

**An Aid to Finding the Causes of Conflict:
A Taxonomy of Violent Conflicts**

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ABSTRACT

This paper presents the first results of a project to establish a taxonomy of violent conflicts ranging from global-system-level interstate war to conflicts between warlords within a country. The taxonomy is intended to facilitate research on the origins of violent conflicts. The goal is to enhance our ability to identify precursors to conflicts by more finely delineating the types of conflicts that erupt. The paper first argues for the necessity of a taxonomy and reviews past efforts at conflict definition, compilation, and classification. It then describes the Conflict Catalog, a listing of all recorded violent conflicts that meet Richardson's magnitude 1.5 or higher criterion (greater than 31 deaths). The Conflict Catalog, a computerized dataset, is a superset of all conflict datasets or listings the author has identified at this time. Notable about the Conflict Catalog is its use of sources, many not in English, that have not yet been tapped for previous conflict datasets. The paper next presents preliminary findings from the catalog on the distribution in space and time of violent conflicts and the distribution of conflicts by duration. The paper then describes the additional work that needs to be done to develop a taxonomy based on the Conflict Catalog.

INTRODUCTION

In the process of developing a Conflict Alert System (CAS), a computerized system for identifying country (or international) situations that are likely to erupt into violence in the next 6 to 12 months, one quickly runs into the problem: What are the types of conflict for which we wish to (or can) get an early warning? Normatively, an early warning of all potential violent conflicts would be desirable so that we (the world community) could, at least in principle, implement conflict prevention measures to try minimize deaths as well as the costs of caring for displaced persons. Scientifically, it is not so simple.

The essence of the conflict early warning problem is to establish a consistent relationship, a mapping, between some set of indicators we can collect and the outbreak of a conflict. That is, we seek to find indicators that have consistently possessed certain values in past situations prior to the outbreak of a conflict. If we can identify these indicators and values—possibly single indicators but more likely a configuration of multiple indicators—then conflict early warning with empirically-based probability assessments becomes feasible (Brecke, 1998). If while monitoring current events we find for a country or region that the indicators possess those certain values, we can then assert that based on past experience there is particular (for example,

88%) probability that a conflict is likely to erupt within some time frame, for instance 6 to 12 months. If the indicators have other values, then the likelihood of a conflict is much lower.¹

For the purposes of a conflict alert or early warning system, an organization such as the United Nations or the North Atlantic Treaty Organization or the Organization for Security and Cooperation in Europe is interested in a wide range of threats to peace, and a conflict alert system must be able to provide an alert for almost all kinds of violent conflict. This means we need to be concerned with (but not limited to) conflicts such as coups (Luttwak, 1968; David, 1987), revolutions (Skocpol, 1979; Stone, 1966), ethnic conflicts (Gurr and Harff, 1994), wars of independence, and struggles for control of collapsed states (Zartman, 1995), to mention only a few.

One of the sub-problems we need to overcome in order to achieve reliable conflict early warning is that we need to more precisely specify violent conflicts.² Midlarsky (1989) alludes to this problem in his introduction to *Handbook of War Studies* where he states, “Although the treatment of war as a generic category has proven useful until now, future research may require the systematic delineation among several categories, each of which may require a separate theoretical treatment.” (p. xviii). It is time to step into that future and make the systematic delineation. To restate the problem in a different manner, whereas considerable effort has gone into defining and experimenting with different sets of indicators or causal variables, much less effort has gone into definition of the outcomes (Singer and Wallace, 1979; Gurr and Harff, 1994; Schmid and Jongman, 1989; Bremer, 1992).

A quick and surely not exhaustive compilation of *types* of violent conflicts that various authors have referred to in their writings (presented in Appendix A) includes 145 different types of violent conflict. Upon inspecting Appendix A, it is obvious that a number of the terms refer to the same or essentially the same thing and are primarily attempts by different writers to use slightly different wording for variety’s sake. Yet, even allowing for duplication, this list illustrates the enormous—even daunting—array of ways in which violent conflict manifests itself.

1. The mapping from indicators to outcomes is sometimes referred to as a model. Thus, one could say (and it has been argued, see Gurr, 1994) that the problem is one of developing better conflict models. Unfortunately, the term ‘model’ is used in such diverse ways in the social sciences that it can mean very different things to different readers. By using the term ‘mapping’ I seek to emphasize the general process of linking variables to outcomes as opposed to a specific type of model such as multiple regression and thereby acknowledge the variety of possible methods for doing conflict early warning.

2. The term ‘violent conflict’ is defined more fully later in the paper. At this point it is sufficient to note that violent conflict is a more general term than war or armed conflict as they are typically used in the research literature (Small and Singer, 1982; Kende, 1979; Bouthoul and Carrere, 1978, or Wallensteen and Sollenberg, 1996).

This variety is only part of the problem. Worse is that many, even most, of these types of conflict are not clearly specified. We possess criteria with which to consistently allocate particular conflicts to only the crudest categories such as interstate war versus civil war. For more discriminating delineations there exist no agreed upon characteristics to define them other than things like a peasant revolt is one in which peasants are the main group fighting against the authorities. More rapid progress can be made if there is a consensus about the definitions of violent conflicts and how they relate to or, conversely, are differentiated from each other. Consequently, the goal of this effort is to develop a coherent schema that orders, differentiates, and relates violent conflicts in order to support the development of theoretically-based and empirically-supported explanations for the outbreak of such conflicts.

TYPOLOGIES VERSUS TAXONOMIES

There are many possible ways to categorize violent conflicts, and there is certainly no consensus as to a “standard” categorization scheme (SIPRI, 1969; Bouthoul and Carrere, 1978; Kende, 1979). An exploration of previous efforts revealed that while there are a number of typologies of conflicts, they tend to be either very general or very narrowly focused, and tend to be very simple in their structure (Eckstein, 1965; Wright, 1965; Singer and Small, 1972; Vasquez, 1986; Djalili, 1991; Wallenstein and Axel, 1994). None was up to the task of coping with the diversity embodied in the list in Appendix A.³

Rather striking was that all of the categorization schemes entailed a typology of conflicts. While the terms ‘typology’ and ‘taxonomy’ are often used almost interchangeably (Holsti, 1966; Gurr, 1970), there is a major difference if one adheres to definitions. Most importantly, typologies are *conceptual schemes* in which the criteria chosen for distinguishing between different examples or cases serve as dimensions of a matrix (Bailey, 1994). Each cell of the matrix, which is typically one- or two-dimensional, defines a different type. Hierarchical typologies are possible but not common (Clark, 1994).

Typologies are created to express and explore particular theoretical explanations. The extent of an empirical grounding for typologies is that historical or current examples are often marshalled to demonstrate that each or most of the different types exist. However, given that typologies typically have only modest empirical grounding, their validity extends only to the extent that they are useful pedagogical or heuristic devices. One typology cannot be objectively demonstrated as being superior to

3. Sokolovskii (1995) is an exception to this with a rather sophisticated two-dimensional typology. Nevertheless, his typology lacks a firm empirical foundation, and as such remains a heuristic device.

