

Brecke, Peter

Working Paper

Risk assessment models and early warning systems

WZB Discussion Paper, No. P 00-302

Provided in Cooperation with:

WZB Berlin Social Science Center

Suggested Citation: Brecke, Peter (2000) : Risk assessment models and early warning systems, WZB Discussion Paper, No. P 00-302, Wissenschaftszentrum Berlin für Sozialforschung (WZB), Berlin

This Version is available at:

<https://hdl.handle.net/10419/49859>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

P 00 – 302

**Risk Assessment Models and
Early Warning Systems**

Peter Brecke

März 2000

Arbeitsgruppe: Internationale Politik

Leiter: Prof. Dr. Wolf-Dieter Eberwein

Tel: (030) 25 491 564

Fax: (030) 25 491 561

e-mail: eberwein@medea.wz-berlin.de

Internet: <http://www.wz-berlin.de>

Wissenschaftszentrum Berlin für Sozialforschung

D - 10785 Berlin

Reichpietschufer 50

Zusammenfassung

Das Papier behandelt Modellierungsfragen und Datenprobleme bezüglich der Zweckmäßigkeit sog. *risk-assessment*-Modelle bzw. zur Klärung von Frühwarnmodellen. Zunächst wird generell die Datenlage überprüft. Dabei läßt sich argumentieren, daß zwei Typen von Daten im Mittelpunkt stehen: einerseits Daten, die zur Erklärung des Auftretens und der Eskalation von gewaltsamen Konflikten herangezogen werden können, andererseits Daten, die sich für die Fundierung von *risk-assessment*-Modellen eignen. Während beim ersten Typus vor allem ein eklatanter Mangel bezüglich innerstaatlicher Konflikte herrscht, sind wir beim zweiten Typ mit dem Problem konfrontiert, daß das Generieren von immer neuen Daten solange ein wirkungsloses Unterfangen bleiben wird, wie es nicht mehr theoretische Klarheit über die Prozeß- und Strukturbedingungen von Gewalt gibt. Anschließend werden noch zentrale Modelle überprüft, die sich mit dem *risk-assessment* und der Frühwarnung befassen. Es wird gezeigt, daß – mit Ausnahme von Korrelationsmodellierungen – noch immer zuwenig Arbeit investiert wird, wenngleich die Alternativen durchaus vielversprechend sind.

Abstract

This paper addresses model design and data-related issues pertaining to the use of risk assessment models in support of conflict early warning systems. The paper first examines the data needed for risk assessment models. It argues that there are actually two types of data that we must collect and use: data to determine the theories that best explain the outbreak or escalation of violent conflict and data corresponding to variables that have been demonstrated to have predictive power and thus are appropriate for use in a risk assessment model. With respect to intrastate conflicts there remains a dearth of data of the first type that is only slowly being corrected. Collecting data of the second type will continue to be an inefficient process until better theories have been formulated and tested with the first type of data. The paper then examines a number of models germane to risk assessment and conflict early warning. It finds that except for one class of models, so-called correlational models, there has been only limited work done even though the alternatives appear to have promise.

Table of Contents

Introduction

1.	Conflict Early Warning Data	1
2.	Conflict Early Warning Models	7
2.1	Correlational Models	8
2.2	Sequential Models	9
2.3	Conjunctural Models	12
3.	Conclusion	14
 Appendix A - Compilations of Violent Conflicts		15
Appendix B – Types of Armed Conflicts		22

Introduction

The goal of achieving useable risk assessment models and early warning systems for violent conflicts has reemerged in recent years.¹ Growing awareness that early intervention may have prevented or at least mitigated disasters such as Rwanda or Somalia has motivated governments, international organizations, and nongovernmental organizations to improve their ability to get an early warning that a violent conflict, with its attendant humanitarian relief demands, is about to erupt (Chayes and Chayes, 1996). Those organizations with responsibilities for humanitarian relief hope, as a result of early warning, to plan more effective operations to provide food and other necessities to persons displaced by the violence. Other organizations that focus on diplomatic or military initiatives hope to use early warning to preempt an outbreak of violence or its recurrence following a conflict by having more time to implement conflict prevention measures such as preventive diplomacy or preventive peacekeeping (Boutros-Ghali, 1992).

There are two key facets to the conflict prevention problem. The first is acquiring the capability to achieve reliable and useable conflict early warning. The second is effectively making use of that capability, motivating the willingness within and among countries and international organizations to act early and expeditiously. This paper focuses on the capability facet. An exploration of the second, willingness facet can be found in Brecke (2000).

This paper describes the state of the art regarding the two main elements of a conflict early warning capability: the data and the models.

1. Conflict Early Warning Data

At the risk of appearing to be a person who divides the world into pairs, I will make one more binary distinction. Data germane to conflict early warning can be divided into two types. The important distinction is not between quantitative and qualitative data, although that distinction exists. Rather, we need to distinguish between the data that will help us figure out

¹ See, for example, Cahill (1966), Rupesinghe and Kuroda (1992), Andriole and Young (1977), Boutros-Ghali (1992), Laurance (1990) and Snyder, Hermann, and Lasswell (1976).

the best early warning indicators and the data that is gathered to serve as those indicators. This is undoubtedly not a standard distinction, but the following paragraphs will make the case for this position.

The road to a reliable early warning capability is highly unlikely to be a short and direct one, but it can probably be traversed. Raw data is not the answer. Even the relatively well-funded State Failure Project (Esty, et al, 1995 and Esty, et al, 1999), which evaluated 600 variables, could achieve only a two-thirds success rate in classifying whether a state failure would occur or not. That achievement is nontrivial, but it is not sufficient for the desired goal of a reliable early warning system.

A more subtle approach that does not expect (or hope) to almost immediately find “smoking pistol” indicators will probably be required for a successful and reliable system. That approach entails following a cycle in which researchers collect and test data to evaluate different explanations or mechanisms for how violent conflicts erupt and from that develop superior explanations (theories). Those new or refined theories will call for the collection of new data—or at minimum a new combination of existing variables—and the cycle will repeat until explanations (theories) with useable predictive power emerge.

At that point the new theories will point to the information that is most relevant to risk assessment and early warning, and that information will become the second type of data, the early warning indicators collected by governments and other organizations for the practical task of conflict early warning and prevention.

This conclusion is probably not a popular one. Most, if not all, practitioners interested in conflict early warning want to know only the second type of data. Unfortunately, efforts to determine the best early warning indicators will be at best inefficient and at worst ineffective if there is no attempt to operate in the mode that goes back and forth between data and theory in the manner just described.

