





# Toward a Nonkilling Paradigm

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Center *for* Global Nonkilling



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To address all forms of violence we encourage scientific research in the fields of human interaction and dialogue, and we invite participation from the academic, scientific and religious communities to aid us in the transition to nonviolent, and nonkilling societies.

*Charter for a World without Violence*  
8th World Summit of Nobel Peace Laureates  
Rome, Italy, December 15, 2007

To Glenn and Glenda Paige,  
Global Source for Nonkilling Inspiration.

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# Foreword

Stephen M. Younger

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Understanding the nature of human violence and reducing its occurrence are the most pressing issues of our time. The last century, which evolutionary sociologists hoped would be the most civilized in history, brought the mechanization of war to a new level with the deaths of tens of millions of people. Even after two world wars, conflicts persist in the Middle East, Africa, and elsewhere, constituting to some a grim proof that violence is an intrinsic part of human nature and, as such, unstoppable.

Such a view might have prevailed in the past, but it cannot do so in the future. A century ago, only a few nations had the capability to destroy on the international scale. Today, with the proliferation of weapons of mass destruction to virtually any country that wants them, there is the potential for species-threatening violence. Nuclear weapons can destroy cities, and perhaps even countries, but new strains of biological pathogens could threaten the very food supply upon which billions of people survive or even the basic operation of our global ecosystem. We are crossing a fundamental threshold in the affairs of humankind. For the first time in our history, we must get serious about the control of violence—*really* serious.

Those who see violence as a part of our nature offer a ready excuse for its continuation. It is, they reason, part of our genetic or cultural destiny, beyond our control to eliminate entirely without the sacrifice of other, desirable, human characteristics. However, I believe that such an answer is akin to telling someone with an addiction that there is nothing that they can do to fight it, that their natural predisposition toward substance abuse condemns them to destruction by its effects. For a rational species, it seems to me that such arguments are fatally flawed. Wars of the type that have caused so many millions of casualties over the past decades were not accidental—they required the investment of billions of dollars, the most intricate planning, the creative disposition of intellectual and physical resources. Quite simply, we *chose* to go to war and quite often did so with enthusiasm.

Glenn Paige asked a remarkably insightful question in his book *Nonkilling Global Political Science*. Why, he asked, when we profess to be devoted

to peace, do we spend so much more on war and violence than we do on their prevention? Numerous books and papers are written on the origins and conduct of war, but only a relative handful are devoted to the creation and maintenance of peace. Why, and what can be done to reverse the trend? That is what this book is about.

The creation of a nonkilling society is not “pie in the sky,” a naïve wish that all conflict would magically disappear and that people would simply live together in harmony. Leslie Sponsel cites a number of cultures that have very low rates of killing, countering the notion that violence is intrinsic to the human character. If violence were truly innate, one would expect *all* societies to be violent. To answer the common response that such peaceful conditions only apply to small groups and not to the large complex societies of the modern world, he notes that a number of nation states have gone for decades without large scale violence. Thus he provides a critical *existence proof* that a nonkilling society is possible.

Jurgen Brauer and John Tepper Marlin look at how a killing-free world would actually look like from an economic point view, and provide not only a detailed analysis calculating the magnitude of the world gross product under peaceful circumstances but also suggest an array of economic measures and institutions that could aid in the transition toward such a scenario.

But what led to the view that violence is inevitable? Historians Antony Adolf and Israel Sanmartin look closely at why accounts of violence dominate many written accounts of the past. Very often our histories are measured by the conflicts that create and destroy political entities—they are easily measured and described *events* that stand out from less featured background of peace. What would be the result of looking at the past from the perspective of *peace* rather than of *war*?

Part of the reason for the fixation on killing rather than nonkilling may be in the very symbolism that we use to convey ideas. Linguists Patricia Friedrich and Francisco Gomes de Matos discuss how the potent elements and dynamics of language shape our view of the world. Some small cultures lack a word for peace, merely referring to periods between conflicts. It is difficult to encourage something when you lack the ability to communicate the concept.

Mathematics is brought into the discussion with D’Ambrosio’s essay on the understanding and manipulation of social concepts. He discusses how the formality of this exact science can help us to clarify our ideas, to think more clearly and to avoid the traps of the past. Philosophers Irene Comins Mingol and Sonia Paris Albert discuss how we might use the insights of philosophy for the same purpose. The past century has seen an increasing emphasis on the formal as-

pects of philosophy, but there is value in reconsidering one of the original foci of this ancient discipline, namely the leading of a good and ethical life.

Other authors take a more physical tack. Antonino Drago examines the persistent connection between science and war and suggests how this linkage might be shifted toward creating sustainable peace. Technology is a tool; we can choose to what application it is turned, in a sense creating a new ethics of science. Piero P. Giorgi examines the biological origins of violence in humans and other animals. Are we “congenitally violent,” either as a result of our genetic makeup, our behavioral predispositions, or as a result of evolution? He argues that we are not, and that killing is a complex social behavior, not an autonomic reflex to conditions. This is good news—the very plasticity of the human brain raises hope that it can be molded as well for non-killing as for killing, support for the conclusions of Sponcel.

Linking the conceptual and the physical is the realm of psychology. Rachel MacNair discusses killing as trauma, including the incidence of post traumatic stress disorder on those previously exposed to violence. Is there an addictive aspect to violence, a factor that could influence how we deal with its repeated incidence? V. K. Kool and Rita Agrawal expand upon this theme with a discussion of violence against animals and the nature of vegetarianism.

But how might we construct a nonkilling society? What are concrete steps that can be taken to move from wish to reality? Olivier Urbain notes that the arts, with their deep reach into the human psyche, can play an important role. We have a decision—shall these arts be applied to the socialization of violence, its glorification even, or can we use them instead to promote a positive ethic, one that “uplifts the human spirit”? The arts have a special place in the construction of a nonkilling world in that they appeal to every culture, every socio-economic stratum, every educational level.

One approach to achieving a nonkilling culture is to emulate successes in other, related, endeavors. Modern society has developed an impressive and effective public health system to address the threat of numerous natural diseases such as malaria. Why not, Sarah DeGue and James Mercy suggest, apply these proven techniques to violence? What *preventive strategies* might be devised to reduce the incidence of intentional killing?

Given the historical link between technology and the military, David Haws takes a literal “nuts and bolts” approach in his proposal for an ethical code for engineering, one focused on the improvement of the human condition rather than the construction of means for destruction. Could organizations such as “Engineers Without Borders” roam the world, applying the benefits of technology to the reduction of accidental or premeditated

death? How can dangerous professions be made safer? How could structures be engineered to withstand a terrorist attack with minimal casualties?

To understand where such resources might best be allocated, James Tyner uses modern geographic analyses to study the “spatial logic” of killing. He finds that killing appears to be more difficult at the shortest range, where people can clearly see one another and where their own physical strength is involved in the act. Contrast this to the anonymity of bombing from high-altitude or attacks by intercontinental ballistic missiles where the attacker may never see or even be within thousands of miles of the intended victims. Spatial relationships affect the humanizing—or dehumanizing—of our actions. So too do the complex relationships linking societies, an aspect of violence discussed by Kathryn Feltey through the sociological lenses.

Each of the essays in this book offers a unique perspective, but all are united in their view that a nonkilling society is possible and that it can be achieved in a step-by-step manner, without miracles, and at a cost likely to be less than that of maintaining a massive defense establishment. Getting there from where we are, with all of our ingrained notions and prejudices, will not be easy, nor is it likely to be quick. But the magnitude of the threat that we face from the spread of weapons of mass destruction leaves us little choice. Either we master ourselves and the technologies that we have created or they will master us and perhaps even destroy us.

I do not agree with every idea put forward in this book, but I do find the notion of a nonkilling future to be compelling. As Mihai Nadin observes in the Epilogue, “Killing is a matter of agency,” i.e., it does not happen of its own accord but as a result of human action. I have spent most of my life engaged in national defense, including a number of years in the design and maintenance of nuclear weapons. My attraction to auge’s ideas comes from a hard-headed recognition that our future approach to security must be different than in the past. In contrast to our hope at the end of the Cold War, the risk of global Armageddon is increasing rather than decreasing. I am proud of the work that I have done in my career and believe that it may have helped prevent a third world war. But I recognize that the weapons of the past are never ideally suited to the future. Even the most battle-hardened soldier will know when a particular type of fight is not worth fighting, when the objective might be better achieved by other means. The most cold-hearted geopolitical strategist will understand that the danger of a world where dozens, even scores, of countries and groups have nation-destroying weapons is something to be avoided. We are not seeking nirvana in advocating a nonkilling society, we are seeking survival. In this we can all find common cause.

# Introduction

## A New Nonkilling Paradigm Emerges

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The underlying ideas behind “nonkilling” are certainly not new. As Marvin Harris (1990: 438) explains, “Zoroastrianism, the religion of ancient Iran, is the oldest nonkilling faith of which any historical record exists,” dating back to sometime between the 11<sup>th</sup> and the 7<sup>th</sup> centuries BCE. According to Harris, Jainism, Buddhism, Hinduism, and Christianity would also be described as “nonkilling religions,” each having a common background of state failure to deliver “worldly benefits” (1990: 444)<sup>1</sup>. Principles of nonkilling are also present in other spiritual traditions such as Confucianism, Taoism, Islam, Judaism, Voodoo, Cheyenne, etc. (see Smith-Christopher, 2007; Paige; Evans, 2008). Nevertheless, nonkilling enters the 21<sup>st</sup> century not simply as a normative principle but as an approach to global problem solving based on practical applications and empirical findings.

In fact, history also provides many examples of grounded nonkilling action. Individual leaders such as Emperor Ashoka of India, who included the notion of nonkilling in his *Edicts* (approx. 238 BCE),<sup>2</sup> Māori leader Te Whiti (c. 1815-1907), Sheik Ahmadou Bamba in Senegal (1853-1927), and other relatively well known figures such as Leo Tolstoy, Mahatma Gandhi, Abdul Ghaffar Khan, and Martin Luther King, Jr., all have embraced the principles of nonkilling in a variety of cultures. But, as Antony Adolf and Isarel Sanmartín argue in the Nonkilling History chapter, nonkilling is also about what did not happen: individuals and communities systematically not killing each other for thousands of years, making our current existence possible.

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<sup>1</sup> Following a cultural materialism approach, Harris explains how nonkilling religions emerged, in a confluence of brutal and costly wars, environmental depletion, population growth and rise of cities, food shortages, widespread poverty and rigidified social distinctions (1990: 444). A scenario that certainly resembles our own.

<sup>2</sup> “But it is by persuasion that progress among the people through Dhamma has had a greater effect in respect of harmlessness to living beings and *nonkilling* of living beings” (Dhammika, 1993). In China, Ming Buddhist monk Chu-hung (1535-1615) “actively promoted nonkilling and the release of life” (*fang shen hui*), two fundamental precepts emphasized in the *Sutra of Brahma’s net* (Yü Chün-Fang, 1998: 933; Sharma (1994: 276).

Even though the word has not appeared as frequently as would be expected, nonkilling has an increasing presence in academia, moving beyond the discussion of oriental philosophy. The introduction of nonkilling as a wider worldview and strategy for social change occurred together with nonviolence, especially after its success in India. Nevertheless, it appears that nonviolence has had a relatively greater presence, perhaps because it is better suited to the Western intellectual taste for more abstract concepts. As Collyer reminds us, the “familiar word, nonviolence, is almost comforting in its generality” while nonkilling “confronts and startles us with its specificity” (2003: 371).

Both concepts have deep similarities and share a common background. In his 1963 essay *Disciplines of the Spirit*, civil rights leader and scholar Howard Thurman explains how “[n]onviolence and nonkilling mean ... essentially the same thing” as in effect they both oppose the “logic of hate [which] is to kill”:

It is to translate the willing of the nonexistence of another into the literal deed of his extermination. Men who war against each other, if they are to be effective in their undertaking, must hate. They must will the nonexistence of each other. (1963: 115)<sup>3</sup>

Recently, the term has gained increasing usage, notably with the publication in 2002 of the book *Nonkilling Global Political Science*, authored by Glenn D. Paige, Professor Emeritus, University of Hawai‘i. Olivier Urbain (see Nonkilling Arts) points out that Paige is obviously not the “inventor” of nonkilling, an idea so old and deeply rooted that can only be attributed to the collective consciousness of humankind, but provided “a way to think about the issue in a systematic way,” through a simple but far reaching set of questions: “Is a nonkilling society possible? If no, why not? If yes, why?” Significantly, translations of this book have been published in 19 languages,<sup>4</sup> leading to numerous projects and initiatives in the countries where released and beyond.<sup>5</sup>

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<sup>3</sup> Thurman continues this argument: “In the second place, nonviolence may be a rejection not merely of the *physical* tools of violence—since their use is aimed at the destruction of human life, which is the ultimate denial of the need to be cared for—but also of the *psychological* tools of violence as well. Here we assume that, even if the tools of physical violence were available and could be of tactical significance, their use would be renounced because their purpose is to kill—to make good the will for the nonexistence of another human being. And this is to cut off his chances of actualizing his potential sometime in his living future by dealing with him in the present” (1963: 115).

<sup>4</sup> A full list of translations is available at: <<http://www.nonkilling.org/node/18>>.

<sup>5</sup> Recent examples are the German Center for the Advancement of Nonkilling / *Zentrum zur Förderung des Nichttötens* (<<http://www.nonkilling.de/>>), the Citizens Ini-

For the purposes of introducing this volume, a concise definition<sup>6</sup> is offered, where nonkilling refers to the absence of killing, threats to kill, and conditions conducive to killing in human society (2009 [2002]: 1). In analysis of its causes, nonkilling encompasses the concepts of peace (absence of war and conditions conducive to war), nonviolence (psychological, physical, and structural), and *ahimsa* (noninjury in thought, word and deed) (Paige, 2005). In spite of its negative “appearance,” in actuality, it is killing that uses a negation principle, as it means taking the life of another person, fulfilling the will of the nonexistence of another using Thurman’s terms. Nonkilling, using fundamental ancient syllogisms, is the affirmation of the act of not taking the life of another person. This shift in point of view is dramatic and often uncomfortable (see chapters on Nonkilling Linguistics and Nonkilling Psychology).

The perspective of nonkilling offered by Paige provides a distinct approach, characterized by the measurability of its goals and the open-ended nature of its realization. While the usage of other terms such as “nonviolence” and “peace” usually follows a classical form of argument through abstract ideas that often leads to passivity (see chapter by Drago), killing (and its opposite, nonkilling), can be quantified and related to specific causes by following an approach similar to that of the public health model: prevention, intervention and post-traumatic transformation (see Nonkilling Public Health).

On the other hand, as presented by Paige, nonkilling does not set any predetermined path for the achievement of a killing-free society in the same way some ideologies and spiritual traditions that foster the restraint from the taking of life do. As an open-ended generative systems approach it appeals to infinite human creativity and variability, encouraging continuous explorations in the fields of education, research, social action and policy making, by developing a broad range of scientific, institutional, educational, political, economic and spiritual alternatives to human killing (Paige, 2005).

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tiative for a Nonkilling India presented by the Indian Council of Gandhian Studies or the Movement for a Nonkilling Philippines and its associated Philippine Institute for Global Nonkilling at Kalayaan College (<<http://www.kalayaan.edu.ph/>>). Other initiatives include *Centre Caraïbéen pour la Non-Violence Globale et le Développement Durable* in Haiti (<<http://www.cngd.org/>>) and the Center for Global Nonviolence Nigeria (<<http://cgnv.edublogs.org/>>). The publication of *Towards a Nonkilling Filipino Society* (2004), a collection of eighteen essays by prominent Filipino scholars and leaders, is also a significant off spring. The publication of *Global Nonkilling Leadership* (2009), proceedings of the First Global Nonkilling Leadership Forum held in 2007, is an additional example of scholars and activists advancing nonkilling.

<sup>6</sup> A version of this definition has been released under GFDL licence.

In spite of its specific focus, nonkilling also tackles broader issues that account for structural killing and nonkilling. In relation to psychological aggression, physical assault, and torture intended to terrorize by manifest or latent threat to life, nonkilling implies the removal of their psychosocial causes. As Paige suggests, it is the possibility of directly killing humans that supports all forms of nonlethal and pre-lethal violence. In relation to killing of humans by socioeconomic structural conditions that are the product of direct lethal reinforcement as well as the result of diversion of resources for purposes of killing, nonkilling implies removal of lethality-linked deprivations. In relation to threats to the viability of the biosphere, nonkilling implies absence of direct attacks upon life-sustaining resources as well as cessation of indirect degradation associated with lethality. In relation to forms of corporate, economic or accidental killing, nonkilling implies creation of social and technological conditions conducive to their elimination (Paige, 2005; also see Perkins, 2004).

In the same year Paige published *Nonkilling Global Political Science*, John Kavanaugh also pointed out how “[t]he principle of nonkilling is not a recommendation of passivity,” as the “primary commitment to the inherent dignity of personal life requires us to intervene on behalf of the defenceless or the victim” with the only moral limit of “the direct intended killing of the aggressor” (2002: 123). Moving beyond, Paige argues that nonkilling is not only about the rejection of killing, but also implies constructive engagement in societal transformation:

This means unequivocal engagement in abolition of war and its weapons, abolition of poverty, nonkilling expression of human rights and responsibilities, proactive promotion of environmental sustainability, and contribution to problem-solving processes that respond to human needs and evoke infinite creative potential in individuals and in humankind as a whole. (2009: 102)

Such a deep transformation of those societal premises rooted in the widespread acceptance of lethality (in all of its forms) and lethal intent, trespasses the limits of an ideology for social change entailing a new scientific model based on the refutation of killing-accepting science. Certainly, all theories that were the catalysts for significant paradigm shifts were previously dismissed as “utopian,” “idealistic,” and “unrealistic” (Kuhn, 1962), in this case by the institutionalized lethality-accepting scholarly communities that challenge nonkilling’s scientific status, credibility and viability.

As Ibáñez explains, “majority science” always operates as a selective filter of reality, in such a way that “only the portion that dominant ideology provides goes through” (1985: 33). Alternative approaches such as nonkill-



ing tend to be considered deviant, if not simply unnoticed. Following this logic, Ibáñez distinguishes between dogmatic, sedentary or majority science and critical, nomadic or minority science.

While the first assumes the mainstream position of power and unity; the latter adopts the multiple views of those who resist from the base of the hierarchical system; While the first approach does not challenge the existing reality; the latter seeks its transformation; While the first is responsible for reproducing and maintaining the knowledge that has been previously generated; the latter constantly creates alternatives on the fringes of sedentary science; While the first considers the latter “prescientific,” “subscientific” or “parascientific,” the latter considers the first as “meta-scientific” and hylo-morphic, as “all passivity is on the side of matter” and “no production exists beyond reproduction” (1985: 38-39).

Following society’s general orientation toward the belief that affirms the inevitability and legitimacy of killing in human relations, most scientists could be accordingly labelled as “killing-” or “lethality-accepting.” Using the gradual taxonomy suggested by Paige, the following perspective would describe a possible spectrum of orientations:

*prokilling*—consider killing positively beneficial for self or civilization; *kill-ing-prone*—inclined to kill or to support killing when advantageous; *ambi-killing*—equally inclined to kill or not to kill, and to support or oppose it; *killing-avoiding*—predisposed not to kill or to support it but prepared to do so; *nonkilling*—committed not to kill and to change conditions conducive to lethality. (2009: 77)

But as Sponsel (1996: 113-114) points out, the “natural and social sciences may be on the verge of a *paradigm shift*—to include nonviolence and peace as well as violence and war as legitimate subjects for research,” countering the “historic and current systemic bias of the disproportionate amount of attention given to violence and war.” Sponsel calls for considering nonkilling and nonviolence seriously, systematically and intensively: “you cannot understand or achieve something by ignoring it” (1996: 14).

This volume, in a certain way, is a response to that call. In its first edition it brings together 24 authors and 14 disciplines (Anthropology, Arts, Biology, Economics, Engineering, Geography, Health Sciences, History, Linguistics, Mathematics, Philosophy, Physics, Psychology and Sociology) to seriously consider the prospects for the realization of nonkilling societies and to challenge each discipline’s role in the necessary social and scientific transformation. Even though carefully nurtured by authors, this project was not

developed with the goal of becoming a manual or reference work but rather an initial collective interdisciplinary exploration that will need to be continued and expanded. It is therefore a work in progress.

As such, it is incomplete but will certainly be completed and complemented by an emerging flow of nonkilling research. Key areas as Education, Theology and Comparative Religions or Futures, Law, Media, and Urban Studies are missing, not because their contribution is not as crucial to advance the understanding and development of nonkilling human capabilities but because the tight editorial process did not allow a sufficient margin of manoeuvre. Perhaps a revised and expanded edition of this book will allow the incorporation of these and other disciplines. Political Science, the field that hosted the first steps of the explicit scientific study of nonkilling, is also absent, even though readers can benefit from the work *Nonkilling Global Political Science*.

