AU/AF FELLOWS/NNN/2004-00

AIR FORCE FELLOWS (SDE)

AIR UNIVERSITY

UNDERSTANDING AND ASSESSING RISK OF INTRASTATE CONFLICT

HUMAN DEVELOPMENT THEORY AND PRACTICE

by

Gary O. Renfrow, Lieutenant Colonel, United States Air Force

A Research Report Submitted to Air Force Fellows, CADRE/AR

In Partial Fulfillment of the Graduation Requirements

Maxwell Air Force Base, Alabama

April 2004

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
APR 2004	**N/A**	**-**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Understanding and Assessing Risk of Intrastate Conflict Human Development Theory and Practice	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Air University Maxwell AFB, AL**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release, distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**UU**	**77**	

Disclaimer

The views expressed in this academic research paper are those of the author(s) and do not reflect the official policy or position of the US government or the Department of Defense. In accordance with Air Force Instruction 51-303, it is not copyrighted, but is the property of the United States government.

Contents

Page

Illustrations

Page

Tables

Page

Preface

This research project is about theory and practice and is the result of personal interest in our ability to predict and prevent conflict, but more specifically how we can make sense of where to invest this nations time and effort to best do that. My interest in this project stems from excellent educational experiences I have had over the last five years. First, I began to give real thought to this project while attending Air Command and Staff College and studying international relations. Next, I spent an immense amount of time studying military theory as a student of the School of Advanced Airpower Studies. Finally, my interest in human development as a key to effective prevention of conflict was the result of my time at University of Miami as a student and US Air Force Fellow. All of my higher educational experiences have been funded and promoted by the US Air Force—thank you.

A debt of gratitude is due the many talented professors of University of Miami that made this research enlightening and enjoyable. A special thanks to Professors Sherri Porcelain, Dr. Eugene Rothman, Dr. Bruce Bagley, Dr. Ambler Moss and Dr. Vendulka Kubálková for their discussion and editorial assistance. Also, thanks for the patience of the Interim Chair of the International Studies department, Dr. Richard Williamson—his patience with this ever-evolving project was critical and is appreciated.

The staff of the Air Force Fellows Program at Air University, Maxwell Air Force Base, Alabama deserve a great deal of thanks and credit for the management of this

valuable program. The support was outstanding and permitted me to concentrate on academics at all times—thank you.

US Southern Command supported this research in hopes of discovering new ways to gain strategic warning of conflict and ways to evaluate nation-building efforts in Latin America. Lieutenant Colonel Alex Crowther was particularly helpful as a strategic planner on the staff there, but also a keen student of international development. Thank you.

Finally, I thank the members of my family who have tolerated this short assignment and struggled through the year without me. I pass my love to my children who were patient through the process. Special thanks go to my wife, an Army National Guardsman currently deployed to Iraq in support of Operation Iraqi Freedom. I applaud your dedication, patriotism, courage—and the job you did every time I went to war while you stayed behind! Thank you.

AU/SCHOOL/NNN/2004-04

Abstract

Understanding human development is perhaps more relevant today than any other moment in history. Although the United States is very good at using destructive power against our adversaries, preventing conflict and reaching a desirable endstate often eludes us. A better understanding of human behavior in general and human development specifically may help us do both. If capability and will together are given as the ultimate necessary and sufficient cause of violent conflict, then understanding human motivation and behavior is essential. Human behavior is the outcome of individual motivation and interaction with other people, institutions and the environment. The conditions that these elements constitute significantly affect the ability of individuals to live, grow, develop and live the life that the individual values. Human development is a sustainable increase in individual capability to meet ones needs—where conditions do not permit this; individual frustration may lead to violent behavior. This paper explores the lack of human development as the cause of intrastate conflict. The research includes analysis of human needs and the means to satisfy them at the individual and national levels of analysis. Risk assessment models for case studies in Latin America provide for richer understanding of human development and its link to violent conflict. Furthermore, the risk assessments depict trends in human development and risks of intrastate conflict. Ultimately, the model is both a framework for investigation as well as a practical tool for strategic warning and nation building.

Chapter 1

Introduction

> *Finally, the United States will use this moment of opportunity to extend the benefits of freedom across the globe. We will actively work to bring the hope of democracy, development, free markets, and free trade to every corner of the world. The events of September 11, 2001 taught us that weak states, like Afghanistan, can pose as great a danger to our national interests as strong states. Poverty does not make poor people into terrorists and murderers. Yet poverty, weak institutions, and corruption can make weak states vulnerable to terrorist networks and drug cartels within their borders.*
>
> —President George W. Bush, *US National Security Strategy*, 2002

Researchers, authors, journalists, and other students of the world characterize the new millennium in many ways, but one theme appears prevalent in most literature—this is an age of uncertainty. The world's understanding of politics, society, culture, economy, environment, security, and other contextual elements seems less clear today than two decades ago. Interstate conflict is decreasing, while intrastate conflict has increased significantly.[1] Additionally, one of the negative consequences of globalization is that conflict on the other side of the globe has tangible effects everywhere—including the United States.

The United States is second to none in major combat. Yet, reaching a better state of peace after the destruction ends often eludes the nation. Installing adequate governance,

[1] Peter Wallensteen and Margareta Sollenberg. "After the Cold War: Emerging Patterns of Armed Conflict, 1989-1994," *Journal of Peace Research* 32: 345-360.

a sustainable economy, a secure social environment, and other elements that permit members of society reasonable opportunity to a life they value is a daunting vision at best. Searching for theory and doctrine to do this most effectively, however, is the only responsible choice given our involvement in the world. Recent conflicts in Afghanistan and Iraq and the follow-on efforts to rebuild highlight the importance of better understanding and doctrine. Understanding human motivation and behavior first is fundamental to learning to do all of this.

Background

Theories that seek to explain intrastate conflict are numerous. These competing theories range from realism to constructivism, and argue that the cause of conflict lies in everything from individual biological and psychological factors, to complex group and structural dynamics. Although most of these theories help us to better understand violent conflict, a necessary *and* sufficient cause of violent conflict seems to elude researchers. The United Nations Development Programme (UNDP) conducted an extensive literature review and discovered:

> …four broad gaps in literature. There are few if any works that really bring together governance and conflict-related issues with issues of development. Secondly, while there is a growing literature on governance systems and ways to address conflict, there is a very real need for a major text that synthesizes the disparate lessons of individual cases into some broad sets of conclusions. Thirdly, and related to the first two gaps, there is a dearth of works that go deeply beyond the rhetorical and give practical guidance on ways that governance systems and structures can address power inequality, or asymmetries.
>
> Finally, few if any works have attempted to bring the major transitions so rapidly transforming the global community into the context of future governance. Nor for that matter, do those few works that give some sense of what the future might hold give any idea of how future governance

> might relate to future sources of conflict. And, there seems no effort to see what sorts of development—as an aspect of governance and perhaps as a means to mitigate conflict—might be required amidst the turbulence of change.[2]

Research confirmed these remarks. It is not surprising to learn that this subject is not further developed since so many independent and intervening variables potentially exist that make it difficult to piece together one truly necessary and sufficient cause of conflict. However, with this challenge in mind the intent is to reduce the gaps in understanding by exploring governance as one of three essential means to human development, making practical use of theory, investigating indications of where future governmental efforts should focus, and more.

Purpose

The purpose of this paper is to contribute to the existing body of literature with a human development theory that explains why violent intrastate conflict occurs. The paper describes the human development process step-by-step, from motivation to behavior. Additionally, this paper bridges the nexus between theory and practice by constructing a risk assessment model. The model serves as a framework to analyze conditions of human development at the national level. Additionally, the model is predictive and may be used for strategic warning of deteriorating conditions that lead to violent conflict. Finally, the risk assessment model highlights specific areas to focus improvement efforts most likely to have greatest impact on reducing violent conflict. The power in understanding the fundamental means, ways and ends of human

[2] United Nations Development Programme (UNDP). *Promoting Conflict Prevention and Conflict Resolution Through Effective Governance: A Conceptual Survey and Literature Review*, no date, n.p.; online, Internet, 18 January 2004, available from http://magnet.undp.org/Docs/crisis/mapexercise.htm

development is 1) more accurate assessment of the risk of violent conflict and 2) more effective use of time, money and effort spent to prevent or respond to violent conflict.

Thesis

Violent conflict is the result of conditions that deny human development to individuals. Taken separately, the factors that constitute the conditions are rarely necessary or sufficient. However, when viewed holistically it becomes clear that a situation that denies human development is directly correlated to violent conflict. More precisely, the *will* to commit violent conflict is the result of individual frustration in the human development process. This argument is not entirely new. However, the past research to support this thesis used the Human Development Indicator (HDI) developed and published by the United Nations Development Programme (UNDP) as a proxy for human development—it falls short of representing human development accurately. The means to human development go well beyond resources alone—it also requires opportunity and security. After coming to this conclusion deductively, research uncovered an emerging body of literature that supports this notion emphatically. Additionally, the method of analysis used here indicates where deficiencies lie in human development for any given place and time more accurately than any method found in this research. This not only increases our understanding of the situation, but also allows us to apply the new understanding for strategic warning and nation building efforts. Because human development and conflict are both very broad subjects to study, narrowing the scope of research was necessary.

Scope

Studies of violent conflict primarily discuss the subject in terms of being either interpersonal or collective.[3] This research focuses on interpersonal conflict resulting from a lack in human development. There are several good reasons for limiting the research in this manner. First, the data used to draw a correlation between human development and interpersonal violent conflict is more readily accessible by the public. This makes the enquiry easier and the method of analysis used here more readily practical. Additionally, the majority of the risk factors identified for interpersonal and collective violent conflict are the same.[4] Many would argue that collective violence may occur in a society where human development is not deficient, and this may be correct when narrowly defining deficiency as a lack of resources. However, posited here is a broader picture of human development that includes opportunity and security as additional and essential means. This expansion allows a reasonable argument that deficiencies in human development underpin all violent conflict. Even where group dynamics appear to take over, groups exist principally as a means to fill the needs of its membership. This is not to discount the importance of studying and understanding the differences between interpersonal and collective violence, only to point out that understanding the interpersonal variety first is instructive and fundamental to understanding collective violent conflict. Finally, it is reasonable to expect interpersonal violent conflict to increase as a precursor to the onset of collective violent conflict, although this is beyond the scope of research here. Membership in collectives may be an

[3] Etienne Krug et al, *World Report on Violence and Health* (Geneva: World Health Organization, 2002).
[4] Ibid, 220.

attempt by individuals to increase personal capability to meet needs that they could not satisfy individually.

Capability and will are two fundamental elements commonly evaluated when studying conflict in general. This research focuses principally on the will of individuals to commit violent conflict although capability is important to understand as well. Studies have shown, for instance, significant positive correlation between the availability of firearms and violent conflict. However, the saying, "where there is a will, there is a way," seems especially appropriate when considering intrastate violent conflict.[5] Capability and will are difficult to completely disaggregate since one affects the other. This research uses the sum of homicide, intentional interpersonal injury, and death by other violent acts as a proxy for violent conflict. Obviously, this data ultimately represents both capability and will.

A limitation of this research is availability of data. Direct measurement of each risk factor is not always available and the research relies on the selection of appropriate proxies that appear representative and are available over a long enough period to assess. Additionally, individual data is only available as a per capita derivative of nationally reported data. Finally, this research uses objective data. A more complete picture would include the perception of individuals (subjective data). Subjective data is not available in sufficient quantity over a long enough period to be used. This is simply the best that can be done with current information and is adequate to support this thesis and for practical use.

Finally, this research includes only intrastate conflict. Narrowing the investigation to intrastate conflict is not only convenient for the sake of brevity; it is also most relevant in

the post-Cold War environment already described. Numerous theories exist that attempt to explain the cause of intrastate violent conflict.

Existing Theory

Competing theories of intrastate violent conflict include realism, power inequality, ethnicity, interpersonal, structural, or human need dimensions. Each of these general theories borrows from the others and differs in focus of social analysis mostly—with the exception of realism. Traditional realism is widely accepted for its strength in explaining the cause of conflict between states in the international system. Unfortunately for this study, its focus remains largely on interstate conflict. However, it is worthy of mention because more contemporary socially based theories relate to general principles of realism (power inequality as a product of realism's balance of power theories, and structuralism as a product of structural realism). This research acknowledges the efficacy and contribution of all of these theories. However, arguably only the human needs theories attempt to analyze the ultimate cause of violent intrastate conflict in detail—the willingness of individual human beings to engage in the phenomena.

Human Needs Theory

Human Needs Theory, as it relates to conflict, posits that deficiencies of human need satisfaction cause conflict. Human Needs theories are largely in debt to the work of Abraham Maslow. Maslow posited that the source of human motivation is a hierarchy of needs ranging from physiological to psychological whereby the motivation to fill physiologic needs dominates those of the psychological.[6] After over four decades since

[5] The use of machetes in the 1994 Rwandan conflict is a vivid example.
[6] Abraham Maslow, *Motivation and Personality* (New York: Harper & Row Publishers, 1970).

Maslow published his original work, his general theory resonates strongly throughout research to this day—but it is not without criticism.

The major criticisms of Maslow's theory are that it lacks sufficient empirical evidence, that it is not universally correct, and that his classifications are too narrow. Alderfer attempts to reckon with these criticisms by reducing Maslow's stratification into three categories: existence, relatedness, and growth (ERG Model) vice Maslow's original five. Additionally, Alderfer supports his theory with more scientific rigor than Maslow did in his work.[7] Numerous other researchers put Maslow's hierarchy to test with varying degrees of success.

James Davies applies it effectively in *Human Nature in Politics*, showing that individual human needs affect political behavior in a reasonably predictable manner.[8] More recently, human needs theorists have focused specifically on conflict prevention and resolution. John Burton, and many others, expanded the early theories of basic human needs more comprehensively to include group and structural dynamics involved in the process.[9] These studies relate more closely with this research. Still, critics have several arguments against the human need approach. J. Lewis Rasmussen sums up most of its shortfalls nicely:

> Many, if not most, current conflicts stem from the failure of political, economic, and social institutions to pay sufficient attention to the grievances and perceived needs of significant groups in the population. Yet there is no agreement over what specific needs are relevant, whether

[7] Clayton Alderfer, *Existence, Relatedness, and Growth: Human Needs in Organizational Settings* (New York: The Free Press, 1972).
[8] James C. Davies, *Human Nature in Politics: The Dynamics of Political Behavior* (New York: John Wiley & Sons, Inc., 1963).
[9] John Burton spearheaded the writing of *The Conflict Series* while a Distinguished Fellow of the US Institute of Peace and Distinguished Visiting Professor at the Center for Conflict Resolution at George Mason University. Two of the four books are cited in this paper.

> they are different from simple wants or demands, whether they are absolute or negotiable.[10]

However, others claim that needs theory may "serve as a checklist, and a warning of possible basic problems that may ensue if priorities are organized in such a way that important classes of basic needs are pushed into the background for large sections of the society and for considerable periods of time."[11] Human development theory relies heavily on human needs theory and attempts to mitigate its seemingly inherent weaknesses. The most convincing work in human development is Amartya Sen's.