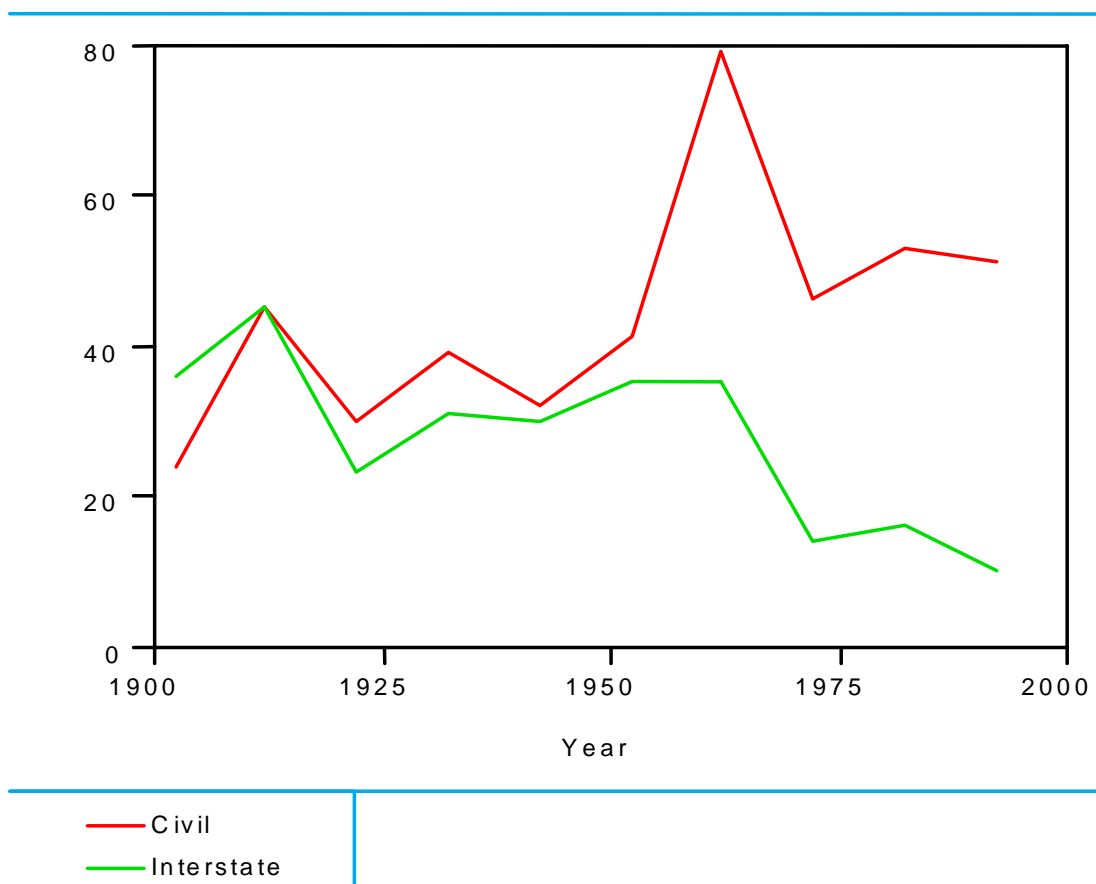
If the reader accepts the argument that we need to first concentrate on the data for evaluation and testing of theories, the next step is to determine what those data are and should be. Dismayingly, even the primary data needed develop better theories are not as useable as we might expect or would like. The best data in terms of comprehensiveness, availability, and appropriateness to address theoretical questions, unfortunately, pertain to interstate conflicts and disputes (Jones, Bremer, and Singer, 1996). I say ‘unfortunately’ not because this family

of conflicts is not important to study. The problem is that at this time interstate conflicts are relatively rare compared to (primarily) intrastate conflicts, as can be seen in Figure 1, which portrays the number of violent conflicts for each decade of the 20th century that are primarily interstate conflicts as opposed to intrastate conflicts.

FIGURE 1

Number of Conflicts in 20th Century

Civil vs Interstate Conflicts



While accumulation and refinement of our understanding of interstate wars and disputes is occurring (Vasquez, 1993; Geller and Singer, 1998), in no small part because of the improving data regarding wars and disputes and causal factors such as alliances and international system structure (Wilkenson, 1996; Wilkenson, 1999; Gibler, 1999), progress with respect to intrastate wars lags precisely because of the relative absence of analogous data.

Possibly the most fundamental shortcoming regarding data relevant to intrastate war is that there is at this time no even remotely comprehensive list of intrastate violent conflicts that is in a form both readily accessible and useable for data analysis, namely, in a computer data file. It is hard to imagine how we can find the causes of intrastate conflicts when we lack even a list of the conflicts for which we would like to find the causes.

This absence of a useable list of conflicts borders on the mind-boggling. Finding the causes of conflicts and the early warning indicators requires working with a significant sample of conflicts. We will not find the causes using sample sizes of one or even a few. Only a large sample will give us the ability to confidently generalize from past cases to future pre-conflict situations.

It must be emphasized that the problem is not the absence of lists of conflicts. Appendix A contains a long list of lists. The problem is two-fold: each one of the lists in the appendix contains only a small subset of the total population of violent conflicts and very few of the lists of intrastate conflicts are in a form suitable for data analysis. The Correlates of War Civil Wars dataset is available and being updated, but it is limited to conflicts in which (essentially) at least 1000 fatalities have occurred, a design constraint that eliminates many conflicts and thus limits the range of conflicts for which causes can be identified. An on-going project to build a Conflict Catalog will resolve this problem of limited, useable intrastate conflict datasets, but that effort is not yet complete (Brecke, 1999).

A second, related shortcoming is that we do not have a sound categorization system for violent conflicts. At this time conflicts are categorized in terms of very general distinctions such as interstate versus civil war (Small and Singer, 1982) or are placed in essentially ad hoc categories such as ethnic conflicts or peasant revolts, terms, that while generally meaningful to most readers, are not precise in terms of the criteria for inclusion and are not clearly distinct from other terms such as ethno-political conflicts or peasant rebellions. Appendix B provides a sample of about 150 of these categories. An empirically-based categorization system is in the works, but its completion of necessity follows completion of the Conflict Catalog (Brecke, 1997). It is worth noting that a categorization of violent conflicts analogous to what is done in other sciences requires a large sample size and a significant number of variables in order to achieve stable categories, that is, categories that do not lose their validity because of a minor change in the data.

This emphasis on categorization is important because if we want to identify early warning indicators that can provide us a 6-12 months “heads-up” of a conflict eruption or escalation, we almost certainly need to think in terms of identifying appropriate indicators for particular types of violent conflict. The likelihood of finding early warning indicators for a specific type of conflict will almost certainly be easier than finding them for a broad range of conflicts. The variety of conditions that lead to ethnic conflict, for example, is almost certainly much wider than the conditions that lead to a conflict in which the major point of contention is control of the state and the primary identifying characteristic of the major protagonists is religion or a conflict in which the major point of contention is creation of a new state and the primary identifying characteristic is language. By narrowing the definitions (and thus instances) we can reduce the number of variables and have a better chance of identifying which possible early warning indicators correspond with—and better yet, precede—the outbreak of the particular type of conflict.

The search for a unified theory of war, so to speak, one or a few indicators that point near-unerringly to a future conflict of any type, is way too premature. Our existing theory is nowhere near advanced enough to give us that capability. Even particle physicists, whose theory is advanced enough to give exquisitely precise predictions that can be tested to a level of detail several digits to the right of the decimal point, do not yet have a unified theory. Their theoretical endeavors over the last century has focused on making (theoretical) explanations for the different components of the physical world, such as leptons or the strong force, and then working their way towards a broader theory that combine the explanations for the components, such as the one that linked electro-magnetism and the weak force.

This may be the problem of the State Failure project. State failure, as important as it is, may, like war, be too broad a phenomenon to explain and reliably predict at this time. The three variables identified as being closely associated with state failure: Infant mortality, trade openness, and level of democracy, will probably be components of some future theory that fully explains state failure, but the heterogeneity of the 127 (Phase II) cases, especially in terms of the types of conflicts they experienced, makes the three variables lowest common denominators that are not sufficient to explain specific instances of state failure. To support this contention, it is worth noting that the State Failure Task Force identified additional important indicators for specific types of conflict. Especially, ethnic conflict was (is) more

likely when a single ethnic group dominates the ruling elite as well as when there was a “youth bulge” in the population (Esty, et al, 1999, p. 51).

