested to find the best fitting model for the data. Performing this regression yielded the following model:

$$\text{Instability} = 97.048 + .210(\text{Protest Demonstrations}_{t-1}) + .384(\text{Political Strikes}_{t-2}) + .288(\text{Political Strikes at}_{t-4}) - .049(\text{Year}) + .226(\text{Political Strikes}_{t-1} * \text{Protest Demonstrations}_{t-1})$$

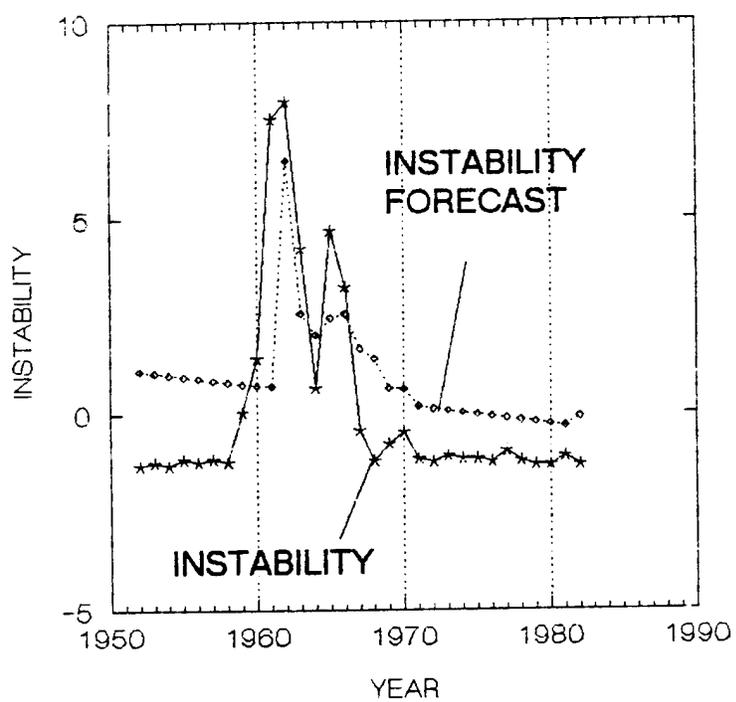
Despite the simplicity of the model, its utility for predictive purposes is somewhat limited. The R Squared for the model

tells us that the combination of the variables still only explains 14.4% of the variance in instability over the entire data set. In concrete terms, the Standard Error of Estimate tells that 95% of the predicted values for instability yielded by the model are within +/- 4.130 instability units of the actual value. Remembering that instability ranges only from -2.509 instability units to 11.163 instability units, we aren't saying very much since our confidence interval for any estimate encompasses 60% of the entire range of possible values. However, when we test the predictions of this model against the 1981 and 1982 data the model does significantly better. 45 percent of the change in instability is explained by a change in the prediction. However, the model seems especially poor at predicting higher values of instability as shown by Graphs 7,8,9.

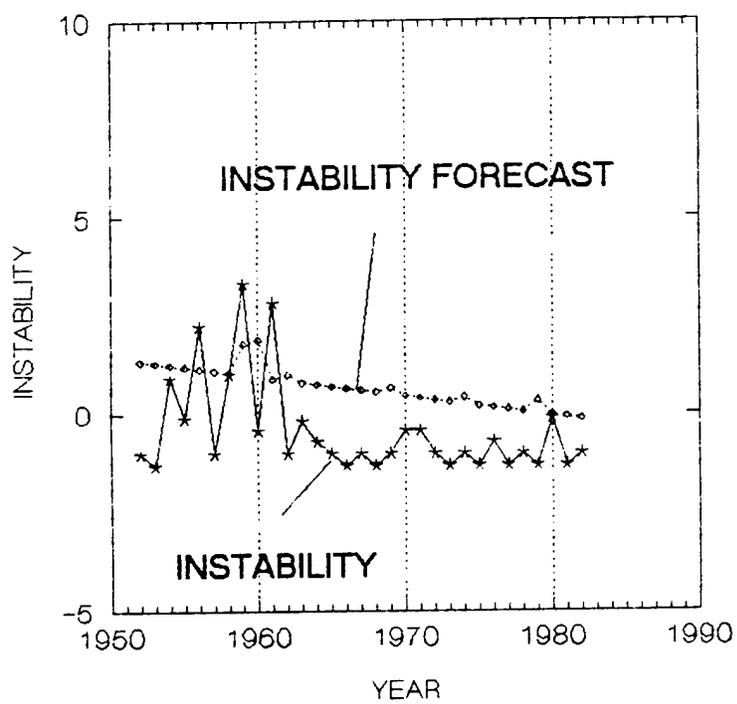
CUBA INSTABILITY FORECAST II (GRAPH 7)