As for this introduction, a contextualization on the current development of this emerging nonkilling paradigm is offered. First, applicability of the theoretical framework for paradigm shifts and scientific revolutions as portrayed by Kuhn (1962) is noted. Secondly, the nature of a nonkilling paradigm shift following the notions brought forward by Paige (2009 [2002]) is described. Thirdly, some of the interdisciplinary findings (that can be explored in detail throughout this volume) regarding cumulative evidence and applicability of nonkilling theory are explored, supporting the case for such a shift. Finally, the current status of what commentators, activists and scholars see as a transformational shift is discussed and a variety of future perspectives are offered.

## On Paradigm Shifts

The concept of paradigm shift was introduced by Thomas Kuhn in *The Scientific Structure of Scientific Revolutions* (1962) as a theory to explain epistemological change through history. In spite of its flaws and setbacks, successive debates and modifications have led to a widely accepted model on the mechanisms that shape scientific revolution (see Lakatos and Musgrave, 1970; Kordig, 1973; Fuller, 2000), which, in Kuhn's terms, is "a non-cumulative developmental episode in which an older paradigm is replaced in whole or in part by an incompatible new one" (1962: 91).

According to this approach, normal science is based on the unprecedented and open-ended scientific achievements that are acknowledged by a scientific community, constituting a paradigm (1962: 10). Paradigms determine which issues are subject to inquiry, what are the appropriate questions, and what methodology must be applied to solve them. Paradigms also

serve as instruments for endo-culturalization and doctrinal training within the scientific community. Acceptance of defined doctrine by students is required as part of their initiation thus creating consensus on the basic rules and standards. These standards are consecrated through a series of institutional instruments as professional societies or academic journals, and—eventually—the general understanding that the bases of the paradigm no longer need to be discussed (as they are already enshrined in textbooks).

As a paradigm reaches its position as normal science it will focus its efforts on the reinforcement of its theoretical and experimental foundations, leaving no space for the analysis of anomalies or the development of new theories, as it is “directed to the articulation of those phenomena and theories that the paradigm already supplies” (1962:24). But anomalies that cannot be understood within an existing scientific framework still appear, creating discrepancies between theory and facts. Kuhn assumes that anomalies exist in all paradigms, even though they tend to be considered as acceptable margins of error or, more often, simply ignored and excluded from the focus of debate (1962: 64). In the history of science there have always been points in which the excess of significant anomalies have jeopardized the prevailing scientific paradigms, bringing them into a state of crisis (see Kuhn, ch. 7).

These inexorable anomalies, together with changes in socially constructed knowledge and belief systems and growing academic criticism, seed the ground for scientific revolutions or paradigm shifts (transition from normal to extraordinary science). A paradigm is not limited to dominant theories but encompasses the worldview of the scientific community at a certain point in time. Understandably, the change of the scientists’ worldview is not a simple consequence of the accumulation of adverse anomalies within a discipline, but, moreover, a result of deep alterations of social, historic and cultural conditions and possibilities.

A paradigm shift is thus a long social process that implies significant changes in how disciplines function, slowly modifying views on what is thinkable or unthinkable, altering intellectual strategies for problem-solving and modifying terminology usage and conceptual frameworks in a changing universe of discourse. When anomalies become more generally acknowledged, explicit discontent, new articulations of the paradigm and new discoveries proliferate. As Kuhn expresses it, “a scientist’s world is qualitatively transformed as well as quantitatively enriched by fundamental novelties of either fact or theory” (1962: 7). At this stage new ideas or those who had previously been consigned to the margins of academic thought are brought forward and engage the previously accepted theoretical framework in an epistemological challenge.

Followers of the institutionalized paradigm that has started to be questioned will close ranks until a new alternative emerges and gains acceptance. Conversion from one paradigm to another is not necessarily immediate or spontaneous and, according to Max Planck, can be more the result of a generational turnover: "A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it" (in Kuhn, 1962: 151). On the contrary, Kuhn does believe in conversions, that "occur not despite the fact that scientists are human but because they are" (1962: 152). When a paradigm reaches its crisis and consensus within the established framework of "normal science" ceases to exist, a period of "revolutionary science" arises, as the bolder members of the scientific community start to point out weaknesses and explore alternatives for the previously unchallenged assumptions. Challenging a paradigm certainly requires audacity, as desertion will initially be framed as the exclusion from scientific practice, as defined by the dominant paradigm (1962: 34).

Any scientific community will encompass both conservative and more "daring" individuals. The first will harshly resist any theoretical change brought forward by the latter elements, and a period in which both paradigms co-exist—in a troubled relation—will occur. During this initial period the emerging paradigm (still precarious and incomplete) will be highly criticized for being unable to solve apparent anomalies, only replacing the previous one (and thus completing the shift) when it has overcome its inconsistencies and gained unity. The result of this process is not simply a different or improved theoretical model or, in other words, "handling the same bundle of data as before, but placing them in a new system of relations with one another by giving them a different framework" (1962: 85), but a completely altered worldview (thus the incommensurability of old and new paradigms presented in the Kuhnian approach). Allegiance to a new paradigm is not based exclusively on its past achievements (usually still immature) but rather on "which paradigm should in the future guide research on problems many of which neither competitor can yet claim to resolve completely" (1962: 157).

As Kuhn believed problem-solving is the basis of science, the success of a new paradigm ultimately depends on its ability to "resolve some outstanding and generally recognized problem that can be met in no other way" (1962: 168). Or, summarizing, being able to resolve more problems and resolve them better than its predecessor. A new paradigm implies a redefinition of science itself as problems that were previously considered trivial or nonexistent become focal points of scientific development (1962:

103). The emerging paradigm will initially have a small number of supporters (disqualified and considered suspect by the mainstream scientific community) who are ultimately responsible for improving their proposal, exploring its possibilities and persuading others to join. As the number of aligned scientists increases so will the quantity of books, articles, instruments and experiments. If successful and appealing, a spiral process will be unleashed through which the emerging paradigm will enter its phase of normal science. In this sense, paradigm shifts share parallels with the diffusion of innovation theories where new inventions and discoveries are described on an innovation curve ranging from initial resistance, innovators, then early adapters, late majority, and finally laggards (Rogers, 1995).

### A Nonkilling Paradigm Shift

In *Nonkilling Global Political Science* (2009 [2002]), Glenn D. Paige envisions what kind of science would emerge if the scientific community would replace the assumption of lethal inescapability with the premise of nonkilling potentiality or, in other words, if it would shift from the predominant killing-accepting perspective to a nonkilling perspective (2009: 73):

What values would inspire and guide our work? What facts would we seek? What explanatory and predictive theories would we explore? What uses of knowledge would we facilitate? How would we educate and train ourselves and others? What institutions would we build? And how would we engage with others in processes of discovery, creation, sharing, and use of knowledge to realize nonkilling societies for a nonkilling world?

In a “disciplinary shift to nonkilling creativity,” Paige argues, the acceptance of killing as a social, cultural, political, economic, biological, technological, etc. imperative becomes unthinkable or, at the very least problematical, as both approaches are, using Kuhnian terms, incompatible and incommensurable. Certainly, if killing is considered inevitable or acceptable within the scientific community little effort will be devoted to deepening our understanding of killing and possible alternatives that will remove the conditions behind lethality. As the criteria for determining legitimate problems and solutions also change, Paige calls for a greater emphasis on the understanding of killing within the framework of a four-part logic of analysis. This focus is on the causes of killing; causes of nonkilling; causes of transition between killing and nonkilling; and the characteristics of killing-free societies (2009: 73).

This causal approach is crucial, as each case of killing and nonkilling must be analysed seeking to understand the underlying “processes of cause and effect, however complex and interdependent” (2009: 74). Not only is it necessary to know “who kills whom, how, where, when, why and with what antecedents, contextual conditions, individual and social meanings, and consequences,” but also why and how so many in human history have chosen life over lethality when confronted with the most adverse circumstances, and why and how collective or individual transitions and oscillations from killing to nonkilling and vice-versa have occurred (an irreversible linear progression is not assumed), taking into account every variable from individual decision-making to structural killing and nonkilling determinant factors (*idem*).

Interestingly, the fourth item in this framework implies the need to understand existing killing-free societies. Recalling Kenneth Boulding’s 1<sup>st</sup> Law (“Anything that exists is possible”), Paige (and contemporary anthropological evidence) reminds us that nonkilling societies do exist in spite of having passed largely unnoticed to most in the scientific community. Following its open-ended nature, no specific model is proposed but rather a call to human inventiveness and infinite variability, appealing to “progressive explorations of ethically acceptable, potentially achievable, and sometimes hypothetically envisioned conditions of individual, social, and global life” (2009: 75). Empirical demonstrations of historical and contemporary experiences “need to be extended in explorations of ‘pure theory’ to identify desirable characteristics of killing-free societies and plausible processes of realizing them from present conditions” (*idem*).

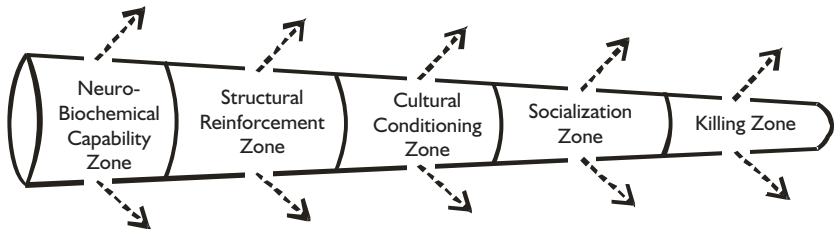
In his proposal, Paige also identifies five zones (portrayed as a “funnel of killing” and a “unfolding fan of nonkilling alternatives”) in which practical transformative alternatives must be developed in the process of applying the theoretical knowledge derived from nonkilling analysis:<sup>7</sup> the killing zone (the place of bloodshed); the socialization zone (where people learn to kill); the cultural conditioning zone (where acceptance of killing as unavoidable and legitimate is predisposed); the structural reinforcement zone (providing socioeconomic relations, institutions, and material means predisposing and supporting killing);

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<sup>7</sup> “Such changes can range from spiritual and nonlethal high technology interventions in the killing zone, through nonkilling socialization and cultural conditioning, to restructuring socioeconomic conditions so that they neither produce nor require lethality for maintenance or change, and to clinical, pharmacological, physical, and self-transformative meditative and biofeedback interventions that liberate from bio-propensity to kill” (Paige, 2009: 76).

and the neurobiochemical capability zone (comprising physical and neurological factors that contribute to both killing and nonkilling behaviors). The focal point of nonkilling scientific research resides on the need for effective transformative applications in the scope of this “funnel of killing.”

**Figure 1.** Unfolding fan of nonkilling alternatives

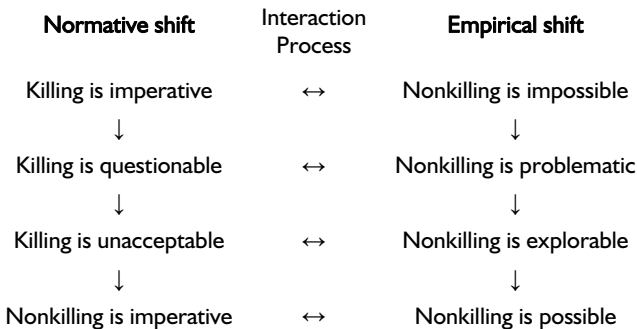


For the emergence of these alternatives a normative and empirical shift from the killing imperative to the imperative not to kill must occur through a cumulative process of interacting ethical and empirical discoveries. As Kuhn stated, a scientific revolution does not come about simply through accumulation, but rather through transformation, altering the foundational theoretical generalizations (1962: 85). Paige points out that this inevitably requires normative, factual, theoretical, applied, educational, institutional and methodological nonkilling revolutions. Normative ethical progression would have to move from “killing is imperative,” to “killing is questionable,” to “killing is unacceptable,” to “nonkilling is imperative.” In parallel, an empirical progression should shift from “nonkilling is impossible,” to “nonkilling is problematic,” to “nonkilling is explorable,” to “nonkilling is possible.” [see Figure 2] (2009: 75-79).

As a *factual shift*, nonkilling deepens into the gathering of evidence for nonkilling human propensities and capabilities, usually discarded or ignored by killing-accepting “normal science” that sees them as trivial or nonexistent anomalies, but that are extremely significant in the context of nonkilling fact-gathering. As a *theoretical shift*, nonkilling faces the challenge of articulating normative and empirical theories that can effectively tackle the problems from the range of phenomena it confronts. As an *applied shift*, nonkilling must assist global transformation toward killing-free societies, designing ways where theoretical knowledge can relate to the problem-solving needs of the “unfolding fan of nonkilling alternatives.” As an *educational shift*, nonkilling has to challenge the authority of killing-accepting academic traditions; unless the horizon of rules and standards within the scientific com-

munity is widened to include nonkilling alternatives and competencies for research, teaching, consultancy, leadership, civic action and critical reflection, disagreement over lethality is not likely to occur. As a *methodological shift*, nonkilling must overcome not only the conceptual and theoretical framework that limit the understanding of nonkilling capabilities but also instrumental and methodological impediments that condition selection, evaluation, criticism and analysis of necessary data on killing and nonkilling. Finally, an *institutional shift* foresees the establishment of nonkilling as normal science, designing new organizational outlines for disciplines, subdisciplines and interdisciplinary relations, not only focusing on the academic arena but moreover on the field of social practice (Paige, 2009: 79-85).

**Figure 2.** Process of Normative-Empirical Nonkilling Paradigm Shift



**Interdisciplinary Bases for a Nonkilling Shift**

In 1986 twenty scientists from a range of disciplines gathered in Seville to produce what would be known as the *Statement on Violence*<sup>8</sup>. This document, formally adopted by UNESCO’s General Conference two years later, firmly refuted “the notion that organized human violence is biologically determined.” Criticising “violent pessimism,” the document labelled common beliefs as those that affirm that humans have an instinctive tendency to war, a “violent brain,” or that violent behaviour is genetically programmed into human nature are “scientifically incorrect.” In his chapter “Nonkilling Human

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<sup>8</sup> Available at <[http://en.wikisource.org/wiki/Seville\\_Statement\\_on\\_Violence](http://en.wikisource.org/wiki/Seville_Statement_on_Violence)>.



Biology,” Piero P. Giorgi expands this notion, showing consistent evidence that rejects nature as a primary determinant and shaper of aggression.

For example, studies among the pygmy chimpanzees (the bonobos), one of the animal species closest to humans, revealed that levels of aggression both in the wild and in captivity are not even comparable with current levels of violence among humans. Among the bonobos, sexual behaviour would operate as a form to avoid and reduce group tensions. Other notable primatologists have systematically challenged the “man the hunter” and “man the warrior” myths, offering counterarguments for alleged human biological propensity to violence and killing (see Sussman, 1999; Hart; Sussman, 2009). As the “Seville Statement” suggests, violence would rather be a product of the human mind. But is it?

Psychologist Rachel MacNair (2002) coined the term “Perpetration-Induced Traumatic Stress” (PITS) to describe a subcategory of Posttraumatic Stress Disorder that expresses the common symptoms of those who have been active participants in causing trauma, including soldiers, executioners, police officers, and abortion or euthanasia practitioners. Facing early arguments that defended the existence of natural aggression instincts, the findings behind PITS suggest “that the human mind, contrary to certain political ideologies, is not only not well suited for killing, but that the mind tends to find it repulsive” (see chapter by MacNair). As this author points out, “[n]onkilling is not merely a good ethical idea” but it “is necessary for mental health” (idem). Curiously, this view is widely shared by scholars in the military establishment, where human resistance to killing can be rather problematic and has been studied in great detail. As Lt. Col. Grossman explains, one of the military’s most challenging tasks is to train recruits “to overcome the average individual’s deep-seated-resistance to killing” (1995: 295).

As Giorgi suggests, the global transition from nonkilling to killing societies would have been a “purely cultural accident happen[ing] about 8,000 years ago.” Killing of fellow human beings would have supposed an interruption of “90,000 years of a well established nonkilling human tradition,” a contradiction that has tried to be solved “by convincing ourselves that human being are violent by nature and have been killing each other from the very beginning.” Following a biocultural evolution approach, our brain would still be suited for a hunter-gathering culture that, as Sponsel (see *Nonkilling Anthropology*) suggests, would “epitomize Paige’s attributes of a nonkilling society.”

In contrast with the alleged biological imperative that would confirm the Hobbesian view of human nature, new anthropological findings seem to be more inclined to support Rousseau’s idea of the peaceful “noble savage.”

Hunter-gatherer societies not only tend to have relatively nonhierarchical and egalitarian social structures but are also “grounded in an ethos of routine cooperation, reciprocity, and nonviolent conflict resolution,” as the San, Mbuti or Semai illustrate (see Sponsel; also visit the online *Encyclopaedia of Peaceful Societies*).<sup>9</sup> Considering humans lived exclusively as hunter-gatherers for roughly 99% of their existence (Hart; Sussman, 2009), Margaret Mead’s claim (1940) for the relatively recent appearance of warfare (during the Neolithic period) and the even more recent establishment of military-like institutions (jointly with the state, approximately 5,000 years ago), seem to support Rousseau’s point.<sup>10</sup>

This is certainly not to say that humans should return to hunter-gathering, but it supports the bases for nonkilling human capabilities through revised socio-cultural heuristic models. As Sponsel explains, on many occasions “peace appears to be elusive not because relatively nonviolent and peaceful societies are so rare—they are not—but instead because so rarely have nonviolence and peace been the focus of research in anthropology and other disciplines” (1996: 114). This same bias also affects other disciplines across the social sciences and humanities.

Challenges to the “self-fulfilling prophecy” have also emerged from the field of humanities. Comins Mingol and Paris Albert, for example, make the case for a “nonkilling philosophy,” that should be “committed to the recuperation of and the recognition of human potential for peace,” both “working to construct and reconstruct discourses that legitimize and promote nonkilling” and “visibilizing and removing the veil of cultural killing, with its discourses that marginalize, exclude and ultimately serve to legitimize structural and cultural killing.” Friedrich and Gomes de Matos (2009) defend the development of “nonkilling linguistics,” arguing how in “a nonkilling society, language must play a pivotal role as a tool for peace as it needs to be widely engaged.”

In the field of Geography, Tyner points out how “innumerable geographies underlie the actual human behavior of killing,” holding the potential to rationalize and legitimate both killing and nonkilling. The situation parallels

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<sup>9</sup> Available at: <[http:// www.peacefulsocieties.org/](http://www.peacefulsocieties.org/)>.

<sup>10</sup> It is also worth noting that weapons specifically designed for warfare or archaeological records of regular warfare only appear relatively late in human prehistory (Sponsel, 2009). Practice of nonkilling warfare has also been studied among North American Indian societies (Sioux, for example) who practiced the “counting coup,” where “[t]o touch an enemy, to enter battle unarmed and take an opponent’s weapon or horse was the highest feat of bravery one could accomplish” (in Mayton, 2009: 131).

that of sociology, as Feltey explores how the theoretical foundations of this discipline can contribute to the development of nonkilling societies.

In similar terms, D'Ambrosio emphasizes the nature of mathematics as "an instrument to deal with the human pulses of survival and transcendence." In the model he proposes, a critically and historically grounded "nonkilling mathematics" would need to favour semantics over syntax as a means to "resist cooptation and be prone to be used for humanitarian and dignifying purposes." In the realm of physics, Drago counters some violence-prone logic associated with Newtonian mechanics through L. Carnot's notion of greatest efficiency by acting in a reversible manner ("never perform an action that cannot be subsequently reversed without loss of work"). The application of this notion resulted not only in the development of thermodynamics, where the greatest efficiency means the minimum of entropy change ( $\Delta S = \min$ ), but also in various offsprings in the fields of conflict resolution and defence (for example, the concept of alternative defence or *Soziale Verteidigung*), with special significance for nonkilling, as "the death of a human being is the most irreversible process" (see Nonkilling Physics). Its practical application is envisioned by Haws, who argues that "the extreme boundaries of killing (intentional) and letting-die (accidental) encompass a well-distributed continuum of possibilities," that must be assumed and integrated in the professional ethics of engineering. And, as Mihai Nadin, a scholar in the field of anticipatory systems, points out in his Epilogue, nonkilling science and technology "would have meant not the abolition of stones or knives, but of all the reasons for killing in the first place."