If the reader accepts the argument that we should, at least for now, concentrate on explanations for different components of the social world, in this case, different types of violent conflict, then the emphasis should be on projects that focus on sets of seemingly similar conflicts. The following efforts to differing degrees adhere to that admonition and merit mention in addition to the State Failure Project noted earlier.

For example, for his model of communal or ethnopolitical conflict, Gurr (1994) proposes 15 indicators grouped into background conditions, intervening conditions, response conditions, and an example list containing 9 accelerators.

For genocides/politicides, Harff (1994) distinguishes between background conditions, intervening conditions, and accelerators (also called precipitating events). Background conditions are further broken down into international and internal background conditions. She offers a list of 19 indicators.

Fein (1994) for the most part agrees with Harff, but she has her own set of indicators pointing towards genocide/politicide. Her 18 indicators break down into three categories: Conditions from the past, recent background conditions, and precipitating events.

For the much broader class of conflicts that cause humanitarian relief operations and refugee flows, Schmid and Jongman of the PIOOM program at Leiden University in the Netherlands have developed a list of 70 background conditions indicators and 118 situational circumstances indicators (Schmid, 1998).

These are serious efforts. The problem is that there is no strong evidence that any of the indicators they propose are truly conflict early warning indicators. The first data task described above has been essentially bypassed in the quest for the second type of data.

The essential argument is that we need to be patient and build a strong foundation to find the best early warning indicators. To accomplish that we need to tread the line between single case studies that fail to give us generalizability and (so-called) large-N quantitative studies that mix disparate phenomena (different types of violent conflict) together in order to get sufficient sample sizes for statistical power. The Conflict Catalog and the subsequent conflict categorization projects seek to give us the data such that we have sizeable samples with specific types of conflict, but that, again, is in the future. We need to start from basic

information and build our theories from there. The benefit of taking such a path is that it will enable us to much more effectively leverage the other data, such as that for the State Failure Project, that has already been collected.

2. Conflict Early Warning Models

The reader may accept the plausibility of the need to first collect data to resolve between different theoretical explanations for the outbreak of violent conflicts as opposed to rather blindly collecting early warning indicators, but that does not answer the question of what data (beyond very basic data) should be collected for the first step. The answer to that question forces us to examine the models being used to determine the most appropriate theories.

To reduce ambiguity, in this paper a *theory* is an explanation of a phenomenon (or set of phenomena) whereby the explanation describes a process or mechanism through which the phenomenon occurs or changes. For our purposes an appropriate theory describes a process by which a violent conflict erupts or an already conflictual situation transitions to a higher level of violence. It describes how the appearance of or change of some thing or things causes a conflict to erupt or escalate. A *model* is a representation of the phenomenon that articulates or brings together in a relatively concise and comprehensible way the components of a theory. A theory can be represented by a number of models, each typically providing a particular perspective on the phenomenon. Confusingly, a model can, in turn, represent a number of theories. There is not necessarily a one-to-one relationship. In this instance, the usual and preferred action is to apply data against the model to see which theories embodied in the model best fit or correspond to the data.

This multiplicity in the ways that phenomena, theories, and models interact makes it difficult to establish a coherent schema for organizing models. While we might wish for simplicity's sake that models corresponded on a one-to-one basis with theories, the fact that they do not forces us to use different organizing principles. Two such organizing principles are:

- To categorize models by the phenomena they represent
- To categorize models by the methodologies employed to apply data to the model

For this paper we will focus mainly on models germane to intrastate conflict.

One attempt to organize models relevant to conflict early warning was done by Gurr and Harff (1994). They categorized models into the three following types:

- Correlational Models
- Sequential Models
- Conjunctural Models

This breakdown corresponds quite closely to different methodologies.

2.1 Correlational Models

The Correlational Model approach has seen wide application in determining the causes of war, particularly interstate wars, and progress has been made (Geller and Singer, 1998). The approach is based on the assumption that certain indicators or measures of the political, economic, and social situation in a country covary with a measure of the level of violence in that country.² One tries to find out how much they covary by putting them in a multiple regression (or a logit analysis) equation. On the right-hand-side of the equation exists a (sometimes very large) number of factors (indicators) believed to contribute to the likelihood of whether a situation will become a violent conflict or not in the not-too-distant future. On the left-hand-side is the outcome indicator with values such as conflict or no conflict or close to a conflict or possibly some more precise measure of the level of violence. The goal is to find the influence or weight that each factor has on the outcome. Those factors that turn out to “weigh heavily” on the outcome become key components of a correlational model of the outbreak of violent conflict.

Inspection of the correlational model approach reveals that it possesses two distinct facets. The first is to develop and validate a correlational model that corresponds to a particular theory (Gurr and Moore, 1997). This involves using data from the past to find the

² One can go further and argue on theoretical grounds that the variables represented by those indicators of the situation cause the level of violence, but that is not strictly necessary for obtaining conflict alerts.

relationship between each factor and the outcome.³ The second facet entails assuming that the correlational model is reasonably correct and robust and then supplying current values to each of the factors of the regression equation (Gurr, 1998). (In effect the equation(s) describing the model changes its (their) nature from stochastic to deterministic.) If the values of those factors (the terms on the right-hand-side of the equation) reach values such that the calculated value of the outcome (the left-hand-side of the equation) corresponds to a violent conflict, there then exists a reasonable basis for a conflict alert.

These two facets of the correlational model illustrate and parallel the distinction made earlier between the data needed to determine the appropriate early warning indicators and the data needed for early warning activities in an organization. Onishi (1998) describes the use of both facets of a correlational model approach to achieve an early warning of displaced persons.

2.2 Sequential Models

The Sequential Model approach is a very different method for achieving conflict alerts. Rather than describing a causal structure that involves some number of independent variables pointing to a dependent variable such as the likelihood that a conflict will erupt, as is done with a correlational model, a sequential model consists of a “mechanism” that describes how changes in an environment bring about a specific event (or events) or a change in some specified variable. For example, whereas a(n extremely simplistic) correlational model might represent the theoretical argument that the level of violence in a society is a function of the degree of wealth inequality and the unemployment rate, a similarly simplistic sequential model might be expressed as: If the unemployment rate in a society is rising, the level of discontent among the workers will rise. If the level of discontent is at a high level and the government drastically raises the price of bread, then violence is likely to erupt.

The element of time is much more integral, much more explicit in the “explanation” of how a conflict comes about.

Events fit more easily within a sequential model than they do in a correlational model. Events typically trigger changes in a sequential model. They can cause relationships between

³ Typically the concern is the weight or strength of the relationship, but the nature or the functional form of the relationship can be ascertained as well.

different elements of the model to become either active or inactive. Alternatively, they can cause a change in the tempo or dynamic of a relationship. For example, two groups in a society may coexist with some tension but essentially peaceably. If members of one of the groups begin to verbally attack the other group, accusing them of being the cause of increased crime, for example, that event or series of events is likely to increase the tensions between the groups, probably inciting increased verbal and written exchanges of both a provocative and conciliatory nature by different individuals in the groups. At another level, if there is an incident in which members of one of the groups attack and kill members of the other group, this event is likely to provoke retaliation by the second group, which establishes a relationship of violent exchanges that did not exist before.