Amartya Sen is a Nobel Laureate economist who popularized human development study with his book, *Development as Freedom*. Sen makes a convincing case that human development hinges on constitutive and instrumental freedoms. Exposing that famine has never occurred under democratic governance—and many other instances of freedom strongly support his central thesis. Sen's influence is obvious throughout this research. His extraordinary work defines terms in a fresh, rich and uniquely human fashion.

Defining Terms

This paper posits that conditions that deny human development cause violent intrastate conflict. *Human development is* a *sustainable increase in the capability to meet one's needs*.[12] Development literature contains many variants of this definition, and the definition has evolved in the last two decades, but the one used here contains the central

[10] J. Lewis Rasmussen, "Peacemaking in the Twenty-First Century: New Rules, New Roles, New Actors," *Peacemaking in International Conflict: Methods & Techniques* (ed. I William Zartman and J. Lewis Rasmussen, Washinton D.C: United States Institute of Peace Press, 1997), 33.
[11] Johan Galtung, "International Development in Human Perspective," *Conflict: Human Needs Theory* (ed. John Burton, New York: St. Martin's Press, 1995), 311-312.
[12] Ibid., 302. Galtung viewed development as, "a process progressively satisfying basic human needs, where the word 'progressively' would stand for both 'more and more need dimensions' and 'at higher and higher levels….'" He clearly equates Maslow's Hierarchy of Needs with human development, but is critical of the hierarchy as Maslow describes it.

elements of all of them.[13] Mistakenly, many use the term g*rowth* and *development* interchangeably. However, g*rowth is an increase in capability* but is not necessarily sustainable. *Capability* refers to *a state of ability to accomplish objectives*—in this case, meeting needs.[14] *Needs are requirements that when left unsatisfied have a negative consequence on health*.[15] *Health is a condition of physical, emotional and/or mental well-being*.[16]

James Laue defined conflict as, "natural competition of two or more parties who believe they have incompatible goals." Laue also emphasized that there are often positive outcomes of this inevitable process.[17] *Violent conflict* is treated here as *competition between humans that includes the intentional use of physical force or intent*

---

[13] UNDP, *Human Development Report 1990* (New York, NY: Oxford University Press, 1990), 10. Emphasis has shifted in the human development community from viewing human development as strictly an issue of economics, to one of "enlarging people's choices." Human capability is central to the UNDP's definition. Amartya Sen adeptly connects these concepts with economic reality, discussing five types of freedoms: "(1) *political freedoms*, (2) *economic facilities*, (3) *social opportunities*, (4) *transparency guarantees* and (5) *protective security*." These are very much in agreement with a framework used here—resources, opportunity and security. See Amartya Sen, *Development As Freedom* (New York: Random House, 1995) 10.

[14] UNDP, *Capacity Development and UNDP: Supporting Sustainable Human Development,* 1997, n.p.: on-line, Internet, 18 December 2003, available from http://magnet.undp.org/Docs/cap/BKMORG~1.htm.

[15] Frederick Samuels, Human Needs and Behavior (Cambridge, MA: Schenkman Publishing Company, Inc., 1984), 17. Samuels defines, "a need of an individual is something which is essential to his or her well-being; it may or may not be so perceived." Also, see Abraham Maslow, *Motivation and Personality* (New York: Harper & Row Publishers, 1970) 67. Few can argue the strength of this argument with respect to physical health. Maslow argued additionally, that the same is true with psychological health. Finally, see Johan Galtung, "International Development in Human Perspective," *Conflict: Human Needs Theory,* John Burton, Ed. (London, UK: The MacMillan Press Ltd, 1990) 132. Galtung describes the ill physical and mental effects of deficient need satisfaction (his term "disintegration" is based on empirical research.)

[16] World Health Organization (WHO), *Preamble to the Constitution of the World Health Organization* (as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States [Official Records of the World Health Organization, no. 2, p. 100] and entered into force on 7 April 1948). The Preamble defined health as, "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." The definition has not changed since 1948.

[17] James Laue, "Contributions of the Emerging Field of Conflict Resolution," in *Approaches to Peace: An Intellectual Map* (ed. W. Scott Thompson and Kenneth M. Jensen, Washington D.C.: United States Institute of Peace Press, 1991), 301-302.

to harm.[18] Where conflict may be inevitable and even beneficial, it is the position of this paper that *violent conflict* is not. The use of *intrastate* reduces the scope of this paper to consider the phenomena within nations, and not between. Finally, this theory uses a constructivist approach requiring some discussion.

Agents are active participants in any process, whereas *agency* is the condition of being a participant. *Agents* influence and are influenced by other *agents* and the environment. *Rules* tell people what they can or should do—they even determine who the *agents* are. Constuctivists define rules very broadly as social norms, morals, values, laws, regulations, policy, and more—anything that serves as guidance in individual and institutional behavior. Finally, *institutions* are patterns of *rules* that create groups of *agents*.[19] These definitions do not intend to replace an entire literature that exists to describe the constructivist theory, but are sufficient for the approach taken here.

Organization of Paper and the Approach

This paper presents a new theory of human development and intrastate conflict, discusses and presents a risk assessment model, conducts case studies to support the theory and practice, discusses practical uses of the theory and method, and finally reports the findings of the research. The approach taken here capitalizes on personal understanding of conflict, worldview perspectives, human nature, and practice. This paper presents a theory constructed quite deductively. Hedley Bull is credited for claiming that the best research is conducted from an armchair—there is great value in

[18] Etienne Krug et al, *World Report on Violence and Health* (Geneva: World Health Organization, 2002), 5. This definition incorporates the fundamental elements included in the WHO's definition for violence combined with the definition for conflict.

merely attempting to get to the roots of a phenomenon by simply modeling the process.[20] Deductive reasoning led the research to the individual human level of analysis—psychologically, biologically and socially. The constructivist terms and approach are particularly well suited for this type of analysis. Chapter 2 describes a theory of human development using this approach. The micro-view enriches understanding but on some level is difficult to put into practice.

Chapter 3 discusses risk assessment. Before developing a specific risk assessment model, this chapter describes the advent of risk management, the risk management and risk assessment processes and defines terms. Next, a risk assessment model is discussed by identifying risk factors, analyzing their theoretic correlation to intrastate conflict, and finally discussing adequate indicators that will serve as proxies for each risk factor. The level of analysis and approach shifts from individual to make general estimates of a nation's ability to satisfy the individual needs for human development. Although there are possible inaccuracies associated with generalizing individual behavior by using national statistics, the following chapter demonstrates the strength of using this data.

Chapter 4 presents four case studies. First, this chapter uses statistical data for Venezuela to develop a risk assessment model based on the theory in Chapter 2 and the method developed in Chapter 3. Then time series analysis demonstrates the correlation between deficiencies in human development and intrastate violent conflict. This chapter uses the same methodology to assess Nicaragua, Ecuador and Costa Rica.

---

[19] Vendulka Kubálková, Nicholas Onuff and Paul Kowert, Eds., *International Relations in a Constructed World* (Armonk, New York: M.E. Sharpe, Inc., 1998), 58-78. Chapter 3 of this book is a "User's Guide" to constructivism and is a good primer for anyone interested in applying the constructivist concepts.

[20] Hedley Bull, The Anarchical Society: A Study of Order in World Politics (New York:Colombia University Press, Inc., 1977), xiii. Vendulka Kubálková was a student of Hedley Bull and related this story in class, but the sentiment is also published in the preface of his book where he claims, "thinking is also research."

Chapter 5 discusses practical uses of the theory and methodology. First, this chapter discusses the risk assessment model as a useful way to provide strategic warning as well as a method to focus efforts in nation building. Additionally, Chapter 5 describes other practical uses of the theory and methodology. In essence, the theory and methodology have use in pre-conflict, conflict, and post-conflict phases.

The final chapter of this paper offers fundamental findings and recommendations. This chapter begins with a brief review of the paper's salient points and concludes with recommendations for further research, use of the theory and methodology.

Chapter 2

Human Development Theory

> *The more developed a nation is, the more complete is the independence of the individual, and the safer the individual from encroachments by another.*
>
> — Dmitry Pisarev

Many would argue that a personal theory exists in everyone's mind regardless of any deliberate attempt to better understand phenomena. Although this may be true, theory in the scientific sense represents the most critical analysis with the objective to understand the causal relationships between all elements involved. The strength of a theory increases with its power to explain these relationships, and ultimately predict the behavior of each element.

To facilitate the unfolding of this theory of human development this chapter discusses "ends," "ways," and "means" separately, building on each along the way. Many consider human development as both an ends and a means. It is true that with any sustainable increase in capability comes prospect for further development.[21] However, it is useful to look at human development as a process with a beginning and an end to uncover elements along the way. First, it is helpful to begin with an overview of the theory before discussing it in sequential detail.

[21] Amartya Sen, *Development As Freedom* (New York: Random House, 1995) 35-53.

Overview

This theory proposes that the conditions that deny human development are a source of frustration that affects the will of individuals to commit violent conflict—in other words, the motivation to commit violent conflict. The actual behavior of individuals relies not only on motivation, however, but is the result of the motivation and interaction with other individuals, institutions, and the environment. The complex interaction is clearest when viewed as the result of each agent's motivation and the rules that ultimately guide each agent's behavior.

That frustration may lead to aggressive, even violent behavior is well-documented in clinical studies.[22] Frustration is the result of the denial of human development—but specifically the denial of the means to satisfy human needs that enable individuals to develop. The means to need satisfaction necessary for human development consist of resources, opportunity and security. The addition of opportunity and security as means to development expands understanding of human development that until the last two decades focused mostly on resources. Human needs may be classified as being physical, emotional or mental. Furthermore, there appears to be sufficient support for the notion that needs are hierarchical—however minor. Anyone who disagrees with this proposition for whatever reason, however, is encouraged to continue. The theory and methodology are of considerable value even if one disregards the hierarchy of needs entirely.

The Ends of Human Development

The ends, or the objective, of the human development process is human development itself. This end is important since it is part of the thesis of this research that the lack of conditions that

[22] Frederick Samuels, *Human Needs and Behavior* (Cambridge, MA: Schenkman Publishing Company, Inc., 1984), 44-47.

lead to human development lead to violent intrastate conflict. If this is true, then maximizing human development consequently reduces the risk of conflict. This is the inspiration and raises the first proposition to support:

Proposition 1: Human development negatively correlates to violent intrastate conflict.

Boutros Boutros-Ghali described a highly negative correlation between human development and armed conflict in *An Agenda for Development* in 1995.[23] That same year, Project Ploughshares reported that nearly half of the nations ranked in the bottom 50-percentile for human development were at armed conflict. This compared to the top 50-percentile of which 13-percent were involved in armed conflict.[24] Beyond the evidence listed above, this proposition will gain support from the results of testing in Chapter 4 of this paper. If we accept for the moment that the lack of human development leads to an increased risk of violent conflict theoretically, we are left to deduce then what exactly leads to human development.

Proposition 2: Individual human development is the outcome of satisfying individual needs sufficiently.

Although Abraham Maslow does not use the term *human development* in his writings, he posits a "healthy model." This was revolutionary in his day when most theories in psychology centered on the research of the unhealthy. He constructed his model after analysis of extraordinary men (for which he is often criticized) and claims that health increases in degrees as needs are satisfied.[25] He is not the only theorist that believes this way. One of Maslow's greatest critics otherwise, defines human development as, "a process progressively satisfying basic human needs, where the word 'progressively' would stand for both 'more and more need

[23] Boutros Boutros-Ghali, *An Agenda for Development* (New York: United Nations, 1995).
[24] Project Ploughshares, *Armed Conflicts Report 1995* (Waterloo Ontario: Institute of Peace and Conflict Studies, 1995).
[25] Abraham Maslow, *Motivation and Personality* (New York: Harper & Row Publishers, 1970) 67.

dimensions' and 'at higher and higher levels.'"[26] This sounds like Maslow's description of needs and self-actualization (which is practically synonymous with the term human development used here). Finally, Amartya Sen proposes that human development is about the freedom to satisfy needs (but in much broader and richer terms).[27]

Many evaluate human health in terms of physical, emotional and mental dimensions.[28] It follows then that humans have physical, emotional, and mental needs that when satisfied lead to health. Whether needs are satisfied sufficiently is a matter of degree. For instance, one may *exist*—that is continue to live, but not grow—if just enough nutrients were consumed and metabolized to sustain the human body. However, it takes an excess of this amount for the body to *grow*, and a sufficient amount over an extended period for growth to be sustained—to *develop*. Emotional and mental dimensions behave similarly, although they are more difficult to view directly.

Proposition 3: There is a hierarchy of needs.

There are many critiques of Maslow's Hierarchy of Needs—some valid while others appear made without a careful reading of his work. One argument is that people have given their lives—disregarding their physical needs entirely—in the name of their country, so how can Maslow be correct? This critique, and there are many similar, disregard that Maslow expressly discusses the hierarchy as a theory of motivation—not behavior. He states: "To avoid argument, let me stress that we are now concerned, not with behavior theory, but with motivation theory.

---

[26] Johan Galtung, "International Development in Human Perspective," *Conflict: Human Needs Theory,* John Burton, Ed. (London, UK: The MacMillan Press Ltd, 1990) 302.
[27] Amartya Sen, *Development As Freedom* (New York: Random House, 1995).
[28] World Health Organization (WHO), *Preamble to the Constitution of the World Health Organization* (as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States [Official Records of the World Health Organization, no. 2, p. 100] and entered into force on 7 April 1948). It is interesting that this research replaces Alderfer's "relatedness" category of needs with "emotional" and that WHO replaces "emotional" with "social." Emotion is still an elusive dimension of need, but seems to largely rely on social interaction for satisfaction.

Behavior is determined by several classes of determinants, of which motivation is one and environmental forces is another."[29] He goes on later to discuss "multimotivated" behavior as more typical, where several needs are satisfied by one behavior simultaneously.[30] Another common critique of Maslow is that his hierarchy is too rigid and there are likely differences between individuals for any number of reasons. This critique is also unfounded and based on a seemingly shallow reading of Maslow or total disregard for major concessions Maslow makes for differences in his theory. First, he states, "In actual fact, most members of our society who are normal are partially satisfied in all their basic needs and partially unsatisfied in all their basic needs at the same time."[31] In addressing differences between cultures, Maslow clearly recognizes the likelihood when he states: "No claim is made yet that it [the Hierarchy of Needs] is ultimate or universal for all cultures. The claim is made only that it is relatively *more* ultimate, *more* universal, *more* basic than the superficial conscious desires, and makes a closer approach to common human characteristics. Basic needs are more common human than are superficial desires or behaviors [emphasis in original]."[32] Maslow acknowledges that this priority of needs can be different between individuals and even change where long term sufficiency or deficiency alters what he generally considers a "normal" hierarchy.[33] In sum, most criticism of Maslow is unfounded.[34] However, two weaknesses of his approach seem valid and worth discussing further: the narrowness of his classifications of need, and the lack of empirical support.