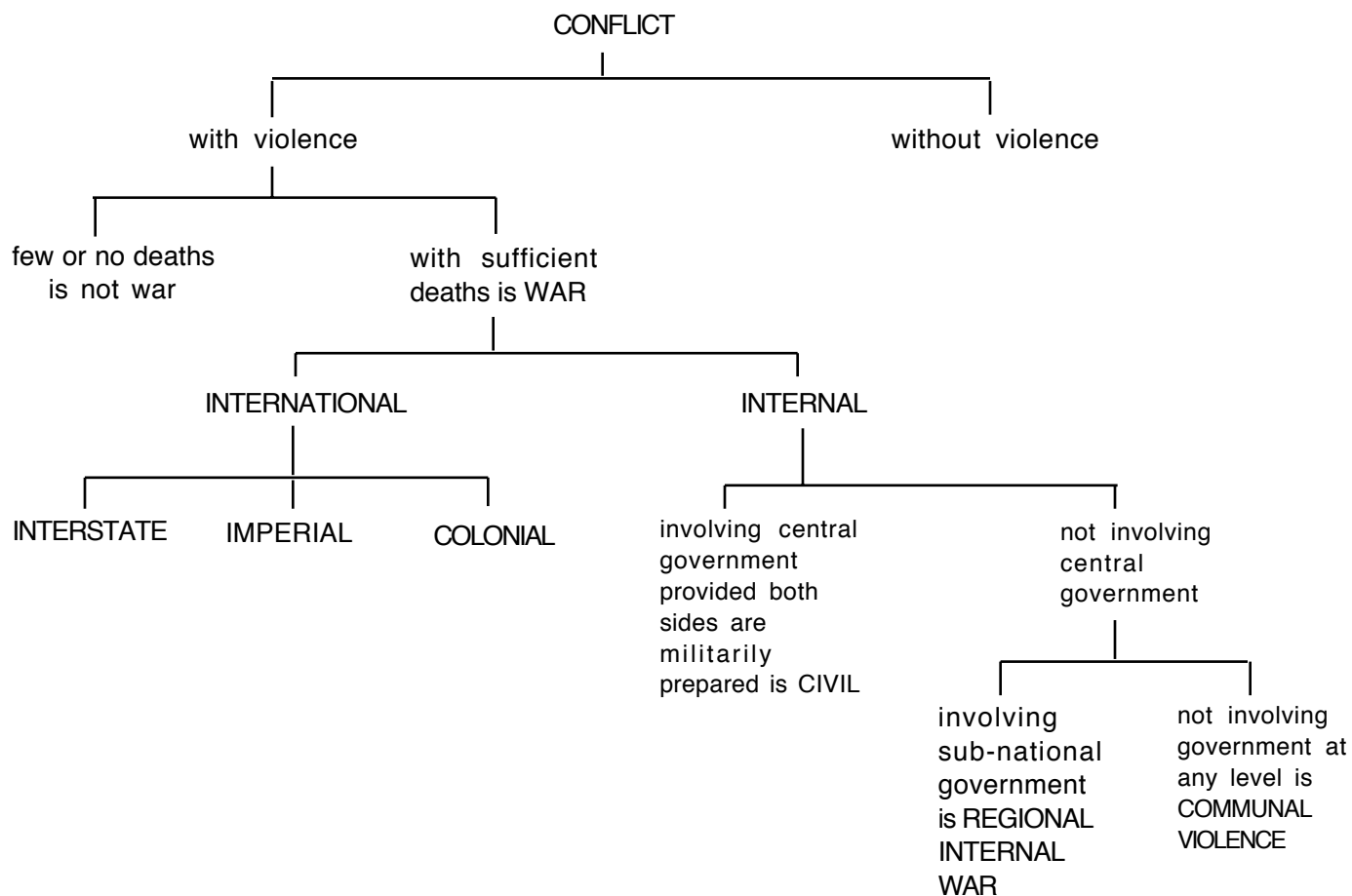
another because each is so intimately related to the research questions of its creator(s).

The scattered, jumbled diversity in terms for and definitions of the different types of violent conflict and the absence of any agreed-upon system or standard for categorizing and defining those different types leaves us in a situation of disarray. Given the larger research project of which this paper is a part and that larger project's pattern recognition approach to conflict early warning, the lack of consensus and even definition regarding conflict categorization has meant that it is necessary to develop a new system for categorizing violent conflicts (Brecke, 1998).

At an early point in this project an initial attempt to classify conflicts using the method of logical division was made. To be more precise, the method is called 'downward classification by logical division' and can be best understood by observing Figure 1, which depicts Small and Singer's (1982) application of the method to conflict. If we start from conflict, we first divide conflicts into those involving violence and those not involving violence. Those conflicts involving violence are then divided according to a number of fatalities threshold (1000) into wars and other violent conflicts. Wars we can further divide into International wars and Internal wars. International wars can, in turn, be divided into Interstate, Imperial, and Colonial wars. And so forth, as in Figure 1.

FIGURE 1

A TYPOLOGY OF CONFLICTS USING DOWNWARD
CLASSIFICATION BY LOGICAL DIVISION



source: Small and Singer (1982)

The attempt to use this method sought to extend Small and Singer's "tree" structure in both breadth and depth by making use of additional variables or distinguishing characteristics. The goal was a tree that both encompassed the variety of violent conflicts and discerned between conflicts with relatively subtle distinctions in their traits. Several classification trees were developed. They differed primarily in the order by which particular traits such as the point of contention or the number of major actors were used to distinguish different types of conflict. Two problems emerged. The first was that it quickly became much more difficult to develop a classification system as the

number of characteristics used for the logical division process increased. Even more troubling was that the entire procedure began to acquire a rather arbitrary “feel” to it. There was no good reason to opt for one categorization scheme over another.

This unsatisfactory outcome motivated research into other disciplines that have encountered similar problems. Botanical and zoological taxonomists began to see the limitations of the downward classification approach as long as 300 years ago. In the period between 1763 and 1859 (dates demarcated by the publications of Adanson’s *Familles des plantes* (Adanson, 1966) and Darwin’s *The Origin of Species by Means of Natural Selection*) downward classification was gradually replaced by the technique of ‘upward classification by empirical grouping’ (Mayr, 1982). This is the approach we call taxonomy.

Taxonomies, in contrast to typologies, are *empirically-based categorizations* in which individual examples or cases are placed into groups according to characteristics the examples possess. Grouping is based on data for the characteristics collected from the examples. Those groups possessing examples that have the same value (or very similar values) for most if not all of the characteristics (variables) are most closely related while those groups whose examples share the same value for only a few variables are more distantly related. Individual groups or clusters are called taxa. The categorization is often hierarchical, and, if so, a tree-like diagram is produced to clearly illustrate which taxa are most closely related to each other and at what level of generality they are related (Bailey, 1994).

Undoubtedly, the best known taxonomies are those in biology pertaining to plants, animals, and other life forms such as bacteria (Kingdom, Phylum, Class, Order,...). Taxonomies exist in other disciplines as well, however. An example in the social sciences can be found in linguistics where there is a community of researchers developing a taxonomy of languages in which different languages are grouped into families and phyla at higher levels of generality and comprehensiveness (Ruhlen, 1991; Ruhlen, 1994).

A categorization of violent conflicts that is empirically grounded is very desirable. With a taxonomy we can say with confidence that a conflict of type “A” possesses characteristics “X,Y, and Z.” More importantly, we can consistently identify the set of conflicts of type “A” from a population of conflicts. The ability to make statements of this sort has two related benefits.

First, theoretical and empirical work to find the causes of violent conflict can consciously focus on very particular types of conflict and use very specific examples as the appropriate empirical domain. More importantly for the broader discipline, evaluation of individual research projects with respect to each other will become easier because how they differ from each other in terms of subject matter and empirical grounding will be clearer. Second, when we are trying to find conflict early

warning indicators, we can specify that particular combinations of indicators are precursors to particular combinations of dependent variables (namely, particular types of conflicts). With this step we can reduce the wide variation in conditions that lead to violent conflicts that plagues current attempts to find early warning indicators (Brecke, 1998).