Harff (1994) describes a sequential model that incorporates this general concept with respect to genocide and politicide: one looks for *accelerators*, events that, when they occur, tend to lead to a cascade of events resulting in a genocide/politicide (with politicide defined by Harff as situations in which groups are victimized primarily because of their political opposition to the ruling regime instead of their communal characteristics such as ethnicity or religion).

A sequential model represents a theory. Both describe a process to explain how a change in some thing leads to a change in the object of interest, in our case violent conflicts. This is another way in which sequential models differ from correlational models. A sequential model has a one-to-one correspondence with a theory. To make a sequential model, one must have a theory in mind. In fact, the act of making the model forces an explicit articulation of a theory. Correlational models, in contrast, typically have a one-to-many relationship with theories. One model can, in principle, support a number of different theories. The data that are applied to a correlational model determine which particular theory it supports.

If one considers a sequential model in terms of what it is doing, it is clear that an appropriate methodological or analytical approach is to implement it in a computer simulation. A computer simulation model almost by definition represents a process that unfolds through a sequence of steps, usually over time. As such, a computer simulation directly corresponds to a sequential model. The unique feature of computer simulations is that they step through the sequence of steps in an accelerated manner inside the computer. The result is that in a simulation, one year in the “real world” transpires in something much less, perhaps one minute or a few seconds. It is through this accelerated movement through time

that a sequential model implemented in a computer can provide an early warning of violent conflicts. As the model simulates the situation between or within countries, the model can, in effect, get to the future before the “real world” gets there.

Thus, a sequential model implemented in a computer simulation could be used to provide conflict alerts in the following way: As in any formalized conflict alert system, information from current news feeds and new publications is processed and entered into a database subsystem, probably on a daily if not continuous basis. The Kansas Event Data System (KEDS) and the new Integrated Data For Events Analysis (IDEA) system provide the core capability for this task (Gerner and Schrodt, 1996; Taylor, Jenkins, and Bond, 1999). From the database the conflict early warning system extracts or calculates the indicators which serve as inputs for the simulation. These inputs become the initial values for the variables within the model, and as such serve as starting points for the simulation model’s calculations. The model is then run in order to simulate the country or countries it represents. If the simulation run, given new input data that arrived since the last run (perhaps on the previous day), results in a conflict that did not occur in previous simulations, it is providing a conflict alert.

Unfortunately, to this writer’s knowledge there are no computer simulations that represent sequential models of the outbreak of violent conflict. A partial exception to this assertion is various strategy-oriented computer games such as *Civilization*, *Imperialism*, and *Age of Empires*. In these games a player can end up involved in wars, but the reason these simulations are not really useful for the purpose of conflict early warning is that the sequential models implicitly built into the games are simply the game designers’ personal mental models of how wars come about. Those models may be very good, but they lack the solid theoretical and empirical foundation that is essential for a credible conflict early warning system. The problem remains, as before, an absence of good theories explaining the processes by which different types of violent conflict erupt.

An alternative approach to sequential models can be found in the PARISinLA project (Adibi, Alker, Malita, and Vest, 1997). This project emphasizes analysis of the history of discussion or debate between actors as well as their actions, and it employs sophisticated software to analyze those histories as they are embodied in textual descriptions. The PARISinLA project also makes use of data sets that contain the histories of cases involving

conflict management, most notably CASCON and SHERFACS, and thus are well-suited to this type of historical and textual analysis. This is work in progress.

2.3 Conjunctural Models

The Conjunctural Model approach focuses on combinations of conditions and events that lead to violent conflicts. The underlying premise is that different combinations of a country's circumstances lead to different outcomes. For instance, some situations lead to violence in the form of a guerrilla war against the government, while others lead to an inter-ethnic group conflict, while yet others do not lead to violence at all. Schock (1996) presents a weak form of a conjunctural model that explores whether political context moderates the influence of economic inequality on political conflict. Stronger forms of a conjunctural model are possible that allow for the exploration of a large variety of combinations or conjunctures that lead to violent conflict.

Conjunctural models may possess an advantage over correlational models with respect to both finding causes for violent conflicts and in an operational conflict early warning role. The problem for correlational models may be the assumptions behind them. One of the assumptions with correlational models is that they start from the premise that the explanatory variables covary with the output or dependent variable. In addition, correlational models typically assume that the explanatory variables do not covary with each other as they covary with the dependent variable. The explanatory variables are supposed to be independent from each other. If the explanatory variables covary with each other quite closely, a problem of multicollinearity emerges, and as any introductory statistics text explains, multicollinearity makes it effectively impossible to ascertain the precise relationship between the explanatory and dependent variables (Wonnacott and Wonnacott, 1977).

It may be the case that neither of these two assumptions holds true with respect to violent conflicts and especially the conflict early warning task, making the correlational model approach unsuitable. The key feature of the relationship between early warning indicators and violent conflict may not be how they covary; it may be the occurrence of a particular combination or configuration of them at some point in time before the conflict erupts. Moreover, the notion of independence of the explanatory variables (early warning

indicators) may be inappropriate because it may be their interaction that is important. For these reasons, conjunctural models deserve greater attention.

The conjunctural approach can be quite easily understood if the reader envisions it as a pattern recognition task. This results in an analytical approach that emulates what a typical international affairs or country expert appears to do. To illustrate, consider the following. When such an expert focuses her or his attention upon a country to decide whether it is likely to experience political violence and then makes a determination, that individual has in all likelihood used pattern recognition. More specifically, the individual examines the country's situation, which includes both its history and its current condition, in terms of both events and variables describing underlying processes. The individual (consciously or not) compares the situation with other countries' situations, both current and in the past, to find analogues. The individual can find an analogue through two paths. First, the other case (or cases) can be empirically almost identical, a parallel case. In international affairs so much variation in country descriptions exists that such an outcome is unlikely. The second path is that the other case (or cases) can be sufficiently similar such that given the analyst's theoretical (mental) model of how the "world" works, the analyst judges the cases to be analogous. Deviations—even significant deviations—in the cases are possible, but if those aspects of the situation as determined by the theoretical or mental model to be important to the countries' dynamics are the same, then the cases are believed to be analogues. If the analogous case or cases subsequently evolved to violent conflicts, then the analyst is likely to believe that the particular country of interest is also likely to suffer a conflict.

Brecke (1998) describes how to transform situations within or between countries into patterns that can be analyzed in a manner analogous to that described in the previous paragraph. The situation at a particular place at a particular point in time is summarized as one grid pattern. The history of a particular place is summarized in a sequence of grid patterns. Each grid pattern is conjunctural in that it depicts the combination of characteristics (or variables) that describe the situation.

The key to this approach is to use pattern recognition techniques to identify particular grid patterns, configurations of conditions that consistently precede the outbreak of violent conflicts and that also do not occur in places that do not experience violent conflict. There are a number of possible pattern recognition techniques that can be used. Schrodtt has explored the use of factor analysis, discriminant analysis, cluster analysis, genetic algorithms, neural

networks, and most recently, hidden Markov models to identify early warning indicators with modest success (Schrodt and Gerner, 1996; Schrodt and Gerner, 1997; Schrodt and Gerner, 1998; Schrodt, 1991; and Schrodt, forthcoming). The State Failure Project has applied neural network analysis to the data they have collected, and the United Nations Humanitarian Early Warning System project (HEWS) tried using neural network analysis to their own data as well (Esby, et. Al. 1999; Ahmed and Kassinis, 1998). What has not yet been done is to apply any of these techniques to a conjunctural model. It is an approach that remains essentially untested.