Another field with a huge responsibility and that has made great progress in the shift toward nonkilling is certainly that of public health. Significantly the *World Report on Violence and Health*, published in 2002 by the World Health Organization, labelled violence as a "preventable disease" (Krug et al., eds., 2002). The *Report* not only documents the nature and scope of violent deaths (including homicides, suicides and war-related killings) but also analyses the economic costs of the loss of human life in fields such as health care, law enforcement and judicial services, and reduced productivity (issues that, on the other hand, are being increasingly explored by economists and that Brauer and Marlin lay out in their chapter on Nonkilling Economics). This document also offers a wide range of primary prevention strategies (preventing killing before it occurs) following the social-ecological model. As DeGue and Mercy explain in their chapter, killing is a multifaceted problem "resulting from the complex interaction of biological, psychological, environmental, and social factors" and requires a wide "array of interventions targeting potent

risk and protective factors at each level of the social ecology” for its effective reduction. Nevertheless, “the creation of nonkilling communities is the ultimate goal of the public health approach.”<sup>11</sup>

### A Paradigm Moves Forward

Kuhn presented an analogy between the framework of scientific revolutions leading to paradigm shifts and political revolutions that bring about social transformation (see Kuhn, ch. 9). Considering both imply an alteration of the worldview held by communities, it is not odd to see how political and scientific revolutions are sometimes closely linked in human history. Nonkilling is probably not an exception, as its implications clearly go beyond the sphere of politics or academic research, questioning and potentially transforming (or perhaps rehabilitating) human relations. A movement toward nonkilling (either expressed using this term or simply embracing the idea behind it) is already happening in the fields of civil action, education, politics and science.

It will be interesting to see how it evolves and interacts, even though, as Kuhn pointed out, paradigm shifts are usually invisible processes (see Chapter 11), sometimes viewed not as dramatic changes but as gradual additions and revisions of scientific knowledge, as those expressed in the previous sections of this paper. Kuhn argued that textbooks and reference works, as pedagogic vehicles, are somehow an “acid test” for the emergence of a paradigm (1962: 136). Significantly, in the past five years, entries on nonkilling have made it into UNESCO’s *Encyclopedia of Life Support Systems* (2004), the *Encyclopedia of Violence, Peace and Conflict* (2008) and OUP’s *International Encyclopedia of Peace* (2009). The popular online *Wikipedia* includes entries for nonkilling in more than thirty languages<sup>12</sup> and so does its sister-project *Wiktionary*, offering over forty translations for the term.<sup>13</sup>

Also recently, the 8<sup>th</sup> World Summit of Nobel Peace Laureates included the term in its historical *Charter for a World without Violence*, that “call[s]

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<sup>11</sup> In the health sciences and other disciplines efforts have been increasing to reframe fundamental premises by starting with health rather than disease, function rather than dysfunction, strengths/assets emphasized initially rather than weaknesses/deficits, nonlethal weapons rather than killing technologies. In addition, research on the iatrogenic nature of disease and illness where the doctor/healer actually exacerbates a problem may be akin to the variety of effects any researcher and her medical model has on scientific analysis, diagnosis and prognosis.

<sup>12</sup> See the English entry at: <<http://en.wikipedia.org/wiki/Nonkilling>>.

<sup>13</sup> Available at: <<http://en.wiktionary.org/wiki/nonkilling>>.

upon all to work together toward a just, killing-free world in which everyone has the right not to be killed and responsibility not to kill others.” In its closing paragraph, the *Charter* states:

To address all forms of violence we encourage scientific research in the fields of human interaction and dialogue, and we invite participation from the academic, scientific and religious communities to aid us in the transition to nonviolent, and nonkilling societies.

An unpublished survey conducted by the Center for Global Nonkilling on doctoral dissertations related to nonkilling and nonviolence listed over 1,300 works produced between 1940 and 2009, including contributions to the fields of criminology, history, education, social psychology, political science or communication, among many others. On the other hand, the Center for Global Nonkilling has recently established a network of Nonkilling Research Committees covering 20 disciplines and engaging approximately 300 scholars.<sup>14</sup> A related initiative is an Exploratory Colloquium on Nonkilling and Neuroscience (Philadelphia, July 2009) where prominent neuroscientists explored questions related to nonkilling human capabilities. A pilot two-week Global Nonkilling Leadership Academy designed to introduce younger leaders from a dozen countries to nonkilling knowledge and experience was also planned for October 2009 in Honolulu.

In spite of notable progress and important moves in areas such as public health, nonkilling applied sciences still have a great challenge ahead. This challenge is further complicated by the unavailability of funds and institutional support for the extensive research that needs to be conducted in the field of violent death prevention. In the same way the UN Assembly Session on Disarmament (1978) criticized the “colossal waste” of resources associated with killing; the amount of resources dedicated to research activities associated with lethality (not simply killing-accepting) is truly shocking, especially if compared to the practically nonexistent resources drawn toward nonkilling research. The military R&D budget in the United States for 2009 alone amounts up to US\$79.6 billion, from a total defence budget of US\$651.2 billion.<sup>15</sup> Approximately half a million scientists over the world are exclusively dedicated to military related R&D, hoarding 30% of global R&D resources (5 times more than what is assigned to medical research

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<sup>14</sup> See: <<http://www.nonkilling.org/node/7>>.

<sup>15</sup> See: <<http://www.gpoaccess.gov/usbudget/fy09/pdf/budget/defense.pdf>>.

and 10 times more than what agricultural R&D receives; see Campaña por la paz [2005] and SIPRI's *Annual Yearbook*).

Hope does come from the global movement to establish ministries and departments of peace in governments across the world, from the national to the local levels. The success stories from countries as Costa Rica, Nepal, Solomon Islands or Catalonia, where ministries and departments for peace have been created and are starting to develop associated agendas in the field of R&D, are definitely examples for others to follow and, in fact, active campaigns exist in 30 countries.<sup>16</sup> Symbolic steps, such as the *Nonkilling Clause of Scientific Conscientious Objection*, conceived as a form of “embedded demonstration” to be applied in academic works, are also in development process, fostering ethical commitment among the scientific community:

It is strictly prohibited to use, develop or apply, either directly or indirectly, any of the author's scientific contributions contained in this work for purposes that can result in killing, threats to kill, conditions conducive to killing or justifications of killing in human society, including threats to the viability of the biosphere and other life-sustaining resources, socioeconomic structural conditions leading to killing, or the creation or omission of social and technological conditions that could lead to avoidable forms of accidental killing. This clause can only be revoked providing written consent from every person in the world has been obtained.

To summarize, we believe that the essays offered in this book, however brief and exploratory, provide grounds for confidence in possibilities for a major shift from lethality-accepting science to an ethically-orientated nonkilling paradigm empowering social and cultural transitions toward killing-free societies. This process is currently underway. But it will require much greater commitment not only by the scientific community but by society as a whole.

Paradigm shifts are inevitable, open-ended, and impermanent. Nonkilling will certainly not be the final phase in scientific development. But it will surely be a crucial contribution to the advancement of knowledge and action for continuation of human and planetary life.

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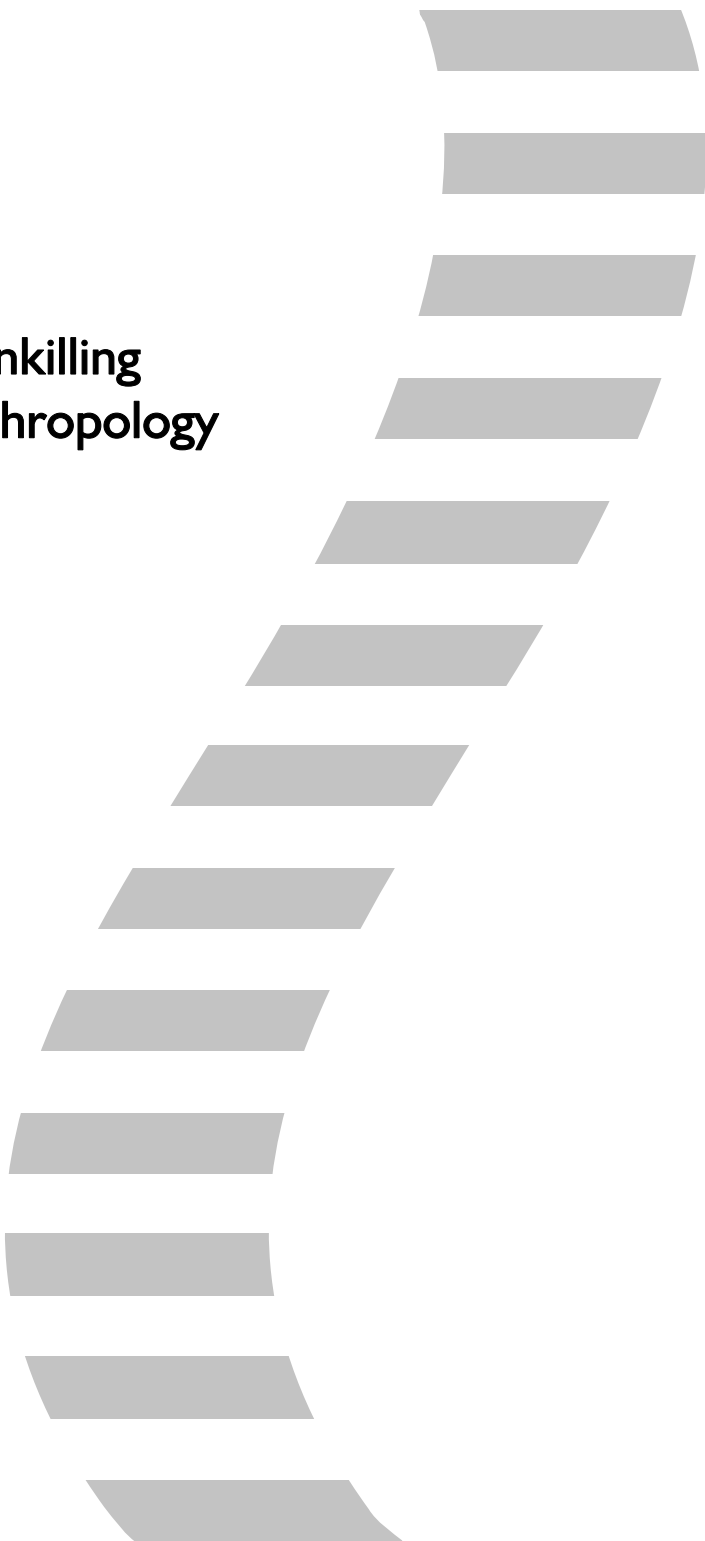
<sup>16</sup> Visit the Global Alliance at <<http://www.mfp-dop.org/>>.

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**Nonkilling  
Anthropology**





# Reflections on the Possibilities of a Nonkilling Society and a Nonkilling Anthropology

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That since wars begin in the minds of men, it is in the minds of men  
that the defenses of peace must be constructed.  
(UNESCO Constitution, November 16, 1945)

Everyone has the right to life, liberty and security of person.  
(UN, Universal Declaration of Human Rights, December 10, 1948, Art. 3)

The time has come to set forth human killing as a problem to be solved rather  
than to accept enslavement by it as a condition to be endured forever.  
(Paige, 2002:145)

Is a nonkilling society possible? What are the possibilities of a nonkilling political science? These are the two elemental, central, and pivotal questions that Glenn D. Paige (2002) raises and explores in his ground breaking book which is generating a quiet but accelerating and far-reaching revolution in theory and praxis throughout the world (Bhaneja, 2008). The present essay addresses these two questions and related matters from one anthropologist's perspective and cites some of the extensive literature for documentation and as sources for further information, although no attempt has been made at a thorough literature review, especially for periodicals.

The particular approach to anthropology used here needs to be clearly specified at the outset. American anthropology may be defined as the holistic scientific and scholarly study of human unity and diversity in all of its aspects throughout time and space. It encompasses the five subfields of archaeology, biological (or physical) anthropology, cultural anthropology, linguistic anthropology, and applied anthropology. In varying ways and degrees, American anthropologists share a concern for human evolution, human diversity (biological, cultural, and linguistic), culture and cultures, fieldwork, and comparison (especially cross-cultural). Anthropology is also unique in its scope which ranges from in-depth studies of local communities to surveys of the human species as a whole (Birx, 2006; Perry, 2003; Salzman; Rice, 2004).

### Nonkilling Society

Is a nonkilling society possible? Without any hesitation, my answer is affirmative. As a political scientist, Paige pursues the framework of nation states or countries noting that today there are 195 such entities. In contrast, an anthropologist would more likely pursue the framework of cultures. Estimates of the number of extant cultures in the world today are around 7,000 (Summer Institute of Linguistics, 2008). Furthermore, whereas countries typically range in age from a few decades to a few centuries, cultures are centuries to millennia old. Accordingly, examples of nonkilling and peaceful cultures can also be important evidence in answering Paige's first question in the affirmative. Such socio-cultural systems generally accord with Paige's (2002: 1) definition of a nonkilling society as "... characterized by no killing of humans and no threats to kill; no weapons designed to kill humans and no justification for using them; and no conditions of society dependent upon threat or use of killing for maintenance or change."

At the same time, the logic that Paige pursues regarding the frequency of killing by humans is affirmed as well by anthropology. He argues that women seldom kill other humans, and that only a minority of men kill other humans (cf. Levinson, 1994; WHO, 2002). To phrase it another way, the overwhelming majority of humans have not been involved directly in any kind of killing. The Yanomami are an anthropological case in point. They were stereotyped and stigmatized in a derogatory way as "the fierce people" by Napoleon Chagnon (1968, 1992). However, if one actually scrutinizes his own ethnography (description of a culture), then it is apparent that most individuals within Yanomami society do not kill others. There is no mention of a woman killing a man or another woman. Raids and other forms of intergroup aggression are not ubiquitous in space and time by any means. Not all men from a village participate in a raid on another village. Also, Chagnon mentions that often many members of a raiding party find excuses to retreat rather than participate in the entire process (Sponsel, 1998).

Other anthropologists who have conducted research with the Yanomami, some living with them for many more years than Chagnon, such as Bruce Albert, Gale Goodwin Gomez, Kenneth Good, Jacques Lizot, and Alcida Ramos, have all called into serious question Chagnon's characterization of the Yanomami as the "fierce people." Apparently as a result of such authoritative criticism, Chagnon dropped that subtitle from later editions of his book, yet his characterization in the text persists anyway (Sponsel, 1998). The ethnography by Chagnon together with the wealth of dozens of

other books on the Yanomami could be examined to identify a multitude of examples of nonkilling and peaceful behaviors that prevail in the daily life of most individuals and communities (see especially Dawson, 2006; Ferguson, 1992, 1995; Good, 1991; Lizot, 1985; Peters, 1998; Ramos, 1987, 1995; Smole, 1976; Sponsel, 1998, 2006c).

A nonkilling society is not only just a possibility as Paige theorizes, rather in reality many such societies actually exist today. The most famous one is the Semai of the Malaysian forest. They fit Paige's criteria for a nonkilling society and were first described through field research by Robert Knox Dentan (1968). Years later Clayton Robarcheck (1979, 1992, 1996, 1998a,b) independently confirmed Dentan's characterization of the Semai. Much later Clayton and Carole Robarcheck worked among the Waorani who were supposedly one of the most violent societies known, as will be discussed here later. In an ingenious comparison between the Semai and Waorani, the Robarcheck's (1992, 1998a) concluded that the worldview of each of these two cultures was the single most important influence on whether they were peaceful or warlike. Otherwise, they were very similar in many respects such as their subsistence economy.

Beyond the Semai, dozens of other nonkilling societies have been extensively documented in the anthropological record. David Fabbro (1978) published the earliest modern cross-cultural study identifying the basic attributes of existing peaceful societies which accord with Paige's criteria. The most systematic and extensive documentation of such societies is by Bruce D. Bonta (1993, 1996, 1997). He compiled an annotated bibliography of 47 cultures that are generally nonviolent and peaceful (Bonta, 1993). A wealth of information on these and other aspects of this subject are archived on his encyclopedic website called "Peaceful Societies" (<http://www.peacefulsocieties.org>). By now there are several other surveys and inventories of nonviolent and peaceful societies including those by Baszarkiewicz and Fry (2008), Bonta and Fry (2006), Melko (1973, 1984), and van der Dennen (1995). Three edited books of ethnographic case studies of nonviolent and peaceful cultures also have been published (Howell; Willis, 1989; Montagu, 1978; Sponsel; Gregor, 1994). Most recently, Fry (2006, 2007) has systematically and vigorously argued with ample evidence for the human potential and actuality of nonviolence and peace.

Given this extensive documentation of nonkilling and peaceful socio-cultural systems, the only way that any author, scholar, or scientist can possibly assert that human nature is inherently murderous and warlike is by ignoring the ample evidence to the contrary from a multitude of diverse sources. Nevertheless, that fact has not prevented many from doing so as apologists

for warfare (Barber, 1996; Cannel; Macklin, 1974; Ehrenreich, 1998; Feibleman, 1987; Ghiglieri, 1987, 1999; Guilaine; Zammit, 2001; Kaplan, 1994, 2000; Keeley, 1996; LeBlanc; Register, 2003; Otterbein, 1993, 1999, 2004; Smith, 2007; Wrangham; Peterson, 1996). Either they have not adequately covered the documentation that is readily available in the published literature, or they just purposefully ignore other arguments and evidence that do not fit their own ideology, theory, arguments, advocacy, and so on. In either of these two instances, their science, scholarship, and writing is seriously deficient and suspect, to say the very least (Frankfurt, 2005, 2006). Yet the unproven assumption that human nature is inherently murderous and warlike still dominates publications by a vocal minority of anthropologists and others to the nearly total exclusion of any serious and systematic attention to nonkilling and peace. For a most recent example, see Holmes (2008).

Most simple hunter-gatherer bands epitomize Paige's attributes of a nonkilling society (Kelly, 2000). They are grounded in an ethos of routine cooperation, reciprocity, and nonviolent conflict resolution as documented for the San and Mbuti of Africa, Semai of Malaysia, and many others (Bonta, 1993, 1996, 2008; Dentan, 1968; Fry, 2006, 2007; Kelly, 2000). Furthermore, for 99% of human existence, from more than two million to roughly 10,000 years ago, humans lived almost exclusively as simple hunter-gatherers (Hart; Sussman, 2009; Kelly, 2000; Lee; DeVore, 1968; Shepard, 1973). Accordingly, although captivating, William Golding's (1999) novel *Lord of the Flies* which was originally published in 1954, and the ensuing two movies are not by any means accurate anthropologically as a reflection on human nature. A more recent variant on the Hobbesian theme is the film called *Apocalypto* which appears to have been made to insult the Mayan people.

With regard to nonlethal weapons and weapon-free societies (Paige, 2002: 109, 113), it is important to note that weapons specifically designed for warfare do not appear archaeologically until very late in human prehistory, although tools employed in hunting such as a spear or a bow and arrow could easily be used to kill or injure another human being. The archaeological record does not evidence any regular warfare until relatively late in human prehistory (Ferguson, 2002, 2006; Fry, 2006, 2007; Grossman, 2008; Guilaine; Zammit, 2001; Keegan, 1993; Keeley, 1996; Kelly, 2000; LeBlanc; Register, 2003).

Paige (2002: 101) refers to the 20<sup>th</sup> century as "the era of lethality." Anthropology, with its unique combination of temporal depth and spatial breadth offers great hope in this regard, because such widespread lethality is an extremely recent aberration in human nature, judging by evidence from evolution and prehistory accumulated by archaeologists and evidence from

the record of some 7,000 cultures in the world (ethnographies) and from cross-cultural comparisons (ethnology). Torture, terrorism, genocide, weapons of mass destruction, and the like are all relatively rare in the vast range of human experience (cf. Levinson, 1994). The “era of lethality” endures for decades or so, not millennia or millions of years. However, structural violence in various forms and degrees is coincident with the origin of inequality (social stratification) which emerges most of all with civilization at the state level of sociopolitical organization and complexity (Bodley, 2008a).

Actually warfare and the institution of the military are relatively recent inventions, as noted long ago by Margaret Mead (1940). There is relatively little evidence of warfare until the Neolithic some 10,000 years ago, depending on the region. The military as a social institution is mostly coincident with the evolution of the state around 5,000 years ago, depending on the region (Bodley, 2008a; Fry, 2006, 2007; Keegan, 1993; Kelly, 2000). Moreover, anyone who is a genuine evolutionist realizes that change is inevitable; thus, there is no reason to think that warfare and the institution of the military, not to mention other lethal aspects of humankind or a culture, are inevitable and eternal. Humanity as a whole cannot return to a hunter-gatherer lifestyle, at least at the current level of world population and given economic dependence and preference (Shepard, 1973). However, hunter-gatherers can provide heuristic models of the socio-cultural possibilities of a nonkilling society (Fry, 2006, 2007; Kelly, 2000).

Resource scarcity and the resulting competition may well lead to conflict, violence, and even warfare as many have asserted (Hastings, 2000; Homer-Dixon et al., 1993; Kaplan, 1994, 2000; Klare, 2001, 2002; Lanier-Graham, 1993; Myers, 1996; Renner, 1996). But as Fredrik Barth (1956) demonstrated for three different ethnic groups in the Swat Valley of Pakistan, niche differentiation may be an alternative. They effectively reduced most direct competition by developing different foci for land and resource use as well as complementary trading relationships. However, this interethnic system was probably seriously disrupted by refugees from the successive Soviet and American invasions of Afghanistan.