---

[29] Abraham Maslow, *Motivation and Personality* (New York: Harper & Row Publishers, 1970) 29.
[30] Ibid., 55.
[31] Ibid., 53-54.
[32] Ibid., 54-55.
[33] Ibid., 51-52. Maslow spends an entire section of his book discussing the, "The Degree of Fixity of the Hierarchy of Basic Needs."
[34] This paper goes to great lengths to credit Maslow's work. 25-years of military and academic exposure led the researcher to the same criticisms of Maslow discussed here. Only after finally reading his actual work, is it clear that it is a much more meaningful theory than the reduced version commonly taught.

Clayton Alderfer applied a more rigorous approach to investigate Maslow's Hierarchy of Needs and developed a separate theory termed Existence, Relatedness, and Growth (ERG) theory. By broadening the categories of needs into his three new categories, he was able to show significant correlation of greater magnitude than when he applied Maslow's.[35] Additionally, by reducing categories Alderfer made the theory more likely to be universally correct. This paper proposes that there is a hierarchy however subtle, and that it is especially valid when generalized as a characteristic of a population where individual differences are marginalized over a lengthy period. In other words, *most* people will be motivated *most* of the time by some very broad categories of needs where some are more dominant than others. Furthermore, since it is reasonable to claim that humans have three dimensions of health (physical, emotional and mental), it seems reasonable to suggest that there are also similar dimensions of need; whereby physical needs dominate emotional and emotional needs dominate mental—not as a rigid structure, but one of general tendency.[36] It is important to note again at this point, that even if the reader is still hesitant to accept this proposition in these very general terms, it should not detract from the understanding that need satisfaction in general is important for health in each of these dimensions, and further that frustration of needs increases the risk of violent conflict.[37]

[35] Clayton Alderfer, *Existence, Relatedness, and Growth: Human Needs in Organizational Settings* (New York: The Free Press, 1972) 71-101. Maslow at the time espoused five needs: physiological, safety, love, esteem, and self-acutalization. He later adds several others despite criticism.
[36] Frederick Samuels, *Human Needs and Behavior* (Cambridge, MA: Schenkman Publishing Company, Inc., 1984), 91-97. Samuels posits that there are physical, emotional and mental "first-order needs."
[37] Ibid., 44-47. Also see Abraham Maslow, *Motivation and Personality* (New York: Harper & Row Publishers, 1970) 117-129. There is a great deal of clinical support for this proposition.

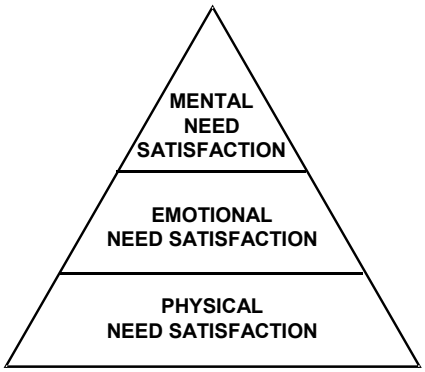

Figure 1 The Ends of Human Development

Proposition 4: Dominant needs motivate humans.

Maslow posits that, "man is a wanting animal and rarely reaches a state of satisfaction except for a short time."[38] Humans are motivated—given the *urge to act*—to satisfy needs. However, although humans are *urged* to act, actual behavior is predicated on more that will be discussed later in the chapter. This is not to say that all physical needs must be *fully* met before any emotional needs will become dominant. Maslow clearly believed that only some degree of satisfaction had to be gained before the lower priority need would take over.[39] It is a matter of strength of need whereas in theory each unit of physical need is stronger than each unit of emotional need, which is stronger than each unit of mental need. A useful analogy is eating a sandwich.

Imagine you come home from work hungry. How hungry are you? If you are *very* hungry you may be motivated to do nothing else until you satisfy your need with a bite of a sandwich. With each passing bite, your physical need is further satisfied—and your motivation to continue to eat diminished. If after the first couple of bites your child asks for help on homework, your

[38] Abraham Maslow, *Motivation and Personality* (New York: Harper & Row Publishers, 1970) 24.
[39] Ibid, 53-54. Maslow posited that most people are in fact partially satisfied/dissatisfied at all times.

motivation to satisfy your physical need to eat may be sufficiently diminished that your emotional need to help your child is dominant. Better yet, you may invite your child to the table and help with homework while continuing to eat, satisfying multiple needs simultaneously. Finally, you may be so hungry that you are motivated to finish the sandwich and start on a second before you take time for the child. Maslow describes these concepts in different terms and others confirm it.[40] For purposes of this investigation, it is sufficient for now to leave discussion of the ends of human development and turn to means.

The Means for Human Development

In order to cull the essential elements that lead to need satisfaction, it is worthwhile to investigate development of living creatures in general from a micro-view—even cellular. It appears that all living organisms develop by natural design. Even at the cellular level, the life-cycle of organisms consists of efforts to attain sufficient nutrients to grow and multiply.[41] In order for this growth to be sustainable—in order for development to occur—three essential types of sufficient means must be in place: resources, opportunity and security.

Proposition 5: The means to development are sufficient resources, opportunity, and security.

First, there must be sufficient nutrients available. These nutrients are the *resources* required for existence, growth, and development. Next, living organisms require access to *resources*. It is not enough for the *resources* to be in the same room, or even on the same microscope slide—organisms must have the *opportunity* to consume them (in the cellular instance, they must be physically in contact with the *resources*). Finally, even if sufficient *resources* are available and the organism has the *opportunity* to consume them, the organism may not develop unless

[40] Ibid., 47-58. Also see Clayton Alderfer, *Existence, Relatedness, and Growth: Human Needs in Organizational Settings* (New York: The Free Press, 1972) 6-21 and Frederick Samuels, *Human Needs and Behavior* (Cambridge, MA: Shenkman Publishing Compay, Inc., 1984) 1-38.

adequately protected from external hazards for a sufficient amount of time. *Security* completes the list. *Resources, opportunity, and security* satisfy the physical needs of living organisms, including humans.[42] Are emotional and mental needs similar? An example may make it clear enough that these means remain vital to the satisfaction of emotional and mental needs as well.

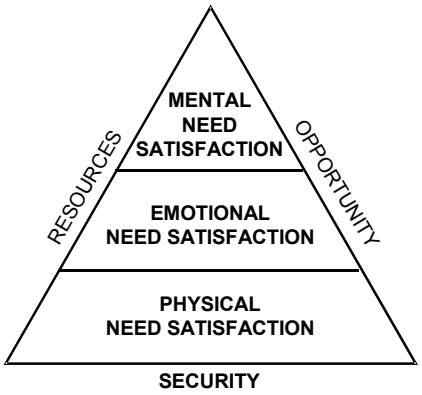

Figure 2 The Means and Ends of Human Development

If someone has a dominant emotional need for love, then the resources required to fill that need might be interaction with another individual. The mere existence of the other individual is necessary but not sufficient to fill the need for love. Sufficient opportunity (time and place for meeting for instance) and security (freedom from external threats—like parents perhaps) are necessary and sufficient. The emotional needs may only be satisfied sufficiently for human development when the three means exist. Similar examples would apply to mental needs, but it seems adequately covered and intuitively acceptable that our physical, emotional and mental needs are necessarily satisfied by sufficient resources, opportunity and security that will lead to human development. One question remains: how do the means get to the ends?

---

[41] Margaret Barnett. *Microbiology* (Indiana: The McGraw-Hill Companies, Inc., 1977), 107.
[42] Murville Harbaugh, Ed., *Fundamentals of Biology* (York, PA: The Maple Press Company, 1953) 53-69.

The Ways to Human Development

Various agents supply resources, opportunity and security to individuals necessary for human development. This is not a static phenomenon, one that involves merely two agents, or one that satisfies only one need at a time—or even one agent at a time.

Proposition 6: Individuals, institutions, and the environment serve as agents in the human development process.

This is a complicated process of interconnection between: 1) an individual, 2) other people, 3) institutions, and 4) the physical environment that surrounds them over any given period. Only space and time limit the number of individuals and institutions interacting at once. It is common in the human development process for each agent to satisfy others' needs while having its needs met. Finally, the process is ever changing and non-stop.

Because by definition each agent influences the outcome of interaction, it is important to discuss the role each may play in the process. The focus here is on individual agents as it pertains to the degree of satisfaction of needs that lead to human development, but the satisfaction of needs is also important for institutions and the environment ultimately. Although it is beyond the scope of this paper to dwell on institutional or environmental needs in detail, it is worth discussing briefly.

We cannot consider institutions and the environment motivated as humans are without seriously altering the definition used here. However, this is not to say that they both do not have needs. Institutions require human and economic capital (resources), public will (opportunity) and public commitment (security) to exist, grow and develop. Similarly, the environment has a need for resources, opportunity and security to do the same. Where the environment may create its own resources, opportunity and security to some degree, it is worth noting that the human

race has impeded these means on several levels and is increasingly of concern since the environment is such a major supplier of our physical means.

Proposition 7: Agents supply, receive, and mediate the delivery of the means to human development.

Agents in the process of development perform the role of supplying, receiving, or mediating the transfer of essential means. Additionally, agents may participate in one or more of these roles either sequentially or simultaneously. Agents act as a supplier when they are the source of the means to satisfy another agent's need either directly or indirectly. As a mediator in the process, agents transfer means from the supplier to either the receiver or another mediator. Finally, agents may be the recipients of essential means indirectly through a mediator, or directly from the supplier. Each agent in the process has the ability to enable or disable the human development process through the promotion or disruption of the flow of means. For example, attending school satisfies many of a child's emotional and mental needs. A Department of Education may be the institution seen as the source of these means. However, the family participates as well. The family institution may promote the flow of these means by ensuring the child attends regularly, does homework, etc. However, the family could just as easily disable the human development process by not permitting the child to attend at all. The process relies on not only the motivation to satisfy needs along the way, but the actual behavior of each agent.

Proposition 8: Behavior is the outcome of the interaction of every agent's motivations and rules.

Kurt Lewin posited that behavior is equal to the function of the union between the person and the environment—formulaically expressed as B=f(PE).[43] Many others followed his example in identifying these essential ingredients. Disaggregating the environment in Lewin's definition, however, is useful for this theory. Reformulated, each human agent's *behavior is equal to the*

motivation of the agent adjusted to comply with the rules deemed valid by the individual agent as a result of interacting with other individuals, institutions and the environment.

Rules in a constructivist sense include morals, values, cultural norms, rules of the family, regulations, and governmental policy—any guidelines accepted as valid by the individual. For instance, if an agent's need to eat is most dominant, she may restrict her behavior to eating less than she is motivated to leave some for other family members. She is accepting a rule—to leave something for everyone else—despite the fact that she has not fully satisfied her dominant need.[44] These rules shape our behavior and yet we do not realize it. Even when people claim that they elected to behave in a certain fashion, the decision-making involved is an evaluation of the rules, and behavior an expression of whatever rules led to the decision.[45] Humans create and accept rules as an expression of what they consider right and important—rules are not always beneficial to the human development process.

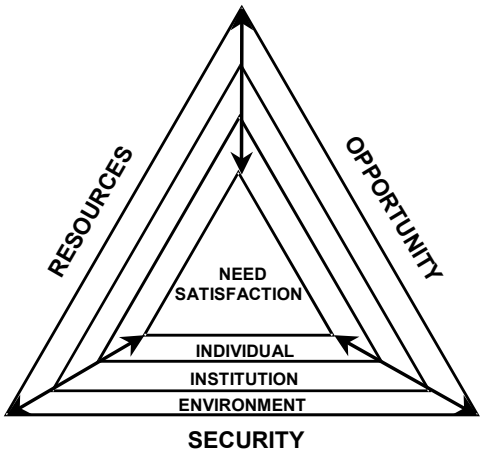

Figure 3 The Means, Ways and Ends of Human Development

---

[43] Kurt Lewin, *Principles of Topological Psychology* (New York: McGraw-Hill, 1936) 12, 30-36.
[44] Abraham Maslow, *Motivation and Personality* (New York: Harper & Row Publishers, 1970) 39-43. Another way to look at this proposition is that perhaps the individual need to have order (follow rules) became dominant. Maslow discusses this as a safety need.
[45] Vendulka Kubálková, Nicholas Onuff and Paul Kowert, Eds., *International Relations in a Constructed World* (Armonk, New York: M.E. Sharpe, Inc., 1998), 58-78.

Figure 3 displays the human development process from beginning to end. Resources, opportunity and security are the means to human development that satisfy an individual's physical, emotional and mental needs. The means are delivered to the individual by the individual him or herself, other individuals, institutions or from the environment. First, the level of need satisfaction determines the level of frustration of the individual, which in turn may lead to the will to commit violent conflict. However, the behavior of the individual is also predicated on the interaction of other agents—their motivations and behavior—and all our somehow guided by rules whether they be personal values, societal mores, or institutional policy. In essence, these elements constitute the conditions that individuals must live in and are accompanied by an increased level of risk of violent conflict where conditions increasingly deny individual human development. Simulation clarifies these concepts.

Simulation of the Human Development Process

The theory presented to this point portrays human development as a "healthy" model in a spirit Maslow would likely appreciate. Now, this section examines the human development process by way of a scenario that facilitates investigation in a less sequential and more realistic manner. Use of a "directed telescope" to view human development from each agent's perspective may lead to better understanding.[46] The following scenario presents an opportunity to explore the concepts discussed to this point:

> A farmer is heading out to tend his crops because he has a dominant need to achieve. His child runs from the house claiming to be lonely and bored. The farmer, realizing that he has not spent much time with his child lately, invites the

[46] Martin Van Creveld, *Command In War* (Cambridge, MA: Harvard University Press, 1985). Van Creveld used the term to discuss the necessity to view the battle from different levels using various sources of information (primarily implanted officers with guidance to keep him informed). In the same sense, this enquiry attempts to view the process from the perspective of each agent and depends on information provided as data for specific countries using specific indicators—using countries and international organizations as our "eyes on the battlefield."

child to help him in the field. The child joins him and they talk about local elections while they cultivate the field.

Identifying the agents, the needs for each agent, and the means for satisfying each need allows us to analyze the quality of this specific human development situation. Additionally, this scenario provides us an opportunity to discuss more fully, where the process may be disabled.

The farmer, child, family and environment are agents in the farmer's human development process. Although each agent has needs in this situation, the primary goal here is to understand how each agent impacts individual human need satisfaction, motivation and behavior of the farmer. The needs of the farmer and those of the other agents, however, are never far removed as will be seen.

The farmer's source of motivation to work his field at this time is a dominant need to achieve. If we did not know this, it would be difficult to know exactly by merely viewing his behavior. He could be dominantly motivated by a physical need for rest, but his work ethic led him to work anyway—this would be a source of frustration perhaps, and would not be as conducive to human development. This would be a case where the farmer's values have affected his human development. This is not an argument against the farmer's choice to disregard his naturally dominant motivation—this is one of the human characteristics that separates us from other animal species and serves us well on some level, but these choices, based on rules, are not always so benevolent. For instance, a cultural rule that prohibits a segment of society from education or work opportunity has far greater implications on the individual as well as the community.