3. Conclusion

Progress in terms of data and models in support of risk assessment models for conflict early warning and prevention is occurring, but progress is slow. A significant amount of even basic data about conflicts remains to be collected and analyzed. However, those data may enable us to make better use of the considerable data already collected and assembled. More effort should be placed on collecting data about conflicts as opposed to data about the countries that have experienced or are experiencing violent conflict.

Modeling work that may provide guidance regarding what other data to collect and, ultimately more importantly, provide reliable risk assessment models is also making only limited progress. Part of the problem is that most model developers are hamstrung by limited resources relative to the magnitude of the problem. A bigger problem, as outlined above, is the lack of theory—supported by data—that can guide the design of a reliable risk assessment model. Rather than going directly for an operational risk assessment model, more effort should be placed on modeling and data work to support the development of better theory to explain the outbreak of different types of violent conflict.

Appendix A

Compilations of Violent Conflicts

Dictionaries or Encyclopedias of Wars and Battles

Brownstone, David F. and Irene Franck. Timelines of War: A Chronology of Warfare from 100,000 B.C to the Present. New York: Little, Brown & Company. 1996.

Bruce, George. Collins Dictionary of Wars. Glasgow: Harper Collins. 1995.
(this was formerly Harbottle's Dictionary of Battles, 1966, 1971, 1981 and The Paladin Dictionary of Battles, 1986.)

Chandler, David. Dictionary of Battles: the world's key battles from 405 BC to today. New York: Random House. 1991.

Clodfelter, Micheal. Warfare and Armed Conflicts: A Statistical Reference to Casualty and Other Figures, 1618-1991. Vols. 1 and 2. Jefferson, North Carolina: McFarland & Company, Inc. 1992.

Davis, Paul K. Encyclopedia of Invasions and Conquests: from Ancient Times to the Present. Santa Barbara, CA: ABC-Clio. 1996.

Dupuy, Trevor N., and R. Ernest Dupuy. The Harper Encyclopedia of Military History from 3500 B.C. to the present. 4th edition. New York: Harper & Row. 1993.

Eggenberger, David. An Encyclopedia of Battles: accounts of over 1,560 battles from 1479 B.C. to the present. New York: Dover. 1985.
(this was formerly A Dictionary of Battles, 1967)

Gallay, Allan. Colonial Wars of North America: an encyclopedia, Military History of the United States series, Vol. No. 5. New York: Garland, 1996.

Goldstein, Erik. Wars and Peace Treaties: 1816-1991. New York: Routledge. 1992.

Hogg, Ian. V. Battles: A concise dictionary. New York: Harcourt Brace. 1995.

Kaye, G.D., D.A. Grant, and E.J. Emond. Major Armed Conflict: A Compendium of Interstate and Intrastate Conflict, 1720-1985. ORAE Report No. R 95. Operational Research and Analysis Establishment. Department of National Defence. Ottawa, Canada. 1985.

Keenan, Jerry. Encyclopedia of American Indian Wars: 1492-1890. Santa Barbara, CA: ABC-Clio. 1997.

Kohn, George C. Dictionary of Wars. Garden City, N.Y.: Anchor Press/Doubleday, 1987.

Laffin, John. Brassey's Battles: 3,500 years of conflict, campaigns, and wars from A-Z. Washington, D.C.: Brassey's Defence Publishers, 1986.

Sweetman, John. A Dictionary of European Land Battles: from the Earliest Times to 1945. New York: MacMillan Publishing Company. 1985.

Van Creveld, Martin. The Encyclopedia of Revolutions and Revolutionaries : from anarchism to Zhou Enlai. New York: Facts on File. 1996.

Young, Brigadier Peter, with Brigadier Michael Calvert. A Dictionary of Battles 1715-1815. Vol. 3. New York: Mayflower Books, 1979.

Young, Brigadier Peter, with Brigadier Michael Calvert. Dictionary of Battles 1816-1976. Vol. 4. New York: Mayflower Books. 1978.

Academic Research Works Containing Compilations

Bodart, Gaston. Losses of Life in Modern Wars: Austria-Hungary; France. Oxford: At the Clarendon Press. 1916.

Bouthoul, Gaston, and Rene Carrere. "A List of the 366 Major Armed Conflicts of the Period 1740-1974," Peace Research. Vol. 10, Number 3 (July 1978). pp. 83-108.

Dumas, Samuel, and K. O. Vedel-Petersen. Losses of Life Caused by War. Oxford: At the Clarendon Press. 1923.

Farwell, Byron. Queen Victoria's Little Wars. New York: W. W. Norton & Company. 1972.

Hassig, Ross. Aztec Warfare: Imperial Expansion and Political Control. Norman, OK: University of Oklahoma Press. 1988.

Holsti, Kalevi. J. Peace and War: Armed Conflicts and International Order 1648-1989. Cambridge: Cambridge University Press. 1991.

Holsti, Kalevi J. The State, War, and the State of War. Cambridge: Cambridge University Press. 1996.

Jongman, Albert J. (Ed.). Contemporary Genocides: Causes, Cases, Consequences. Leiden, Netherlands: PIOOM. 1996.

Kende, Istvan, "Wars from 1965 to 1978," Peace Research. Vol. 11, Number 4 (October 1979). pp. 197-199.

Kiser, Edgar, Kriss A. Drass, and William Brustein. "The Relationship Between Revolt and War in Early Modern Western Europe," Journal of Political and Military Sociology. Vol. 22, No. 2 (Winter 1994). pp. 305-324.

Levy, Jack S. War in the Modern Great Power System, 1945-1975. Lexington, KT: the University Press of Kentucky. 1983.

Luard, Evan. War in International Society: A Study in International Sociology. New Haven: Yale University Press. 1987.

Richardson, Lewis F. Statistics of Deadly Quarrels. Pittsburgh: The Boxwood Press. 1960.

Rummel, R. J. Lethal Politics: Soviet Genocide and Mass Murder since 1917. New Brunswick, NJ: Transaction Publishers. 1990.

Rummel, R. J. China's Bloody Century: Genocide and Mass Murder since 1900. New Brunswick, NJ: Transaction Publishers. 1991.

Rummel, R. J. Democide: Nazi Genocide and Mass Murder. New Brunswick, NJ: Transaction Publishers. 1992.

Rummel, R. J. Death by Government. New Brunswick, NJ: Transaction Publishers. 1994.

Small, Melvin, and J. David Singer. Resort to Arms: International and Civil Wars, 1816-1980. Beverly Hills: Sage Publications. 1982.

Sorokin, Pitirim A. Social and Cultural Dynamics: Volume 3: Fluctuation of Social Relationships, War, and Revolution. New York: American Book Company. 1937.

Sutton, Antony. The State, War, and Revolution. (Unpublished manuscript). Probably 1972.

Sutton, Antony. Wars and Revolutions in the Nineteenth Century. (Unpublished manuscript). 1972.

Uralnis, B. Wars and Population of Europe: human losses of the armed forces of the European countries in the XVII-XX century wars. Moscow: Progress Publications. 1960.

Woods, Frederick Adams, and Alexander Baltzly. Is War Diminishing? A Study of the Prevalence of War in Europe from 1450 to the Present Day. Boston: Houghton Mifflin Company. 1915.