An alternative approach to consider when attempting to create a classification scheme is whether we could take an existing typology and extend it through the techniques of family resemblance categorization or radial categories (Collier and Mahon, 1993). These techniques are not appropriate for the problem faced by this project. We do not seek to “stretch” a conceptual scheme (radial categories) because it is not obvious there is a typology that should or can be stretched. It is not clear that existing categories or types of conflict are the best or even correct starting point. Even if we did consider existing categories the correct ones, it is not appropriate to decide *a priori* that a particular differentiating characteristic operates within or in addition to another characteristic when it is not evident what characteristics best distinguish and relate the diverse set of objects we call violent conflicts. Radial categories thus do not help us for the problem of categorizing violent conflicts. In contrast to using radial categories, finding the best characteristics is one of the central purposes of taxonomic techniques.

Adapting categories (family resemblance categorization) can apply very well to typologies. Its appropriateness to taxonomies is less certain. For example, contrary to the rigidity attributed to classical categorization by Collier and Mahon, clustering techniques used in creating a taxonomic structure encompass the problem that motivates family resemblance categorization, the absence of all cases possessing all of the characteristics that ultimately define the grouping. Taxonomic techniques do not require that all examples or cases possess data for all of the variables (Sneath and Sokal, 1973). In sum, an empirically-based categorization system for violent conflicts is long overdue, and we will have the best chance of creating a comprehensive, consistent categorization by creating a true taxonomy.

COMPONENTS OF A TAXONOMIC APPROACH

To create a taxonomy of violent conflicts, three main tasks must be completed. The first is to define the population of violent conflicts to be categorized and assemble a sample of that population. The second task is to define the set of variables by which the conflicts can be grouped and differentiated and then to determine for each of the conflicts its value with respect to each of those variables. Both of these tasks are data collection intensive, but they are necessary to build the dataset the third task needs. The third task is to apply clustering techniques to the dataset to find groupings and from that types of violent conflicts.

Violent Conflicts

In this project the term 'violent conflict' is used as shorthand for violent political conflict. Cioffi-Revilla's definition of war for his LORANOW project serves as the definition of violent conflict for this project:

A war (a "war event") is an occurrence of purposive and lethal violence among two or more social groups pursuing conflicting political goals that results in fatalities, with at least one belligerent group organized under the command of authoritative leadership. (Cioffi-Revilla, 1996:8)

This definition combines sufficient generality such that it encompasses a wide variety of types of violent conflict yet at the same time distinguishes violent conflict from other forms of lethal violence such as mob lynchings, gang turf battles, and organized crime vendettas. The line between violent conflict and other forms of lethal violence may be fuzzy at times, but in practice they will probably seldom be confused. While using the term 'war' instead of violent conflict has some appeal because while a gang turf battle, for instance, can be considered to be a violent conflict, 'war' for many researchers has come to mean a violent conflict with specific properties such as that there have been more than 1000 battle-related deaths. A satisfactory term is difficult; violent political conflict is too wordy and war has certain connotations for some researchers; despite its faults, violent conflict is used.

Conditions applied to define wars (Singer and Small, 1972) or armed conflicts (Wallensteen and Sollenberg, 1996) such as that at least one group be a government of a state or that all opposing sides be armed or that only battlefield deaths matter for the determination do not apply to the definition of violent conflicts. Consequently, situations such as massacres of unarmed civilians or territorial conflicts between warlords when there is no state involvement qualify as violent conflicts.

Task 1: The Population of Violent Conflicts

For the first task, the potential population of violent conflicts is all violent conflicts at any location in the world since 1400 AD in which 32 or more persons have died because of the conflict within the span of a year. Multi-year conflicts are defined by consecutive years in which that threshold of deaths is surpassed. The 32 person threshold makes the population of conflicts correspond to conflicts of magnitude 1.5 or higher according to the Richardson (1960) scale. The magnitude value is the base ten logarithm of the number of people who died; the base ten logarithm of 31.62 is 1.5.

Obviously, the *sample* of cases for which data can be collected is significantly smaller than the population, particularly for conflicts in which the number of fatalities is towards the lower end of the range, for conflicts further back in time, and for parts of the world where written records are not readily available, especially for earlier times.

Nevertheless, this population has been set as a goal because:

- 1) A surprisingly large amount of data for this population of conflicts already exists, albeit in widely scattered sources with only a modest degree of overlap.
- 2) With the large sample size that can be gathered from this population, we obtain wide variation in the types of conflict and their characteristics while at the same time have the possibility of having a significant number of examples for each type, especially in the more general, higher-level groupings. The greatly expanded number of cases made available for statistical analysis will almost certainly reveal new relationships that can contribute to our understanding of the causes of different types of violent conflict.
- 3) At a more practical level, when extracting conflicts from existing compilations that do not supply fatality figures, it is in many instances difficult to separate those conflicts that have, say, 45 fatalities from those that have 110 fatalities or 350 fatalities until additional sources have been accessed. The marginal additional effort to use the lower threshold is thus minimal, and may even be negative, because the additional sources do not have to be sought in the making of the list of conflicts.

The Conflict Catalog

The Conflict Catalog is a computerized dataset that contains a superset of all extant compilations of violent conflicts that have been identified at this time. Assembly of the Conflict Catalog began approximately two years ago by combining the conflicts from existing computerized war datasets such as *Correlates Of War* (Small and Singer, 1982), *Militarized Interstate Disputes* (Jones, Bremer, and Singer, 1996), *Great Power Wars* (Levy, 1983) and *Major-Minor Power Wars* (Midlarsky, 1988). From there I added additional conflicts from Richardson (1960), Wright (1965), Sorokin (1937), and Luard (1987). Further research has unearthed a large number of other sources containing a plethora of conflicts not listed in those eight sources. In fact, a brief perusal of the additional sources indicates that those eight sources combined contain perhaps one third of the conflicts contained in the entire set of sources that have been identified at this time. (See Appendix B for a listing of conflict compilations that have been identified and in some instances used thus far.)⁴

The sources that have been identified are quite varied in nature. They range from academic research manuscripts to encyclopedias by military historians to historical atlases to historical chronologies. Some focus on the post World War II era (SIPRI, 1969; Bouthoul and Carrere, 1978; Eckhardt and Azar, 1979; Kende, 1979; Goose,

4. One massive compilation among these additional sources never cited is that of Sutton (1972a; 1972b). He attempted to assemble in one place all violent conflicts from 1820 to 1970 in which more than 20 people were killed in order to provide a strong, comprehensive foundation for an empirical analysis of war. Amazingly, he never followed through to get that enormous effort published, and the voluminous manuscripts languish at the Hoover Institution Archives at Stanford.

1987; Wallenstein and Sollenberg, 1996; Holsti, 1996). Others concentrate on the period since the Napoleonic Wars (Richardson, 1960; Small and Singer, 1982), while yet others go back to either the 1700's or 1600's (Bouthoul and Carrere, 1976; Holsti, 1991), 1400's (Wright, 1965; Tilly, 1993; Luard, 1987), or back to antiquity (Sorokin, 1937; Dupoy and Dupoy, 1993; Kohn, 1987). In practical terms, the only conflicts not included from previous compilations (with only a small number of exceptions where it is known that less than 32 people were killed) are those that occurred before 1400 AD.

In the process of assembling the Conflict Catalog to its current state, a Eurocentric bias in the data has become evident. Beginning in the 1800's the bias is much reduced, but for earlier periods it is stark, as will be seen below. To reduce the bias, two additional resources have begun to be accessed (and are listed in Appendix B). The first is historical chronologies and historical atlases for non-European regions. The second is sources produced in other regions of the world. The most important of these are major Chinese, Japanese, and Russian compilations that are essentially equivalent to what has been produced by military historians in the West except that they include many violent conflicts essentially ignored by Europeans and North Americans.