DOMINICAN REPUBLIC INSTABILITY FORECAST II (GRAPH 8)



PARAGUAY INSTABILITY FORECAST II (GRAPH 9)



Since it is precisely those periods when instability is likely to be high that we are most interested in forecasting, the model leaves much to be desired.

Though the model lacks great utility as a forecasting tool per se, this is not to say that we have gained nothing. As before we can use the model for purposes of descriptive inference. Interestingly enough, this model is actually relatively simple and fits one of the original hypotheses quite nicely. Basically the pressure cooker idea of peaceful protest having a destabilizing effect endures, though it is somewhat mitigated by an overall downward trend in instability over time. The last term in the model describes an interaction between coincident Political Strikes and Protest Demonstrations. This term indicates a synergy where certain types of peaceful protest combine to have a greater effect on instability than they do individually as we would expect. The fact that only peaceful protest variables and time were found to be statistically significant tells us much. From an intelligence perspective we can narrow our focus considerably in the employment of our collection resources. Rather than attempting to monitor terrorist attacks or coup attempts, we might better spend our time watching the level of peaceful political protest. Based on our work, by the time different types of political violence are frequent, it is probable that the system is already substantially unstable. Examining the demographics of groups engaged in peaceful political protests, pursuing contacts with the leaders of such groups, and developing a

greater understanding of their grievances could prove extremely useful. In an era of declining budgetary resources, any tool which can aid in setting priorities merits attention.

We can also use the model to make both geographic and temporal comparisons. By coding each individual country as equal to one or zero and adding these country variables to our model, we can examine if we should pay more attention to peaceful political protest in one country than another. We might expect that Cuba is different because of its unique governmental structure. Or Costa Rica, with its history of democracy throughout the entire period, might behave differently than other countries. Likewise we can examine whether or not things were different in the 1970s or 1980s.

Somewhat unexpectedly, no countries demonstrated even a marginally statistically significant difference when added to the predictive model. Nor did the 1970s or 1980s. Similarly, no regional differences comparing either Central America or the Southern Cone were supported by the data. Though we have not improved our predictive capability we have gained valuable knowledge. It was stated earlier that all of our units were converted to standard units in order to make valid inter-country comparisons. At that point, it was also noted that a standard deviation from the norm in one country may not have the same significance in another. The fact that no statistically significant inter-country or inter-temporal differences were found, with respect to the model in question, lends weight to the argument that the degree of deviation from the norm does have similar implications across borders

and time periods. Of course, just because this appears to be the case with this particular model does not necessarily mean the principle is universal. But, here at least, it appears that the idea of each country having a level of tolerance for destabilizing behavior, is supported. This conclusion also has merit for the intelligence analyst since it demands that events must be put in the context of the society in which they are occurring. The importance of a particular event lies not only in the details of the event itself, but in how the event compares with the previous pattern of events in that particular country. While this may seem readily apparent, analogies such as "We saw this happen in Cuba and look what happened there. We don't want the same thing to happen in Guatemala," are all too frequent.

Chapter 7 Scenario

In order to demonstrate how the methodology developed here might actually be put into use, the following scenario is provided. Though the scenario is fictitious, the setting and the methods are quite real.

CENTRAL INTELLIGENCE AGENCY MEMO FOR RECORD

FROM: OFFICE OF QUANTITATIVE ANALYSIS (currently hypothetical)

TO: CHIEF LATIN AMERICA BRANCH, DIRECTORATE OF INTELLIGENCE

Based upon statistical models developed by this office there are indications of increasing political instability in Peru during the coming year. Specifically levels of peaceful political protest such as demonstrations and politically motivated strikes are above normal levels and have been during recent years. Our model projects a potentially unsustainable level of political instability which could result in a radical change in the political system within the year.