The above are indisputable scientific facts, this in spite of the biased approaches, pseudoscience, and disinformation campaigns of a few anthropologists and others who have gained notoriety. Without meaning to denigrate the substantial contribution of anthropologists who have focused on studying warfare and other forms of aggression, such as Eller (1999, 2006), Ferguson (1995, 2007) and Nordstrom (1997, 1998), clearly a vocal minority are in effect apologists for war (cf. Paige, 2002: 136). (For additional case studies, see com-

pilations such as those by Fried et al., 1968; Ferguson; Farragher, 1988; Ferguson; Whitehead, 1992; Ferguson, 2003; Nordstrom and Robben, 1995). Since at least the 1960s the apologists for war pursue and even champion the pivotal assumption that humans are innately, instinctively, genetically, or biologically programmed to be aggressive, and, therefore, that war is an inevitable manifestation of human nature (Ardrey, 1961; 1966, 1976; Chagnon, 1992; Ghiglieri, 1987, 1999; Keeley, 1996; Lorenz, 1966; Morris, 1967, 1969; Otterbein, 1993, 1999, 2004, 2008; Wrangham; Peterson, 1996). Their absolutist, universalist, and essentialist posture conveniently ignores the contrary examples within our own species of *Homo sapiens* and, as will be discussed later, from our closest relatives in the animal kingdom, the chimpanzees (see Bonta, 1993, 1996; Dennen, 1995; Fry, 2006, 2007; Howell; Willis, 1989; Melko, 1973, 1984; Montagu, 1978; Sponsel, 1996a; Sponsel; Gregor, 1994).

Some of these apologists for warfare claim to have discovered extraordinarily violent and warlike societies, such as the Yanomami in the Brazilian and Venezuelan Amazon. However, the Yanomami, although not free from low levels and frequencies of some types of aggression do not pursue warfare by any meaningful definition of the term and are relatively nonviolent in their daily lives (Barash; Webel, 2002; Gelvin, 1994; Keegan, 1993; Jeong, 2000; Sanders, 2008; Sponsel, 1998; Stoessinger, 2008). Chagnon (1968, 1992) stereotyped and stigmatized the Yanomami as the “fierce people,” and even after he dropped that designation as the subtitle of his famous (now infamous) book, his fixation on aggression still exaggerated it to the point of being misleading (Good, 1991; Sponsel, 1998, 2006c). Chagnon exemplifies some anthropologists who have been so focused on the violent aspects of a society, often to the point of obsession, that they have provided a grossly distorted and problematic perspective, neglecting the far greater frequency of nonviolence and peace in the daily life of most people in the society.

It should also be noted that, even within relatively violent societies, most people are nonkilling in their own behavior (cf. Nordstrom, 1997, 1998). Furthermore, there are individuals, groups, and subcultures that explicitly pursue nonkilling and pacifism such as the Amish. In addition, even in the midst of wars, such as the recent ones in Afghanistan and Iraq, there are medical doctors and other persons who are saving lives and reducing suffering instead of the opposite. Nevertheless, the prevalence of many forms of violence in American society and culture to the point of obsession in the media and elsewhere should be obvious, especially with inventories like that by Paige (2002). Transcending this phenomenon is as much a problem for science as for society as Paige discusses.



History provides examples of nation states such as Germany and Japan that have been transformed from a society frequently engaged in war to one pursuing peace. Costa Rica is an instructive example as well. This country abolished the military and instead invested its resources in life-enhancing activities. Cases like Costa Rica merit much greater recognition, documentation, and analysis by anthropologists and others (Biesanz et al., 1982).

Among ethnographic cases, perhaps the most remarkable example of a rapid transformation from a killing to a nonkilling society is the Waorani of the Ecuadorian Amazon, as amply documented by the Robarcheks (1992, 1996, 1998a,b). Traditionally the Waorani were frequently involved in intergroup feuding. Through contact with American missionaries the Waorani imagined the possibilities of a nonkilling and peaceful society; they considered this to be far more attractive, and within a few decades the majority of the Waorani communities voluntarily changed. The Waorani demonstrate the plasticity and adaptability of human nature. Accordingly, they hold the promise for the possibility of other societies undergoing such a transformation, another case of an affirmative answer to Paige's first question. Also it is noteworthy that many societies in Oceania and elsewhere which had traditionally engaged in some kind of warfare to some degree were rapidly pacified by Western colonial forces, albeit often through violent means (Bodley, 2008b; Ferguson; Whitehead, 1992; Rodman; Cooper, 1979).

There are also societies which have courageously persisted in their pacifist commitment in the face of terrible violence. The Amish are pacifists, like the Hutterites, Mennonites, and Quakers. Americans and many in the rest of the world were shocked when a psychotic gunman shot to death five girls and wounded five others in an Amish one-room school in Lancaster County, Pennsylvania, on October 2, 2006. Many people were impressed as well when representatives from the same Amish community attended the funeral of the gunman whom police had killed in order to forgive and comfort his widow and children. The Amish did not respond to this horrific crime by initiating a cycle of blood revenge (Kraybill, 2008; Kraybill, et al., 2006). This should have been a lesson to the larger world, and especially American society in general and its government. It has direct relevance to the aftermath of the terrible unjust tragedy of the 9-11 attacks. What if a similar Christian response had been pursued then? What if the federal government of the U.S.A. had responded to 9-11, not by military attack on Afghanistan, but instead capitalized on world sympathy and advocated concerted action by its leaders through the United Nations, Interpol (International Criminal Police Organization), and other nonkilling means? Whether

or not this would have brought to justice the surviving perpetrators of the 9-11 attacks is uncertain. However, it is certain that U.S. militarism has not achieved that goal in the many years since 2001. Moreover, it is certain that in the interim hundreds of thousands of innocent civilians, including women, children, and elderly, have been killed and injured, so-called collateral damage. Millions have been displaced as refugees internally and beyond their homeland in Afghanistan and Iraq. Billions of dollars have been sacrificed from constructive life-enhancing initiatives to promote nutrition, health, education, economy, and other things in the USA and elsewhere. As Mahatma Gandhi observed, an eye for an eye leads to blindness. All of the vast resources—personnel, financial, institutional, technological, and so on—of the Pentagon, State Department, C.I.A., and other U.S. federal government agencies failed to prevent 9-11. The time is long overdue to open the minds of government leaders and the populace regarding the nonkilling alternatives available for dispute resolution and conflict prevention. (Barnes, 2007; Bonta, 1996; Fry; Bjorkqvist, 1997; Kemp; Fry, 2004; Ury, 1999, 2002.)

Tibet also provides a particular case to illustrate several crucial points previously identified. During its long history, in spite of some episodes of violence, Tibet was transformed into a mostly nonviolent society. The spread of Buddhism was the seminal influence in this transformation. Today the power and wealth of Tibetans are not military, political, and/or economic, but religious and cultural. That Tibetans have suffered terribly since the 1950 invasion and occupation by the Chinese with more than a million killed and thousands imprisoned and tortured to this day, and that more than 100,000 Tibetans have risked their lives in the Himalayan winter to flee to exile as political refugees in adjacent countries and beyond, does not diminish this power. Although initially there was militant resistance to the Chinese invasion by some Tibetans, subsequently under the leadership of His Holiness the XIV<sup>th</sup> Dalai Lama of Tibet, Tibetans appear to present the most outstanding case of a nonviolent response to violent invasion, occupation, and suppression. While this nonkilling approach has not liberated Tibet from Chinese imperialism, it has avoided far worse conflict and suffering by the Tibetans who are greatly outnumbered and outgunned by the Chinese. It may be only a matter of time before the situation improves significantly, although it could be decades or more before the central government of the People's Republic of China promotes a more democratic society and moral civilization in the entire country. However, there is reason for optimism, given the religiosity, courage, and resilience of Tibetans. There is also some hope, given historical precedents such as the expulsion of the British colo-

nial empire from India, the dissolution of the apartheid system in South Africa, and the overthrow of the Ferdinand Marcos regime in the Philippines, all generated by the nonviolent actions of courageous and persistent leaders and commoners in the face of overwhelming lethal force. (For more on Tibet see Blondeau; Buffetrille, 2008; Dalai Lama, 1987; Kapstein, 2006; Shakyas, 1999; Sperling, 2004; Thurman, 2008, and the official website of the Tibetan Government in Exile at <http://www.tibet.com>)

To go even deeper, into human nature, that is, while many biologists and psychologists might favor nature over nurture as the primary determinant and shaper of aggression, some have revealed strong evidence to the contrary. Of all of the species in the animal kingdom, the closest to humans are the common and pygmy chimpanzees, *Pan troglodytes* and *P. paniscus*, respectively. Only after many years of observations on a few social groups of the common chimpanzee at Gombe Stream Reserve in Tanzania did Jane Goodall and her research associates discover what they described as the rudiments of war (Goodall, 1986; Wrangham; Peterson, 1996; Ghiglieri, 1987, 1999). However, Margaret Power (1991) and others have argued that this aggression may be influenced by external factors, at least in part, and especially by the primatologists provisioning the chimpanzees with bananas in order to bring them closer for more detailed observation.

In sharp contrast to some groups of the common chimpanzees, independent studies of the pygmy chimpanzees, also called bonobos, have not revealed comparable aggression either in the wild or in captive colonies. In fact, they are just the opposite. They seem to pursue behavior according to the motto make love and not war! Bonobos use a wide variety of sexual behaviors to avoid or reduce tensions within the group on a daily basis (Kano, 1990, 1992; Waal, 1989, 1996, 2006; Waal; Lating, 1997). However, the "scientists" who favor the Hobbesian view of human nature, apparently have ideological blinders that channel them to emphasize violence to the near exclusion of nonviolence, stressing the common chimpanzees at Gombe and largely ignoring other common chimpanzee groups elsewhere where such behavior has not been observed. They also downplay the evidence of the peaceful bonobos. (see Aureli; de Waal; 2000; Harcourt; de Waal, 1992; Kohn, 1990.)

As a heuristic exercise, Leslie E. Sponsel (1996a) marshaled the arguments and evidence for the natural history of peace, pursuing just the opposite position from that of the apologists for war. The fields of biology, primate ethology, human ethology, human palaeontology, prehistoric archaeology, ethnography, and ethnology were surveyed. The basic conclusions were that: (1) although conflict is inevitable and common, violence is not;

(2) human nature has the psychobiological potential to be either nonviolent/peaceful or violent/warlike; (3) nonviolence and peace appear to have prevailed in many prehistoric and pre-state societies; (4) war is not a cultural universal; and (5) the potential for the development of a more nonviolent and peaceful world is latent in human nature as revealed by the natural history of peace (Sponsel, 1996a :114-115).

Douglas P. Fry (2006, 2007) elaborated this approach further in much greater detail. He observes that the “Man the Warrior” model asserts that war is ubiquitous in time and space, natural, normal, and inevitable. Fry asserts that this reflects a Western cultural bias that selectively focuses on certain kinds of evidence to the exclusion of contrary evidence. He observes that this Hobbesian model also stems from muddled thinking that confuses almost any kind of aggression such as homicide or blood feuding with warfare. Fry concludes that the “Man the Warrior” model is fantasy instead of fact. Moreover, he warns that this model is dangerous because it may contribute to policies of belligerent militarism as well as to inaction by peace advocates, if war is considered to be an inevitable manifestation of human nature. Fry argues that evolutionary pressures would select for restraint and for the ritualization of aggression to reduce harm, as well as for alternatives in nonviolent conflict resolution because the costs of aggression can far exceed any possible benefits. He affirms that war can be eliminated in the 21<sup>st</sup> century by transcending the narrow, unrealistic, and culturally biased mentality of “Man the Warrior” and the associated belligerent militarism, and replacing it with an emphasis on extending nonviolent conflict management alternatives practiced within democratic nation states to an international system of world and regional cooperative governance and justice such as in the United Nations and the European Union.

Such studies are an independent and objective confirmation of the assertions in the UNESCO “Seville Statement on Violence” of May 16, 1986, cited by Paige (2002: 39-40). (see Adams, 1989.) They affirm as well the statement in the charter of UNESCO; namely, that just as war begins in the minds of men, then so can peace (Barnaby, 1988). They sustain Mead’s (1940) contention that war is only an invention, and that, as such, it can be transcended.

What is needed more than ever is a collaborative project to research nonviolence and peace in both theory and practice with a commitment, expert personnel, and adequate resources on a scale equivalent to the Manhattan Project of WWII. If that war effort was so important to the world, then why isn’t a peace effort even far more so? Modern warfare is simply much too expensive in terms of human deaths, injuries, and suffering as well

as money, resources, and the environment (Andreas, 2004; Cranna; Bhinda, 1995; Hastings, 2000; Lanier-Graham, 1993; U.S. Army, 2008). Indeed, war is rapidly becoming an unaffordable anachronism in the 21<sup>st</sup> century (cf. Younger, 2007). Just consider the fact that a significant percentage of the American troops returning from Afghanistan and Iraq are bringing the war home in the form of not only physical injuries, but also post-traumatic stress syndrome, substance abuse, domestic violence, homelessness, and even suicide. The expense of all of this—medical, psychological, and social as well as economic—will be long-term and immense (Grossman, 1995; Hedges; Al-Arian, 2007; McNair, 2002). (Also see “Iraq Body Count” at <http://www.iraqbodycount.org>) Incidentally, the facts that soldiers have to be trained to injure and kill other human beings, and that many of those who do so often suffer serious emotional problems that may endure over many years, are yet another line of evidence invalidating the Hobbesian myth of dismal human nature. (Also see <http://www.refusingtokill.net>)

As in political science (Paige, 2002: 74), likewise in anthropology, authors who have dared to consider the possibilities of nonviolence and peace have been variously accused, stigmatized, and dismissed as unrealistic, idealistic, romantic, or utopian dreamers (Otterbein, 1999; Sponsel, 1990, 1992, 2000b, 2005). But such feeble attempts at a counter-argument are not sustainable in the face of the wealth of scientific evidence that has been rapidly accumulating since the 1970s.

In summary, although anthropology certainly has its limitations, it offers a far broader temporal and spatial perspective than that of political science which tends to be constrained by its focus on the governments and politics of historic and contemporary nation states (Barash; Webel, 2002; Jeong, 2000). Anthropology offers not only an affirmative answer to Paige’s first question, but also amplification and substantiation based on numerous and diverse well-documented cases in the real world. Paige discusses how individuals in different contexts from different professions or disciplines and countries answer his elemental question. No doubt he would also find a variety of responses to this question if he were to ask individuals in societies such as the Amish, Semai, Tibetans, Waorani, and Yanomami. Hopefully, future anthropological researchers may do just that.

### **Nonkilling Anthropology**

What are the possibilities for a nonkilling anthropology? At first glance, probably most anthropologists would be puzzled to consider the idea of either a killing anthropology or a nonkilling anthropology. However, consider

this logic: either you are part of the solution or a part of the problem; there is no space for neutrality. For example, if you witness a person who is apparently being beaten to death and do nothing to intervene, such as call for anyone nearby to help and telephone the police, then are you not you complicit in murder to some degree? Similarly, if you are an anthropologist in a killing society and do nothing to intervene in any way, then are you not complicit in the killing to some degree? Moreover, even from an egocentric perspective, it might be argued that ignoring the human suffering caused directly and indirectly by a killing society diminishes one's own humanity and increases one's own suffering, because we are all interconnected and interdependent (cf. Dalai Lama, 1999). Such considerations may stimulate some to contemplate the possibilities of a killing anthropology and a nonkilling anthropology.

Answering Paige's second question is much more difficult than answering the first one because it requires thinking more "outside of the box," since much of anthropology supports, indirectly if not directly, and inadvertently if not intentionally, the military-industrial-media-academic complex. To be blunt, the modern war-making machine's main effect, if not primary purpose, is usually to generate death, destruction, and suffering, as for example in the March 2003 U.S. "shock and awe" bombing campaign over the city of Baghdad. At the same time, it should be mentioned that I respect those in the military who serve honorably and even place themselves in harm's way; however, I respect even more highly someone like the courageous First Lieutenant Ehren Watada who refuses to serve in an unjust Iraq War in spite of tremendous institutional, social, and legal pressures to conform (<http://www.thankyoult.org>). Another difficulty with the nonkilling aspects of anthropology is that they are so diffuse that a special effort is required to identify and explicate them. Furthermore, much of what would help generate a nonkilling anthropology is at the early stage of critical analysis and focused on the military as an institution, its origin, evolution, structure, functions, beliefs, values, symbols, rituals, customs, and practices, rather than on positive alternatives, such as the interrelated human rights and peace movements and organizations throughout the world.

In recent decades, an increasing number of publications have critically analyzed in historical perspective the relationships between anthropology and war since colonial times to the current wars in Afghanistan and Iraq. This endeavor is not to be confused with the anthropological study of war as such. (See Ben-Ari, 2004; de Wolf, 1992; Frese; Harrell, 2003; Goldschmidt, 1979; Gordon, 1988; Gough, 1968; Gusterson, 1996, 2003, 2007; Hickey, 2003; Hymes, 1999; Jell-Bahlsen, 1985; Mabee, 1987; Neel, 1994; Patterson, 2001; Penny;

Bunzl, 2003; Price, 2008; Schaft, 2004; Simons, 1997, 1999; Starn, 1986; Stauder, 1999; Suzuki, 1986; Wakin, 1992; Williams, 1986.) Among other influences, pursuit of this subject reflects the correlated development since the 1960s of a code of professional ethics for anthropologists emphasizing the primary ethical principle of “do no harm.” That code was largely stimulated by the reaction to covert counter-insurgency research by anthropologists in Thailand during the American war in Vietnam and adjacent countries, although its roots are deeper in time and broader in experience (Fluehr-Lobban, 2002, 2003; Hymes, 1999; Whiteford; Trotter, 2008; Wakin, 1992).

At the same time, some anthropologists have been pacifists, such as Edward B. Tylor and Franz Boas, although rarely does this surface in their research and publications. It was not until the 1960s, and in connection with the Vietnam War in particular, that a variant of what might be called nonkilling anthropology began to develop. Perhaps more than any other single anthropologist before or since, Ashley Montagu as a prominent public scientist pioneered the groundwork for a nonkilling anthropology through many of his publications addressing nonviolence and peace as well as violence, including even structural violence (racism, sexism, ageism) (Lieberman, et al., 1995; Montagu, 1968, 1972, 1989, 1998; Sponsel, 2006b; cf. Paige 2002: 97). He rigorously challenged the idea that there is any biological basis for racial superiority, distinguishing between biological and social ideas about race (Montagu, 1998). Montagu (1972) was one of the leaders in the development of the UNESCO Statement on Race. Likewise, he critically analyzed and dismissed the Hobbesian view of human nature (Montagu, 1976). He edited the first anthology documenting nonviolent and peaceful societies (Montagu, 1978). Montagu and Matson (1983) scrutinized dehumanization as a tactic facilitating violence toward “the other” (Hinton, 2001; Staub 1989). More recently, several other pioneers laying the groundwork for a nonkilling anthropology stand out in various ways, including Baszarkiewicz and Fry (2008), Bodley (2008a,b), Bonta (1993, 1996, 1997), Dentan (1968), Ferguson (1995, 2002, 2003, 2006, 2007, 2008), Fry (2006, 2007), Gonzalez (2004), Graebner (2004), Gusterson (1996, 2003, 2007), Hymes (1999), Kyron and Rubenstein (2008), Lutz (2001, 2002), Nordstrom (1997, 1998), Nordstrom and Robben (1995), Price (2004, 2008), Sanders (2008), Sluka (2000), Sponsel (1994a,b,c, 1996a,b,c, 1997a,b, 2000b, 2006b), Sponsel and Good (2000), and Strathern and Stewart (2008).

Recently, the U.S. military initiated the special program called the Human Terrain System (HTS) that embeds anthropologists and other social scientists with troops on the ground in conflict zones in Afghanistan, Iraq,

and probably elsewhere as well. The main purpose appears to be to enhance the cultural information and understanding of the soldiers in order to help make their operations more effective (Kipp, et al., 2007; McFate, 2005 a,b; Renzi, 2006; Sewall, et al., 2007). It is claimed that HTS reduces conflict, saves lives, and may shorten the wars; however, so far these assertions have not been proven. One HTS anthropologist, Marcus Griffin, even maintains a website from Iraq (<http://marcusgriffin.com>).

The American Anthropological Association is the major professional organization of anthropologists in the USA, with a membership of well over 10,000. Its executive officers charged a special commission with investigating the role of anthropologists in the HTS (AAA ad hoc Committee on the Engagement of Anthropology with US Security and Intelligence Communities or CEAUSSIC). The results of their inquiry were summarized in an Executive Board Statement on October 31, 2007. Their 62-page Final Report was posted on November 4, 2007. The main conclusion is that anthropologists involved in HTS may compromise or violate the principles in the 1998 AAA Code of Ethics in various ways. They may not be able to openly disclose their purpose or obtain voluntary consent from informants, and their information may be used by the military in ways that harm their informants and/or others in their community. Another concern was that anthropologists working anywhere in the world might be mistakenly identified as associated with the U.S. military and/or HTS and thereby their personal safety might be placed at risk (<http://www.aaanet.org>). In addition, a number of prominent anthropologists have been very critical of HTS, among them Roberto J. Gonzalez (2007, 2008), Hugh Gusterson (2003, 2007), and David H. Price (2000, 2007). An organization also was formed among such critics called the Network of Concerned Anthropologists (<http://concerned.anthropologists.googlepages.com>). (Ferguson, 1988; Fluehr-Lobban, 2002, 2003; Glazer, 1996; Whitehead; Trotter, 2008.)