Loneliness dominantly motivates the child (a need for companionship) although he expresses an additional need—to rid himself of boredom (perhaps a mental need). His need for companionship is likely dominant since it is of the emotional dimension rather than mental. This

is only true in degree however. For instance, if the child's deficiency in mental need satisfaction is great enough, it may be dominant over his emotional needs. His behavior, running to his father expressing his desire for companionship, is the result of his motivation as well as an accepted rule—it is appropriate to let his father know of his need deficiency. This may be a cultural rule or a family rule (or both), but in any case is a rule that the child has accepted as valid and is healthy in that it is a rule that enables human development.

Analyzing institutions and the environment is different than for individual agents. The family, as an institution, exists to fill a purpose. The purpose of the family is to aid its individual members in the satisfaction of individual needs. It is a non-zero sum entity in that many individuals may be satisfied simultaneously and not necessarily at the cost of denying any of its members. If members of the family were not able to sufficiently meet their needs in this environment, they may part from it (if rules permitted this and were accepted as valid). If enough of the members left, of course, the family institution may no longer exist. The family institution requires human membership (human capital), purpose (membership must include need satisfaction), and commitment for it to continue to exist and develop. These are the family's resources, opportunity, and security respectively. Similarly, the environment has needs. Nutrients, access to those nutrients, and adequate climate are required for the environment to exist, grow and develop. This is oversimplifying but serves to merely demonstrate the method of thought and is important to realize that the health of each agent is ultimately important to individual need satisfaction.

The resources for the farmer to achieve anything may be expressed as his personal capability. The farmer's possession of capabilities, however, is not enough to satisfy his need for achievement—he must have sufficient opportunity. Work is the activity that affords the farmer

opportunity. Finally, the security to work and thereby satisfy his need for achievement is satisfied by some sense of order that gives the farmer both a real and perceived protection from the threat of losing these resources and opportunity. His activity also leads to satisfaction of other needs. Table 1 provides a matrix of the needs and the means to satisfy them with the father's and child's dominant needs in bold.

Table 1 Individual Needs and Means for Human Development

	Resources	Opportunity	Security
Physical Needs -Exercise	Capability: -Physical Health	Activity: -Work -Time	Order: -Real and perceived freedom from loss of capability or activity
Emotional Needs -**Achievement (Father)** **-Companionship (Child)**	**-Emotional health** **-Farming skills** **-Communicative skills**	**-Work** **-Time**	**-Real and perceived freedom from loss of capability or activity**
Mental Needs -Problem Solving	-Mental Health -Problem solving skills	-Discussion -Time	-Real and perceived freedom from loss of capability or activity

This is a useful way to visualize the process. Although this is a simplistic scenario involving only two people, it highlights many points of possible failure in the process of human development. If a governmental, cultural, family, or individual rule stated that children should not work—and this rule was deemed valid by the individuals—then the situation would not permit the child to meet his or her dominant need and the child would seek alternative solutions to meet it. This is not of critical importance when viewed at this individual level of analysis assuming substitutions are available (interacting with a sibling or mother for instance).

This is a peaceful scenario where the conditions for the most part are healthy and promote human development. However, let us suppose that local villagers stole crops each evening from the farmer's field. This condition would quickly alter the outcome of the situation and the farmer's motivation and behavior. First, the farmer's dominant need would likely change.

Physical security more than likely would become a dominant need and may lead the farmer to seek law enforcement assistance from the local village (assuming this is a societal norm accepted as valid by the farmer). If, however, the farmer was not able to resolve this conflict through the local law enforcement, for whatever reason, the farmer's lack of security—and eventually perhaps his lack of resources—may lead the farmer to resort to violent resolution. Still relatively simple and of minor consequences, the scenario highlights how the conditions for human development as broadly described in this chapter may lead to violent conflict. The impact can be severe when analyzed at a different level. One can quickly imagine, for instance, that at the national level a societal norm (rule) that dictates individual responsibility for their own security may have severe consequences. The next chapter makes this clearer with construction of a risk assessment model for use at the national level.

Chapter 3

Risk Assessment: A Method of Analysis and a Useful Tool

> *The universe of data out of which reasonable military decisions have to be made is a vast chaotic mass of technological, economic, and political facts and predictions. To use the scientific method in bringing order out of this chaos is nothing other than the best we can do.... However, our experience thus far with scientific preparation for military decision-making warns us to appreciate how imperfect is "the best we can do."*
>
> — Dr. Bernard Brodie

Time spent understanding human development well enough to develop a basic theory is time well invested. However, being able to pull theory from the ether and bring it into operational use is even more satisfying. This chapter discusses the risk assessment process as one method to better understand human development and its correlation to violent conflict, as well as offer a practical use of the information.

The measure of operational utility is perhaps the ease of use of an instrument while preserving context. This is a challenge. The intent of developing a strategic risk assessment model is not to throw away the last dozen pages in exchange for an abbreviated version. Instead, the process of developing a risk assessment model will bring even greater understanding of the theory itself—to support its major thesis, give graphic representation, and even instruct the theory—while providing a useful tool. Constructing the model for use at the national level requires a new level of analysis without forgetting about what was learned in the last chapter concerning the phenomenon at the individual level.

This chapter discusses risk management and then presents a strategic risk assessment model. Although risk management is discussed briefly, it is beyond the scope of this work to comprehensively discuss control measures used to manage risk. Instead, discussion includes primarily risk assessment—a fundamental element of risk management in general. Building on new knowledge and understanding of human development, construction of a risk assessment model begins by identifying risk factors and ends by analyzing them.

Background

Nobody is sure who the first risk managers were, but evidence of Moses dictating the requirement for guardrails on rooftops to avoid injury and family guilt suggests that risk management it is not a new concept.[47] The military profession, in particular, manages risk very effectively on the battlefield and in daily training operations. Personal experience in the last two decades in these environments may bias risk management's efficacy touted here, but operations in Afghanistan and Iraq that relied on this process were convincing. The military did not create the concepts of risk management, but they use and test them regularly—they are not alone.

The corporate risk management literature dominates the field and focuses on gaining economic advantage from understanding risks of investment.[48] No entity understands risk more than insurance companies perhaps. Insurers manage large databases that permit analysis of probability and severity of risk to such a degree that they are able to predict profits based on the profile of insured customers. The public sector has its own body of literature and even its own

[47] Vernon Grose, *Managing Risk: Systematic Loss Prevention for Executives* (England Cliffs, NJ: Prentice-Hall, Inc., 1987), 37.

[48] Charles M. Newman II and I. James Czechowicz, *International Risk Management* (Morristown, NJ: Financial Executives Research Foundation, 1983). This book is a good sampling of industry use of risk management as a method of reducing the risk to foreign investment.

institutes that focus on its unique obligations to public safety.[49] The military borrows from the well-established academic literature and there are no fundamental differences between military services (although the tools developed are specific for their different missions.) It is clear from even this quick review of the literature that most consider risk management less a theory, and more a widely accepted practice. Terms and basic concepts are nearly universally defined throughout the literature.

Terms and Concepts

Risk is uncertainty of outcome. If the outcome of any process is certain, it is 100% predictable and therefore not a risk (although few processes can approach this).[50] *Uncertainty* is the lack of understanding of a process or situation. It follows then, that understanding reduces risk in that choices are made with a clearer understanding of the consequences. Since there is little that is certain, then there is little that is risk-free—it is a matter of degree. Intuitively, we know that the risk is greater to walk on ice than on a dry sidewalk. Perhaps, it is because we feel our feet slipping beneath us. Nevertheless, we could also correlate the number of times we have fallen on ice compared to a dry sidewalk. In doing so, we would discover that there is a measurable difference in the risk. This is one of risk's measurable characteristics—*probability*. However, there is more to it. Bungee jumping may have an excellent safety record (low probability of injury) but many still consider it a risky venture. This is because even though the probability it low, the consequence is severe. This is the other measurable characteristic of risk—s*everity*.[51]

---

[49] Martin Fone and Peter C. Young, *Public Sector Risk Management* (Oxford, UK: Butterworth-Heinemann, 2000). This book is a Public Risk Management Association publication.
[50] Ibid., 2-6.
[51] Marine Corps Institute, ORM 1-0, *Operational Risk Management*, 2002, n.p.: on-line, Internet, 12 November 2003, available from http://www.hqmc.usmc.mil/safety.nsf.

A risk assessment estimates the risk associated with either a process or situation. Many use the term interchangeably as a product of, as well as a process of assessing risk. Risk assessment involves identifying potential risk factors, analyzing the factors for probability and severity, and then using this information to estimate the total risk as a sum of the individual risk factors. *Risk factors are elements of a process or situation believed to influence risk*. These are the essential terms and concepts.

Notes, Warnings and Cautions

They say in the flying business that "Notes, Warnings and Cautions" in flight manuals can always be tracked to some person's catastrophe. Personal experience with the misuse of risk management warrants some discussion before proceeding to develop a risk assessment tool. First, risk management is both a qualitative and quantitative venture that attempts to apply art and science to assess and manage risk. Risk management then, is an attempt to discover the truth in order to avoid, mitigate, or eliminate the risk. In a dynamic environment—especially one that includes human beings—this is more a vision than a mission statement. The objective is to continually reduce uncertainty and increase understanding to the point whereby our efforts to reduce risk are most effective, most of the time. Additionally, it is not a substitute for judgment, but informs it. Finally, the use of numbers is valuable. They paint a picture that is useful for comparison and visualizing a situation. However, they should add to the context, not replace it. Reducing uncertainty is the point of this paper. Chapter 2 discussed human development as the key to understanding the will of people to commit violent conflict in the form of a theory. This chapter attempts to add to this existing knowledge through synthesis and simulation required to develop a risk assessment tool, first by identifying risk factors.

Identifying Risk Factors

A fundamental motivation for this research was the understanding that there appears to be a strong correlation between human development and violent conflict. In other words, human *underdevelopment* has probability of leading to violent conflict. Therefore, anything that disables the human development process is a risk factor. Constructing a matrix similar to the one used in the scenario at the end of the Chapter 2 is a useful way to begin.

Table 2 Risk Factors

	Resources	Opportunity	Security
Physical Needs	Physical and Economic Capability	Working	Physical and Economic Governance
Emotional Needs	Emotional and Social Capability	Communing	Emotional and Social Governance
Mental Needs	Mental and Educational Capability	Learning	Mental and Educational Governance

Table 2 depicts means to human development as broad categories to serve as a starting point for investigation at the national level. From the simulation in Chapter 2, it appears that resources to attain a physical, emotional or mental need are an expression of capability.[52] This makes sense intuitively, that individuals must have the capability to meet their needs as a primary means of attaining them. Additionally, this can be thought of as health of that dimension, since health is the status of well-being. Similarly, it appears that activities that permit the use of capability are an expression of opportunity. Finally, security is a real and perceived sense of order that preserves the capability and activity. At the national level, government is largely in

[52] Robert Erikson, "Descriptions of Inequality: The Swedish Approach to Welfare Research," *The Quality of Life*, Martha Nussbaum and Amartya Sen, Eds., (New York, NY: Oxford University Press Inc., 1993) 67-83. After this framework was established, reading Erickson and Sen confirmed the rightness of viewing resources as capability. Erickson describes resources as, "…a capability to achieve satisfaction in many respects—or, as termed here, a large scope of action—is not only a means to achieve a high level of satisfaction, it is of value in itself," (73).

place as the institution that provides the means to satisfy this need. With the basic risk factors identified, we turn to analyze the factors to construct a risk assessment matrix.

Analyzing Risk Factors

There is risk associated with deficiency of any of these means. For instance, a nation with 90-percent of its individuals employed is at greater risk for violent conflict than a nation with 100-percent employment. The means therefore represent risk factors. How much each factor correlates to violent conflict is a matter to be determined in the next chapter. However, as a starting point for analysis the last chapter was instructive.

This chapter discussed probability and severity as characteristics of risk earlier. They serve as the two axes of a risk assessment matrix as displayed in Table 3:

Table 3 Sample Risk Matrix

		Severity		
	Category	**A**	**B**	**C**
Probability	**I**	**1**	**2**	**3**
	II	**2**	**3**	**4**
	III	**3**	**4**	**5**

This method assesses the total risk by assigning weight to each risk factor according to its probability and severity, then adding scores from each category. As discussed, humans are motivated by dominant needs which tend to give priority to the emotional needs over mental, and physical over both. In other words, it is more probable that physical need deficiencies motivate individuals before emotional or mental given equal levels of deficiency. Alternatively, the deficiency of a subordinate need must be greater than the superior need for it to become dominant. Categories I, II and III are the physical, emotional and mental needs and risk factors

respectively. Categories A, B and C represent the means to development: resources, opportunity and security.

The hierarchy of needs is well-established at this point and represents probability, but the proposition that there is a hierarchy of means is a new proposition (although discussed in different terms by others.)[53] Although intuitively this makes sense at this point, testing in the next chapter should confirm this proposition. The matrix used in the simulation, and again in this chapter, is constructed in this fashion. Determining the appropriate weight for each category is a challenge. The next chapter serves to remedy this through testing, but first appropriate indicators for each risk factor must be identified.

Measurable Indicators

Direct measurement of many risk factors is either not possible or just not done. Therefore, this research uses suitable proxies. The validity of a proxy is relative to its ability to portray the status of a corresponding element accurately. Far from perfect, this section attempts to identify proxies that represent each risk factor close enough to make an assessment. To make this tool easier to use, all of the proxies are data available online to the public. Additionally, details of the statistics and mathematic computations are in a separate appendix to avoid "losing the forest for the trees," at this point, but it is worth discussing the overall nature of each proxy here.

Physical Indicators

The proxy used here to represent the physical health of a nation is the Life Expectancy Index (LEI). An LEI is indexed as a percentage, making it user friendly in the risk assessment matrix. Similarly, Gross Domestic Product Index (GDPI) represents the economic health of individuals.

This is a per capita measurement that approximates individual earnings and adjusts for purchasing power parity. Unemployment rates as a percentage of the employable population represent work. The World Bank produces an annual assessment of the quality of governance for all countries and serves as a proxy for governance here. The indicator used here is an average of the five indicators assessed by World Bank. This same proxy is used for emotional and mental security, although a more accurate proxy would estimate how governance is satisfying the specific emotional and mental security needs.

Emotional Indicators

Proxies for emotional and social aspects are not so available. The emotional index created for use here, uses suicide rates in a country indexed against rates elsewhere in the region.[54] Attempts to find a suitable measure of social health have failed to this point. What data is available is not reported regularly enough for time series analysis unfortunately. Less than perfect, this research proceeds with only an emotional proxy. The ability of a nation's individuals to commune is another difficult estimate, but the research here uses the average of the employment rate and school enrollment rate as representative. A more comprehensive estimate would include some measurement of socialization during people's free time, but no such measure is regularly available at this point. The same problem exists for mental health.

---

[53] Amartya Sen, "Capability and Well-Being," *The Quality of Life*, (Martha C. Nussbaum and Amartya Sen Eds., New York, NY: Oxford University Press Inc., 1993), 31-51. Sen discusses a hierarchy that considers capability rather than "basic needs" and posits a hierarchy of functionings beyond mere resources.