The Conflict Catalog as of this writing contains 2163 violent conflicts. The information about each conflict in the Conflict Catalog at this time is very simple: *Who*, *when*, *where*, and *common name* (if one exists) and variables derived from that information. The derived variables are: The number of major actors in the conflict, the duration of the conflict in years, and the duration of the conflict in months (when that can be calculated). As this project progresses, the violent conflicts found in the additional sources will be added to the Conflict Catalog. If more sources are found, they will be used. Most new sources are likely to *not* be in the English language. The expected number of conflicts in the Conflict Catalog when the additional sources have been tapped is approximately 4000. A worksheet for documenting the contents of the Conflict Catalog has been developed and is being used.

Preliminary Findings from the Conflict Catalog

To illustrate some of what will come out of the Conflict Catalog as this project proceeds, this section presents a few findings that are available now. If the 2163 conflicts currently in the dataset are broken down according to the century in which they began, as is done in Figure 2, one finds a rather interesting pattern. The number of conflicts, after being stable for the 15th and 16th centuries, begins to dip in the 17th century and then drops markedly for the 18th century. The number of conflicts almost triples between the 18th and 19th centuries and continues to rise in the 20th century. Figure 3 presents the same information, only this time by decade rather than century. Of note is that the "worst" decade in terms of new conflicts is the 1960's. It will be interesting to compare this figure to one that presents the number of fatalities by decade, but such a figure is in the future.

If we look at the data in more detail, other patterns emerge. So that we may see the geographic breakdown of conflicts, each conflict has been coded as to where it occurred (or at least primarily occurred) in one of 12 regions. The regions and their approximate extent on a current map are:

1. North America, Central America, and the Caribbean
2. South America
3. Europe west of 15 degrees east longitude plus Sweden and Italy
4. Europe east of 15 degrees east longitude (includes Caucasus region)
5. Middle East (Iran west to Syria and Arabian peninsula)
6. North Africa (Egypt to Morocco and Mauritania east to Sudan)
7. West and Central Africa (Senegal to Congo)
8. East and Southern Africa (Ethiopia to Zambia to Angola and south)
9. Central Asia (Afghanistan, former Soviet republics, and Siberia)
10. South Asia
11. Southeast Asia (Burma to Australia, New Zealand and the Pacific islands)
12. East Asia (China, Korea, Japan)

Other regional breakdowns are, of course, possible. This particular set of regions was selected as a tradeoff between precision in location, concordance with regional studies breakdowns, and comprehensibility in graphics.

FIGURE 2

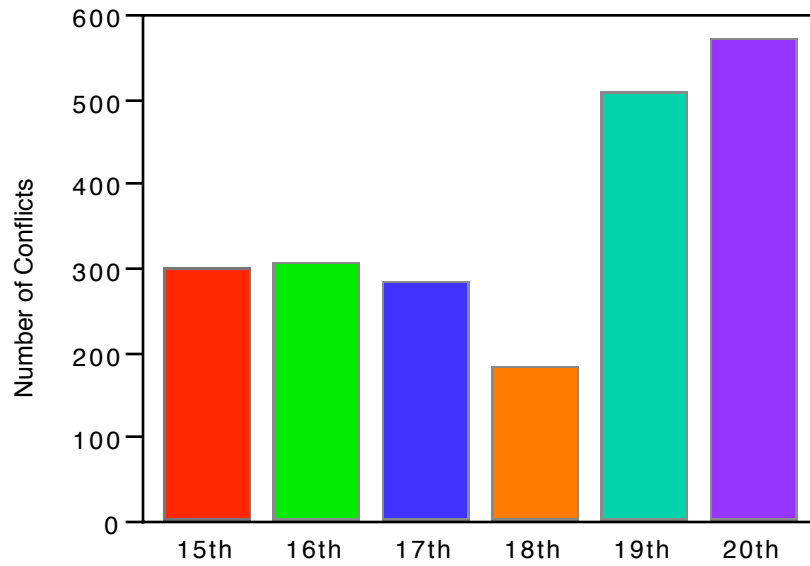
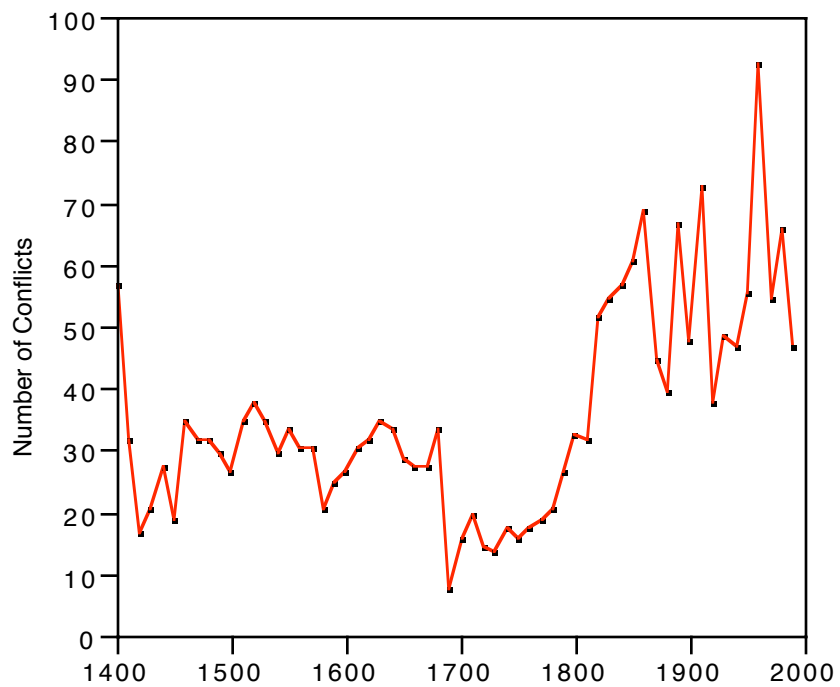
Number of Conflicts by Century

FIGURE 3

Number of Conflicts by Decade

Figures 4-9 present the breakdown of conflicts by region for each of the six centuries covered by the Conflict Catalog. The centuries are presented in “reverse” order to reveal the Eurocentric bias problem mentioned earlier. The skewed nature of the data means that inferences about the nature and causes of conflicts more than 200 years ago may be misleading. At a minimum, scholars should acknowledge the limited applicability of their findings.