There is no doubt that anthropology can be relevant in facilitating cross-cultural understanding and communication as, for example, in the pioneering research by Edward T. Hall (1990) on proxemics (spatial relationships). The main problem is the ends to which anthropology is a means—causing harm or promoting welfare, violence or nonviolence, war or peace, militarism or pacifism, and so on. As part of the creative challenge of a nonkilling anthropology it is imperative to imagine the practical possibilities of a nonkilling alternative to HTS. For example, some anthropologists might have less concern if the field anthropologists were engaged with the U.S. Department of State instead of the Department of Defense, but that would also depend on current government policies. For instance, by now it is widely recognized in the USA and



worldwide that many of the policies of President George W. Bush's administration have been disastrous, to say the least (Carter, 2005; Chomsky, 2001; Gore, 2007; Govier, 2002; Singer, 2004; Wright; Dixon, 2008).

In thinking through Paige's chapter 3, one of the challenges is that anthropologists usually focus on culture and community, whereas political scientists tend to focus on power and polity, especially in the context of the nation state. However, anthropology also deals with many subjects basic to political science such as human nature, the origin of the state as civilization, and the emergence and maintenance of social inequality. In any case, thinking through the relevance of this chapter for anthropology has the potential to transform the discipline, if not even to revolutionize it. In the first paragraph of chapter 3, Paige poses several questions about political science that can be pursued through anthropology as well as other disciplines. For example, his third question asks what values would inspire and guide the work? His sixth question asks what uses of knowledge would we facilitate? These two questions were previously answered in another context by the present author who pointed to the various United Nations declarations and conventions on human rights as a framework for developing anthropological thinking and actions (Sponsel, 1994a; 1995: 277-278; 1996b, c; 1997a, b; 2001). Before and since then, many other anthropologists have conducted research on human rights theory and practice (Bell, et al., 2001; Downing; Kushner, 1988; Messer, 1993; Nagengast; Turner, 1997; Nagengast; Vélez-Ibáñez, 2004). Anthropologists have also addressed the important issue of universal human rights versus cultural relativism mentioned by Paige (2002: 117). (See Bell, et al., 2001; Herskovits, 1972; Nagengast; Turner, 1997.) Three tasks for applied science that Paige (2002: 104) identifies are prevention, intervention, and post-traumatic nonkilling transformations, and each of these can be pursued through various forms of applied anthropology (e.g., Rubenstein, 2008). Articulating teaching, research, and service with human rights, even just in a general way as a conceptual framework, can generate more social meaning and significance in the anthropological endeavor.

For the professional training of nonkilling anthropologists, the curriculum and the pedagogy would need to be substantially changed, if not revolutionized (cf. Paige 2002: 127-129). The curriculum would need to be reoriented from a structure around standard courses on subfields, topics, areas, and methods to one more explicitly focused on the important problems and issues of contemporary society and the world. It would have to emphasize aspects of nonviolence and peace, although not to the exclusion of also considering violence and war. These are among some possibilities for a curriculum:

- Unity and Diversity of Humankind
- Professional Values and Ethics in Anthropology
- History of Anthropology from War to Peace
- History of Colonial and Development Anthropology
- Anthropology of Colonialism and Neocolonialism
- Cultural Evolution, Change, and Revolution
- Anthropology of Violence and War
- Anthropology of Nonviolence and Peace
- Science, Technology, and Economics as if People Mattered
- Quality of Life: Environment, Water, Food, and Health
- Anthropology of Environmentalism, Environment, and Gaia
- Comparative Religion: Worldviews, Values, and Spiritual Ecology
- Alternative Political and Legal Systems
- Culture in Conflict Management and Resolution
- Problems and Solutions in Applied Anthropology
- Human Rights and Advocacy Anthropology
- Collaborative Ethnographic Methods

Each of these courses would address as feasible Paige's (2002: 72-74) four principles of logical analysis (see below). (Also see McKenna, 2008; Smith, 1999.) Although some of these courses mirror traditional ones, the focus would be significantly changed. For example, the orientation of a course on Alternative Political and Legal Systems, formerly political and legal anthropology, would shift to themes such as the mechanisms of nonviolent dispute resolution traditionally practiced by hunter-gatherer cultures (Avruch, 1998; Bonta, 1996; Bonta; Fry, 2006; Fry; Bjorkqvist, 1997; Greenhouse, 1985; Kemp; Fry, 2004; Rubinstein, 2008; Wolfe; Yang, 1996).

The faculty would be dedicated as much to teaching and service as to research, genuinely recognizing and rewarding the significance of all three. They would be engaged in cooperative rather than competitive activities aimed at applying their science to understanding and helping to resolve practical problems and issues, rather than advancing egocentric career trajectories by pursuing the latest academic fashions and theoretical fantasies. Accordingly, overall there would be a shift in emphasis, albeit not exclusively, from basic to applied aspects of anthropology (Barker, 2004; Fry; Bjorkqvist, 1997; Gwynne, 2003; Johnston, 2007; Johnston; Barker, 2008; Kemp; Fry, 2004; Paine, 1985; Sponsel, 2001; and Ury, 1999, 2004).

At the same time, there are economic obstacles to be overcome. For example, at the University of Hawai'i, in spite of near unanimous opposition

from faculty and students, some top administrators and a few researchers in the physical sciences recently embraced a 5-year contract for \$50,000,000 from the U.S. Navy for the development of a University Applied Research Center. At the same time, it is simply inconceivable that even a fraction of that amount would ever be invested in the annual budget of the Spark M. Matsunaga Institute for Peace at the University of Hawai'i. Such are the priorities in a killing society and in the most militarized state in the union (Blanco, 2009; Kajihiro, 2007). Killing remains more profitable than nonkilling. As General Dwight Eisenhower also warned in his farewell presidential speech to the nation on January 17, 1961: "The prospect of domination of the nation's scholars by Federal employment, project allocations, and the power of money is ever present—and is gravely to be regarded." (See Feldman, 1989; Giroux, 2007; Simpson, 1998.)

Likewise, within the professional organization of the American Anthropological Association and others, the structures and priorities would have to radically change. For example, within the AAA the Committee on Ethics and the Committee for Human Rights would have to be given top priority with corresponding financial and other resources. The themes of the annual conventions would have to place far greater emphasis on the more applied aspects of anthropology. Current priorities are crystal clear. For instance, the topical index of key words from sessions at the 2008 annual convention of the AAA lists ten sessions on violence and eight on war, but only one on peace and none on nonviolence. On the other hand, it lists nine sessions on human rights and a dozen on ethics which is more positive, a much larger number than prior to the 1990s (AAA, 2008). Incidentally, the AAA is not atypical in this respect. As another example, the second edition of the multidisciplinary *Encyclopedia of Violence, Peace, and Conflict* (Kurtz, 2008) contains 289 entries, but only ten (3.5%) with nonviolence and 29 (10%) with peace in their titles, although these topics may receive some attention in articles without these words in their titles.

Many of the phenomena that Paige (2002: 133) worries about were not problems until the evolution of the state, and especially modern nations, so they are very recent (Nagengast, 1994). Contemporary issues include abortion, capital punishment, conscription, war, armed revolution, terrorism, genocide, criminality, social violence, disarmament, and economic demilitarization (Paige, 2002: 133; cf. Levinson, 1994). According to Paige (2002: 111-112), five problems that are globally salient are: continued killing and the need for disarmament, poverty and the need for economic equality, violations of human rights and the need for greater respect for human dig-

nity and human rights, destruction of nature, and other-denying divisiveness that impedes problem-solving cooperation. (See Donnelly, 2003; Mahoney 2007). In one way or another, anthropologists have been addressing these and related matters to varying degrees. Indeed, there are many books on each of these subjects, but if any one might be singled out, including as a possible textbook, then it would be *Anthropology and Contemporary Human Problems* by John H. Bodley (2008a).

Paige concludes Chapter 3 by inviting "... thought about what political science would be like if it took seriously the possibility of realizing nonkilling societies in a nonkilling world." He goes on to write that "Acceptance of such a possibility implies active political science engagement in nonviolent global problem-solving" (Paige, 2002: 97). This is certainly a provocative question for anthropology as well. Applied, advocacy, action, public, and engaged are various qualifiers associated with anthropology that deals with practical problem solving in promoting human survival, welfare, justice, dignity, and rights in various ways and degrees (Barker, 2004; Besteman; Gusterson, 2005; Eriksen, 2006; González, 2004; Gwynne, 2003; Hinton, 2001; Johnston, 1994, 1997, 2007; Johnston; Barker 2008). Already many anthropologists are contributing to the development of a nonkilling society and nonkilling world, although not exactly with those terms in mind. There is still enormous potential for further work in this regard. However, a major obstacle is that often such practical work is not considered to be as prestigious or valuable as basic research, as for example, in the assessment for tenure and promotion of academic faculty at universities and colleges, and especially among those who are still under the illusion that science is apolitical and amoral (cf. Giroux 2007).

The framework and questions for research and praxis that Paige develops so boldly and profoundly in his book and other work opens up an entire new world of exciting and promising possibilities for anthropological research, teaching, and service with potentially far reaching practical consequences. His pursuit of a medical model for the sciences, humanities, and other professions pivoting around a central concern for saving lives, reducing suffering, and promoting well being calls for a paradigm shift, if not even a revolution. While he emphasizes nonkilling, ultimately this transcends stopping the negative—lethality, to also advance the positive—protection and enhancement of the quality of life. In the present author's opinion, the subject of human rights provides the conceptual and practical framework for such a noble endeavor.

## Discussion

Paige challenges the prevailing assumption that (1) killing is an inescapable or inevitable part of human nature or of the human condition, and the corollary that (2) it must be accepted in political theory and practice as well as elsewhere. He implies that this assumption stems from the long history of American warfare and militarism by citing numerous examples (Paige, 2002: 7-8). Even more revealing and disturbing are the more detailed historical inventories of these aggressive activities in sources such as Andreas (2004) and Churchill (2003). Thus, a systemic bias toward violence including war appears to be a product of Western and especially American history and culture (Duclos, 1997; Hofstadter; Wallace, 1971; Keegan, 1993; Lewis, 2006; Palmer, 1972; Sponsel, 1994a, 1996a). The USA is grounded in the invasion and conquest of the continent by European colonial displacement or compulsory relocation, forced assimilation and acculturation, and downright ethnocide and genocide of a multitude of indigenous societies (Bodley, 2008b; Churchill, 1997; Diamond, 1999; Ferguson; Whitehead, 1992; Jaimes, 1992; Kroeber, 1961; Patterson, 2001; Starkey, 1998; Steele, 1994). Another factor is the militarism and warfare that permeates U.S. history (Andreas, 2004; Churchill, 2003; Hedges, 2002; Hillman, 2004; Ury, 2002). Since at least WWII, the Hobbesian view of human nature has been increasingly reinforced by the development of the industrial-military complex that President Dwight Eisenhower warned about in his farewell speech to the nation.

Moreover, subsequent developments have resulted in an industrial-military-media-academic complex that infiltrates American society like a cancer, with the most rapid and penetrating growth during the presidential administration of George W. Bush as part of the post-9/11 paranoia it helped to create and maintain. Thus, for instance, for several years Americans were kept terrified with a system of periodic color coded alerts and other tactics that helped generate the lucrative profits of the weapons, military, and security industries since 9-11. The interconnected weapons and oil industries are not only the most profitable ones in the world along with illegal drugs, but also the most powerful politically as well as economically (Andreas, 2004). Accordingly, it is most sad to say that peace is likely to emerge and prevail globally only when it becomes more profitable than war.

American anthropologists who stress a Hobbesian view of human nature may be culturally as well as ideologically biased (Clark, 2002; Curti, 1980). On the one hand not all American anthropologists share the ideology that encompasses the Hobbesian view (Kegley; Raymond, 1999: 20-21, 245;

Patterson, 2001). On the other hand, to some degree all American anthropologists share the same generic culture. In anthropology, the common assumption about dismal human nature and the inevitability of war and other forms of aggression appears to still prevail, even though most reject simplistic and reductionistic biological determinism. For instance, this is reflected in the fact that there are many more books on violence and war than on nonviolence and peace, whether general surveys or particular case studies. Those on nonviolence and peace number about a dozen, whereas there are many times more that number on violence and war (Ferguson; Farragher, 1988; Sponsel, 1994a, b, 1996a, c; Wiberg, 1981). Members of the American Anthropological Association may list their specializations in a special online directory. The specializations available for listing in the AAA form include conflict, conflict resolution, ethnic conflict, violence, and warfare, but revealingly, neither nonviolence nor peace are listed.

The idea of human nature also needs to be problematized (Cannel; Macklin, 1974; Curti, 1980; Sponsel, 2007; Stevenson; Haberman, 1998). Logically, human nature may or may not exist, it may be uniform or multifarious, it may be good or bad, and so on. For example, some anthropologists would argue that there is no single, uniform human nature; instead, there are numerous human natures as expressed in the diversity of some 7,000 different cultures extant in the world today. From such a perspective, human nature is manifest in cultural diversity and is generated by nurture (social environment) instead of nature (genetics). Human nature is tremendously plastic and adaptable as well as diverse, the latter the expression of the former two attributes (Sponsel, 2007). Thus, many anthropologists would see cultural relativism as their primary disciplinary value, while some extreme cultural relativists would even dispute the existence of any meaningful cross-cultural universals common to all of humanity (Brown, 1991; Herskovits, 1972). Furthermore, within science and academia, there are many different theories of human nature (Cannel; Macklin, 1974; Curti, 1980; Feibleman, 1987; Stevenson; Haberman, 1998). Likewise, each of the world's religions has a somewhat different concept of human nature distinctive to their own worldview (Matthews, 2004). This diversity itself undermines the assumptions of a single, uniform human nature, and of the inevitability of violence and war in spite of the reductionistic and simplistic speculations of the apologists for war.

As a political scientist concerned with international relations, Paige tends to focus on the modern nation state. Anthropology also problematizes this focus because the state is actually a relatively recent invention and could well be a transitory stage of political organization in cultural evolution (cf.

Ferguson, 2003; Nagengast, 1994). As conceived by anthropologists, the state is basically coincident with civilization and only about 5,000 years old, depending on the region. Actually 99% of human existence from origins dating back to at least two million years ago was dominated exclusively by hunting-gathering lifestyles. If there is anything universal in human culture and/or such a thing as human nature, it then most likely is a result of this hunter-gatherer legacy (Lee; DeVore, 1968; Shepard, 1973). Moreover, the overwhelming majority of hunter-gatherer societies are mostly egalitarian, cooperative, nonkilling, and peaceful, as demonstrated by evidence from archaeology, ethnohistory, ethnography, and ethnology, this notwithstanding the contrary opinions of the apologists for warfare (Kelly, 2000).

As a political scientist, Paige considers power to be pivotal in society and in his discipline, and power is political with economics, religion, and other factors secondary. The parallel focus in anthropology is culture. Culture is pivotal in society and in the discipline. However, both of these are only partial considerations, albeit very important ones. Particular circumstances can be decisive. For instance, in the case of Tibet as previously discussed, Buddhism as a religion is pivotal, and the power of the Dalai Lama as a spiritual leader is primary even in exile. Given the relationship of Tibetans with China and other countries, these factors also become political, but that is secondary, even though it is often difficult to consider the religious and political as separate in this case, especially given Tibet's history since the Chinese invasion and occupation. Similarly, in the case of the Middle East, religion is a tremendous influence; it is not simply a matter of secular politics. Indeed, in Islam politics is subordinated to religion. It is impossible to understand the Middle East purely in secular terms (Eickelman, 2002; Eickelman; Piscatori, 1996; Esposito; Mogahed, 2007; Khan, 2006).

Paige is challenging not only the inevitability of killing, but also its efficacy and legitimacy. A nonkilling anthropology would reject these tenets as well. However, legitimacy invokes normative considerations, and some might reject this by claiming that science must be amoral as well as apolitical to maintain neutrality for the sake of objectivity. But that is an illusion. To take an extreme case, the Manhattan project was grounded in hard science. Yet Paige (2002: 81) notes that 19 out of 150 scientists on the Manhattan Project voted against any military use of the atomic bombs. Personally, the present author does not see any difference in incinerating Jews in the Nazi concentration camps and in incinerating Japanese in the cities of Hiroshima and Nagasaki. Both are absolutely immoral. Furthermore, the scientists who made these atrocities possible

cannot be considered amoral and apolitical. Indeed, they can be considered complicit in such crimes against humanity (cf. Christopher, 1999).

Postmodernists have called into question the assertion that science is neutral, objective, apolitical, amoral, and the like. As an example, in the controversy over the scandalous behavior of some researchers working with the Yanomami generated by the publication of the book *Darkness in El Dorado* by investigative journalist Patrick Tierney (2000), some of those who portrayed themselves as scientists clearly exhibited behavior that was just the opposite of scientific, lacking in objectivity, rife in political ideology, and downright unethical and immoral (Borofsky, 2005; Fluehr-Lobban, 2003; Gregor; Gross, 2004; Gross, 2004; Robin, 2004; Sponsel, 2006a; Sponsel; Turner, 2002; Tierney, 2000). The larger hidden agenda of many of the negative responses to Tierney was to try to invalidate a penetrating critic of one example of Cold War anthropological research (also see Neel, 1994; Price, 2008; Wax, 2008).

The above are some of my reservations, qualifications, and elaborations regarding Paige's book and thesis. At the same time, what he has to say is obviously extremely important, and increasingly so given the so-called global war on terrorism, the dire problems of globalization, the developing consequences of global warming with all of its widespread and profound impacts on society and the environment, and the increasing militarization of the planet including its infiltration of scientific and academic institutions (Giroux, 2007). These are all interrelated and acting in synergy to the point of being not only alarming, but potentially catastrophic, to say the least.

Consequently, the time is not only most propitious, but also most urgent to consider the possibilities of a nonkilling society at every level—family, community, national, international, and global. Paige's four-component logical analysis is most valid and useful; namely, to consider the conditions, processes, and consequences of (1) a killing society, (2) a nonkilling society, (3) the transition from a nonkilling to a killing society, and (4) the transition from a killing to a nonkilling society. Tibet could be a very revealing case study for illuminating these four components. In various ways anthropology offers evidence and insights that are very relevant to all four of these components, ranging from the earlier work of Franz Boas, Margaret Mead, Ruth Benedict, and Ashley Montagu, and others to the most recent work of pioneers previously mentioned.

Finally, Paige (2002: 143) asserts that: "Every political scientist and each person can be a *center* for global nonviolence to facilitate transition to a nonkilling world." More anthropologists need to become such a center. In 1993, I was privileged to participate in a small multidisciplinary conference titled "What We Know About Peace" in Charleston, South Carolina, spon-



sored by the Harry Frank Guggenheim Foundation (Gregor, 1996). However, I quickly became very disappointed and even disillusioned when it became clear that almost all of the participants were actually talking about war instead of peace. One participant even went to the extreme of asserting that peace is the presence of war (Tuzin, 1996: 3). Thank you, Glenn Paige, for opening some minds to the social and scientific possibilities of nonkilling and peace.

## Conclusions

Glenn Paige (2002) has dared to ask the very profound and provocative primary question: Is a nonkilling society possible? From my perspective as an anthropologist who has paid some attention to anthropological aspects of peace and nonviolence, and not only war and violence unlike most colleagues, I find the answer to this question quite simple. A nonkilling society is not only possible to conceive of theoretically, such societies exist in reality as revealed by the overwhelming evidence from archaeology, ethnohistory, history, ethnography, and ethnology. Thus, nonkilling is an actuality, not merely a possibility. Nonkilling and peace are scientific facts; the evidence is overwhelming and undeniable, as alluded to in this essay and sustained by the accumulating documentation, such as Bonta's website. The time is long overdue to systematically make this explicit and pursue it in every constructive way possible to create a nonviolent and life-enhancing society for the realization of the human potential for freedom, justice, peace, harmony, and creativity. Anthropology has an important role to play in such a noble and vital endeavor, if only more anthropologists can open their minds to the revolutionary possibilities of a nonkilling society and a nonkilling anthropology.