Wright, Quincy. A Study of War: Vol. 1. Second edition. Chicago: University of Chicago Press, 1965.

Historical Chronologies and Historical Atlases

Ajaye, J. F. Ade, and Michael Crowder (general eds.). Historical Atlas of Africa. New York: Cambridge University Press, 1985.

Axelrod, Alan. Chronicle of the Indian Wars: From Colonial Times to Wounded Knee. New York: Konechy & Konecky. 1993.

Channon, John, with Robert Hudson. The Penguin Historical Atlas of Russia. London: Penguin Books. 1995.

Freeman-Grenville, G.S.P. Chronology of African History. London: Oxford University Press, 1973.

Freeman-Grenville, G.S.P. Chronology of World History: a calender of principal events from 3000 B.C. To A.D. 1973. London: Rex Collings, 1975.

Freeman-Grenville, G.S.P. Historical Atlas of the Middle East. New York: Simon Shuster, 1993.

Gilbert, Martin. Atlas of Russian History. New York: Dorset Press. 1985.

Grant, Neil. Chronicle of 20th Century Conflict. New York: Smithmark Publishers. 1993.

Marley, David F. Wars of the Americas: A Chronology of Armed Conflict in the New World, 1492 to the Present. Santa Barbara, CA: ABC-CLIO. 1998.

McEvedy, Colin. The Penguin Atlas of African History. London: Penguin Books. 1995.

Natkiel, Richard, and John Pimlott. Atlas of Warfare. New York: Gallery Books. 1988.

Pluvier, Jan M. Historical Atlas of South-East Asia. New York: E.J. Brill, 1995.

Schwartzberg, Joseph E. (Ed.). A Historical Atlas of South Asia. 2nd impression with additional material. New York: Oxford University Press. 1992.

Wilgus, A. Curtis. Historical Atlas of Latin America: political, geographic, economic, cultural. New York: Cooper Square Publishers, 1967.

Works Not in the English Language

History of Wars in China. (Zhongguo lidai zhanzheng shi). Vols. 14-18. Taipei, Taiwan: United Military University of Taiwan. 1972. (in Chinese)

Military History of China: Appendix: Chronicle of Wars in Sui and Tang Dynasties (v.2). (Zhongguo junshi shi). Military History of China Team. Beijing: Peoples Liberation Army Press. 1986. (in Chinese)

Encyclopedia of Wars and Battles in and Outside of China. (Zhongwai zhanzheng zhanyi dacidian). Changsha, Hunan, PRC: Hunan Press. 1992. (in Chinese)

Dictionary of Wars and Battles. (Zhongwai zhan dian). Beijing: Central National University Press. 1993. (in Chinese)

Wars & Incidents: Survey of All Wars, Coup D'états, and Incidents. (Sensou•Jihen: Zensensou•Kuu Te Taa•Jihen Souran). Edited revised edition. Tokyo: Kyouikusha. 1993. (in Japanese)

Notohisa, Yashida, (Ed.). Small Encyclopedic Overview of Japanese Wars. (Nihonshi Syohyaka•Senran). Tokyo: Konto. 1984. (in Japanese)

Bodart, Gaston. Lexicon of War and Military History (1618-1905). (Militaer-historisches Kriegs-Lexicon). Vienna: C. W. Stern. 1908. (in German)

Bouthoul, Gaston, and Rene Carrere. The Challenge of War,1740-1974. (Le defi de la guerre). Paris: Presses Universitaires de France. 1976. (in French)

Latsinsky, A. S. (Ed.) Chronology of the Global History of Wars with reference to the major facts of socio-political and cultural history, 4400 BC - 1900 AD. St. Petersburg: Military Printing House. 1901. (in Russian)

Shavrov, I. E. (Ed.). Local Wars: History and Modern Times. Moscow: Military Publishing House of the Ministry of Defense of the USSR.. 1981. (in Russian)

Other

SIPRI. SIPRI Yearbook of World Armaments and Disarmament, 1968/69. New York: Humanities Press. 1969.

SIPRI. SIPRI Yearbook: World Armaments and Disarmament. New York: Humanities Press. 1986 to 1993 editions.

SIPRI. SIPRI Yearbook: Armaments, Disarmament and International Security. New York: Humanities Press. 1994 to 1996 editions.

Sivard, Ruth Leger. World Military and Social Expenditures. Leesburg, VA: WMSE Publications. 1985, 1987-88, 1991, 1993, 1996 editions.

Wallenstein, Peter, and Karin Axell. "Armed Conflict at the End of the Cold War, 1989-92," Journal of Peace Research. Vol. 30, No. 3. 1993. pp. 331-346.

Wallensteen, Peter, and Karin Axell. "Conflict Resolution and the End of the Cold War, 1989-93," Journal of Peace Research. Vol. 31, No. 3. 1994. pp. 333-349.

Wallensteen, Peter, and Margareta Sollenberg. "After the Cold War: Emerging Patterns of Armed Conflict 1989-94," Journal of Peace Research. Vol. 32, No. 3. 1995. pp. 345-360.

Wallensteen, Peter, and Margareta Sollenberg. "The End of International War? Armed Conflict 1989-95," Journal of Peace Research. Vol. 33, No. 3. 1996. pp. 353-370.

Wallensteen, Peter, and Margareta Sollenberg. "Armed Conflicts, Conflict Termination, and Peace Agreements, 1989-96," Journal of Peace Research. Vol. 34, No. 3. 1997. pp. 339-358.

Appendix B

Types of Armed Conflicts

<u>Inter-state conflict</u>	<u>Conflict between State and external non-state actor</u>
international war	extra-systemic war
global war world war general war systemic war major coalition war	imperial war colonial war
major powers war	war of liberation war of independence revolutionary war decolonization conflict armed rebellion colonial liberation war
war of rivalry - hegemonic war - power transition war - status war - colonial war (between colonial occupiers)	state-building war (expanding into “unoccupied” territory)
territorial conflict - border war (between countries) - border skirmish - navigation war - territorial dispute - frontier conflict	colonial expansion war
state-sponsored terrorism (in other countries)	war of resistance war of occupation
subversion	drug war
irredentist conflict	
counter-revolutionary war	
armed attack - invasion - missile attack - bombing attack - bombing campaign - bombardment	
intervention	
occupation of territory	
expansionist war	
collaborationist conflict	
neo-colonial conflict	

<p><u>Intra-state conflict</u></p> <p>civil war</p> <p>revolution</p> <ul style="list-style-type: none"> - political revolution - social revolution - urban revolution - peasant revolution - palace revolution - millenarian revolution - anarchistic revolution <p>state-building war</p> <p>state formation conflict</p> <p>insurgency</p> <ul style="list-style-type: none"> - armed insurgency <p>rebellion</p> <ul style="list-style-type: none"> - armed rebellion <p>revolt</p> <ul style="list-style-type: none"> - peasant revolt - armed revolt <p>peasant war</p> <p>peasant rebellion</p> <p>jacquerie</p> <p>coup d'etat/putsch</p> <ul style="list-style-type: none"> - palace coup - reform coup - revolutionary coup - conspiratorial coup d'etat <p>purge</p> <p>pronunciamento</p> <p>dynastic war</p> <p>war of succession</p> <p>terrorism</p> <ul style="list-style-type: none"> - attacks to cripple economy - attacks to shake faith in government 	<p>ethnic conflict</p> <ul style="list-style-type: none"> - ethno-political conflict - race conflict - race war <p>expulsion</p> <p>group identity conflict</p> <p>war of self-determination</p> <p>war of secession</p> <p>separatist conflict</p> <p>insurrection</p> <ul style="list-style-type: none"> - sessionist armed insurrection - armed insurrection - militarized mass insurrection <p>uprising</p> <ul style="list-style-type: none"> - armed uprising - peasant uprising <p>conflict to achieve limited self-rule</p> <p>genocide</p> <p>politicide</p> <p>democide</p> <p>massacre</p> <p>government repression of social groups</p> <p>state terrorism</p> <p>government oppression</p> <p>pogrom</p> <p>counter-terrorism campaign</p> <p>warlord battles for control of collapsed state</p> <p>clan warfare</p> <p>factional warfare</p> <p>internecine warfare</p> <p>class conflict</p> <ul style="list-style-type: none"> - class warfare <p>state resistance conflict</p> <p>riot</p> <p>land seizure</p>
--	--