FIGURE 4

Number of Conflicts by Region: 20th Century

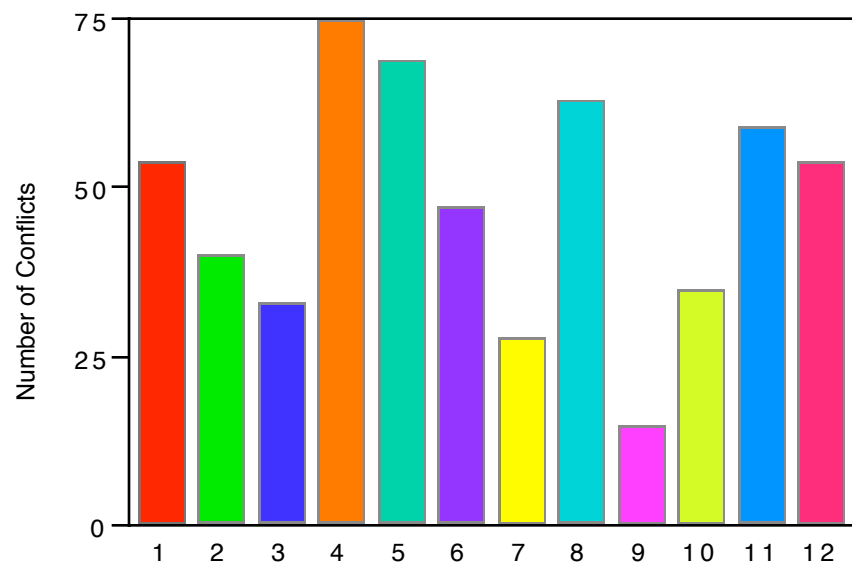


FIGURE 5

Number of Conflicts by Region: 19th Century

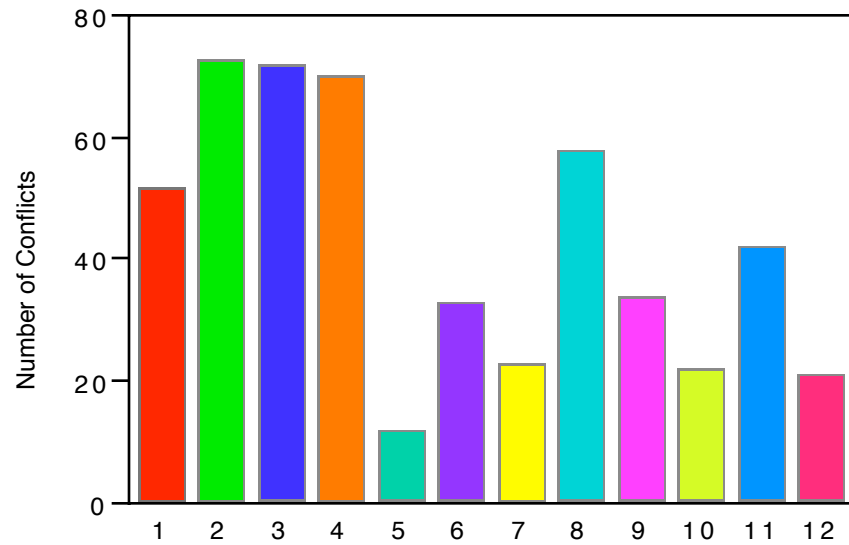


FIGURE 6

Number of Conflicts by Region: 18th Century

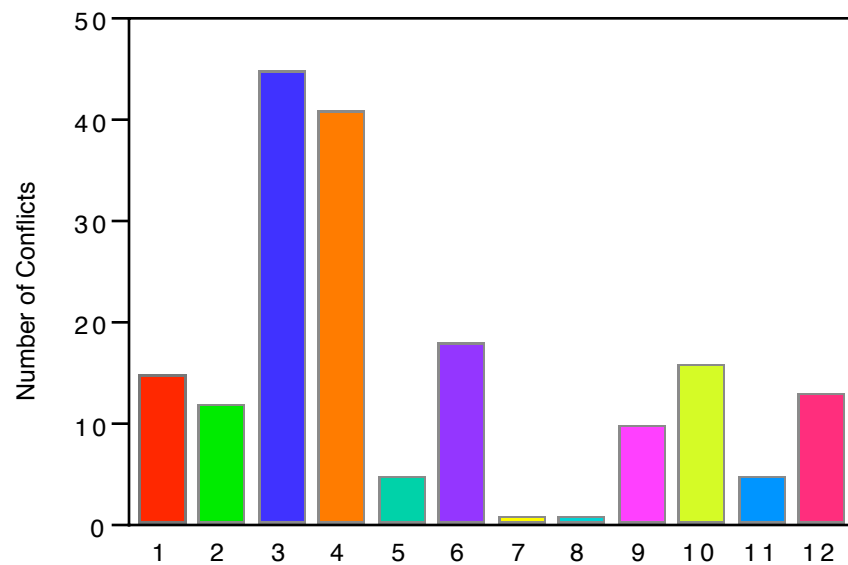


FIGURE 7

Number of Conflicts by Region: 17th Century

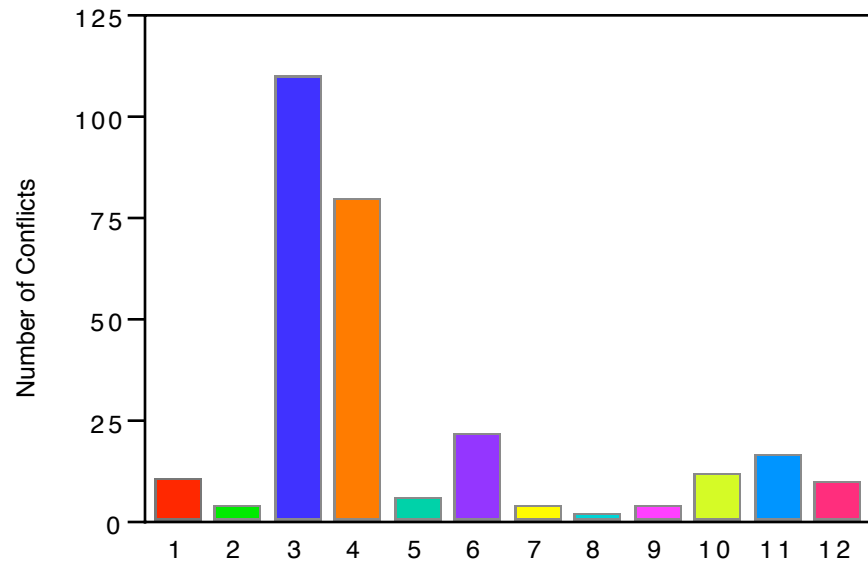


FIGURE 8

Number of Conflicts by Region: 16th Century

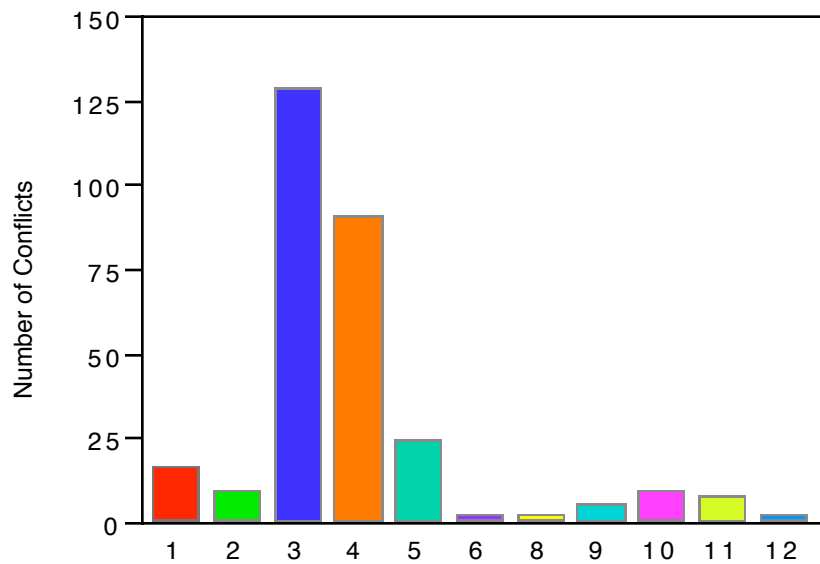


FIGURE 9

Number of Conflicts by Region: 15th Century

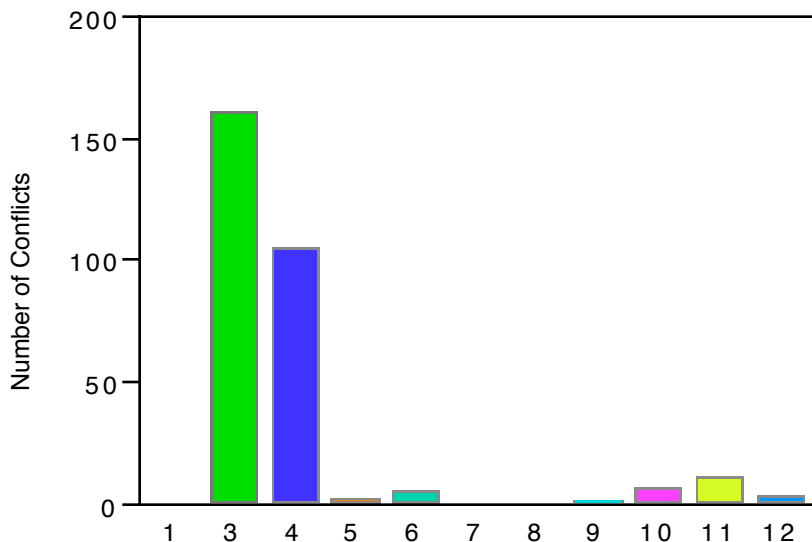
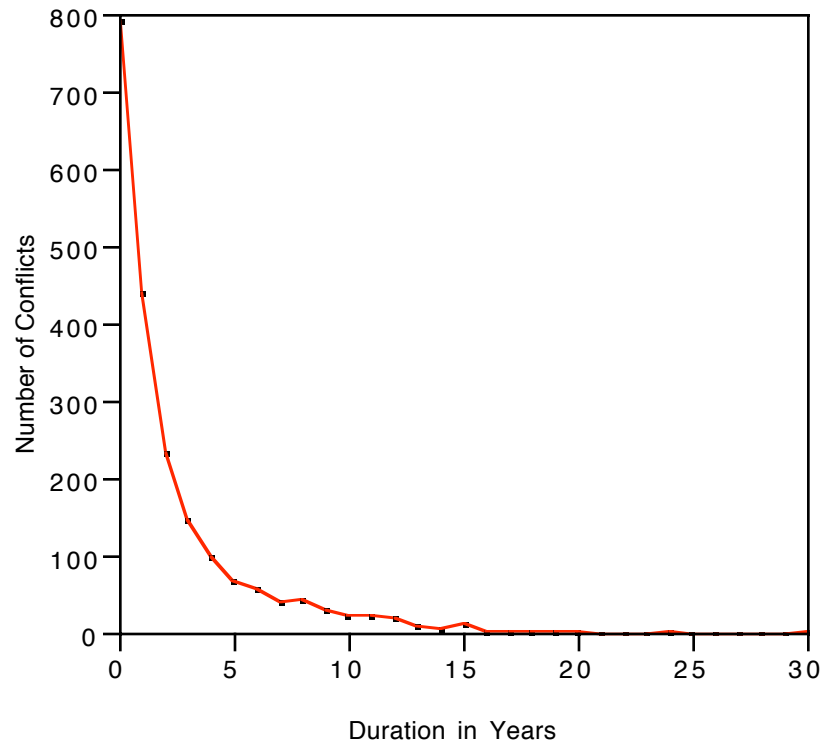


Figure 10 relates the number of conflicts to their duration in years. That is, at the far left is the number of conflicts that were less than one year in duration. Then are the conflicts between one and two years in duration, between two and three years in duration, and so on. Figure 10 is of interest because while we intuitively expect that there are more short conflicts than long ones, especially very long ones, we are not very certain as to the precise relationship. Figure 10 answers that question for it depicts what appears to be an almost perfect declining exponential curve. The fact that it is such a relationship is not really surprising once one sees the figure, but what is of interest is that even in such an early state the Conflict Catalog is able to provide new insights. With additional cases and additional variables, more insights are in store. It is worth noting that an interesting figure that can be generated once a taxonomy of violent conflicts has been developed is one relating number of conflicts by duration for different types of conflict.

FIGURE 10

Number of Conflicts by Duration



Task 2: Selection of Variables Describing Violent Conflicts

While the Conflict Catalog will contain information of interest to many researchers who study different aspects of violent conflicts, its primary purpose is to enable the development of a conflict taxonomy. This section describes the nature of the information that will be in the Conflict Catalog in support of that development task.

When developing a taxonomy, a critical step is determining the criteria, the variables by which the cases are deemed to be similar or dissimilar to each other. For the problem of classifying violent conflicts, the inadequate state of our theory for the causes of violent conflicts supports developing a taxonomy based on *phenotypic* characteristics of conflict as opposed to *genotypic* characteristics (Lenski, 1994). That is, the basis for distinguishing violent conflicts will be their observable characteristics as opposed to their causes. As such, the question then becomes what are the appropriate or best characteristics.

A review of the various literatures pertaining to violent conflicts has found limited guidance. The following list of characteristics summarizes what different researchers

(including the author) deem to be the most relevant to classifying violent conflicts. As can be seen, many of the variables are rather obvious. In the numerical taxonomy literature, this list would be called a taxonomic character list.

1. The political-legal status relationships of the major actors or participants in the conflict (Small and Singer, 1982)
2. The number of major actors (Deutsch, 1964; Vasquez, 1986)
3. The point of contention (Mansbach and Vasquez, 1981; Diehl, 1992)
4. The primary purpose for changing area of territorial control
5. The principal identity-defining difference between the major actors (ethnicity, religion, class, etc.)