[54] Suicide is not a perfect indicator of emotional health, but perhaps the best available today. Suicide is also subject to cultural rules in that some cultures or religions prohibit it to such a degree that it is practically unthinkable. To minimize the influence of this, the countries used to develop the index are from the same geographic region and similar ethnicity—again, far from perfect.

Mental Indicators

An attempt to use deaths by mental illness is unreliable. The codification of this cause of death seems sporadic and highlights one of the weaknesses in using some of the health data. Where suicide is relatively obvious, countries appear to place causality on mental illness in an unpredictable fashion and makes the use of the data invalid. Literacy is used to represent mental capability and is indexed in a similar fashion as the rest of the data. UNDP publishes an Education Index as a useful indicator, but aggregates school enrollment into its figure. Here, enrollment represents learning separately as the opportunity for mental/educational health. This completes the list of proxies required to assess the risk of violent conflict—except for an indicator for violent conflict itself.

Violent Conflict Indicators

The most readily available data that approximates violent conflict is homicide (includes intentional injury by other persons) and a separate category of reported deaths by cause of, "other violence." The World Health Organization reports these figures in its annual World Health Report. The figure used to represent violent conflict is the total number of deaths (as a percentage of total population in thousands) for each reported year. Not all indicators are treated in the same manner.

Treatment of the Indicators

Because all of the indicators will represent risk, all data is converted to represent underdevelopment. In other words, where a country has a GDPI of 0.85, the figure is converted to 0.15 to represent the risk of violent conflict—so that as the figure increases, it should be positively correlated to violent conflict. Additionally, because culture matters, many numbers are indexed as a percentage that accounts for regional differences and highlights impact. For

instance, the emotional index uses a maximum of 20-percent and a minimum of 0-percent to compute an index. Similarly, unemployment is indexed with a maximum of 25-percent and a minimum of 0-percent. This treatment mirrors the method used by UNDP and gives a more balanced picture of the situation, and in a more culturally sensitive fashion. Refer to the appendix for more detail on the treatment of data. For now, however, this is sufficient to investigate the process through case studies in Latin America.

Cultural Differences

The case studies in the next chapter analyze each country separately by way of time series analysis. Analyzing each country in this fashion accounts for cultural differences by focusing on changes in the specific country over time. For instance, there are cultural rules that make violent resolution more or less acceptable that will affect the total number of violent acts. However, these differences are accounted for by looking for *change* in violent conflict rather than focusing solely on the actual magnitude (although both are included in the final assessment). The same is true with practically every risk factor.

Chapter 4

Case Studies in Latin America

One who is in difficulty but doesn't make plans is impoverished; one who is impoverished and doesn't fight is lost.

—Sun-Tsu

Analysis, Synthesis, Simulation, and Test are four useful ways to remove ignorance of any phenomena.[55] Chapters 2 and 3 used the first three methods in detail. This chapter will now test the knowledge and understanding gained along the way by applying the risk assessment principles from the last chapter.

This research tested the model against Venezuela first. There appears to be a significant increase in violent conflict in the past decade based on initial enquiry. Figure 4 displays the violent conflict reported in the World Health reports from 1997 to 2000.

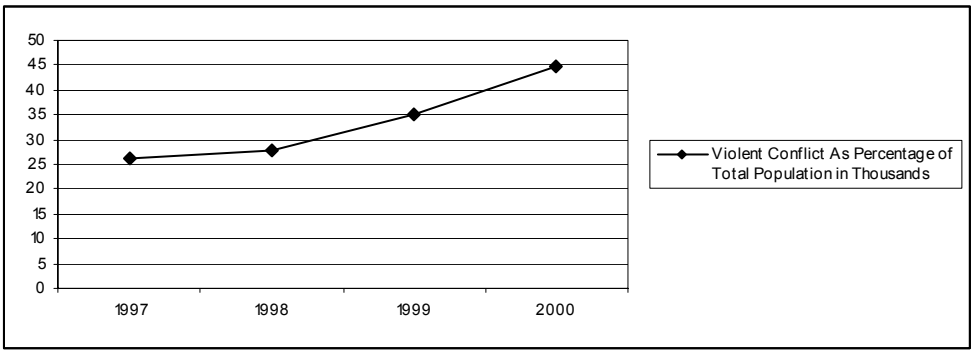

Figure 4 Violent Conflict in Venezuela, 1997-2000

[55] Vernon L. Grose, *Managing Risk: Systematic Loss Prevention for Executives*, (England Cliffs, NJ: Prentice-Hall, Inc., 1987) 27-30.

If the theory and tool are valid, there should be an accompanying decrease in human development. To test this, Figure 5 plots Venezuela's Human Development Index (HDI) for the same period. UNDP develops and reports this useful figure annually in the Human Development Report.

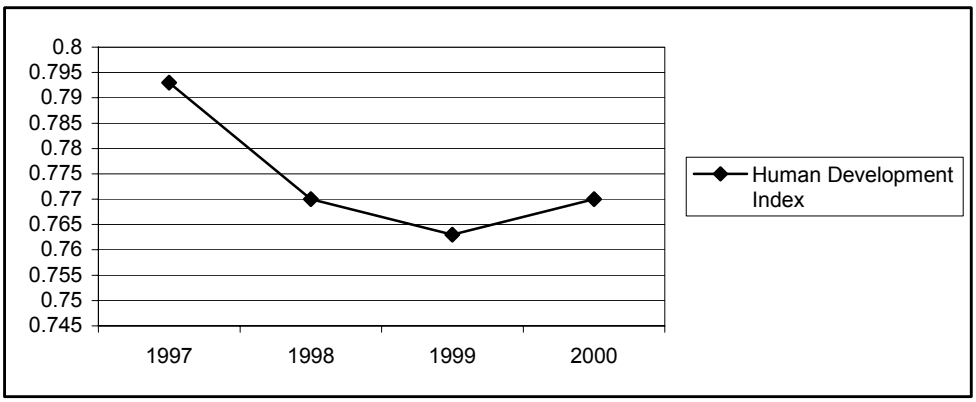

Figure 5 UNDP Human Development Index, 1997-2000

Although the general trend negatively correlates to violent conflict (-0.5535 correlation using least squares method), it fails to correlate at all between 1999 and 2000. This is perhaps because the HDI is a simple average of the Life Expectancy Index (LEI), Gross Domestic Product Index (GDPI), and the Education Index (EI). This chapter tests the results of the risk matrix in the same manner to validate the process after construction. Before beginning the quantitative assessment, however, a brief qualitative description of the country is beneficial.

Qualitative Overview

Venezuela strategically lies in the northern end of South America and is about twice the size of California with a population of over 24 million. Venezuela, along with Colombia and Ecuador, was part of Gran Colombia until its collapse in 1830. Until 1959, Venezuela was under rule of military strongmen that permitted some social reforms and promoted the oil industry. Oil

constitutes one-third of the countries GDP, and 80-percent of its export earnings. Politically, Venezuela's President Chavez was elected in 1999, winning 60-percent of the popular vote. However, since his election President Chavez has lost his solid support from Venezuelans. Socially, the people of Venezuela consist of Spanish, Italian, Portuguese, Arab, German, African, and indigenous people, 96-percent of whom are Roman Catholic and 2-percent Protestant. Venezuela has increasing internal drug consumption and conflicts related to drugs along the Colombian border as drug producers there are seeking refuge from the Colombian military's crackdown. Venezuela has a relatively large military but loyalty to the government is divided. Economic disparity in Venezuela is great with a measured 49.5 Gini coefficient[56] in 1998 and 47-percent of the population below the poverty line, and an unemployment rate of 17-percent.[57] This is by no means a detailed qualitative analysis of Venezuela, but serves as the backdrop for further investigation here and highlights an essential element in the risk assessment process.

Quantitative Analysis

Quantitative analysis has its perils. It is easy to become too confident about what the numbers are indicating, but with this caution in mind, the quantitative analysis begins with Table 4, constructed in accordance with the discussion to this point. Recall that the probability that a deficient risk factor will lead to violent conflict depends on whether the factor is in a physical, emotional, or mental category. Additionally, this research posits that the severity increases depending on whether it falls into the resource, opportunity, or security category. Before

[56] Gini coefficient is an index that ranges from 0 to 1 where 1 equals total equality of income distribution.
[57] Central Intelligence Agency, *World Factbook, 2003*, n.p.; on-line, Internet, 17 January 2004, available from http://www.cia.gov/cia/publications/factbook/.

attempting to provide weights as multipliers in any of the categories, however, it may be better to complete one matrix for several years to test its correlation to violent conflict.

Table 4 Risk Matrix Template

	Resources	Opportunity	Security
Physical Needs	Average of Life Expectancy Index and GDP Index	Employment Rate Index	Governance
Emotional Needs	Emotion Index	Average of Employment Rate and Enrollment	Governance
Mental Needs	Literacy Rate Index	Enrollment	Governance

Table 5 displays the data retrieved from online sources for each proxy for all four years. The details of this data and its sources are, again, in a separate appendix.[58] The totals represent an average of all the risk factors. Before attempting to give weight to each category, it is valuable to test the unweighted data over time for correlation to violent conflict as was done at the onset of this chapter with UNDP's HDI.

Table 5 Unweighted Risk Matrix, Venezuela 2000

1997			Total	1999			Total
0.23	0.114	0.643		0.27	0.149	0.685	
0.236	0.222	0.643		0.263	0.249	0.685	
0.228	0.33	0.643	**0.403**	0.22	0.35	0.685	**0.445**
1998				**2000**			
0.265	0.112	0.653		0.26	0.17	0.717	
0.246	0.221	0.653		0.265	0.26	0.717	
0.228	0.33	0.653	**0.411**	0.21	0.35	0.717	**0.464**

A casual glance at Figure 6 suggests that this method is perhaps more valid than the UNDP's HDI in the case of Venezuela, as the new index is steadily increasing while violent

[58] Data Appendix contains the raw data and formulas for any manipulation of data required to index the data.

conflict is increasing. The positive correlation impressively computes to 0.9802, confirming significant correlation, and considerably more significant than UNDP's HDI.

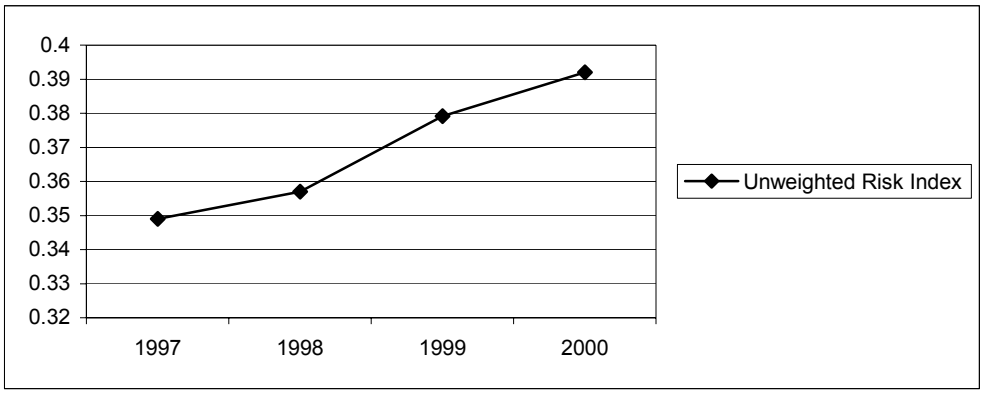

Figure 6 Unweighted Risk, Venezuela, 1997-2000

Although it is inspiring to reach such a strong correlation from the data in the initial risk matrix, confidence that each factor carries different weight requires applying the theory before settling on these results. It is probable that the early success is circumstantial. The weight each factor carries must be relative to the influence it has on the change in violent conflict.

Developing a Weighted Matrix

Many versions of a weighted matrix were tested with varying degrees of success. Although there is confidence that there is a hierarchy, the degree to which the hierarchy affects outcome is not resolved at this point. The matrix in Table 6 takes a conservative approach to the issue by giving only slightly changing weight to each risk factor, then tested.

Table 6 Weighted Risk Matrix Template

	Resources	Opportunity	Security
Physical	1	0.95	0.90
Emotional	0.95	0.90	0.85
Mental	0.90	0.85	0.80

The result of testing the weighted data is a 0.9792 correlation. Although this is slightly less than the unweighted data, the new matrix (Table 7) more accurately represents the presumed influence of each risk factor in the process.

Table 7 Weighted Risk Matrix, Venezuela 1997-2000

	1997		Total		1999		Total
0.23	.433	0.579		0.27	0.566	0.617	
0.224	0.2	0.547		0.25	0.224	0.582	
0.205	0.281	0.514	**0.357**	0.198	0.298	0.548	**0.395**
	1998				**2000**		
0.265	0.426	0.588		0.26	0.646	0.645	
0.234	0.199	0.555		0.252	0.234	0.609	
0.205	0.281	0.522	**0.364**	0.189	0.298	0.574	**0.412**

Although this more appropriately approximates the real influence of each risk factor, it is troublesome that the total correlates less than the unweighted data. This may be because the analysis to this point treats the phenomenon as if it were linear.

Posited earlier is the notion that there is significance surrounding the relationship between resources, opportunity and security. This position is largely the result of considering the phenomenon from an individual perspective. If a resource were available but unobtainable because there is no opportunity to consume it, it seems intuitively correct (and empirically supported) that it would be more frustrating than if the resource had not existed at all.[59] The opposite also seems equally true (a lot of opportunity but no resources to consume). It seems that as the difference between the sufficiency of resources, opportunity and security increases, there is an accompanying increase in frustration and therefore risk of violent conflict. If this is true, it may account for the shortfall in correlation of the weighted matrix.

[59] Anatol Rapoport, *The Origins of Violence* (New Brunswick, New Jersey: Transaction Publishers), 1995, 37. Several experiments support this notion. Additionally, M.B. Harris (1974) showed that the level of frustration is

The difference between the unweighted average of resources, opportunity and security is 0.869, 0.854, 0.905 and 0.976 for the years 1997 to 2000 respectively. The product of this number and the weighted totals correlate to violent conflict in Venezuela over this period very significantly—0.9958. This treatment perhaps compensates for a non-linear phenomenon—whereby as the risk factor worsens, frustration results ever more readily. It may also be that the difference between resources, opportunity and security is the source of increasing frustration. Finally, it may be both. In any case, it seems to work very well to this point.

Although this analysis appears promising, further testing is required to validate the method. This investigation next tests Ecuador, Nicaragua and Costa Rica. Although this research forgoes the qualitative analysis in this section, it is only for the sake of brevity of the paper.

Ecuador, Nicaragua and Costa Rica

Ecuador, Nicaragua and Costa Rica are good candidates for similar analysis principally because data is available for the same years. Additionally, however, they are each in very different situations. Ecuador is similar to Venezuela in that its rate of violent conflict is steadily increasing. It suffers from worse economic conditions, but similar difficulties in governance (although slightly better than Venezuela). Ecuador's data correlated strongly with its violent conflict, although not as strongly as Venezuela (0.9521) using the same methodology. Nicaragua's data correlated significantly better.