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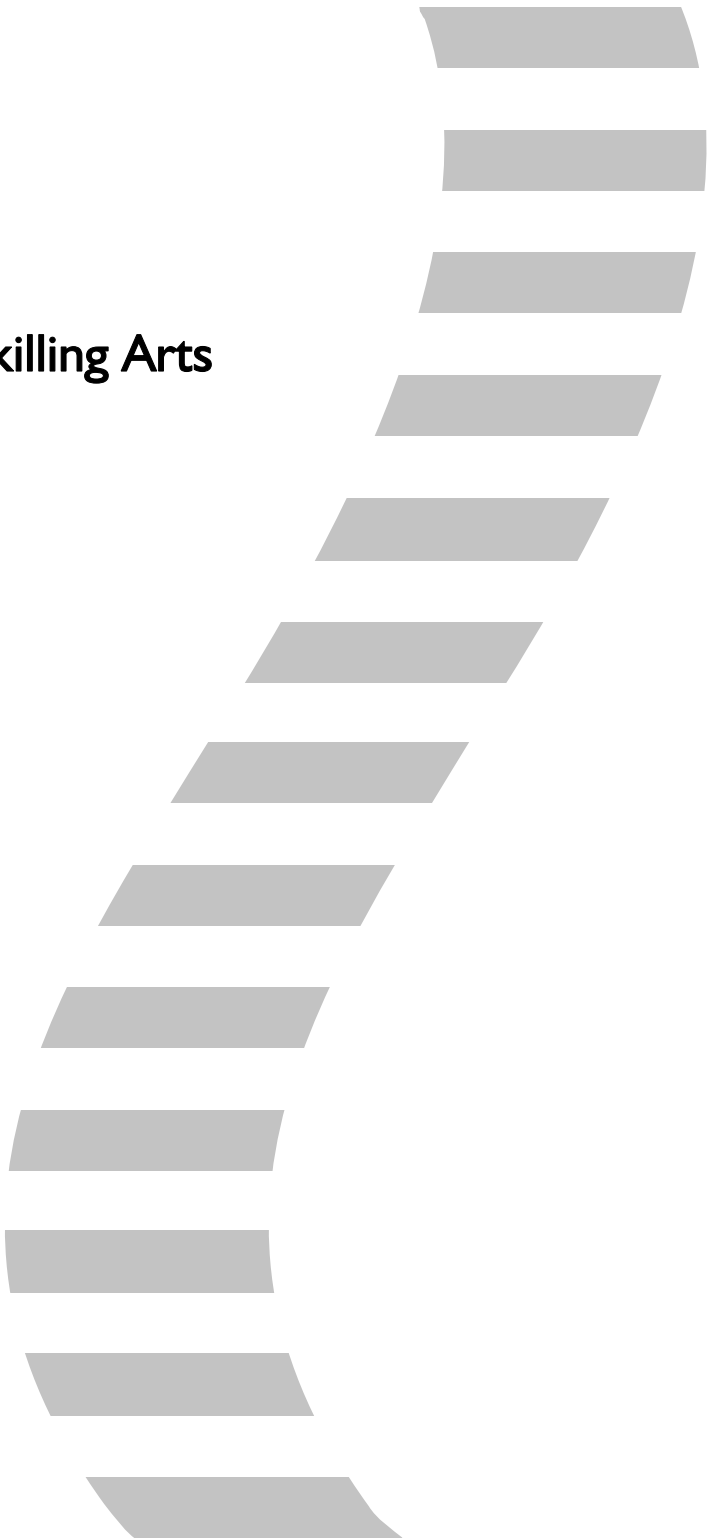
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# Nonkilling Arts







# Nonkilling Arts

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Romain Rolland quotes Tolstoy, “Art must suppress violence, and only art can do so” (...) Art Young observes, “Nonviolence is more than a system of political thought; it is the stuff of poetry and of life.” Reminiscent of the importance of martial music for military morale, a maxim in the Kingian tradition maintains, “If you don’t have a song, you don’t have a movement.” (...)

Quotations provided by Glenn Paige, (2009a: 123)

The main question that motivated me to write this chapter is “What is the role of the arts in making a nonkilling society possible?” As a first attempt to touch upon this vast and complex issue, three answers are provided here. First, Glenn Paige offers several hints in his seminal *Nonkilling Global Political Science* (2009). Second, I offer the results of some free brainstorming concerning the role of the arts. The third section invites the reader to an exploration of the human qualities enhanced by the arts. Finally in the conclusion, some avenues for further discoveries are suggested.

If we agree to consider the hypothesis that a nonkilling society can be imagined, and that concrete steps toward its realization can be taken, then there is no limit to what can be imagined concerning “nonkilling arts.” It is to be hoped that a powerful stream of creativity, new ideas, works of arts, and networks will soon irrigate our global human civilization still in the grips of a culture of violence. The ambition of this chapter is to add a few drops to this current toward a society that respects life, and toward governance at all levels that functions effectively with much less, or ideally no more, killing. In this chapter I will express myself as an individual, making highly subjective and personal statements, and my views do not automatically represent, nor are they necessarily incompatible with, the official stance of the Toda Institute for Global Peace and Policy Research, of which I am currently the director. I wrote this piece from the point of view of an amateur blues pianist, hoping to inspire an endless series of free improvisations around similar themes.

## Glenn Paige on the Role of the Arts in the Nonkilling Society Project

Synergistic nonkilling creativity among the arts can uplift the human spirit and imagination for the crucial transformational tasks ahead. (Paige, 2009: 123)

Before starting our explorations of the role of the arts in creating a nonkilling society, we need to go back to Glenn Paige's original set of questions: "Is a nonkilling society possible? If not, why not? If yes, why?" (Paige, 2009: 21), and especially to the numerous answers provided in his book to the last question: "If yes, why?" The following passage can serve as a starting point to affirm the crucial role of the arts in endeavors to build a nonkilling society:

In December 1987 a Korean professor of philosophy, president of the Korean Association of Social Scientists and political leader in Pyongyang, surprisingly replies without hesitation: "It's completely possible." Why? First humans by nature are not compelled to kill. (p. 21)

Whereas "equitable distribution" might not be easily enhanced through the arts, everything else on this list—consciousness, reason, creativity, productivity—can be directly inspired by artistic means. Moreover creativity and the arts have a crucial role to play in "education" and the "provision of a proper social atmosphere." There are many other statements dispersed throughout Paige's book letting us know that he is a strong believer in the power of the arts for the nonkilling society project. Only a few are presented here, and the ambition of this paper is not to offer an exhaustive list. The reader is invited to find many other hints in *Nonkilling Global Political Science*.

### *The Uplifting, Philosophical and Normative Power of the Arts*

Every day we are influenced by the arts, music, dance, films, literature, photography, theatre, painting and sculpture, the use of arts in the media, and more, and the collective power of these artistic energies both expresses and contributes to the overall culture of our human societies. The fact that we need to move toward a "culture of peace" immediately tells us where we are right now when it comes to the level of humanity with which we treat each other. On 10 November 1998, the United Nations General Assembly (UNGA) proclaimed the period 2001-2010 as the "International Decade for a Culture of Peace and Nonviolence for the Children of the World" (UNAC, 2009).

What should be the ethical axis of such a "culture of peace," and more specifically of a "culture of nonkilling?" Paige gives an example of the impor-

tance of beliefs and values in the shaping of such a culture. He reports findings comparing two Mexican Zapotec villages (emphasis added):

With material and structural conditions much the same, the homicide rate in San Andres is 18.1 per 100,000 compared with 3.4 in La Paz. This comparison helps us to understand that pessimism about human nature and community norms condoning violence are correlated with killing; whereas *nonkilling beliefs and values predispose to a nonkilling society*. (p. 49)

What could be a key concept at the basis of “nonkilling beliefs and values”? One such normative center, fundamental to a nonkilling culture, is “Respect for Life.” The phrase appears eight times throughout Paige’s book, as for instance when he affirms that (emphasis added) “The reality of *respect for life* in religious and humanist faiths provides a strong spiritual basis for confidence that a nonkilling global society is possible” (Paige, 2009: 41), or that a nonkilling department of political science should try to express the desired traits of a nonkilling society by affirming “nonsectarian but multi-faith spiritual and humanist *respect for life*” (p. 132). Paige also uses expressions such as “uncompromising respect for life” (p. 78) and “unambiguous respect for life” (p. 121).

Based on the above reaffirmation of the seminal importance of Paige’s original explorations, the question at the center of this chapter then becomes: “How can the arts contribute to the development of a nonkilling society, pervaded by a nonkilling culture, which would be based on an uncompromising respect for life?” First let us take a look at the answers provided by Paige himself throughout his work. Three proposals stand out as part of a coherent plan: using cultural resources, establishing centers, and developing four pillars for nonkilling transformation.

### *Cultural resources*

Paige offers a list of works of art which he includes in the category “social institutions.” It seems to me that the main point here is to use what we already have to be inspired to do more (emphasis added).

Nonkilling cultural resources are creations of art and intellect that *uplift the human spirit* and inspire advances toward realization of a nonkilling society. These include folk songs (“We Shall Overcome”), opera (Philip Glass, *Satyagraha*), novels (Bertha von Suttner, *Lay Down Your Arms*); poetry (Steve Mason, “Johnny’s Song”), art (Käthe Kollwitz, “Seed for the planting must not be ground”); and films (Richard Attenborough, *Gandhi*). The Centre for Nonviolence through the Arts, founded in 1995 by Mallika Sarabhai in Ahmedabad, India, seeks to synergize nonkilling creativity for social transformation in the visual, performing, and literary arts (Paige, 2009: 60).

A systematic exploration of works of art that “uplift the human spirit” would be fascinating, and we would like to invite the reader to join us in continuing this task.

*Centers for creativity and the arts*

More concrete than “cultural resources,” Paige’s next proposals advocate the establishment of institutions, promoting a range of positive societal reinforcements from simple celebrations to global recognition of the role of artists (emphasis added).

One institutional model—patterned after private centers that sponsor creative communities among the seven arts or among painters, poets, and writers—is to provide opportunities for artists of every inspiration to come together to celebrate transformative nonkilling creativity in response to human lethality... Synergistic nonkilling creativity among the arts can *uplift the human spirit* and imagination for the crucial transformational tasks ahead. For global recognition, benefactors should establish awards for nonkilling contributions to the arts no less significant than encouragement provided by the various Nobel prizes. (Paige, 2009: 123)

In the two passages above, Paige mentions the power of the arts to “uplift the human spirit.” This is very difficult to evaluate, and most of the time the positive impact of the arts cannot be verified empirically. To make this concept more palatable, Paige provides the example of how Thoreau and Tolstoy as literary artists have inspired the major leaders of nonviolent movements, Gandhi and King: “Nonkilling Americans, such as Adin Ballou and Henry David Thoreau inspire Tolstoy...; Tolstoy inspires Gandhi; Gandhi inspires King; all inspire German Green Party founder Petra Kelly ... and many others in a cumulative global diffusion process of emulation and innovation” (Paige, 2009: 70). Along the same lines, the transformative power of the arts can be empirically evaluated in professional fields such as music and arts therapy.

*The four elements of nonkilling transformation: the Four S’s*

The principal elements that need to be combined for nonkilling transformation are clear. *Spirit* (S1), profound commitments not to kill derived from each and all faiths and philosophies. *Science* (S2), knowledge from all the arts, sciences, and professions that bear upon the causes of killing and nonkilling transformation. *Skills* (S3), individual and group methods for expressing spirit and science in transformative action. *Song* (S4), the inspiration of music and all the arts, making the science and practice of nonkilling politics neither dismal nor deadly but a powerful celebration of life. (Paige, 2009: 130)

The fourth element, Song (S4), clearly represents the power of creativity and the arts in transformational processes. In addition, music and the arts also have major roles to play in the other three S's, namely Spirit, Science and Skill as defined above. My personal conclusion after this brief textual analysis of *Nonkilling Global Political Science*, is that there is no question that for Glenn Paige, nonkilling arts is an integral and major part of the nonkilling society project. This exercise has only confirmed the content of two long, fascinating and warm personal exchanges between this author and the founder of the Nonkilling movement, in Honolulu on 15 November 2008 and 21 July 2009.

### **Exploring the Countless Roles of the Arts toward a Nonkilling World**

For the possibility of “nonkilling arts” to make sense, there must be such a thing as “killing arts.” This might be counter-intuitive, but it is important to recognize that music and the arts have been widely used, and are still used today, to encourage people to kill as many “enemies” as possible. Hitler, Stalin and other dictators have systematically used the arts to encourage their people to commit mass atrocities through propaganda and other means of indoctrination. Marching songs have given the courage and enthusiasm to soldiers in most historical periods and civilizations to go and kill, and not fear being killed.

In the collective volume entitled *Music and Conflict Transformation* (Urbain, 2008), George Kent dedicates one chapter, “Unpeaceful Music,” to this issue. He writes:

Some music may help to make some kinds of peace some of the time, but, like many other good things, music has a dark side as well. There is music that celebrates war, viciousness, hate, and humiliation. Music does have the power to heal, but we need to see that it also has the power to hurt. Music can bring us together, and it also can divide us. (Kent in Urbain, 2008: 104)

We invite the reader to continue exploring this topic, which might provide interesting answers to the first part of Paige's original set of questions mentioned above: “Is a nonkilling society possible? If not, why not?” For instance, one possible answer is: “It is impossible, because even the arts are used for killing!” In this paper, I will continue focusing on the “If yes, why?” part of the equation.

A personal brainstorming session has yielded the following short list of the positive roles the arts can play in the construction of a nonkilling society:

- To praise the dignity of life, explicitly or not
- To expose, denounce or condemn atrocities and killing
- To promote a cause or an issue conducive to a more humane society
- To empower people in extremely difficult situations, so they can avoid having to kill or being killed
- To enhance positive human qualities that enable people to work toward the development of a less violent society (see next section)

Each of the first four statements will be illustrated by a few examples, and the last one will be more thoroughly explored in the next section. The evaluation of works of art is eminently subjective, and endless debates can be triggered by people's differing tastes and choices. In order to avoid making broad statements that would do not make much sense to anybody else, I will simply state my own likes and dislikes throughout the series of examples examined below. There is no doubt that the reader will easily provide other illustrations, expressing different experiences and a unique appreciation of esthetics and human creativity.

*To praise the dignity of life, explicitly or not*

For me, Beethoven's Ninth Symphony is a very moving piece, and I will focus on the "Ode to Joy" here. Even though evaluation of works of art are entirely subjective as mentioned above, I find comfort in the fact that it is appreciated all over the world, if not unanimously. It became the anthem of the European Union, it is played in Japan throughout Christmas every year, and is regularly performed on all continents. For countless people with various backgrounds, listening to the "Ode to Joy" brings out love for life and people, and for the power of human creativity. Once we know that Beethoven had become hearing impaired when he wrote this piece, our admiration knows no bounds. When transported by the last movement of Beethoven's Ninth, I feel the importance of life, of people, and a great enthusiasm for being alive. This can lead me, and surely others, to treasure human life, and to deepen our commitment to "respect for life." Of course there can be racist or Eurocentric interpretations, but it seems to me that there is a large consensus that the "Ode to Joy" is an uplifting piece that brings out hope and love for humanity in listeners and performers.

The power of "Ode to Joy" to inspire people to work toward a nonkilling society is implicit and indirect. The voices, sounds, rhythms and timbres do not say "no more killing," nor do they say "violence is bad." The lyrics, based on a poem by Friedrich von Schiller written in 1785, with additions

by Beethoven, do not talk about peace or nonviolence, but about joy and unity, as in this excerpt: “Joy, bright spark of divinity, Daughter of Elysium, Fire-inspired we tread Thy sanctuary. Thy magic power re-unites All that custom has divided, All men become brothers, Under the sway of thy gentle wings” (classicalmusic.about.com, 2009).

Here I want to use “Ode to Joy” as an example of a work of art that implicitly provides a message toward the imperative of creating a nonkilling society. The music and the lyrics do not say so directly, but this is the conclusion that most people can draw when enjoying a transformative experience as listeners, spectators, or performers.

I would like to state that *art that inspires us to praise the dignity of life*, even if the message is not explicit, *can contribute to the nonkilling society project*. Which work of art inspires whom to feel what is an entirely different question. Other musical pieces that have the same effect on me are most of Beethoven’s other symphonies, Vivaldi’s “Spring” from the “Four seasons,” Mozart’s “Lacrimosa” from the “Requiem,” and many other Western classical works. Taken at random from other repertoires are Herbie Hancock’s “Chameleon” from *Head Hunters*, Phil Collins’ “In the Air Tonight,” and Shinji Harada’s “Calling.” None of these songs are about the theme of nonkilling, but do bring out, in at least one listener, an appreciation of life and people that is conducive to the search for ways to realize a nonkilling society.

Sometimes the message can be more explicit, as in Mozart’s *Magic Flute*, in the famous scene when music has the power to avoid bloodshed, or in John Lennon’s “Imagine.” However the problem remains the same. The arts can inspire us to work for the realization of a nonkilling society, but it is hard to define which artwork has what effect on whom. There is also the question of “bad” art explicitly praising the dignity of life, and spelling out the necessity for a more humane world. Would these have a negative effect on the possibilities of a nonkilling society?

To conclude this section, I would simply say that if I were asked whether or not listening to or performing Beethoven’s “Ode to Joy” can contribute to the realization of a nonkilling society, the reader now knows what my answer would be, and is invited to explore his or her own.

*To expose, denounce or condemn atrocities and killing*

Pablo Picasso’s “Guernica” is the best example for me, and the most famous anti-war symbol in Western painting. When I saw the original in Madrid in 2005, I did not feel tremendous “joy” at being alive, but it did make me think about the dark side of human existence, about the absurdity of

war and the omnipresence of killing in our world. The 1937 painting depicts the bombing of Guernica, Spain, by Italian and German warplanes on 26 April of the same year. Innocent civilians and animals are being slaughtered in this navy blue, black and white mural-size composition. On the right, a desperate person has both arms thrown up in supplication. This detail is reminiscent of one of Francisco de Goya's most famous paintings, "The Third of May," painted in 1814 to illustrate the events of that took place in 1808 in Madrid, Spain, during the Napoleonic Wars. It shows a man about to be killed by a firing squad, throwing up his arms just like the figure in Picasso's "Guernica." Nowhere do these two paintings say: "stop all wars!" or "no more killing," but the viewer is invited to reflect, or avoid thinking, about the issue. There is no guarantee that the sheer number of such works of art describing atrocities and killings will lead to a nonkilling society, but let us imagine their absence for a while. If nobody produces anything describing the dark side any more, that would be a severe impediment toward consciousness raising and education toward a nonkilling society.

Other examples of works of art depicting human suffering, death and killing are Victor Hugo's 19<sup>th</sup> century novels *The Hunchback of Notre-Dame*, *Les Miserables* and *Ninety-Three*, Stephen Spielberg's 1993 movie *Schindler's List* based on the 1982 biographic novel by Thomas Keneally; and a series of sculptures by Danish artist Jens Galschiot, each called "Pillar of Shame." These 8-metre tall statues represent people suffering from oppression and have been erected in major cities throughout the world since 1997. The "VII Photo Agency" was established by a group of photographers in 2001 in order to produce a record of the injustices created and experienced by people across the world. Some of their themes are Genocide, 9/11, Afghanistan, Iraq and the Palestinian/Israeli conflict. The reader is invited to complete the list, starting with Tolstoy's *War and Peace*, and Oliver Stone's *Platoon*.

Fulfilling a role quite different from praise for the dignity of life or the uplifting of the human spirit, I believe that art that exposes, denounces or condemns attacks on human dignity has a crucial role to play in the realization of a nonkilling society.

*To promote a cause or an issue conducive to a more humane society*

Paris-based painter and designer Lida Sherafatmand does not believe that art is only for art's sake. She has published the "Humanitarian Art Manifesto" in 2004, and has held events to promote its message throughout the world every year, with support and popularity steadily increasing. The "Introduction" to the Manifesto states:



Now more than ever before, we as people from all disciplines and walks of life, need to pull our forces together to make our dream come true, our dream of peace and humanity.

We will not let discouraging news and threats diminish our hope and we will continue advancing on our road toward humanity and peace with increasing courage and passion.

In previous centuries there have been artworks produced on the themes of peace and humanity, but it is the transnational simultaneousness and the fabulous increase in the number of these works, and the dedication of artists focusing on these themes, that makes this a movement now, at the beginning of the 21<sup>st</sup> century.

We the artists,

- place our creative talents at the service of humanity, and share in the sufferings of those under injustice, with the goal of empowering them with hope and energy
- use the universal language of art to communicate the beauty of humanity and positive peace
- bring to view the need to act with care and compassion instead of inhumanity
- speak for, and on behalf of, our fellow artists who cannot exhibit and share their works because of the suppressive rules under which they live; those artists whose lives are in danger
- prompt dialogue among different cultures through our art. (Sherafatmand, 2009)

Some of Sherafatmand's paintings have titles explicitly referring to a cause or an issue: "Children's Hope," "Working for Peace," "Let's Protect our Children from Wars," "Stop Child Labor." Whereas in Beethoven's 9<sup>th</sup> and Picasso's "Guernica" the message in favor of the dignity of life is implicit, the "Humanitarian Art Manifesto" promotes the creation of art with an explicit message.

A question that comes to mind immediately upon reading the "Humanitarian Art Manifesto" concerns the necessity of a "Nonkilling Arts Manifesto." What would it look like? Would it be radically different from the above manifesto? Or should the nonkilling movement support the Humanitarian Art Manifesto and add a specific component for nonkilling arts?