6. The nature of external power involvement in intrastate conflicts (Small and Singer, 1982)
7. The nature of government involvement in intrastate conflicts (Small and Singer, 1982)
8. Whether the territorial boundaries between the actors are clearly defined or not
9. The ratio of capabilities between the major actors (Vasquez, 1986)
10. The level of discipline of the armed actors
11. The form of combatant engagement (Small and Singer, 1982)
12. The level of military technology employed in the conflict
13. The nature of the political system within which an intrastate conflict takes place
14. The nature of the different political systems involved in an interstate or state-versus-external-nonstate actor conflict
15. The duration of the conflict
16. The outcome of the conflict (Brinton, 1938)
17. The number of military fatalities (Small and Singer, 1982)
18. The number of civilian fatalities (Sivard, 1993)
19. The nature of the relationship between a particular conflict and a larger conflict of which it is a part
20. The goals of the actors regarding the outcome (Vasquez, 1986)
21. The level of violence (Eckstein, 1964)
22. The stakes to the major actors of the issues involved (Vasquez, 1993)

For the taxonomy project, not all of the criteria listed above will be used because there is overlap and ambiguity in some instances. As a result, the following changes or deletions have been made. In some instances it is important to remember that these criteria apply to the conflict and only incidentally refer to the characteristics of the actors involved in the conflicts.

The variable *the point of contention* will be used rather than *the goals of the actors regarding the outcome* because as Small and Singer (1982) assert, it is often difficult to discern the actors' true goals. The point of contention is less murky to define, and it effectively subsumes the (relevant) goals of each of the actors. It is worth noting that Luard (1987) and Holsti (1991) place considerable emphasis on identifying the issues

that are central to violent conflicts.

The variable *the level of violence* will not be used but its intent will be captured with the two variables *the number of military fatalities* and *the number of civilian fatalities*. The number of military fatalities is relatively easy to find and is quite clearly operationalized. The number of civilian fatalities is more difficult to obtain because it is less often recorded. However, this information is worth collecting because it helps us get a better measure of the apparent phenomenon that civilian populations have been impacted by conflicts differently over time. It may be that the impact on civilian populations is closely related to the type of conflict.

The variable *the stakes to the major actors of the issues involved* will not be used because it pertains to the actors rather than the conflict.

These changes result in a set of 19 criteria or variables for distinguishing different kinds of conflicts.

Variable 19, *the nature of the relationship between a particular conflict and a larger conflict of which it is a part*, requires further explanation. This variable is intended to get at the phenomenon that some conflicts are recognized as separate conflicts while at the same time being part of a larger conflict. The European and Pacific theatres of World War II, the Egyptian Campaign of the Napoleonic Wars, or the conflicts that comprise the War of the Roses serve as examples. This variable enables us to differentiate how conflicts are related hierarchically and as such may be a potentially important characteristic.