Nicaragua is in a situation in the same four-year period where violent conflict is decreasing. Its economic situation is similar to Ecuador and deteriorating slowly. However,

---

relative to the nearness to achievement of a goal—the closer to the goal, the greater the frustration if a need is left unsatisfied.

although governance is poor, it is increasingly better. Nicaragua's data correlated stronger than the other two countries tested (0.9929). Costa Rica is in a very different situation altogether.

Costa Rica's violent conflict remains between 5.47-percent to 6.0-percent. It is encouraging that even within this narrow range of change in conflict that this method correlated at 0.7955. Minor improvements in this correlation are possible by weighting the matrix differently (by placing more weight on physical resources and less on emotional security, correlations greater than 0.97 were possible). Costa Rica is also in a very different situation in that it has high income, high employment, and good governance. Finally, Costa Rica's unweighted data did not positively correlate at all in contrast with the other three instances. It negatively correlated (-0.8396) before weighting. This instills some confidence in earlier presumptions that the weighting was appropriate and necessary despite the earlier fortune of an unweighted correlation. It is clear that this method of analysis is valid enough to estimate risk with a reasonable degree of certainty. Now the analysis may be turned into a more usable product.

Chapter 5

Practical Uses

> *One who is in difficulty but doesn't make plans is impoverished; one who is impoverished and doesn't fight is lost.*
>
> —Sun-Tsu

There are many practical uses of the human development theory and the risk assessment model developed in this paper. Strategic warning of deteriorating situations and informed nation building efforts are possible by analyzing the risk matrix. There is an element missing from discussion to this point however. The risk so far has been a measure correlated to the degree of change in violent conflict, but has not accounted for the weight of this change. In other words, the total risk must account for not only the conditions which support human development, but the actual violence level. The violent behavior differs in each country as the rules of the culture make violent behavior more or less likely. Adding the percentage of violent conflict (in thousands of people) to the risk figure results in a new total risk that accounts for the actual level of violence. Venezuela continues to serve as an example.

Venezuela Risk Assessment and Analysis

Figure 7 represents the risk assessment for Venezuela. Color-coding assists in representing the risk assessed for each category (resources, opportunity, security, violence level, and total risk). The colors represent what the researcher considered low, medium and high risk. This is in

part a subjective assessment. From the perspective of an outsider, how much violent conflict is too much remains unanswered. However, it serves to highlight the worsening conditions as well as the accompanying violent conflict. The Total Risk figure includes the average of resources, opportunity, and security. Next, this average is multiplied by the delta between the three means of human development. Finally, this result is added to the violence level to reach total risk.

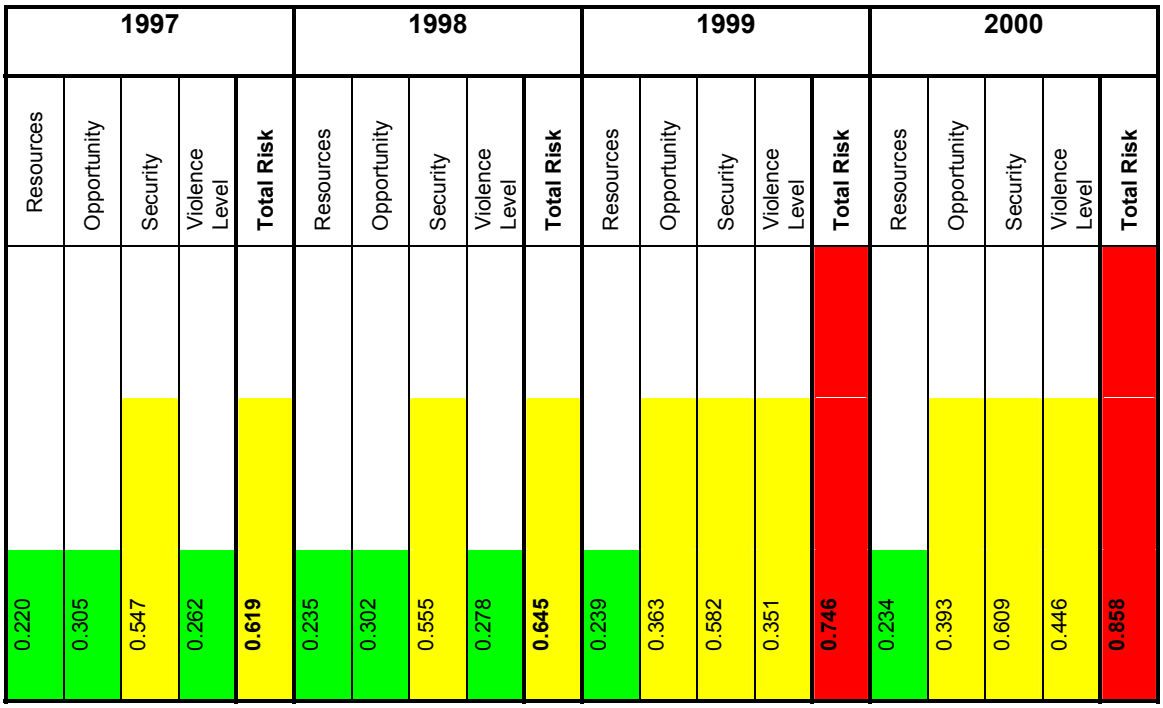

Figure 7 Risk Assessment, Venezuela

This is a useful method for visualizing trends. More practically, it is possible to determine what this trend represents in lives lost due to the violent conflict and where controls may have most impact. For instance, with a 2-percent increase in the GDP Index, one would expect an approximately 1.95-percent decrease in violent conflict in Venezuela. With a 10-percent increase in the quality of governance, one could expect an associated 16.8-percent decrease in violent conflict (until resources or opportunity again became dominant). A regression formula may be used to determine the approximate violent conflict one can expect with any value of

human development for this country. All of these, of course, remain estimates—this is where cutting it with an axe for good measure makes sense. One can probably expect that with every percent of increase in GDP index, there will be an associated one-percent decrease in violent conflict and with a 10-percent increase in governance, expect approximately 15-percent decrease—these are realistic enough to hang your hat on. Finally, that is for this country, time and circumstances.

Another useful way to analyze this data is to test for degrees of correlation between each of the dimensions of means and violent intrastate conflict. The results of testing Venezuela's data were quite telling. Resources positively correlated to violent conflict, but only moderately with a coefficient of 0.5008. However, opportunity correlated significantly stronger (0.9742) and security very significant with a positive correlation coefficient of 0.9967. This suggests that time, money and effort would be best spent giving priority to security (governance) first, and opportunity shortly thereafter until such a point that resources again become a dominant motivator in Venezuela's society. To provide even more focus, the same methods may be used to analyze physical, emotional and mental need dimensions.

Testing for correlation between need dimensions and violent conflict in Venezuela revealed no significant differences between the three in this case. Each need dimension significantly correlates: physical needs correlate at 0.9807, emotional needs correlate at 0.9814, and mental needs correlate at 0.9827. This may not always be the case, however, and may permit focusing on a more exact control measure to have most effect. For instance, if it turned out that opportunity means and mental needs correlated much stronger than the other dimensions, then it would suggest that efforts should focus on the conditions that strengthen educational activity to have most impact on violent conflict. This may also suggest that the methodology of viewing

human needs as satisfied by more than just resources has real strength. The correlation is consistently significant when tested against any need dimension. This type of analysis is a good start, but more may be done to focus even further.

Since it is presumed at this point that governance in Venezuela requires serious consideration, it is possible to refine our investigation into this category alone for a moment. The proxy used in the research to this point is an average of all governance ratings. Disaggregating these ratings and testing them for correlation may be telling.

Table 8 Analyzing Governance, Venezuela 1997-2000

	1997	1998	1999	2000	Correlation
Voice and Accountability	0.445	0.44	0.524	0.607	0.9938
Political Stability	0.691	0.661	0.673	0.685	0.2107
Government Effectiveness	0.804	0.847	0.815	0.783	-0.6791
Regulatory Quality	0.534	0.516	0.634	0.751	0.9889
Rule of Law	0.688	0.665	0.727	0.789	0.9678
Control of Corruption	0.754	0.787	0.739	0.69	-0.9102

Table 8 displays the disaggregated governance data for Venezuela. When tested for correlation Voice and Accountability, Regulatory Quality and Rule of law significantly and positively correlated to violent conflict in Venezuela for the same years. This may be a good indicator of the aspects of governance that should be given priority. As always, care is necessary to not think too much of what is seen here. For instance, although it is significant that the data correlates strongly, this only confirms that the phenomena is changing in a pattern that is very similar to violent conflict—it is not necessarily confirmation that it is causing the phenomena to

occur. However, it is at least suggestive and more than we started with. This method at least focuses analysis. The next step may be to analyze the institutions that are the source of this security. For instance, the institutions that provide for Rule of Law (law enforcement, judicial system, etc.) may be analyzed for sufficiency of resources, opportunity and security required to be an effective institution that promotes human development. Additionally, investigating the policies (rules) that affect institutional behavior—and impacts the institution's ability to satisfy individual needs—would be beneficial and provide even more focus.

This research relied on publicly available data that lags by a couple of years in order to demonstrate the validity of the theory and process. However, data is much more readily available to the State Department and other agencies that have a direct connection with the country. This would make the model more useful for strategic warning. However, with prevention in mind this tool is sufficient in demonstrating trends that are useful for nation building measures since most risk factors are relatively slow changing. Beyond the uses described here, which represent the original intent of this paper, there appears to be great strength in understanding human development.

Other Practical Uses of this Theory and Methodology

Resources, opportunity and security must be sufficient to complete any human task efficiently. Assessing educational infrastructure, business practices, and any number of human processes may benefit from this understanding. To elaborate, a more familiar military example is helpful.

John Boyd arguably revolutionized military theory when he proposed a simple, but significant relationship between observation, orientation, decision, and action (the OODA-

loop).[60] Boyd's theory hinges on the realization that there is a cycle for action whereby these four components rely on each other. The ability to act is no better than the ability to decide on action, which is no better than the ability to orient oneself, which is no better than the ability to observe the situation. Further, he theorizes that the key to success on the battlefield is to reduce the time it takes us to observe, orient, decide and act while stretching the adversaries. In other words, be more efficient. It appears that understanding resources, opportunity and security in a similar vein may be very useful in military operations.

Where Boyd discusses the four components of effective action, this theory offers the means to each component. Assessing and strengthening each of our means to observe, orient, decide and act while targeting the most appropriate means of the adversary promises new insight for strategy. The ability to observe relies on sufficient resources to observe, the opportunity to observe, and the security to observe. Furthermore, any imbalance in sufficiency of the three means will result in human frustration as well as inefficiency of action. This works against whichever side has the imbalance. With this in mind, it may be helpful in targeting strategy.

Nodal analysis that includes these three means may highlight targets that most likely will lead to inefficiencies, are the easiest to attack, are the ones which are perhaps less permanent but result in the same benefit, etc. It may also be useful in strategy development to develop strategies that include effect based operations along each need dimension. For instance, a psychological operational strategy that focuses on resources, opportunity and/or security of the emotional dimension of the adversary—especially as part of an integrated strategy that targets one specific mean. An information strategy may also benefit from this sort of analysis along the

[60] Richard Seamon, "Boyd, The Fighter Pilot Who Changed the Art of War/The Mind of War: John Boyd and American Security," *Proceedings,* Volume 29, Issue 4, (Annapolis, MD: United States Naval Institute, April 2003), 93. John Boyd never published his theory, but lectured on many occasions. The US Marine Corps adopted his theory it led to the development of its current battlefield doctrine of maneuver warfare.

mental need dimension. By created a matrix similar to the one used here to analyze human development and conflict, it may be possible to gain great insight into strategy development.

Finally, the means to development in general appear to be biologically universal. If this is true, the framework may be very useful for the study of environmental issues, infectious disease, and other studies grounded in biology. For instance, control of infectious disease is a global problem and creative solutions may result from investigating the phenomena using the framework developed here. Diseases are living organisms and require sufficient resources, opportunity and security and there appears a biological imperative for them to seek this out. It may be that the resources can be categorized as appetites. In other words, perhaps there are nutrients that are preferred over others. This enquiry may lead to discovery of nutrients that can be used to attract the disease from the human body—taking advantage of the fact that the organism is driven to live and grow rather than attempts to kill the disease. Another useful way to view this problem is as a human task to control disease. Boyd's OODA Loop theory in conjunction with theory espoused here may be instructive for development of an effective strategy to monitor and control infectious disease. Obvious perhaps, but there is a certain elegance and power in this framework's simplicity.

Chapter 6

Conclusions

Life is the art of drawing sufficient conclusions from insufficient premises.

—Samuel Butler
Notebooks

This paper began by positing that human development most accurately correlates to violent intrastate conflict when comprehensively viewed as the outcome of interaction between an individual, other individuals, institutions, and the environment. It also proposed that the means to human development include sufficient resources, opportunity, and security. Finally, that the method of enquiry here would more accurately indicate where the deficiencies lie in human development for any given place and time. The purpose was to contribute to not only theory, but to supply a method of using the theory.

Findings

Human Development Theory

Human Development Theory is more comprehensive than, and compensates for many of the criticisms associated with Human Needs Theory. It recognizes that needs are not necessarily universal—although there appears to be a biological hierarchy of needs, it is viewed as minor and difficult to predict with so many variables and no controls for testing. However, political, societal, economic, geographic, and other

contextual differences are recognized and accounted for. The trend of violent conflict is certainly different in each country. The rules that guide violent behaviors influence the level of violent conflict—this is evident in the differing levels of violence. However, this theory and methodology accounts for these differences by using time series analysis to construct a country specific assessment. The trends are illustrative and highlight specific areas of risk each county. This method is flexible and appears best utilized by constructing a matrix that has the greatest correlation by adjusting the weight of individual risk factors, while preserving the notion that there is generally a hierarchy that places needs from physical to mental, and means from resources to security. There is great value in analyzing human development from not only the individual agent's perspective, but from the perspective of other agents in constructive terms. It highlights the importance of recognizing that each agent has needs and serves important functions to satisfy—or deny—needs of the individual. It is also apparent in the theory that the capability of other individuals, institutions and the environment is vital to individual need satisfaction. The method of shifting the level of analysis seems to warrant more attention. Many research paradigms select a level of analysis and stick with it throughout the research. Although there is certainly value and ease associated with this method, situations appear more accurately portrayed by changing lenses periodically to search for new understanding.

Most of the propositions made here are not new and many are well established. Although many people believe that there is a hierarchy of needs, it is still a matter requiring additional support. The concept of resources, opportunity and security is new and appears to have real strength in understanding more completely human development.

An imbalance in the sufficiency of each of these means seems to have special affect. Furthermore, it appears that the result of the imbalance is not only human frustration, but also efficiency when viewing the model with a task in mind. Finally, there appears to be a lot of potential in the framework for the study of many phenomena beyond violent conflict.

Risk Management

Operational risk management principles appear valid not only as a way of formulating a more accurate human development index, but as a reasonable method to predict change in violent conflict. There are some serious challenges however, in using available data.