In our list of examples of the way the arts can help promote a cause or an issue, we must of course add here the theme of nonkilling itself. Paige asks a fascinating question: "What kind of art will be created when artists are inspired by the belief that a killing-free world is possible and that their art can help to bring it about?" (2009b). Two examples of artists who have already started answering this question are Anis Hamadeh and Francisco Gomes de Matos.

Hamadeh is a German Palestinian musician and writer who wrote the song “No More Killing” in May 2009 to commemorate Glenn Paige’s 80<sup>th</sup> birthday. The song can be downloaded free from the Internet (Hamadeh, 2009). The first verse goes:

In the land of the free there is no more killing and no threats to kill, and no bets to kill./ Like a bell in the night that is gently ringing, all the kids are singing it now. / We are cheerful and we are proud, that is part of what nonkilling is about./ We vote for nonviolence, all the politicians, senators and presidents.

Gomes de Matos is a prolific Brazilian poet who explicitly states the source of inspiration for his recent volume: *Nurturing Nonkilling. A Poetic Plantation* (2009). An excerpt from “A Nonkilling Song” follows:

Nonkilling can be a mission  
Does it need everybody’s permission?  
Nonkilling can be a goal  
Does it touch every soul?  
Nonkilling can be a paradigm  
Does it make Peace yours and mine?  
Nonkilling can be a song  
Does it make Life “Number one”? (Gomes de Matos, 2009: 12)

To close this section, I would like to suggest another interesting project along these lines, exploring the activities of famous artists who have made a commitment to a cause. Some of the most well-known include the organizer of the Band Aid and Live Aid projects, Irish rock band Boomtown Rats lead singer Bob Geldof (humanitarian relief for Africa), Colombian rock musician Juanes (victims of anti-personnel mines), US actress Angelina Jolie (refugees), and Irish rock band U2’s lead singer Bono (poverty and hunger). They are part of a very long list of accomplished artists who have used their art, their fame, or both, in the service of a cause or an issue.

*To empower people in extremely difficult situations, so they can avoid having to kill or being killed*

If you were born and raised in the hills surrounding Caracas, your chances of having to kill to survive, or to be killed in the process, would be extremely high. An article dated 16 July 2006 described the barrios (districts, neighborhoods or more accurately, shantytowns) of Caracas as follows:

This is where the poorest of the poor live, millions of people down the side of mountains, without any permanent access to water and electricity, with-

out roads, without a decent sewage system and permanently tormented by the highest levels of crime and violence in the world. Official figures suggest that most of the world's war zones are relatively safer than big Latin American cities like Sao Paulo or Caracas. (Socialistworld.net, 2006)

How could the arts possibly alleviate the suffering of the millions of people caught in these appalling circumstances? What could music, for instance, offer to people who have to battle every day against destitution, poverty and crime? Actually, music was able to work out nothing less than a miracle:

In the violent slums of Venezuela, free classical music lessons have transformed the lives of hundreds of thousands of children and created an unlikely production line of virtuosos ... In Venezuela, El Sistema embraces more than 200 orchestras, reaching 250,000 children. It attracts more than £15 million a year of government funding. But it started humbly, with a handful of children playing in a garage. (*Times Online*, 2009)

This extraordinary success story is symbolized by the young Venezuelan Gustavo Dudamel, considered today as one of the best conductors in the world, who has risen from the barrios of Caracas thanks to an organization called El Sistema:

Inspired and founded in 1975 under the slogan 'Play and fight!' by the extraordinary social crusader Jose Antonio Abreu, El Sistema flourished with a simple dictum: that in the poorest slums of the world, where the pitfalls of drug addiction, crime and despair are many, life can be changed and fulfilled if children can be brought into an orchestra to play the overwhelmingly European classical repertoire. (*Guardian.co.uk*, 2009)

The contrast between a life of poverty and crime on the one hand, and the empowerment provided by music on the other, is striking:

Across Venezuela, young barrio-dwellers now spend their afternoons practising Beethoven and Brahms. They learn the "Trauermarsch" from Mahler's fifth symphony while their peers learn to steal and shoot. They are teenagers like Renee Arias, practising Bizet's Carmen Suite at a home for abandoned and abused children, who when asked what he would be doing if he had not taken up the French horn, replies straightforwardly: "I'd be where I was, only further down the line-either dead or still living on the streets smoking crack, like when I was eight." Or children like Aluisa Patino, who states plainly that she learns the viola "to get myself and my mother out of the *barrio*." (*Guardian.co.uk*, 2009)

Among thousands of testimonies, one more will suffice to make the point:

The leader of Los Chorros's orchestra, tipped for a professional future, is Patricia Gujavro. Her face while playing looks as though it knows more than her 17 years should afford, but her lachrymose expression unexpectedly vanishes when she speaks, breezily. Patricia lives in Palo Verde barrio with her two brothers. Her father has "never been in the family" and her mother disappeared to Ecuador last year. "I've thought a lot about what my life would have been like if I hadn't started the violin," she says. "I suppose I'd be like most 17-year-old girls in Palo Verde—hanging with the gangs and pregnant. One of my friends is 17, with a kid and pregnant again, and no idea how to support them. That... well, that hasn't happened to me yet." Her ambition, inevitably: "to join the Simon Bolivar orchestra"—if not, become an engineer, music having "given me discipline, respect for other people and for myself, unlike the other girls." (*Guardian.co.uk*, 2009)

What is amazing here is not so much that El Sistema has saved thousands of young people in Venezuela, but rather that music has not yet been used in most countries in similar ways to prevent countless precious lives from having to kill to survive or be killed in the process. There are many other examples of the tremendous power of the arts to save lives, and because of lack of space, I will only mention two illustrations of the benefits of music and arts therapy for child soldiers and refugees.

One unique story of musical healing is told by Sudanese hip-hop artist Emmanuel Jal, a former child soldier of the civil war, who is using his music and a documentary called *War Child* to share his experiences of violence and poverty, and to promote peace and education. At the age of six, Jal was trained as a child soldier by the Sudan People's Liberation Army, to fight and kill his Arab Muslim compatriots. After years in a training camp, followed by rehabilitation, study and hard work in Kenya and Britain, he became a famous artist. He says:

Music is the only thing that can speak to your mind, your heart and your soul system, your cells, and influence you without any hard work ... I put my fight into music, for two reasons: to cool down my anger, transforming that anger to positivity, and because I want to pass a message to people. At first I was doing it because it's fun [and] it's healthy; now it goes to the people. (*America.gov*, 2009)

In 2005, he collaborated with Abdel Gadir Salim for his "Ceasefire" album, the first to bring together representatives of the opposing sides of the war, a young hip-hop Christian artist and a traditional Muslim Arab singer. Jal has already produced a CD, a book and a documentary, all entitled *War Child*, and he is making preparations to build a school in his hometown.

Esther Feagan wrote a thesis for her Master of Arts in Arts Therapy at the School of the Arts Institute of Chicago, entitled “Plotting Transition: Refugees and Survivors of Torture Search for Meaning through Visual and Written Narratives.”

Her research question was: “Do personal narratives related through visuals, text, and sound enable refugees and survivors of torture who struggle with feelings of futility to recover a sense of meaning in life after migration?” (Feagan, 2009). She worked with adults who had emigrated because of trauma, and helped them to tell their stories through a combination of narrative and art therapies. The conclusion of her research was as follows:

Narrative therapy enables the client to find meaning through the process of telling a story. As the client struggles to answer the questions of “why” and “for what purpose,” recounting a personal narrative allows the client to map his or her connections between life events and their meaning. The expression of this story through visuals, text, or sound is an outward manifestation of this inward mapping. It brings into existence the elusive pieces of a life once lived, an identity abandoned, and discarded hopes newly restored. (Feagan, 2009)

The above section is just a small sample of the very different roles the arts can play for the development of a nonkilling society. For those who want to find answers to the question “If yes, why?” the arts provide a welcome relief from the tough contemplation of death, maiming, killing and destruction affecting humankind, but more importantly, offer pathways toward the transformation of the structural conditions and cultural predispositions of our world.

### **Human Qualities Promoted by the Arts**

In the first section, a Korean professor was quoted as mentioning the qualities of “consciousness, reason, creativity, productivity” as conducive to a nonkilling society. One of the founders of peace studies, Johan Galtung recommends creativity, nonviolence, and empathy as essential for peaceful conflict transformation. There are many other ways to systematize the importance of human qualities for peace, and another example is the Buddhist leader and peace philosopher Daisaku Ikeda, who recommends courage, wisdom and compassion. The psychologist Martin Seligman has identified six different categories of human qualities leading to happiness and fulfillment. First, Galtung, Ikeda and Seligman’s systems are briefly explored, then examples of how the arts do enhance positive human qualities are given.

Why did Galtung choose creativity, nonviolence and empathy? This is linked to his explanation of why conflicts arise. For him it is important to know the attitude, behavior and contradictions (ABC) characterizing the parties to a conflict. Throughout a career that spans decades and has produced more than 1,000 articles and 100 books, and countless workshops and successful conflict transformation sessions, Galtung has affirmed that in order to transform conflicts successfully without violence, the best attitude was *empathy*, the most appropriate behavior *nonviolence*, and the most effective way to deal with contradictions *creativity* (Galtung, 1996).

Galtung often uses the arts in his work for peace. For instance, *A Flying Orange Tells its Tale* is a children's book about conflict transformation published in several languages, and illustrated by his son Andreas (Galtung, 2007). He often plays the flute to indicate the start and end of his lectures at universities. Galtung has also written a chapter entitled "Peace, Music and the Arts: In Search of Interconnections" in the volume *Music and Conflict Transformation* mentioned earlier (Urbain, 2008).

Daisaku Ikeda is the leader of one of the largest lay Buddhist movements in the world, the Soka Gakkai International. He is also a man of dialogue and a philosopher of peace, who has established numerous educational, cultural and research institutions throughout the world, including a fine arts museum and a concert association. The three qualities of courage, wisdom and compassion he recommends as leading toward peace and happiness, are those traditionally characterizing the "Buddha," a human being having reached "enlightenment" (Ikeda, 2002: 10). He is a firm believer in the power of culture and the arts to connect people and enhance peace and nonviolence, and is himself a poet, novelist and photographer. Two online exhibitions of his photographs, entitled "Dialogue with Nature" and "This Beautiful Earth" can be found on a website dedicated to his work (Ikeda, 2009).

The qualities of courage, wisdom and compassion emphasized by Ikeda are also found in most other religions and humanist philosophies. Among the six human qualities most conducive to a fulfilling and enjoyable life (and by extension, hopefully, to a life of nonkilling), according to Martin Seligman, the founder of the positive psychology movement, the first three are the same as those recommended by Ikeda: wisdom, courage, love, a sense of justice, temperance, and spirituality or transcendence (Seligman, 2002: 132-133).

There is some overlap between the three lists offered by Galtung, Ikeda and Seligman above, and by adding them up we obtain the following list of qualities: consciousness, reason, creativity, productivity, empathy, nonviolence, courage, wisdom, compassion, love, justice, temperance, spirituality

or transcendence. We could easily add hope, kindness, generosity, imagination, and ingenuity.

The point of briefly describing the respective systems of the three thinkers above is to show that human qualities are not floating abstractions, but concrete behavioral structures that are at the basis of entire philosophical and educational endeavors. In this context, the collective level of human qualities displayed by people at a certain point in time determines the quality of the culture of a society. If we want to move toward a nonkilling society, one of the most crucial elements will be the fostering of positive qualities in ourselves and others.

The potential of the arts to promote these qualities is tremendous, more accurately, boundless. In the volume *Music and Conflict Transformation* mentioned earlier, Felicity Laurence devotes an entire chapter to the power of music to enhance empathy. Most people have tasted the personal satisfaction and sense of accomplishment that accompanies the simplest artistic task.

Creating art collectively has been a way to develop social cohesion for thousands of years. Visual artist Bert Monterona has become an expert at bringing people together through the joint creation of mural paintings, even people caught in opposing sides of violent conflicts.

Music and arts therapy are now recognized for their beneficial power to heal all sorts of physical and mental illnesses, and scientific research has now started into the potential of group music therapy, as in the groundbreaking research of Pavlicevic and Ansdell entitled *Community Music Therapy* (2004).

There are many more examples that show the amazing power of the arts to enhance human qualities conducive to peace, happiness, and collectively, to a nonkilling society.

## Conclusion

Before suggesting some avenues for further explorations, I would like to end with a challenging question: if the appreciation of arts depends on the subjectivity of the beholders, and if progress toward a nonkilling society is a question of commitment, where does the process start? Will the arts influence people to make that commitment, or does it all depend on people's commitment from the beginning?

Personally, I think commitments are made as a result of millions of small internal and external events, and are not simply the product of the rational use of our neocortex at some precise point in time. I find it crucial to promote a nonkilling society by any means possible, and especially through the arts. With the impending threats of accelerating global climate change, and

resource scarcity including peak oil and water shortages, it is of the utmost urgency for us to learn how to get along and organize our societies on a better basis than killing or the threat to kill.

To end this chapter, I would like to suggest a few avenues for further research or explorations, compiled with the help of some friends.<sup>1</sup>

- How do we conduct a systematic exploration of works of art that “uplift the human spirit” contributing to a nonkilling society?
- What would a “Nonkilling Arts Manifesto” look like? What would be the best way to optimize the impact of both this new manifesto and the “Humanitarian Art Manifesto” mentioned earlier?
- Continue the list of artists who have used their art for a cause or an issue; people like Bob Geldof, Juanes, Angelina Jolie and Bono.
- Peter van den Dungen is professor of peace studies at the University of Bradford, UK. He is the founder (1992) and general coordinator of the International Network of Museums for Peace and editor of *Peace Museums Worldwide*. He believes that peace museums have a major role to play in the development of a culture of peace. He also promotes peace tourism. For instance, he questions the fact that whereas most cities in Europe exhibit on their town squares an equestrian statue of a weapon-wielding man, symbolizing the greatness of local heroes, very few have a sculpture of one person (or more) accomplishing some heroically compassionate actions (Van den Dungen, 2002). What would nonkilling museums and nonkilling tourism look like?
- How can we evaluate if the use of nonkilling arts makes a difference? Is there any way to collect evidence that people who are exposed to nonkilling arts become more peaceful and less violent? This research can provide new avenues on the links between social psychology and the arts.
- Once people start producing nonkilling arts all over the world, how do we find out which societies create more nonkilling arts (of the explicit type)? Would those be the less violent societies (showing that people express the overall culture of their societies), or the more violent ones (showing that people need the arts to express their most urgent needs)?

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<sup>1</sup> Many thanks to Itir Toksoz, Terrence E. Paupp and Glenn Paige for providing most of these suggestions.



- What could be the role of educational institutions such as music conservatories, fine arts institutes, departments of (for instance) peace studies or ethics at universities, in the promotion of nonkilling arts?
- Certain states have funding for the arts. From a policy perspective, how do we encourage states to sponsor public programs that promote nonkilling arts?
- Explore the use of nonkilling arts at all levels, from elementary to university. What would be the use of integrating such a topic in the regular curricula in different countries? Would there be a difference between the countries considered to be democratic, and those less so? This could contribute to the Democratic Peace Theory if we broaden its scope to include the hypothesis that democracies do not fight each other because their people share a common human heritage of arts and culture, value creativity and the arts, and even focus on nonkilling arts. A related question is: Would countries that introduce nonkilling arts in their regular curricula become more democratic as a result? Or more peaceful without any increase in the democratic level?
- What can international organizations such as UNESCO do to promote nonkilling arts or to do research on nonkilling arts?
- In his speech at Amherst College on 26 October 1963, John F. Kennedy mentioned the links established by Robert Frost between poetry and power. How could decision-makers and people in positions of power in general become more sensitive to the centrality of the arts and poetry, especially nonkilling arts, for effective and humane governance? The relevant excerpt from Kennedy's speech follows:
 

Our national strength matters, but the spirit which informs and controls our strength matters just as much. This was the special significance of Robert Frost... At bottom, he held a deep faith in the spirit of man, and it is hardly an accident that Robert Frost coupled poetry and power, for he saw poetry as the means of saving power from itself. When power leads men toward arrogance, poetry reminds him of his limitations. When power narrows the areas of man's concern, poetry reminds him of the richness and diversity of his existence. When power corrupts, poetry cleanses. For art establishes the basic human truth which must serve as the touchstone of our judgment (Kennedy, 1963).
- The reader is hereby invited to continue the list.

As mentioned at the beginning of this chapter, Glenn Paige did not invent nonkilling. This concept is at least a few tens of thousands of years old, as old as humanity. Moreover, before there were any human beings on the planet to even think about it, we can assume that animals refused to kill every day, based on recent research (see Bekoff; Pierce, 2009). What Glenn Paige has provided to humanity is a way to think about the issue in a systematic way. This set of questions is a pure stroke of genius: "Is a nonkilling society possible? If no, why not? If yes, why?" For this he deserves our eternal gratitude, which can also be expressed through numerous works of art.

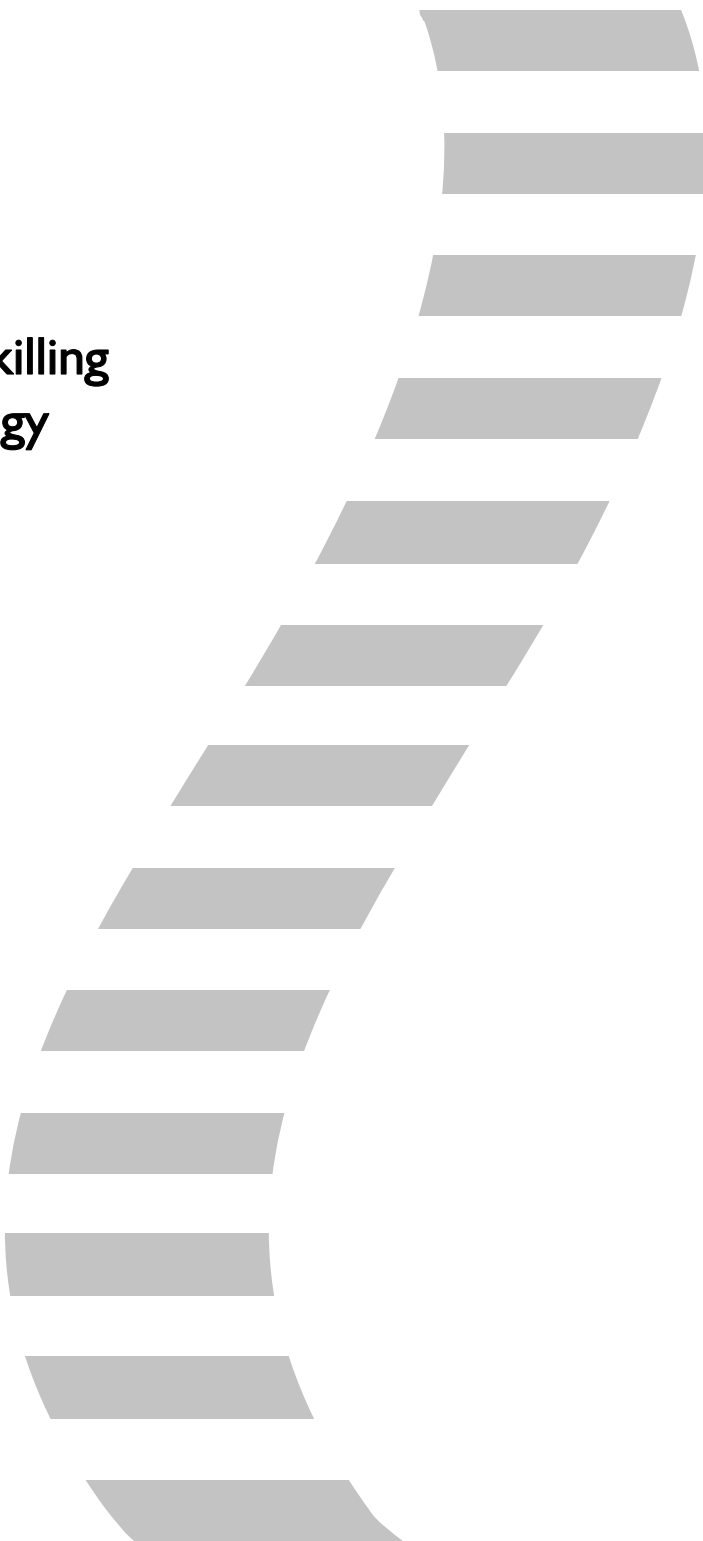
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# Nonkilling Biology





# Nonkilling Human Biology

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In the years 1960-70 scientists became aware of the need to develop new ideas about the social responsibility of science. It had in fact become clear that advances in science, like other human pursuits, are not occurring in a vacuum of independent objectivity; social and political trends channel research questions, condition support for specific fields of study as well as the application of findings. More dangerously, they also influence the interpretation and practical use of results and the decision to inform, or not, the public about new discoveries.