With this list of criteria, the next step is to establish the categories or scales for each of them. We need to do this because for the purpose of classifying conflicts, each of these criteria is a variable that takes on a certain value for each conflict, and we need to define what values these variables can take. There is very little guidance in the violent conflict literatures regarding possible or best values. The following values or categories are proposed. The choice of categories is an attempt to balance the sometimes conflicting concerns of comprehensiveness, discreteness (not overlapping) and measurability (or at least identifiability). For variables such as *the ratio of capabilities between the major actors* or *the level of discipline of the armed actors*, the measurement or evaluation should be the value at the beginning of the conflict.

For variable 1, *the political-legal status relationships of the major actors*, the following are allowed values:

- 1 All actors are sovereign states
- 2 None of the actors are sovereign states
- 3 The actors consist of a state and one or more actors within the state
- 4 The actors consist of a state, one or more actors within the state, and one or

- more external sovereign states
- 5 The actors consist of a state, one or more actors within the state, one or more external sovereign states, and one or more external nonstate actors
 - 6 The actors consist of a state, one or more actors within the state, and one or more external nonstate actors
 - 7 The actors consist of a state and one or more external nonstate actors

For variable **2**, *the number of major actors*, the simple number of major actors will be used.

For variable **3**, *the point of contention*, the following are allowed values:

- 1 Status in or control over global state system
- 2 Status in or control over regional (sub)system
- 3 Territory (and accompanying population and resources)
- 4 Control of state and the nature of the political regime
- 5 Control of state from occupying force of another state
- 6 Control of state when state control has ceased to exist
- 7 Participation in the control of a state
- 8 Creation of a new state or polity within an existing state
- 9 Existence of an ethnic or political group within the state
- 10 Territory within a state that the state apparatus does not fully control (organized crime, warlords)
- 11 Policies executed by current government

For variable **4**, *the primary purpose for changing area of territorial control*, the following are allowed values:

- 1 Adjust past boundary change or establishment
- 2 Change status ranking
- 3 Absorb related population
- 4 Spread ideology/religion
- 5 Acquire resources
- 6 Control access to area by others
- 7 Gain defensible position
- 8 Repel occupying force

For variable **5**, *the principal identity-defining difference between the major actors*, the following are allowed values:

- 1 Ideology
- 2 Socio-economic class
- 3 State-based nationalism
- 4 Language
- 5 Religion
- 6 Culture
- 7 Race

8 Ancestral lineage (clans)

For variable **6**, *the nature of external power involvement in intrastate conflicts*, the following are allowed values:

- 1 provide political “protection” for combatants in international forums
- 2 provide staging area for combatant operations
- 3 economic aid to combatants
- 4 embargo on trade with combatants
- 5 shipment of light weapons to combatants
- 6 shipment of heavy weapons to combatants
- 6 supply military advisors
- 7 air force or naval air operations over the territory
- 8 army forces executing operations in the territory

For variable **7**, *the nature of government involvement in intrastate conflicts*, the following are allowed values:

- 1 government is essentially uninvolved in conflict
- 2 government fights non-government actors
- 3 government supports one group of non-government actors against another group

For variable **8**, *whether the territorial boundaries between the actors are clearly defined or not*, the following are allowed values:

- 1 Boundaries are clearly defined
- 2 Boundaries are quite clearly defined, but are convoluted or contain pockets
- 3 There are no clearly defined boundaries; actors are heavily intermingled

For variable **9**, *the ratio of capabilities between the major actors*, the following are allowed values:

- 1 Between 1.5 to 1 and Even
- 2 Between 1.5 to 1 and 3 to 1
- 3 Greater than 3 to 1
- 4 Cannot be determined because it is a multiple actor conflict that cannot be simplified to two blocs

For variable **10**, *the level of discipline of the armed actors*, the following are allowed values:

- 1 Combatants are essentially unorganized
- 2 Combatants are loosely organized and dispersed
- 3 Combatants are moderately organized but not well-disciplined
- 4 Combatants are well organized and disciplined
- 5 At least one combatant is well organized and disciplined and the other combatant or combatants are essentially unorganized
- 6 At least one combatant is well organized and disciplined and the other

- combatant or combatants are loosely organized and dispersed
- 7 At least one combatant is well organized and disciplined and the other combatant or combatants are moderately organized but not well disciplined

For variable **11**, *the form of combatant engagement*, the following are allowed values:

- 1 non-government militia against civilian population
- 2 clash of non-government militias
- 3 quasi-military units against civilians
- 4 clash of quasi-military units against non-government militias
- 5 government armed forces against civilians
- 6 clash of government army units against non-government militias/armies
- 7 clash of government naval and/or air units
- 8 clash of government army units
- 9 clash of all major components of government armed forces

For variable **12**, *the level of military technology employed in the conflict*, the following are allowed values:

- 1 all sides use weapons that are considered primitive or basic at the time
- 2 all sides use weapons and transport mechanisms that are widely available at the time
- 3 at least one side uses standard weaponry while at least one side uses primitive weaponry
- 4 at least one side uses weapons and transport mechanisms that reflect the state of the art in conventional warfare while at least one side uses primitive weapons
- 5 at least one side uses state of the art weaponry while at least one side uses standard weaponry

For variable **13**, *the nature of the political system within which an intrastate conflict takes place*, the following are allowed values:

- 1 democratic
- 2 institutional authoritarian
- 3 personalistic authoritarian

For variable **14**, *the nature of the different political systems involved in an interstate or state-versus-external-nonstate actor conflict*, the following are allowed values:

- 1 all democratic
- 2 mixed democratic and authoritarian
- 3 all authoritarian

For variable **15**, *the duration of the conflict*, the number of years and, if possible, the number of months will be used.

For variable **16**, *the outcome of the conflict*, the following are allowed values:

- 1 yield (or cessation of hostilities) by one or more actors

- 2 stalemate
- 3 merges with another conflict
- 4 an external country bartered an agreement
- 5 a multilateral organization bartered an agreement
- 6 an external country intervened with military force to impose a settlement
- 7 a multilateral organization intervened with military force to impose a settlement
- 8 victory for one or more actors

For variable **17**, *the number of military deaths*, the simple number of military fatalities will be used.

For variable **18**, *the number of civilian deaths*, the simple number of civilian fatalities will be used.

For variable **19**, *The nature of the relationship between a particular conflict and a larger conflict of which it is a part*, the following are allowed values:

- 1 no close relationship
- 2 the conflict is part of an identifiable series of similar conflicts in the same location
- 3 the conflict is part of a broader (geographically) conflict

An effort to collect the values for each of these variables for each of the conflicts in the Conflict Catalog is underway. The current emphasis is to collect information about *the point of contention, the number of military fatalities, and the number of civilian fatalities*. Documentation of this data collection effort is through coding sheets for each conflict.

It is fully understood that we will not be able to ascertain the values of all of the variables for all of the conflicts; we will gather all of the information we can. The reason for such an effort at data collection is that this project needs a sample size large enough such that even categories of conflict that are quite narrowly defined can be determined on the basis of a significant number of examples. It is also fully understood that the data are and will be of uneven quality. The best we can do is find alternative sources when possible, make our best judgments, and document them. Up to this time, the amount of data we have been able to collect is much higher than expected.

Task 3: Finding Clusters or Groups of Violent Conflicts

The data collection effort, although extensive, simply provides the empirical foundation with which to pursue the real goal of this project, the classification of violent conflicts. The question then becomes how to best use the data. Fortunately, this task has been addressed by others for similar problems. A data-based classification scheme grounded on a well developed methodology is possible using the techniques of numerical taxonomy (Sneath and Sokal, 1973). At the core of these techniques lie

various methods of cluster analysis (Everitt, 1993).