The proxies used here are of varying accuracy to represent each risk factor. The physical proxies seem straightforward, however the emotional and mental need dimensions are not so readily represented. Ideally, this construction would include the health of individuals emotionally and socially. Where suicide rates seem reasonable enough a measure of emotional health, we found no good proxy available over a long enough period to be useful for purposes here. Additionally, using the average of employment and enrollment seems reasonable; it would be more accurate to also account for activities during free time. Illiteracy rates are perhaps adequate measures of mental capability, but a good measure of the educational health does not currently exist. World Bank only reports governance ratings every two years, which forces us to interpolate data for the interim years. Finally, the quality of available data is lacking although it appears to be improving. As always, one must proceed with caution, but the data seemed to serve

purposes here sufficiently. Another important qualification is that all of the data used here is objectively attained—this study would benefit from subjective measures as well.

Case Studies

Testing reasonably supported propositions made here. Simple comparison of the results of correlating UNDP's HDI to violent conflict, and the model produced here significantly supports the thesis that this method is more accurate. Testing also confirms that there is a significant relationship between resources, opportunity and security—an understanding of which has not yet been fully exploited. Finally, using risk management principles allows graphic representation of not only the total risk of violent conflict, but also the status and trends of resources, opportunity and security—this is useful for strategic warning of violent conflict and as an indicator where nation building efforts should be focused. The greatest shortfall in testing here is the number of cases explored.

Investigation of each country resulted in very significant correlation between the lack of conditions that lead to human development and violent conflict. Correlations this strong are rare in social sciences—and much lower correlations are used in public policy to make decisions. For instance:

> …the use of "index" scores, a weighted combination of the Law School Aptitude Test (LSAT) and undergraduate gradepoint average, in the admissions process for law school. The Law School Admission Services (LSAS) has correlated those index scores with first year grades at most American law schools, to substantiate that the index predicts law school success. The median R value was slightly under 0.5. At no school was it higher than 0.67, and at one it was only 0.25. (Use of the LSAT or gradepoint average alone yields even weaker correlations).[61]

[61] Richard L. Williamson, et al, *Gathering Danger: The Urgent Need to Regulate Toxic Substances That Can Bioaccumulate*, 20 Ecology Law Quarterly 635, fn.141 (1993).

.

The tests with Costa Rica were promising. The weighted matrix, however, should be evaluated with each country, as the contextual elements discussed earlier very well may influence the hierarchy in degrees of probability and severity. However, the usefulness of testing the matrix over time pays the dividend of allowing changes to the matrix that compensate for these minor differences—although it was not necessary in these cases.

Recommendations

Further Testing

This is a research project perhaps more appropriate for a dissertation than merely a thesis for a more convincing argument. However, with the expressed intent to validate the broad propositions and method, it was sufficient. Testing against more case studies in different regions will only add to the validation and may uncover significant regional differences posited here. This research focused on Latin America primarily to assist a gracious supporter of this research, US Southern Command.

Improving the Process

Many improvements could be made to this process. First, the data used does not account for inequalities within a society for each risk factor. There is sufficient support for the thesis that inequality affects health in negative ways and should be accounted for. Methods of applying an inequality coefficient for each risk factor seems attainable and may be revealing and add to the accuracy of the assessment. This chapter already discussed the need for better proxies. The addition of subjective data would make the model more complete. Perhaps by averaging the objective and subjective measures, a picture that even more accurately approximates reality could be made. In addition, more

timely data collection and reporting would obviously make the tool more useful. Data collection on-line is a tedious task. Methods of automated collection and insertion into matrices would facilitate results—use of Access databases for instance. Also, there are many software programs available to correlate variables which would enable more analysis, faster and easier. Finally, this research focused primarily on the will of individuals to commit violent conflict, although capability exists in varying degrees. It would be useful to determine to what extent the violence level is attributable to contextual elements, and to what extent increased capability—firearms availability for instance—contributes to the differences.

Future research

There appears to real strength in understanding human development as an indicator of violent conflict. This research focused on individual acts of violent conflict and not specifically collective violence. Although this paper posits that collective violence has its roots in individual human development, studying the reasons why individual human development leads to collective violence is a field of study still emerging. Additionally, this research narrowly focused on Latin American states—and not very many of them. The theory and methods would benefit from other case studies that included less homogeneous societies from other cultural roots, like Iraq. It seems reasonable to propose that human development theory could be used to explain many other malevolent phenomena in society, such as crime, domestic abuse, drug abuse, etc. Furthermore, it appears that understanding resources, opportunity and security may have significant application beyond that discussed in this paper.

Last Words

Many variables may lead to the onset of violent conflict, but few are necessary and sufficient—human development is perhaps both. The ultimate cause of violent conflict is the result of individual frustration in satisfaction of needs that naturally lead to human development. Where much of the established literature associated with human needs focus on the psychological motivation behind violent conflict, this theory and method of enquiry includes the elements that lead to the actual behavior. The interaction between the individual, other people, institutions and the environment and the rules that intervene are important to understand the phenomena better. This is not a nice, neat explanation. This complex phenomenon demands a qualitative understanding of human behavior. Scientific enquiry and serious thought, however, enrich our understanding.

The first chapter of this paper highlighted four gaps in the human development literature according to UNDP. This paper illuminates the connection between governance—as the mechanism for security on a national level—and conflict. This is brutally evident in three of the case studies as a deficiency and dominant need of the people in Venezuela, Ecuador and Nicaragua. Next, although far from being a major text, this paper reviewed four case studies to validate a process developed from practical experience with risk assessment and new understanding of human development. In doing this, this paper goes well beyond the rhetorical and into the practical. Finally, although this paper is not prescriptive in regards to improvements to governance, it certainly highlights it as an essential element in human development. However, this interesting journey provokes some thought as to the purpose of governance in general.

There is an interesting parallel between resources, opportunity and security and our traditionally principal objectives in the National Security Strategy: bolstering the economy, spreading democracy and ensuring security of the United States. These three seem to have philosophic ties to our Declaration of Independence that proclaimed the inalienable rights of mankind to life, liberty and the pursuit of happiness.[62] This has served the United States well. However, it is arguable that bolstering the economy, spreading democracy and strengthening security have been taken as mission statements all their own without an overarching vision to guide them. Perhaps it is overstating it, but the pursuit of happiness seems to be missing. The pursuit of happiness is the vision statement for human development.[63] That governance exists to provide the order in society that permits individuals the security to self-actualize in Maslow's terms—to live a life worth living in Sen's terms—and to be all you can be in the US Army's old terms, seems meaningful and should perhaps be the litmus for the legs of any nation's strategy. Posited here, is that this should be the vision of government in general.

This short paper falls short of removing all ignorance of the subject, but hopefully is thought provoking and offers a method of analysis for conflict that has to this point been seen as belonging inthe "too tough to do," category. Normative and positivist perhaps—but pulling notions from the ether and making practical use of them requires the courage

[62] John Locke originally intended the right of property in place of the pursuit of happiness.
[63] Notice that it is the pursuit of happiness and not a guarantee of happiness. As Maslow clearly indicates, it is about reasonable opportunity to be all that one can be that is satisfying and is characteristic of healthy individuals.

and confidence to generalize and take a stand on what counts in the end at the cost of some degree of accuracy. The alternative is to talk about a subject, and not act.

Appendix

Data and Statistical Information

Venezuela

This section displays the data and methods used for all computations in this paper. Numbers are rounded to the nearest thousandth. This first section describes most of the source information and statistical handling used for all case studies. The section corresponding to each country notes differences where they exist.

Raw Data

Table 9 Raw Data, Venezuela 1997-2000

Identification	1997	1998	1999	2000
Human Development Index (1)	0.793	0.77	0.763	0.77
Life Expectancy Index (1)	0.79	0.79	0.79	0.8
Gross Domestic Product Index (1)	0.75	0.68	0.67	0.68
Suicides (2)	1144	1076	1245	1264
Literacy Rate (1)	92.0	92.0	92.3	92.6
Unemployment Rate (3)	11.4	11.2	14.9	17.0
Enrollment Rate (1)	67.0	67.0	65.0	65.0
Governance (4)	35.7	34.7	31.5	28.3
Homicides (2)	2,817	2,863	4,017	6,369
Population (2)	23,242	22,777	23,706	24,170

Note 1: Human Development Reports for 1997[64], 1998[65], 1999[66] and 2000[67].

[64] UNDP, *Human Development Report*, 1999, 134; on-line, Internet, 4 October 2003, available from http://hdr.undp.org/reports/global/1999/en/pdf/hdr_1999_back1.pdf.
[65] UNDP, *Human Development Report*, 2000, 158; on-line, Internet, 4 October 2003, available from http://hdr.undp.org/reports/global/2000/en/pdf/hdr_2000_back1.pdf.
[66] UNDP, *Human Development Report*, 2001, 142; on-line, Internet, 4 October 2003, available from http://hdr.undp.org/reports/global/2001/en/pdf/back.pdf.

Note 2: World Health Reports for 1997, 1998, 1999 and 2000[68].
Note 3: World Bank Development Indicators for 1997, 1998, 1999 and 2000[69].
Note 4: World Bank Governance Indicators for 1997, 1998, 1999 and 2000[70].

Treatment

Conversion of the data to represent underdevelopment vice development requires subtracting the raw data from one in some instances. Also, many of the risk factors are converted to indexes (described in notes) for more accurate representation.

Table 10 Unweighted Risk Matrix Data, Venezuela 1997-2000

Identification	1997	1998	1999	2000
Physical Health (1, 2)	0.23	0.265	0.27	0.26
Emotional Index (3)	0.236	0.246	0.263	0.265
Mental Index (1,4)	0.228	0.228	0.22	0.21
Working Index (5)	0.456	0.448	0.596	0.68
Communing Index (6)	0.393	0.389	0.473	0.515
Learning Index (1)	0.33	0.33	0.35	0.35
Governance (1,7)	35.7	34.7	31.5	28.3

Note 1: Raw data subtracted from 1 to represent underdevelopment.
Note 2: Physical Health Index computed by averaging LEI and GDPI.
Note 3: Emotional Index is computed in two steps: (1) Number of suicides X 100 / population in thousands to compute percent of suicides, then (2) Percent of suicides / 20. This indexes the figure against a regional maximum of 20-percent.
Note 4: Mental Index is computed by: Illiteracy Rate / 35. This indexes the figure against a regional maximum of 35-percent.
Note 5: Working Index is computed by: Unemployment Rate / 25. This indexes the figure against a regional maximum of 25-percent.
Note 6: Communing figure is the average of the Working Index and the Learning Index.
Note 7: Governance indicators reported for 1996, 1998, 2000 and 2002. 1997 and 1999 data are interpolated. Additionally, World Bank rates governance in five different categories—the governance figures used here is are an average of the five.

---

[67] UNDP, *Human Development Report*, 2002, n.p.; on-line, Internet, 4 October 2003, available from., http://hdr.undp.org/reports/global/2002/en/indicator/indicator.cfm?File=index.html.
[68] WHO, *World Health Statistics: Mortality Database*, n.p.: on-line, Internet, 12 November 2003, available from http://www3.who.int/whosis/mort/table1.cfm?path=whosis,inds,mort,mort_table1&language=english. Interactive database allows user to select country and year of interest.
[69] World Bank, *World Development Indicators Online*, n.p.; on-line, Internet, 6 January 2004, available from http://www3.who.int/whosis/mort/table1.cfm?path=whosis,inds,mort,mort_table1&language=english. This page permits entry to an interactive database enabling the user access to data by subject, country and year. Requires subscription for complete access, but limited public access is available via this link.
[70] World Bank, *Governance Research Indicator Country Snapshot (GRICS): 1996-2002*, n.p.: on-line, Internet, 22 December 2003, available from http://info.worldbank.org/governance/kkz2002/.

Risk Matrix

The risk matrix represents the product of each risk factor displayed in the previous table multiplied by weight given to each category. Table 10 displays the weight and associated product.

Table 11 Weighted Risk Matrix Data, Venezuela 1997-2000

Identification	1997	1998	1999	2000
Physical Health	0.23	0.265	0.27	0.26
Emotional Index	0.224	0.234	0.25	0.265
Mental Index	0.205	0.205	0.198	0.21
Working Index	0.433	0.426	0.566	0.68
Communing Index	0.354	0.35	0.426	0.464
Learning Index	0.281	0.281	0.298	0.298
Physical Governance	0.579	0.588	0.617	0.645
Emotional Governance	0.547	0.555	0.582	0.609
Mental Governance	0.514	0.522	0.548	0.574

Final Assessment

Table 11 displays the Totals using the data from the preceding table. Average resources, opportunity and security are necessary to compute the delta used in the Total (used to test for correlation to violent conflict) and the Total Risk Assessment. The first figure represents the unweighted average used to determine the delta. The second figure is the weighted average used in the final assessment of risk.

Table 12 Final Assessment Data, Venezuela 1997-2000

Identification	1997	1998	1999	2000
Resources	0.231/0.22	0.246/0.235	0.251/0.239	0.245/0.234
Opportunity	0.336/0.304	0.333/0.302	0.398/0.363	0.398/0.393
Security	0.643/0.547	0.653/0.555	0.685/0.582	0.717/0.609
Delta (1)	0.824	0.814	0.868	1.036
Total (2)	0.357	0.364	0.395	0.412
Total Risk Assessment (3)	0.619	0.645	0.746	0.858

Note 1: The delta represents the difference between the unweighted average of resources, opportunity and security for each year.
Note 2: The total represents the average of all risk factors for a given year multiplied by the delta for the same year.

Note 3: The total risk assessment is the total from the weighted risk matrix plus the total violent conflict in percent per thousand persons (total population).

Correlation

Correlation between the Total Risk and Violent Conflict was completed using the least squares method. The formula for calculating the coefficient of correlation is:

$$r = n \sum XY - \sum X \sum Y / \sqrt{[n \sum X^2 - (\sum Y)^2][n \sum Y^2 - (\sum Y)^2]},$$

whereas r = the coefficient of correlation, n = the number of observations (4, in this instance), X equals the Total Risk for each year) and Y equals Violent Conflict as a percentage of total population in thousands. A software solution made this research much easier.[71] Final correlation between Total Risk and Violent Conflict for Venezuela (1997-2000) computes to 0.9958, with a mean absolute deviation of 0.6744.

Ecuador

The data for Ecuador is generally from the same sources and treated in the same fashion as Venezuela—where there are minor differences, they are noted.

[71] Prentice Hall offers a software program, *QM for Windows*, Version 2.1 (Copyright© 1996-2001, Howard J. Weiss) that made the process manageable. Available on-line from www.prenhall.com/weiss.

Raw Data

Table 13 Raw Data, Ecuador 1997-2000

Identification	1997	1998	1999	2000
Human Development Index	0.74	0.75	0.75	0.75
Life Expectancy Index	0.74	0.75	0.75	0.75
Gross Domestic Product Index	0.65	0.57	0.57	0.58
Suicides	581	549	616	538
Literacy Rate	90.7	90.6	91.0	91.6
Unemployment Rate (1)	9.3	11.5	14.4	9.0
Enrollment Rate	67.0	67.0	65.0	65.0
Governance	35.15	34.55	30.0	25.47
Homicides	2,173	2,317	2,638	3,057
Population (2)	11,937	12,175	12,142	12,646

Note 1: Because unemployment rate was missing for a couple of the years in the World Bank database, this research uses the Pan-American Health Organization's data[72].