CENTRAL INTELLIGENCE AGENCY MEMO FOR RECORD

FROM: CHIEF LATIN AMERICA BRANCH, DIRECTORATE OF INTELLIGENCE

TO: ANDEAN ANALYSIS BRANCH, PERU SECTION

Office of Quantitative Analysis Reports possibility of increasing instability in Peru over the next year. Request your views on this possibility as well as an analysis of the potential impact on US interests should such an eventuality come to pass.

CENTRAL INTELLIGENCE AGENCY MEMO FOR RECORD

FROM: ANDEAN ANALYSIS BRANCH, PERU SECTION

TO: CHIEF LATIN AMERICA BRANCH, DIRECTORATE OF INTELLIGENCE

1. Currently we see no evidence to support the Office of Quantitative Analysis conclusions of an impending increase in political instability in Peru. With economic growth strong President Fujimori's popularity appears to be on the rise. Additionally, the recent capture of the leaders of the Sendero Luminoso terrorist group appears to have the rebels on the run and activity has been declining. We estimate that there is little likelihood of increasing instability in the near term.

2. The potential impact upon US interests of political collapse in Peru could be very substantial. Should the Sendero Luminoso manage to take control, we would encounter an extremely hostile regime posing a direct threats to our interests. At a minimum US as well as other Western citizens would be in grave danger perhaps necessitating a military operation to evacuate them. Additionally no further cooperation in counter-narcotics efforts could be expected. Given that 70%-80% of the world Coca crop comes from Peru, this could have a drastic impact on the flow of drugs into the US. Chile, Brazil, and Ecuador would all feel threatened by such a regime and would undoubtedly divert significant resources to security forces along the border, detracting from pressing economic concerns.

3. A takeover from the right would also be problematic. While a military regime might continue cooperation in counter-narcotics,

the inevitable escalation of human rights violations could make future relations politically unpalatable. Most importantly, recent border tensions with Ecuador could escalate into full scale war. With the US as a guarantor of the treaty establishing this border, the potential for a wider conflict would be high. Finally, a successful military takeover could encourage restive military establishments throughout the region to act in a similar fashion.

CENTRAL INTELLIGENCE AGENCY MEMORANDUM FOR RECORD

FROM: CHIEF LATIN AMERICA BRANCH, DIRECTORATE OF INTELLIGENCE

TO: OFFICE OF COLLECTION MANAGEMENT

Conflicting estimates of future political instability in Peru necessitate the acquisition of more information. Request a community wide collection emphasis be instituted

COLLECTION EMPHASIS BULLETIN

FROM: OFFICE OF COLLECTION MANAGEMENT CIA

TO: DIRECTORATE OF OPERATIONS CIA, OFFICES OF COLLECTION MANAGEMENT DEFENSE INTELLIGENCE AGENCY, NATIONAL SECURITY AGENCY, NATIONAL RECONNAISSANCE OFFICE, BUREAU OF INTELLIGENCE AND RESEARCH US STATE DEPARTMENT.

Request appropriate agencies task all available collection resources to gather intelligence on developments relating to political instability in Peru. Special attention should be given to groups and individuals involved in non-violent political opposition activity.

Direct all responses to Central Intelligence Agency Directorate for Intelligence, Latin America Branch, Andean Section.

FROM: NATIONAL SECURITY AGENCY

TO: CENTRAL INTELLIGENCE AGENCY, LATIN AMERICA BRANCH, ANDEAN SECTION

Recent collection efforts detect extraordinarily high levels of civilian band unencrypted radio communications throughout Peruvian urban centers. Transcripts reveal planning for coordinated large rallies, strikes, and demonstrations to be carried out nationwide in the coming months.

FROM: DEFENSE INTELLIGENCE AGENCY

TO: CENTRAL INTELLIGENCE AGENCY, LATIN AMERICA BRANCH, ANDEAN SECTION

Defense Attache contacts with senior military officers indicate growing frustration with President Fujimori's failure to crack down on left-wing activity. Frustration compounded by Fujimori's failure to deliver on promises of increased salaries and better living conditions for troops.

FROM: NATIONAL RECONNAISSANCE OFFICE

TO: CENTRAL INTELLIGENCE AGENCY, LATIN AMERICA BRANCH, ANDEAN SECTION

Recent imagery reveals gradual troop movements away from rural conflict zones and narcotics trafficking areas toward military facilities closer to urban centers. Movement appears slowed by poor road and weather conditions. Full redeployment of major units probable not earlier than three months from present.