<u>Abstract properties</u>	<u>Either Inter-state or Intra-state</u>
simple conflict complex conflict recurring conflict	ideological war political war post-colonial war
low intensity conflict guerilla war trench warfare weapons of mass destruction war proxy war	religious conflict - religious war environmental conflict - scarcity conflict - resource conflict - pollution/emissions conflict
local war regional war - regional internal war	<u>Borderline Violent Conflict</u>
relative deprivation conflict cultural conflict distributive dispute ideological conflict	incident clash - armed clash agitation unrest disturbance disorder dispute mutiny piracy
personnel war authority war structural war	

REFERENCES

- Adibi, Jafar, Haward R. Alker, Mihaela Malita, and L. Thomas Vest, Jr. 1997. "PARIS: A Prototype Action Recommender's Information Support system for Conflict Prevention." Paper prepared for presentation at the XVIIth IPSA World Congress, Seoul, Korea and the Black Sea University Workshop. August.
- Ahmed, Adeel and Elizabeth Voulieris Kassinis. 1998. "The Humanitarian Early Warning system: From Concept to Practice." in John L. Davies and Ted Robert Gurr (Eds.) *Preventive Measures: Building risk Assessment and Crisis Early Warning Systems*. Lanham, MD: Rowman & Littlefield Publishers, Inc. pp. 203-211.
- Andriole, S. J. and R. A. Young. 1997. "Toward the Development of an Integrated Crisis Warning System," *International Studies Quarterly*. Vol. 21, No. 1. pp. 107-150.
- Boutros-Ghali, Boutros. 1992. *An Agenda for Peace: Preventive Diplomacy, Peacemaking, and Peace-keeping*. New York: United Nations.
- Brecke, Peter. 1997. "A Foundation for Early Warning: A Taxonomy of Violent Conflicts," *Simulation*, Vol. 68, No. 5 (June). pp. 433-440.
- Brecke, Peter. 1998. "Finding Harbingers of Violent Conflict: Using Pattern Recognition to Anticipate Conflicts," *Conflict Management and Peace Science*, Vol. 16, No. 1 (Spring), pp. 31-56.
- Brecke, Peter. 1999. "Violent Conflicts 1400 A.D. To the Present in Different Regions of the World." Paper prepared for the 1999 Meeting of the Peace Science Society (International). Ann Arbor, Michigan. October 8-10.
- Brecke, Peter. 2000. "Early Warning and Conflict Prevention." *Global Governance*. (accepted for publication).
- Cahill, Kevin M., M.D. (Ed.). 1996. *Preventive Diplomacy: Stopping Wars Before They Start*. New York: Basic Books.
- Chayes, Abram and Antonia Handler Chayes, Editors. 1996. *Preventing Conflict in the Post-Communist World: Mobilizing International and Regional Organizations*. Brookings Occasional Papers. Washington, DC: The Brookings Institution.

- Esty, Daniel C., et. al. 1995. *Working Papers: State Failure Task Force Report*. McLean, VA: Science Applications International Corporation. 30 November.
- Esty, Daniel C., et. al. 1999. "State Failure Task Force Report: Phase II Findings." *Environmental Change & Security Project Report*. Washington, DC: The Woodrow Wilson Center. Issue 5. Summer.
- Fein, Helen. 1994. "Tools and Alarms: Uses of Models for Explanation and Anticipation." *The Journal of Ethno-Development*. Vol. 4, No. 1 (July). pp. 31-35.
- Geller, Daniel S. And J. David Singer. 1998. *Nations at War: A Scientific Study of International Conflict*. New York: Cambridge University Press.
- Gerner, Deborah J. and Philip A. Schrodt. 1996. "The Kansas Event Data System: A Beginner's Guide with an Application to the Study of Media Fatigue in the Palestinian Intifada," Poster Session presented at the American Political Science Association meetings, San Francisco, August.
- Gibler, Douglas M. 1999. "An Extension of the Correlates of War Formal Alliance Data Set, 1648-1815." *International Interactions*. Vol. 25, No. 1. pp. 1-28.
- Gurr, Ted Robert. 1994. "Testing and Using a Model of Communal Conflict for Early Warning." *The Journal of Ethno-Development*. Vol. 4, No. 1 (July). pp. 20-24.
- Gurr, Ted Robert. 1998. "A Risk Assessment Model of Ethnopolitical Rebellion." in John L. Davies and Ted Robert Gurr (Eds.) *Preventive Measures: Building risk Assessment and Crisis Early Warning Systems*. Lanham, MD: Rowman & Littlefield Publishers, Inc. pp. 15-26.
- Gurr, Ted Robert and Barbara Harff. 1994. "Conceptual Research, and Policy Issues in Early Warning Research: An Overview." *The Journal of Ethno-Development*. Vol. 4, No. 1 (July). pp. 3-14.
- Gurr, Ted Robert and William H. Moore. 1997. *American Journal of Political Science*, Vol. 41, No. 4 (Oct.) pp. 1079-1103.
- Harff, Barbara. 1994. "A Theoretical Model of Genocides and Politicides." *The Journal of Ethno-Development*. Vol. 4, No. 1 (July). pp. 25-30.

- Jones, Daniel M., Stuart A. Bremer, and J. David Singer. 1996. "Militarized Interstate Disputes, 1816-1992: Rationale, Coding Rules, and Empirical Patterns." *Conflict Management and Peace Science*. Vol. 15, No. 2 (Fall). pp. 163-213.
- Laurance, Edward J. 1990. "Events Data and Policy Analysis: Improving the potential for applying academic research to foreign and defense policy problems," *Policy Sciences*, Vol. 23. pp. 111-132.
- Onishi, Akira. 1998. "The FUGI Model as a Global Early Warning System for Refugees." in John L. Davies and Ted Robert Gurr (Eds.) *Preventive Measures: Building risk Assessment and Crisis Early Warning Systems*. Lanham, MD: Rowman & Littlefield Publishers, Inc. pp. 159-173.
- Rupesinghe, Kumar and Michiko Kuroda. 1992. *Early Warning and Conflict Resolution*. New York: St. Martin's Press.
- Schmid, Alex P. 1998. "Indicator Development: Issues in Forecasting Conflict Escalation." in John L. Davies and Ted Robert Gurr (Eds.) *Preventive Measures: Building risk Assessment and Crisis Early Warning Systems*. Lanham, MD: Rowman & Littlefield Publishers, Inc. pp. 39-55.
- Schock, K. 1996. "A Conjunctural Model of Violent Political Conflict." *The Journal of Conflict Resolution*. Vol. 40. pp. 98-133.
- Schrodt, Philip A. 1991. "Prediction of International Conflict using a Neural Network." *Social Science Computer Review*. Vol. 9, No. 3. pp. 359-380.
- Schrodt, Philip A. and Deborah J. Gerner. 1996. "Using Cluster Analysis to Derive Early Warning Indicators for Political Change in the Middle East, 1979-1996." Paper presented at the American Political Science Association. San Francisco. 28 August - 1 September.
- Schrodt, Philip A. and Deborah J. Gerner. 1997. "Empirical Indicators of Crisis Phase in the Middle East, 1979-1995." *Journal of Conflict Resolution*. Vol. 41, No. 4 (August). pp. 529-552
- Schrodt, Philip A. and Deborah J. Gerner. 1998. "Cluster Analysis as an Early Warning Technique for the Middle East." in John L. Davies and Ted Robert Gurr (Eds.)