Note 2: Because population was not reported for this country in the WHO mortality database, this research uses data from the World Bank's WDI online instead[73].

Treatment

Table 14 Unweighted Risk Matrix Data, Ecuador 1997-2000

Identification	1997	1998	1999	2000
Physical Health	0.305	0.34	0.34	0.335
Emotional Index	0.243	0.225	0.248	0.213
Mental Index	0.266	0.269	0.257	0.24
Working Index	0.372	0.46	0.576	0.36
Communing Index	0.321	0.355	0.403	0.295
Learning Index	0.27	0.25	0.23	0.23
Governance	0.648	0.654	0.7	0.745

Risk Matrix

Table 15 Weighted Risk Matrix Data, Ecuador 1997-2000

Identification	1997	1998	1999	2000
Physical Health	0.305	0.34	0.34	0.335
Emotional Index	0.231	0.214	0.236	0.202

[72] PAHO (Economic Commission for Latin America and the Caribbean), *Statistical Yearbook for Latin America and the Caribbean*, 2001, 39; on-line, Internet, 20 February 2004, available from http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/1/9641/P9641.xml&xsl=/tpl/p9f.xsl&base=/tpl/top-bottom.xsl.

[73] World Bank, *World Development Indicators Online*, n.p.; on-line, Internet, 6 January 2004, available from http://www3.who.int/whosis/mort/table1.cfm?path=whosis,inds,mort,mort_table1&language=english

Mental Index	0.239	0.242	0.231	0.216
Working Index	0.353	0.437	0.547	0.342
Communing Index	0.289	0.32	0.363	0.266
Learning Index	0.23	0.213	0.196	0.196
Physical Governance	0.583	0.589	0.63	0.671
Emotional Governance	0.551	0.556	0.595	0.633
Mental Governance	0.518	0.523	0.56	0.596

Final Assessment

Table 16 Final Assessment Data, Ecuador 1997-2000

Identification	1997	1998	1999	2000
Resources	0.271/0.258	0.278/0.265	0.282/0.269	0.263/0.251
Opportunity	0.321/0.291	0.355/0.323	0.403/0.368	0.295/0.268
Security	0.648/0.551	0.654/0.556	0.7/0.595	0.745/0.633
Delta	0.754	0.752	0.836	0.964
Total	0.276	0.287	0.343	0.370
Total Risk Assessment	0.458	0.477	0.556	0.612

Correlation

Final correlation between Total Risk and Violent Conflict for Ecuador (1997-2000) computes to 0.9521, with a mean absolute deviation of 0.4075.

Nicaragua

The data for Nicaragua is generally from the same sources and treated in the same fashion as Venezuela—where there are minor differences, they are noted.

Raw Data

Table 17 Raw Data, Nicaragua 1997-2000

Identification	1997	1998	1999	2000
Human Development Index	0.616	0.631	0.635	0.635
Life Expectancy Index	0.71	0.72	0.72	0.72
Gross Domestic Product Index	0.51	0.51	0.52	0.53
Suicides	274	301	318	363
Literacy Rate	63.4	67.9	68.2	66.5
Unemployment Rate (1)	13.2	10.7	9.8	9.0
Enrollment Rate	67.0	67.0	65.0	65.0
Governance	35.15	34.55	30.0	25.47
Homicides	826	752	440	508

Population (2)	4,681	4,811	4,941	5,071

Note 1: Because unemployment rate was missing for a couple of the years in the World Bank database, this research uses the Pan-American Health Organization's data[74].

Note 2: Because population was not reported for this country in the WHO mortality database, this research uses data from the World Bank's WDI online instead[75].

Treatment

Table 18 Unweighted Risk Matrix Data, Nicaragua 1997-2000

Identification	1997	1998	1999	2000
Physical Health	0.39	0.385	0.38	0.375
Emotional Index	0.39	0.417	0.429	0.477
Mental Index	0.293	0.313	0.322	0.358
Working Index	0.528	0.428	0.392	0.36
Communing Index	0.449	0.399	0.381	0.365
Learning Index	0.37	0.37	0.37	0.37
Governance	0.627	0.614	0.603	0.591

Risk Matrix

Table 19 Weighted Risk Matrix Data, Nicaragua 1997-2000

Identification	1997	1998	1999	2000
Physical Health	0.39	0.385	0.38	0.375
Emotional Index	0.371	0.396	0.408	0.453
Mental Index	0.264	0.282	0.29	0.322
Working Index	0.502	0.407	0.372	0.342
Communing Index	0.404	0.359	0.343	0.329
Learning Index	0.315	0.315	0.315	0.315
Physical Governance	0.564	0.553	0.543	0.532
Emotional Governance	0.533	0.522	0.513	0.502
Mental Governance	0.502	0.491	0.482	0.473

[74] PAHO (Economic Commission for Latin America and the Caribbean), *Statistical Yearbook for Latin America and the Caribbean*, 2001, 39; on-line, Internet, 20 February 2004, available from http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/1/9641/P9641.xml&xsl=/tpl/p9f.xsl&base=/tpl/top-bottom.xsl

[75] World Bank, *World Development Indicators Online*, n.p.; on-line, Internet, 6 January 2004, available from http://www3.who.int/whosis/mort/table1.cfm?path=whosis,inds,mort,mort_table1&language=english

Final Assessment

Table 20 Final Assessment Data, Nicaragua 1997-2000

Identification	1997	1998	1999	2000
Resources	0.358/0.	0.372/0.	0.377/0.	0.403/0.
Opportunity	0.449/0.	0.399/0.	0.381/0.	0.365/0.
Security	0.627/0.	0.614/0.	0.603/0.	0.591/0.
Delta	0.538	0.52	0.452	0.455
Total	0.23	0.214	0.183	0.184
Total Risk Assessment	0.407	0.370	0.272	0.284

Correlation

Final correlation between Total Risk and Violent Conflict for Nicaragua (1997-2000) computes to 0.9929, with a mean absolute deviation of 0.4292.

Costa Rica

The data for Costa Rica is generally from the same sources and treated in the same fashion as Venezuela—where there are minor differences, they are noted.

Raw Data

Table 21 Raw Data, Costa Rica 1997-2000

Identification	1997	1998	1999	2000
Human Development Index	0.801	0.797	0.821	0.82
Life Expectancy Index	0.85	0.85	0.85	0.86
Gross Domestic Product Index	0.7	0.68	0.75	0.74
Suicides	188	223	233	242
Literacy Rate	95.1	95.3	95.5	95.6
Unemployment Rate (1)	5.9	5.4	6.2	5.2
Enrollment Rate	66.0	66.0	67.0	67.0
Governance	35.15	34.55	30.0	25.47
Homicides	205	214	236	241
Population	3,748	3,842	3,933	4,023

Note 1: Because unemployment rate was missing for a couple of the years in the World Bank database, this research uses the Pan-American Health Organization's data[76]

Treatment

Table 22 Unweighted Risk Matrix Data, Costa Rica 1997-2000

Identification	1997	1998	1999	2000
Physical Health	0.225	0.235	0.2	0.2
Emotional Index	0.251	0.29	0.296	0.3
Mental Index	0.14	0.134	0.129	0.126
Working Index	0.236	0.216	0.248	0.208
Communing Index	0.288	0.278	0.289	0.269
Learning Index	0.34	0.34	0.33	0.33
Governance	0.201	0.191	0.181	0.17

Risk Matrix

Table 23 Weighted Risk Matrix Data, Costa Rica 1997-2000

Identification	1997	1998	1999	2000
Physical Health	0.225	0.235	0.2	0.2
Emotional Index	0.238	0.276	0.281	0.285
Mental Index	0.126	0.121	0.116	0.113
Working Index	0.224	0.205	0.236	0.198
Communing Index	0.259	0.25	0.26	0.242
Learning Index	0.23	0.289	0.281	0.281
Physical Governance	0.181	0.172	0.163	0.153
Emotional Governance	0.171	0.162	0.154	0.145
Mental Governance	0.161	0.153	0.145	0.136

[76] PAHO (Economic Commission for Latin America and the Caribbean), *Statistical Yearbook for Latin America and the Caribbean*, 2001, 39; on-line, Internet, 20 February 2004, available from http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/1/9641/P9641.xml&xsl=/tpl/p9f.xsl&base=/tpl/top-bottom.xsl

Final Assessment

Table 24 Totals Data, Costa Rica 1997-2000

Identification	1997	1998	1999	2000
Resources	0.205/0.196	0.220/0.210	0.208/0.199	0.209/0.199
Opportunity	0.288/0.257	0.278/0.248	0.289/0.259	0.269/0.240
Security	0.201/0.171	0.174/0.162	0.216/0.154	0.170/0.145
Delta	0.174	0.174	0.216	0.198
Total	0.036	0.036	0.044	0.039
Total Risk Assessment	0.091	0.092	0.104	0.099

Correlation

Final correlation between Total Risk and Violent Conflict for Costa Rica (1997-2000) computes to 0.7955 with a mean absolute deviation of 0.1211.

Table 24 Totals Data, Costa Rica 1997-2000

Bibliography

Alderfer, Clayton. *Existence, Relatedness, and Growth: Human Needs in Organizational Settings*. New York: The Free Press, 1972.

Barnett, Margaret. *Microbiology.* Indiana: The McGraw-Hill Companies, Inc., 1977.

Boutros-Ghali, Boutros. *An Agenda for Development.* New York: United Nations, 1995.

Davies, James. *Human Nature in Politics: The Dynamics of Political Behavior.* New York: John Wiley & Sons, Inc., 1963.

Central Intelligence Agency. *World Factbook, 2003*. On-line. Internet, 17 January 2004. Available from http://www.cia.gov/cia/publications/factbook/

Erikson, Robert. "Descriptions of Inequality: The Swedish Approach to Welfare Research," *The Quality of Life* (Martha Nussbaum and Amartya Sen, Eds.) New York, NY: Oxford University Press Inc., 1993.

Fone, Martin and Peter C. Young. *Public Sector Risk Management*. Oxford, UK: Butterworth-Heinemann, 2000.

Galtung, Johan. "International Development in Human Perspective," *Conflict: Human Needs Theory*. John Burton, Ed. London, UK: The MacMillan Press, Ltd., 1990.

Grose, Vernon. *Managing Risk: Systematic Loss Prevention for Executives*. England Cliffs, NJ: Prentice-Hall, Inc., 1987.

Harbaugh, Murville, Ed. *Fundamentals of Biology.* York, PA: The Maple Press Company, 1953.

Kubálková, Vendulka, Nicholas Onuff and Paul Kowert, Eds. *International Relations in a Constructed World*. Armonk, New York: M.E. Sharpe, Inc., 1998.

Laue, James. "Contributions of the Emerging Field of Conflict Resolution," *Approaches to Peace: An Intellectual Map.* Washington D.C.: United States Institute of Peace Press, 1991.

Lewin, Kurt. *Principles of Topological Psychology.* New York: McGraw-Hill, 1936.

Marine Corps Institute. *ORM 1-0, Operational Risk Management*, 2002. On-line. Internet, 12 November 2003. Available from http://www.hqmc.usmc.mil/safety.nsf.

Maslow, Abraham. *Motivation and Personality*. New York: Harper & Row Publishers, 1970.

Newman, Charles and I. James Czechowicz. *International Risk Management*. Morristown, NJ: Financial Executives Research Foundation, 1983.

Pan-American Health Organization (Economic Commission for Latin America and the Caribbean). *Statistical Yearbook for Latin America and the Caribbean*, 2001. On-line. Internet, 20 February 2004. Available from http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/1/9641/P9641.xml&xsl=/tpl/p9f.xsl&base=/tpl/top-bottom.xsl

Project Ploughshares. *Armed Conflicts Report 1995.* Waterloo Ontario: Institute of Peace and Conflict Studies, 1995.

Rapoport, Anatol. *The Origins of Violence.* New Brunswick, New Jersey: Transaction Publishers, 1995.
Rasmussen, Lewis. "Peacemaking in the Twenty-First Century: New Rules, New Roles, New Actors," *Peacemaking in International Conflict: Methods & Techniques*. Washington D.C: United States Institute of Peace Press, 1997.
Samuels, Frederick. *Human Needs and Behavior*. Cambridge, MA: Schenkman Publishing Company, Inc., 1984.
Seamon, Richard. "Boyd, The Fighter Pilot Who Changed the Art of War/The Mind of War: John Boyd and American Security," *Proceedings*, Volume 29, Issue 4. Annapolis, MD: United States Naval Institute, April 2003.
Sen, Amartya. *Development As Freedom*. New York: Random House, 1995.
_____. "Capability and Well-Being," *The Quality of Life.* Martha C. Nussbaum and Amartya Sen Eds. New York, NY: Oxford University Press Inc., 1993.
United Nations Development Programme. *Capacity Development and UNDP: Supporting Sustainable Human Development,* 1997. On-line. Internet, 18 December 2003. Available from http://magnet.undp.org/Docs/cap/BKMORG~1.htm.
_____. *Human Development Report 1990.* New York, NY: Oxford University Press, 1990.
_____. *Human Development Report*, 1999. On-line. Internet, 4 October 2003. Available from http://hdr.undp.org/reports/global/1999/en/pdf/hdr_1999_back1.pdf.
_____. *Human Development Report*, 2000. On-line. Internet, 4 October 2003. Available from http://hdr.undp.org/reports/global/2000/en/pdf/hdr_2000_back1.pdf.
_____. *Human Development Report*, 2001. On-line. Internet, 4 October 2003. Available from http://hdr.undp.org/reports/global/2001/en/pdf/back.pdf.
_____. *Human Development Report*, 2002. On-line. Internet, 4 October 2003. Available from http://hdr.undp.org/reports/global/2002/en/indicator/indicator.cfm?File=index.html
_____. *Promoting Conflict Prevention and Conflict Resolution Through Effective Governance: A Conceptual Survey and Literature Review*, no date. Online. Internet, 18 January 2004. Available from http://magnet.undp.org/Docs/crisis/mapexercise.htm.
Van Creveld, Martin. *Command In War.* Cambridge, MA: Harvard University Press, 1985.
Wallensteen, Peter, and Margareta Sollenberg. "After the Cold War: Emerging Patterns of Armed Conflict, 1989-1994." *Journal of Peace Research* 32, 1995.
World Bank, *Governance Research Indicator Country Snapshot (GRICS): 1996-2002*. On-line. Internet, 22 December 2003. Available from http://info.worldbank.org/governance/kkz2002/.
_____. *World Development Indicators Online.* On-line. Internet, 6 January 2004. Available from http://www3.who.int/whosis/mort/table1.cfm?path=whosis,inds,mort,mort_table1&language=english.
World Health Organization. *Preamble to the Constitution of the World Health Organization* (as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States [Official

Records of the World Health Organization, no. 2, p. 100] and entered into force on 7 April 1948). Also available from http://www.who.int/about/definition/en/.

_____. *World Health Statistics: Mortality Database*. On-line. Internet, 12 November 2003. Available from http://www3.who.int/whosis/mort/table1.cfm?path=whosis,inds,mort,mort_table1&language=english.