FROM: US STATE DEPARTMENT

TO: CENTRAL INTELLIGENCE AGENCY, LATIN AMERICA BRANCH,
ANDEAN SECTION

Reports from economic officers at US Embassy Lima indicate recent economic growth not being felt at lowest levels of Peruvian society. Government austerity programs hitting poor especially hard.

CENTRAL INTELLIGENCE AGENCY MEMO FOR RECORD

FROM: DIRECTORATE FOR OPERATIONS

TO: CENTRAL INTELLIGENCE AGENCY, LATIN AMERICA BRANCH,
ANDEAN SECTION

Station Chief Lima reports sources within Labor Unions, Neighborhood Groups and Peasant Organizations reveal leadership appears increasingly determined. Calls for more forceful challenges to government policies impacting the poor growing more frequent. Contact between groups and cooperative efforts also improving.

CENTRAL INTELLIGENCE AGENCY MEMO FOR RECORD

FROM: LATIN AMERICA BRANCH, ANDEAN SECTION

TO: CHIEF LATIN AMERICA BRANCH

Analysis of recent reporting leads us to believe that initial estimates provided by Office of Quantitative Analysis concerning potential increase in Peruvian instability are sound. Indications are that groups among the lower classes are preparing for widespread political mobilization in the urban centers in the near future. Such groups have been infiltrated in the past by Sendero Luminoso and it is possible, though we have no evidence to this effect, that Sendero is behind the upcoming mobilization. At the same time the military appears to be preparing for a crackdown against these groups. Such a confrontation between the two sides will at the very least represent a major challenge for the Fujimori administration and at worst a coup attempt, civil war, an/or overthrow. An in-depth study is being prepared for your review.

EYES ONLY NATIONAL SECURITY COUNCIL

FROM: DIRECTOR CENTRAL INTELLIGENCE

TO: PRESIDENT, VICE PRESIDENT, SECRETARY OF DEFENSE,
SECRETARY OF STATE, NATIONAL SECURITY ADVISOR, CHAIRMAN JOINT
CHIEFS

Be advised, our analysis indicates the potential for major political upheaval in Peru in the near future. A breakdown in the Fujimori administration and a subsequent takeover by either forces on the right or left would have grave consequences for US interests.

NATIONAL SECURITY COUNCIL DIRECTIVE

FROM: PRESIDENT OF THE UNITED STATES

TO: ALL CONCERNED AGENCIES

All below named agencies will initiate the following actions immediately. Reports of progress and problems should be forwarded to National Security Council. This directive has highest priority.

1. **Joint Chiefs of Staff** will initiate planning for a Non-combatant Evacuation Operation (NEO) of American and other Western citizens from Peru.

2. **US Ambassador Lima** will reaffirm our support both publicly and privately for the Fujimori Administration at all levels and at every opportunity.

3. **US Defense Attache Lima** will communicate to highest levels of Peruvian military in strongest possible terms that the United States does not repeat not support any actions which might threaten the democratically elected government of Peru.

4. **US State Department** will explore additional funding for programs designed to directly alleviate poverty among Peruvian urban lower classes both from governmental and non-governmental resources

5. **US Treasury** will explore providing additional funds and credits to Peruvian Government through World Bank, International Monetary Fund, Inter American Development Bank and any other available resources.

6. **US Embassy Lima** will increase contact with organized groups among lower classes, ascertain concerns and intentions, and counter impression of US as enemy.

7. **Secret Service** will begin preparations for high level US visit to Peru possibly to include President and/or Vice President and senior cabinet members.

8. **Director Central Intelligence** will maintain intensive collection efforts targeting Peru and report significant developments to NSA.

Chapter 8 Conclusion

Although fictitious, the scenario illustrates how a quantitative approach might be useful for the intelligence analyst. It can be used to develop predictive models which can provide warning to intelligence analysts concerning particular future developments which might be of concern. It can identify the key variables and enable the intelligence analyst to better focus his limited collection resources. It can, through descriptive inference, augment the intelligence analyst's understanding of events, highlighting misconceptions which are not supported by an empirical investigation of the data. As result of this greater understanding, better policy options can be exercised.

In the Peruvian scenario the quantitative model provided the first indication that instability was on the increase. The analytical section, focusing on key actors such as the president and terrorist groups, missed developments which the model indicated were significant. Although the analytical section initially disagreed with the quantitative approach, it was able to provide a reasonable estimate of the potential consequences if the quantitative estimate was correct. Even though the analytical implications of the model were at this point questionable, it still served as an effective warning.