In its purest sense, numerical taxonomy is solely an empirical, inductive endeavor. Dunn and Everitt (1982) contend that numerical taxonomy is simply a way to summarize information in an intelligible form and that the value of any given taxonomy can only be judged in terms of its usefulness to scholars. In that spirit, the aim of this study is to open a new, more precise level of discourse about types of conflict while making use of the methods of numerical taxonomy.

Subsequent to but closely linked with the steps described in the previous sections, the next step is to create a dataset in the form of a simple matrix whose rows are the cases or examples, one row for each violent conflict, and whose columns are the criteria or variables. Each cell of this matrix database contain the value for a particular variable with respect to a particular violent conflict. The Conflict Catalog has this form. As the project progresses and the Conflict Catalog is expanded from its current set of variables (columns) to the variables described in the previous section, it will become the dataset used to develop the taxonomy.

To create a taxonomy of violent conflicts from the Conflict Catalog, a small number of additional steps appropriate to cluster analysis must be taken. The first step is to develop a similarity measure and a resulting similarity matrix. A similarity measure is a number that expresses the degree to which two objects, in our case violent conflicts, are similar to each other in terms of a number of (in our case, 19) variables. The measure is calculated using one of a number of possible algorithms or equations that have been developed (Aldenderfer and Blashfield, 1984). Given that most of the variables in the Conflict Catalog are nominal- or ordinal-level variables, with a few being interval-level variables, standard measures used in cluster analysis (and found in most statistical package cluster routines) such as Euclidean distance in the multi-dimensional space defined by the variables or a Pearson correlation coefficient are not appropriate. The Gower coefficient is considered the best similarity measure for this situation (Everitt, 1993). It takes the form:

$$s_{ij} = \frac{\sum_{k=1}^p w_{ijk} s_{ijk}}{\sum_{k=1}^p w_{ijk}}$$

where s_{ij} is the similarity between conflict i and conflict j , s_{ijk} is the similarity of conflicts i and j with respect to the k th variable, p is the number of variables by which to measure the similarity of the conflicts (18 in our case), and w_{ijk} is the “weight” of the k th variable with respect to conflicts i and j . w_{ijk} typically has a value of 1 or 0 depending upon whether a comparison between i and j for the k th variable is considered valid or not. An example of where w_{ijk} would have a value of 0 is when the value of variable k is unknown for one or both conflicts. For nominal or ordinal variables, s_{ijk} takes the value

1 when both conflicts have the same value for variable k , and 0 otherwise. For quantitative variables:

$$s_{ijk} = 1 - |x_{ik} - x_{jk}| / R_k$$

where x_{ik} and x_{jk} are the two conflicts' values for variable k and where R_k is the range of variable k for the set of conflicts to be clustered (Everitt, 1993).⁵

The similarity matrix consists of values of s_{ij} for all pairs of conflicts. To give the reader a feel for the size of this matrix, if the Conflict Catalog ends up containing 4000 violent conflicts, the similarity matrix will contain 8,000,000 cells (.5 * 4000 * 4000).

The second step is to use mathematical clustering algorithms to group the conflicts according to their similarities and differences with respect to the similarity measure. As with the similarity measure, there exist a plethora of alternative methods for creating clusters. Analyses to determine the "best" method find that the results differ from situation to situation and as a result recommend that one employ a number of different clustering methods in order to ensure that the clusters or taxa that emerge are robust and are not simply an artifact of a particular clustering algorithm or the sequence by which cases are evaluated (Mezzich and Solomon, 1980). The end product of this effort is groups or sets of violent conflicts that share a number of characteristics and that are more similar to each other than they are to other groups of conflicts. With these groups and how closely they are related to each other, one can assemble a taxonomy.

CONCLUSION

The Conflict Catalog being developed in this project will greatly expand the set of violent conflicts available for analysis by researchers in the field of international and comparative politics, political sociology, and political geography. In addition to its immediate uses and products, the Conflict Catalog can also serve as the foundation for a subsequent dataset that will enable an empirically-based categorization of violent conflicts. The resulting list of shared characteristics held by different groups of conflicts will enable progress to be made with a larger project to develop a computerized conflict alert system. At another level, the resulting groups of conflicts will help researchers searching for the causes of war by giving them both more precise definitions of the traits of violent conflicts and distinct sets of conflicts on which they can

5. An alternative method for developing the similarity matrix may be to convert each of the nominal-level variables into a set of binary (absent/present) variables (one binary variable for each possible value of a nominal-level variable). This results in a larger number of criteria for determining clusters, which may have the benefit of creating more stable taxa (Sneath and Sokal, 1973). This avenue will be explored if it appears necessary.

concentrate their empirical research. In addition, the data gathered for the Conflict Catalog and the subsequent dataset, while intended primarily for the problem of developing a violent conflict taxonomy, will almost certainly turn out to be useful for examining a large number of other questions about violent conflicts.

One more step in our progression from the conflict compilations begun a century ago, the Conflict Catalog and the taxonomy of violent conflicts that will emerge from it will hopefully be a useful tool for those interested in peace research.

Appendix A

Types of Armed Conflicts

Inter-state conflict

international war

global war
world war
general war
systemic war
major coalition war

major powers war

war of rivalry

- hegemonic war
- power transition war
- status war
- colonial war (between colonial occupiers)

territorial conflict

- border war (between countries)
- border skirmish
- navigation war
- territorial dispute
- frontier conflict

state-sponsored terrorism (in other countries)

subversion

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

Conflict between State and external non-state actor

extra-systemic war

imperial war
colonial war

war of liberation
war of independence
revolutionary war
decolonization conflict
armed rebellion
colonial liberation war

state-building war (expanding into “unoccupied”
territory)
colonial expansion war

war of resistance
war of occupation

drug war

Intra-state conflict

civil war

revolution

- political revolution
- social revolution
- urban revolution
- peasant revolution
- palace revolution
- millenarian revolution
- anarchistic revolution

state-building war
state formation conflict

insurgency

- armed insurgency

rebellion	politicide
- armed rebellion	massacre
revolt	government repression of social groups
- peasant revolt	state terrorism
- armed revolt	government oppression
peasant war	pogrom
peasant rebellion	counter-terrorism campaign
jacquerie	warlord battles for control of collapsed state
coup d'etat/putsch	clan warfare
- palace coup	factional warfare
- reform coup	internecine warfare
- revolutionary coup	
- conspiratorial coup d'etat	
purge	class conflict
pronunciamento	- class warfare
dynastic war	state resistance conflict
war of succession	riot
terrorism	land seizure
- attacks to cripple economy	
- attacks to shake faith in government	
ethnic conflict	<u>Abstract properties</u>
- ethno-political conflict	simple conflict
- race conflict	complex conflict
- race war	recurring conflict
expulsion	low intensity conflict
group identity conflict	guerilla war
war of self-determination	trench warfare
war of secession	weapons of mass destruction war
insurrection	proxy war
- sessionist armed insurrection	local war
- armed insurrection	regional war
- militarized mass insurrection	- regional internal war
uprising	relative deprivation conflict
- armed uprising	cultural conflict
- peasant uprising	distributive dispute
conflict to achieve limited self-rule	ideological conflict
separatism	personnel war
genocide	authority war
	structural war

Either Inter-state or Intra-state

ideological war
political war
post-colonial war

religious conflict
- religious war

environmental conflict
- scarcity conflict
- resource conflict
- pollution/emissions conflict

Borderline Violent Conflict

incident
clash
- armed clash
agitation
unrest
disturbance
disorder
mutiny
piracy

Appendix B

Compilations of Violent Conflicts

Dictionaries or Encyclopedias of Wars and Battles

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