Preventive Measures: Building Risk Assessment and Crisis Early Warning Systems.
Lanham, MD: Rowman & Littlefield Publishers, Inc. pp. 95-107.

Schrodt, Philip A. forthcoming. "Pattern Recognition of International Crises using Hidden Markov Models". in Diana Richards (Ed.) *Nonlinear Methods and Models in Political Science*. Ann Arbor: University of Michigan Press.

Snyder, R. C., C. F. Hermann, and H. D. Lasswell, "A Global Monitoring System: Appraising the Effects of Government on Human Dignity." *International Studies Quarterly*. Vol. 20, Number 2. pp. 221-260.

Taylor, Charles Lewis, J Craig Jenkins, and Doug Bond. 1999. "Trends in Protest and Mass Contention." Paper prepared for delivery at the 1999 Annual Meeting of the American Political Science Association. Atlanta, Ga., September 2-5.

Vasquez, John A. 1993. *The War Puzzle*. Cambridge: Cambridge University Press.

Wilkinson, David. 1996. "Configurations of the Indic States System." *Comparative Civilizations Review*. Vol. 34, Spring. pp. 63-119.

Wilkinson, David. 1999. "Power Configurations in the Far Eastern world System." Paper prepared for presentation at the annual meeting of the International Studies Association. Washington, DC. February 17-21.

Wonnacott, T.H. and R.J. Wonnacott. 1977. *Introductory Statistics*. 3rd ed. New York: John Wiley & Sons.

Arbeitsgruppe Internationale Politik

Discussion Papers

1997

P 97-301
Wolf-Dieter Eberwein
Die Politik Humanitärer Hilfe: Im Spannungsfeld von Macht und Moral

P 97-302
Yasemin Topçu
Die Neugestaltung staatlicher humanitärer Hilfe in der Bundesrepublik Deutschland

P 97-303
Wolf-Dieter Eberwein
**Umwelt – Sicherheit – Konflikt
Eine theoretische Analyse**

P 97 – 304
Peter Brecke
Using Pattern Recognition to Identify Harbinger Configurations of Early Warning Indicators

1998

P 98 – 301
Wolf-Dieter Eberwein
Die deutsch-polnischen Beziehungen: Integrations-theoretische Überlegungen

P 98 –302
Wolf-Dieter Eberwein
Sven Chojnacki
**Disasters and Violence 1946 – 1997.
The link between the natural and the social environment**

P 98 – 303
Catherine Götze
Humanitäre Organisationen und Zivilgesellschaft. Konzeptionelle Überlegungen zum zivilgesellschaftlichen Charakter von Nichtregierungsorganisationen

P 98 – 304
Ortwin Renn und Andreas Klinken
Risikoevaluierung von Katastrophen

P 98 – 305
Matthias Ecker
**Die „Deutsch-Polnische Elitestudie“:
Konstruktion und Repräsentativität der deutschen Stichprobe**

Arbeitsgruppe Internationale Politik

Discussion Papers

1999

P 99-301

Basil Kerski

Die Rolle nichtstaatlicher Akteure in den deutsch-polnischen Beziehungen vor 1990

P 99-306

Nikola Gillhoff

Die Errichtung eines ständigen Internationalen Gerichtshofes – Beginn einer neuen Ära?

P 99-302

Yasemin Topçu

Humanitarian NGO-Networks – Identifying Powerful Political Actors in an International Policy-Field

P 99-307

Matthias Ecker

‘Political Boundary Making’ toward Poland: Social Identities and Interest-Formation in German Elite Reasoning

P 99-303

Wolf-Dieter Eberwein

Sven Chojnacki

The Capacity and Willingness to Act Two Constitutive Elements of Strategy Design

P 99-304

Catherine Götze

**Von der humanitären zur Entwicklungshilfe
Entwicklung, Konflikt, Nothilfe und die ambivalente Aktualität des Kontinuumkonzeptes**

P 99-305

Uta Bronner

Helfer in humanitären Projekten: Strategien und Probleme der Personalplanung

Arbeitsgruppe Internationale Politik

Discussion Papers

2000

P 00-301

Sven Chojnacki

Wolf-Dieter Eberwein

**Die Kultur der Prävention:
Ein Ansatz zur Zivilisierung
internationaler Politik?**

BESTELLSCHEIN

Wissenschaftszentrum Berlin
für Sozialforschung
Presse- und Informationsreferat
Reichpietschufer 50
D - 10785 Berlin

Absender:

Bitte schicken Sie mir folgende Veröffentlichungen des WZB:
Please send me the following WZB-Papers:

Paper-Nr.:	Autor:

Paper-Bestellungen: Briefmarken erbeten

Wir erbitten von allen Bestellern, die papers vom WZB anfordern, eine **1 DM-Briefmarke pro paper** als pauschalen Beitrag zu den anfallenden Versandkosten. Besteller aus dem **Ausland** werden gebeten, für jedes bestellte paper einen "Coupon-Réponse International" (internationalen Antwortschein), der auf Postämtern erhältlich ist, beizufügen.

Aus diesem Grund ist es auch nicht mehr möglich, Bestellungen von papers **per Telefon oder Fax** an das WZB zu richten. Schicken Sie ihre Bestellungen nur noch schriftlich an die WZB-Pressestelle, und legen Sie neben der entsprechenden Anzahl von Briefmarken weiterhin einen mit ihrer eigenen Adresse versehenen Aufkleber bei.

Die in letzter Zeit erheblich gestiegene Anzahl von Bestellungen sowie die Mittelkürzungen, die öffentlich finanzierten Institutionen - wie auch dem WZB - auferlegt wurden, machen diese Maßnahmen unumgänglich. Wir bitten um Verständnis und darum, unbedingt wie beschrieben zu verfahren.

Stamps for papers

We ask for a 1 DM-postage stamp per paper from all those who wish to order WZB-papers, and who live in Germany. These stamps contribute to the shipment costs incurred. All persons interested in WZB-papers from abroad are asked to send one "Coupon-Réponse International" (international reply coupon) for each ordered paper. The coupons can be obtained at your local post office.

Because of this, it is no longer possible to order papers over the phone or by telefax. Please send your orders only by letter to the WZB-Press and Information Office, and add to the postal stamps a sticker with your own address written on it.

The reasons for these measures are the high increase in the number of ordered papers during the last months as well as the cut in funds imposed on publicly financed institutions like the WZB. We do ask for your understanding and hope that you will comply with the above mentioned procedure.