Based upon this warning, a more thorough examination of developments in Peru was warranted. The model was then used to indicate which areas were of particular interest. Collection efforts could then be focused upon those groups which the model indicated were most likely to have an impact upon political stability. Contrary to the analytical

section's preconceived notions, the groups planning peaceful political protest proved to be the key players rather than the terrorist groups traditionally targeted by collection efforts.

Once it was established that there was foundation to the implications of the model, policymakers were alerted and a variety of steps were taken. Noticeably absent from the policy initiatives was any increased military assistance or encouragement of a more repressive environment. As previously noted, the model demonstrated that such efforts would have been unlikely to have been effective. Instead, those groups which the model and subsequent analysis revealed to be the crux of the instability problem were targeted through economic and diplomatic efforts in order that a crisis be averted.

In a postscript analysis it would be difficult to determine how great a role the quantitative analysis played in the outcome of events. Had a crisis been averted, credit might have been given to the warning and subsequent policies enacted. Of course some might have argued that no crisis was imminent in the first place. But had the crisis occurred, at the very least blame could not be laid at the feet of the intelligence community for not providing adequate warning. The wrong policy responses may have been chosen or things may have simply deteriorated too far for any policy instruments to have been effective. Even so, a non-combatant evacuation had been prepared and many lives might have been saved. As always, intelligence victories often go unnoticed for years while intelligence failures make the headlines.

Despite the rather optimistic picture painted above, the quantitative approach is not without its limitations and problems. As any social scientist knows, no quantitative model, no matter how sophisticated, works perfectly. Error terms, random factors, and the unpredictable nature of human behavior can all thwart even the most highly developed model. As the model shown in this paper demonstrates, predictive power can be extremely limited. Too great a reliance on these types of models would undoubtedly be unwise.

Another problem with the quantitative approach is its reliance on large numbers of variables and in turn a reliance on large amounts of data. The models shown here relied exclusively upon political event data. While these types of events are universally reported on by both the media and the intelligence community, no systematic coding procedures have been instituted in order to develop a comprehensive database. A database known as ITERATE (International Terrorism: Attributes of Terrorist Events) was created by a summer intern at the CIA in 1977. However, this database was for demonstration purposes only and was never adopted for use by analysts.⁵¹ To overcome this hurdle the intelligence community must; create a list of variables of interest, establish universal coding standards, train personnel to adhere to those standards so that inter-coder reliability is high; mandate timely reporting procedures, and finally collate all the data and create and maintain the database.

⁵¹ See note 10 p. 127

While much of this capability is already resident within the intelligence community, it lacks formal structure. Should the community desire to utilize economic, demographic or sociological data in the development of more complex models, it would undoubtedly be forced to rely upon data obtained from outside sources as well as outside experts in these fields. As previously mentioned this creates problems in terms of reliability as well as security. Additionally, while economic and demographic data are fairly prevalent, sociological data is nowhere collected in a systematic, timely, current fashion on a worldwide basis. Creation of this capability within the intelligence community might require too great a share of available resources.

Once again we should recognize that the familiarity of most intelligence analysts with quantitative methods is extremely limited. Although the approach demonstrated here is relatively straightforward and should not be beyond the grasp of the average intelligence analyst, current technology allows for far more sophisticated techniques to be utilized. Unfortunately, as the techniques used become more advanced, the analytical audience becomes more narrow. This problem is compounded when an analyst attempts to present this analysis to a policymaker even less sophisticated than he. A tradeoff between the level of sophistication and the utility for the user becomes inevitable.

A possible solution to this problem might be to centralize the analysis in a single organization such as the Office of Quantitative Analysis mentioned in the Peru scenario. This office would be responsible establishing reporting standards, creating and maintaining

the database, as well as developing models for use by the analytical community. Outside consultants from academia and industry, skilled in the latest statistical techniques could be contracted to staff the office. Working with a team of analysts, this office would publish periodic reports highlighting the conclusions reached through sophisticated quantitative analysis without presenting the details of the process used to arrive at these conclusions. An example of such a report was shown in the Peruvian scenario where no numbers or equations were given. Periodic surveys of the community could be conducted to tailor the products to meet the community's current need. A quick response mechanism should also be developed to meet unanticipated needs. Finally, through the use of sophisticated, secure, computer networks already prevalent within the community, analysts in the field could access the database themselves and perform their own analysis. Again some expenditure of resources would be required though costs should not be prohibitive.

All of these ideas assume that individual and institutional barriers to the use of quantitative analysis can be overcome. This requires both changes in institutional culture as well as changes in organizational structure and incentives. With the Cold War over, pressure is growing within the Congress and the public at large to overhaul the intelligence apparatus. When coupled with recent scandals involving the Ames spy case, sexual discrimination, and revelations concerning CIA operations in Guatemala, this sentiment may force substantial changes upon the intelligence community either willingly or

unwillingly. Ultimately it is the policymakers who are not being well served who must prove the catalyst for this changes. Until they demand more robust analysis, the community is unlikely to produce it.

In conclusion, this paper by no means makes the case that the quantitative approach to analysis is a panacea. I certainly do not envision the intelligence community being supplanted by scores of academics pouring over computer generated models. Quite the contrary, the traditional approach to intelligence still has a place in the perhaps less predictable world in which we live. What I have done here is illustrate how the quantitative approach can be a useful tool for the intelligence analyst. Quantitative techniques can assist the analyst in forecasting, and understanding the events he is concerned with as well as the collection of data which he uses to arrive at his conclusions. The quantitative approach, and the scientific method which underlies it, imposes a discipline on analytical methodologies heretofore lacking in the intelligence community. Also, it is my hope that another arrow has been added to the quiver of the intelligence analyst so that he might better serve the decision maker in making policy choices. Without a doubt, it is successful policy outcomes which are the true test of any intelligence analysis.

Appendix 1

1. Protest Demonstration - Coded for each occurrence of an extraordinary discrete definite political action, outside formal political process, directed against the state or other groups aimed at altering government composition or policy. Typically a rally of a large groups but also include hunger strikes, open letters, sit-ins, politically motivated suicide.
2. Regime Supported Demonstration - Coded for each occurrence of a demonstration not of a protest character. Included demonstrations against foreign governments and foreign officials which imply support for the demonstrators own regime.
3. Political Strike - Coded for each occurrence of a work stoppage or stoppage of normal academic life by students for the purpose of protesting against a regime, its leaders, its ideology, its policy, or actions not to include strikes directed at primarily economic goals, e.g. higher wages.
4. Riot - Coded for each occurrence of a demonstration or disturbance that becomes violent of a spontaneous nature. Violence must be initiated by rioters not police forces responding to peaceful protest.
5. Armed Attack - Coded for each occurrence of an act of violence other than an assassination which resulted in bloodshed, physical struggle and/or the destruction of property. Did not include attacks by foreign groups.
6. Political Assassination - Coded for each occurrence of a politically motivated murder of a national leader, high government official, politician, or politically prominent figures not holding office. Did not include foreigners or results of criminal activity.
7. Deaths from Political Violence - Coded for each occurrence of a death resulting from Riots, Armed Attacks, Assassinations and Executions.
8. Governmental Sanction - Coded for each imposition of censorship of individuals and institutions, general restrictions on political activity, and other restrictions on social or political behavior.
9. Removal of Sanctions - Coded for each removal of censorship of individuals and institutions, general restrictions on political activity, and other restrictions on social or political behavior.
10. Political Execution - Coded for each formal political execution which was actually carried out as well as executions outside the formal legal process which appeared to have the approval of the national authorities.
11. Election - Coded for each popular election to national legislature, by-elections, popular elections of national chief executives, and national referenda.
12. Executive Renewal - Coded for each reelection of president, reelection of

incumbent party supporting chief executive, reappointment of incumbent premier who has resigned, a vote of confidence in a premier or his cabinet, and the defeat of a vote of no confidence.

13. Regular Executive Transfer - Coded when incumbent national executive was replaced through established procedures.

14. Unsuccessful Regular Executive Transfer - Coded for each unsuccessful attempt to transfer the office of the national executive through conventional processes without the real or implied threat of violence.

15. Unsuccessful Irregular Executive Transfer - Coded for each reported attempt at transferring the office of national executive outside established formal procedures which failed.

16. Successful Irregular Executive Transfer - Coded for each reported attempt at transferring the office of national executive outside established formal procedures which succeeded.

17. Executive Adjustment - Coded for each change in persons holding office in the supreme national governing body e.g. cabinet or junta, does not include reshuffling of ministerial portfolios unless new persons take office.

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