In this context, the discipline of Peace and Conflict Studies has been undermined by prejudices and political interference. As a consequence teaching and doing research in peace and nonviolence is still considered a useless and naïve pursuit by the public at large and not a politically correct field of study by academic administrators.<sup>1</sup> Moreover, most tertiary institutions that have eventually introduced courses or degree programs on Peace and Conflict Resolution have done so within the theoretical framework of *negative peace*, that is, accepting all form of violence (structural, direct, cultural violence and war) as unavoidable features of human life and proposing only ways of reducing their negative effects. The theoretical approach of negative peace is being accepted with increasing enthusiasm by public and private institutions, especially when it concerns military intervention in troubled regions (the so-called peace missions) or humanitarian assistance of communities disturbed by war. In fact Master programs in Peace and Conflict Resolution of this type for paying students have recently become a true business for universities.

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<sup>1</sup> For example, in the beginning of the 1990s a group of academics found much resistance among colleagues to their proposal to establish a degree in Peace and Conflict Studies at the University of Queensland, Brisbane. Interestingly, the strongest opposition came from political scientists and international relations experts, while other disciplines offered warm support. The degree course was eventually established, became popular with students, led to the acquisition of important external grants, and allowed the creation of one of the most active international centres of peace studies.

The studies about nonviolence, and nonkilling in our case, belong instead to the theoretical framework of *positive peace*—that is, the sets of proposals aimed at the prevention of all forms of violence, not just their reduction. This field of studies is rare in teaching and research programs, probably because it implies two unpopular premises: *defining human nature* and *changing well established life styles and socio-political models*.

The aim of the present chapter is to deal with the first issue, defining human nature, by asking the question: are human beings compulsive killers? If they were, it would be really naïve to propose a nonkilling society.<sup>2</sup> With another work we have been dealing with the second issue of positive peace, namely the possible modalities of transition from a structurally violent to a nonviolent community.<sup>3</sup>

### The Need to Define Human Nature

The topic of human nature is rarely discussed and normally only within a philosophical context (Stevenson, 1987). But modern findings in neuroscience and anthropology allow a revision of outdated assumptions in social and political sciences. In fact, one cannot propose a project involving the introduction of nonviolent alternatives without critically considering the widely accepted idea that human beings are congenitally violent. This old assumption has long justified punitive and repressive solutions against antisocial behaviour, as the only way of containing allegedly unavoidable forms of violence; it also has justified accepting killing other human beings in war as part of human nature. In reality, the culture of violence is faithfully transmitted from one generation to the next, without being aware of its origins (Giorgi, 2001, 2008).

The current literature of political science, psychiatry, human ethology and sociobiology is strongly influenced by the biologically deterministic stand taken by the founders of these disciplines: Thomas Hobbes (mid 17<sup>th</sup> century), Sigmund Freud (late 19<sup>th</sup> and early 20<sup>th</sup> century), Konrad Lorenz (early 20<sup>th</sup> century), and Edward Wilson (late 20<sup>th</sup> century), respectively. In the literature of these disciplines the question about the origins of human behaviour (killing being the specific case in question here) is at best answered with the

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<sup>2</sup> We owe such an innovative concept to Glenn D. Paige and his enlightening teaching at the University of Hawai'i and the Center for Global Nonkilling. See Paige, Glenn D. (2009), *Nonkillig Global Political Science* at <<http://www.nonkilling.org>>.

<sup>3</sup> See Giorgi, 2007. Alternatively, contact the author at pieropgiorgi@gmail.com. An updated and enlarged Italian version of the same work is also available at [http://www.neotopia.it/download\\_neotopia.html](http://www.neotopia.it/download_neotopia.html).



erroneous “compromise” of a 50-50 contribution of “nature” (genetic information) and “nurture” (social influence). Modern developmental neurobiology demonstrates, instead, that no qualitative or quantitative aspect of human social behaviour can be innate.<sup>4</sup> Modern anthropology also provides evidence that the behaviour of *Homo sapiens* is more likely the result of a biocultural (not biological) selection for cooperation and solidarity, which very probably characterised our species since its emergence about 100,000 years ago (Giorgi, 2001, cf. note 5, ch. 3). Much direct (human ethology) and indirect (rock art) evidence also refutes the idea of human congenital violence (see also Giorgi, Anati, 2004). In this paper the biological evidence will be discussed to answer the question of whether we are killer-apes.

### Definition of Terms

Multidisciplinary research is the most effective approach for human biocultural studies, which provides a holistic and comprehensive understanding of human affairs. This approach necessitates explaining specific terms and their related concepts for two purposes: to communicate with a nonspecialist audience and to avoid semantic misunderstanding when terminology is not clear in both the media and specialist literature.

Below is a glossary for those *terms and concepts whose particular usage in this work needs to be explained*. A glossary is normally offered at the end of an essay, but we think that an initial list of short definitions prepares the reader to better integrate special terms when later met in a complex text. References are not provided, as the same concepts will be discussed in the text of this work.

*Aggression.* A specific behaviour aimed at damaging or destroying a living being (plant or animal), normally for alimentary purpose. Hunting and gathering involve aggression. Sexual competition among males is normally a display of fitness to improve the choice to be made by females. Note that, unlike violence, aggression is not specifically intended to damage or destroy other individuals of the same species.

*Aggressiveness.* It represents a congenital predisposition to acquire aggressive behaviour after birth. Therefore it does not represent information for a specific behaviour. In the literature, aggression, aggressiveness and vio-

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<sup>4</sup> The evidence provided by neuroscience is only summarised in the present work. A detailed presentation for non-specialists can be found in Giorgi (2001, cf. note 5, ch. 2). Detailed presentations for specialists can be found in Ellis, Bjorklund, eds. (2005) and Nelson, Haan, Thomas (2006).

lence are normally used as synonyms, causing in this way much misunderstandings and conceptual confusion.

*Behavioural predispositions.* In humans they are congenital predispositions, not congenital information for specific behaviour. A behavioural predisposition only set the level of postnatal stimulation necessary to channel an individual toward a certain category of behaviours. A specific behaviour within that category will then be defined by postnatal models. Therefore behavioural predispositions do not contribute to the definition of social behaviour in any shape or form (what the individual will actually do and how). For this reason the current idea of a 50-50 contribution of genetic information and postnatal learning to define specific social behaviour is invalid. It would be like adding apples and pears. In humans social behaviour is defined only by postnatal social models and personal experiences.

*Biocultural evolution.* Parallel evolution of behavioural predispositions and specific behavioural models acquired by children and youngsters after birth from their cultural context. As a consequence of biocultural evolution, human behavioural predispositions are common to all human beings without being specific behaviours (we have no instincts, apart from the few instincts of babies). Specific social behaviours (aggression and violence included) are not congenitally or genetically defined and differs in different cultures. In biocultural evolution, natural selection acts on both prenatal and postnatal information to make them change in harmony and slowly. In the late Neolithic this harmony was lost, as purely cultural changes occurred quickly and in absence of corresponding changes in congenital predispositions. As a consequence we are still born with a brain suiting a hunter-gathering culture or, to be precise, for living in a nonkilling culture.

*Biocultural studies.* All academic disciplines have to do with human beings, some only marginally (e.g., Astronomy, Physics, Chemistry), most of them very directly (e.g., Medicine, Sociology, Psychology, Economy). It is becoming increasingly clear that human affairs cannot be studied without a multidisciplinary approach: Sociology, Political Science, History and Philosophy are not enough to understand what happened in the past, causal mechanisms and what would be better for us in the future. We cannot continue exploring human beings only partially with individual disciplines or, worst, sub-disciplinary specialisations. For the purpose of this work—answering the question of whether we are congenital killers—we suggest that both so-called scientific disciplines and so-called humanities should be involved; in particular biomedical sciences and cultural studies are necessary, hence the term biocultural studies.

*Conflict.* In the general literature this term is marred by semantic vagueness. The whole field of studies dealing with conflicts and conflict management is also affected by confusing terminology. For clarity and effectiveness, we suggest the following terminology. When two persons or communities are confronted with a difference of opinion or interests, but no conflict has yet materialised, they are facing a conflict of interests (not a conflict). If the conflict of interests is dealt with in a violent way (the stronger one will prevail) they will face a conflict, often a social confrontation, or a physical fight or a war. If the conflict of interests is dealt with in a nonviolent way (dialogue, consultation, formulation of win-win solutions, etc.) a conflict will be prevented. This terminology, and its related concepts, allows a more sophisticated discussion and, importantly, includes the concept of prevention. The strategies of conflict resolution or conflict management normally deal, instead, with situations after the conflict has occurred.

*Conflict of interests.* A conflict of interests is a social situation that represents a potential conflict, which will occur if nothing is done to prevent it. See Conflict.

*Congenital characteristics.* Congenital literally means ‘born with.’ It refers to both genetic characteristics (specific DNA sequences) and conditions experienced by the foetus in uterus. The popular literature often uses the term “genetic” to mean congenital. For example, mental deficiency due to malnutrition of the pregnant mother is congenital, not genetic. Importantly, uterine congenital characteristics are not inherited by the next generation, while genetic characteristics are. For the themes discussed in this paper the important genetic/uterine congenital characteristics are behavioural predispositions.

*Cultural violence.* See violence. A special case of structural violence that affects the way a person thinks. Indoctrination, political propaganda and commercial advertising are among the many forms of cultural violence.

*Deep culture.* Important neuronal connections are formed in our brain during the first 5-6 years of life under the defining influence of post-natal experiences and nonverbal behavioural models. They define social values by establishing logical connections (cell contacts) between cultural situations and their consequences. At a later age memories of this experience settle within sub-cortical regions and escape consciousness to become the so-called deep culture operating at a subconscious level. Deep culture keeps influencing conscious behaviour throughout life via reciprocal connections with the cerebral cortex, but escaping the awareness of the subject. In this way we are convinced of carrying congenital “drives” or “impulses” that are

beyond our control (the imaginary instincts), while we are just influenced by very early postnatal inputs.

*Direct violence.* See violence. Aggressive behaviour displayed by a person against another person; it can be verbal or physical (wounding, torturing and killing). Intentional killing is the extreme form of man-to-man violence and is typical of (historical) human beings. As this is not practised by animals, one needs a term (violence) different from aggression. In this sense, animals are aggressive not violent, and hunting is aggression against other species, not violence.

*Functional potentialities.* They are functions that are eventually displayed by adult humans, but are in our congenital (genetic) developmental program only as potentialities (incomplete structures), because they need a strong postnatal input in order to complete their development as conceived by our biocultural evolution. Examples: bipedal gait, speech and language, hand dexterity, social behaviour, etc. For example, a child can be born perfectly normal (larynx and brain regions ready to work) but the neural connections for speech must be constructed under post-natal stimulation (hearing adult speaking), otherwise the child will say nothing. Conclusion: one is not born a human being; one becomes one after birth if the necessary models are available.

*Human beings.* They are individuals of the species *Homo sapiens* who emerged in Eastern Africa about 100,000 years ago. Therefore the study of human nature should not be limited to historical humans who lived in the last few thousand years. On the other hand, other species of the genus *Homo* or other Hominids or Primates are not “our ancestors,” as often said, because they belong to other species and survived through different adaptive strategies; we only share a common ancestry with them, as we do with all other species of animals at more or less ancient times.

*Human nature.* Human nature is the set of characteristics that distinguishes human beings from other species of animals, Primates in particular. Zoologists have no hesitation in defining the nature of all animal species, by describing body shape, geographical region(s) inhabited, diet, and specific behaviour. In the case of humans, however, we have stopped at their body shape (anatomy). This author has proposed (Giorgi, 2001, 2008) that pre-historic and contemporary hunter-gatherers (their spirituality included) could be a model for human nature, because recent historical modifications have been invented and are purely cultural. Therefore the simply historical view of human beings that has so far dominated sociological analyses and political proposals, being misleading has not promoted human progress beyond technological advances.

*Human instincts.* Terms used by Sigmund Freud (together with “drives” and “impulses”) to indicate specific behaviours that are built in our congenital (prenatal) characteristics. In fact this is the way zoologists and animal ethologists use the term instinct: a specific behaviour that expresses itself even in absence of specific postnatal input. As animals evolved from Fish to Herbivores, Carnivores and Primates, the repertoire of instincts gradually decreased because postnatal acquisition and learning turned out to be more advantageous than congenital behaviour to adapt to a changing environment. Human beings have only a few instincts, all associated with babies in the first year of life: searching the nipple, suckling, orienting their senses toward mother, clasping objects passing in front of their visual field and swimming around the first year of age. All other sensory-motor functions are acquired in the first few years of life under social guidance and learned throughout life. Therefore social behaviour, violence and killing included, are not instincts; Freud did not benefit from modern scientific advances.

*Neurological imperatives.* One normally thinks that humans can adapt to any physical or social environment. That is not so, if we consider the nature of human nature. *Homo sapiens* is a tropical/subtropical species and is healthier and happier in that environment. *Homo sapiens* has also been selected to live in a small-sized community, without a hierarchy and where members know each other and display solidarity toward each other. The human brain is more at ease (healthier) in such a social environment, as proved by the rapidly increasing cases of chronic depression in contemporary competitive and violent societies. We have obvious neurological imperatives.

*Nonviolence.* It represents a mental attitude and behavioural strategies that favour consultation and negotiation in order to set in place win-win solutions of conflicts of interests. Nonviolent solutions are not passive or appeasing; they require action, courage and intelligence. It does not take much intelligence to resolve a conflict of interests with violent strategies—that is, with a conflict—as it has been done in the last 8,000 years or so.

*Peace studies.* They are multidisciplinary studies that aim at understanding the causes of violence and war in order to prevent (not just reduce) them and propose possible nonviolent solutions of conflicts of interests. At the moment the theoretical bases of peace studies are weak, because academics and intellectuals still avoid dealing with the issue of human nature and the origins of human behaviour, nonviolence and violence.

*Postnatal acquisition.* The completion of functional potentialities in parallel with the definition of neural circuitries during the first 5-6 years of life. After this initial period of basic neural construction, one begins postnatal

learning of new skills. Erect posture, hand dexterity, and speech, for example, are acquired, and not learned. The general literature wrongly uses “acquiring” and “learning” as synonyms.

*Postnatal learning.* Information added to the memory bank of the brain after all functional potentialities have been acquired. In fact, the function of transforming short-term memory into long-term memory (learning) is itself one of these functional potentialities.

*Religion.* Religion emerged after the production of food (agricultural and pastoral economies), as a superstructure of pre-existing spirituality. Religion carried the following novelties: a priestly authority, the concept of god(s), rituals, and moral instructions. The traditional collaboration with civil authorities has often embroiled religion in structural violence and caused a loss of spirituality.

*Spirituality.* Spirituality is a functional potentiality typical of human beings, who are concerned with important metaphysical questions: the origins of natural features, the origins of humans, the relationship among humans and between humans and nature, and fundamental questions about life and death. The human cerebral cortex has an area in the frontal lobe that becomes particularly active during meditation and mental concentration on metaphysical issues. Prehistoric cultures and contemporary hunter-gatherers demonstrated sophisticated forms of metaphysical association with elements of nature and with other human beings. They did not consider themselves masters of nature (rather guardians of it) nor masters of other people (but as equals in society). The particular way this functional potentiality was expressed was through their particular culture (just as language was), not separate instructions provided by clergy and political movements.

*Structural violence.* Structural violence is the source of all forms of violence. According to Johan Galtung, it is the sum of those ideas and institutions that limit the development of the human potentialities of each individual. Falling ill of a preventable disease, lacking education, being deprived of love or cultural identity are among the many examples of structural violence.

*Violence.* Violence is a term to be used only for human beings. It represents intentional oppression, wounding and killing directed toward other human beings, therefore members of the same species. Arguably other species do not display violence, only aggression. In the literature, aggression, aggressiveness and violence are normally used as synonyms, causing in this way much misunderstanding and conceptual confusion. We cannot discuss nonviolence without a good definition of violence, especially of structural violence.

*War.* It is a form of direct violence against a perceived “enemy” involving a sophisticated social organisation, a culture accepting or admiring armed forces and weapons, and a dominant minority that has a vested interest in staging war, while not fighting in it.

### A Very Different Species

*Homo sapiens* is the only species on Earth that oppresses, maims and kills systematically and in large scale, members of its own species. An ethologist from Mars landing here today to study animal behaviour—not knowing about human brain development, prehistory and history—would be excused for deducing that killing each other is part of that strange Primate’s nature. However the Martian would wonder about this species’ chances of surviving any longer with such a nonadaptive behavioural trait. We 2009 human observers should know better. The relevant information is written in university textbooks used by students, but we choose to ignore it and adopt the same myopic view of the Mars analyst by thinking that we are violent by nature, just because we see violence and war in historic times and around us now.

Aggression and killing is indeed a functional potentiality of human beings, but our biocultural evolution selected it to kill animals and plants (hunter-gathering), *not other human beings*. In fact oppressing, wounding and killing human beings started only after the invention of food production and the increase in size of human settlements (Giorgi, 2001, 2008). It is therefore a recent and purely cultural invention that has little to do with human nature. On the contrary, there is evidence that living in a structurally violent community is not healthy for human beings. Let us see how Sigmund Freud investigated this aspect of our psychology with great intuition and an unavoidable mistake.

### The Error of Sigmund Freud

Sigmund Freud addressed the question of human aggressiveness in his 1930 book *Civilisation and Its Discontents* (*Das Unbehagen in der Kultur*). He should be recognised for having proposed for the first time that the cultural evolution undertaken by human beings in the last few thousand years—the period of so-called “civilisation”—took a direction that was not conducive to their neurological imperatives. Freud then suggested that this would explain our diffuse sense of malaise and the emergence of neuroses. This novel approach to the causality of psychiatric conditions should have stimulated a critical investigation of human nature in the academic world, but it did not, because the vast majority of social thinkers accepted Freud’s

unsubstantiated explanation of this human malaise. He suggested that neuroses were caused by our basic needs to express aggression against each other and to satisfy unrestrained sexuality. These needs were seen as clashing with society's repression of the behavioural traits associated with these very needs. However, his basic intuition of a mismatch between neurological imperatives and social evolution can support quite a different causal explanation, as discussed below. A critical re-assessment of Freud's contention is warranted by advances in neuroscience and anthropology that occurred since he wrote *Civilisation and Its Discontents*.

In his essay, Freud (1961) followed an interesting line of reasoning. He started by considering the question "What is the purpose of human life?" (p. 771). This question is normally considered within the domain of religion, but Freud argued it must be addressed with scientific arguments. While the aim of life is to be happy, he held that this human aspiration is not included in the scheme of Creation (p. 772). Then Freud offered his materialistic definition of happiness: the gratification of basic instincts (p. 773). Problems of terminology and scientific anachronism undermine his thesis.

The term "instinct" refers to a specific congenital behaviour (such as the running of new-born turtles toward the sea) that is not dependent on post-natal experience. Modern textbooks of developmental psychology tell us that *Homo sapiens* represents the extreme case of the successful evolutionary strategy of reducing instincts to a minimum in order to adapt to specific environments through a postnatal definition of behaviour. Of course this requires high levels of learning capacity and long periods of parental care, which are typical of Primates. As a consequence, the repertoire of human instincts is limited to the specific behaviour of newborn babies in finding the nipple and knowing how to suckle, and one-year old children swimming in the absence of any teaching. No other social behaviour is based on congenital factors, i.e., is instinctive.<sup>5</sup>

The list of gratifying behaviours considered by Freud—those seeking libido, eroticism, intoxication, enjoyment of beauty, etc. (p. 773-776), which are obviously not instincts, as they all require complex postnatal experience in order to be defined and are exquisitely different in different cultures—are hardly good material to investigate the congenital character of human

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<sup>5</sup> See Gallagher, Craig (1987); Nelson (2006, cf. note 6, p. 5). The large work by Ellis and Bjorklund (2005, cf. note 6) does not even discuss instincts. In spite of such a good consensus in developmental human neurobiology, the public is not informed about such a simple but important aspect of human behaviour.



happiness. But we must be kind to Freud, as he formulated these ideas about one hundred years ago when cultures, different from Judeo-Christian, had hardly been studied. At that time developmental neurobiology was not even born as a discipline and Cesare Lombroso was busy photographing prisoners to work out the phrenology of criminal behaviour.<sup>6</sup>

Freud's central argument is that the gratification of "instincts" is happiness, but "... when the outer world lets us starve, refuses us satisfaction of our needs, they become the cause of very great suffering... our so-called civilisation itself is to blame for a great part of our misery, and we should be much happier if we were to give it up and go back to primitive conditions" (p. 776).

Rightly so, in presenting his explanation of human unhappiness or discontent Freud never referred to Jean Jacques Rousseau, because the Austrian psychiatrist did not deal with morality, such as the "good, noble savage" vs. the "bad, immoral civilised man," as Rousseau did. Freud dealt only with instinctive social behaviour—as if humans had such a thing—and considered it to be a basic characteristic of *Homo sapiens*, just like having one nose and two feet.

The other alleged instinctive social behaviour considered by Freud—namely our "instinct" of killing other people—is more relevant to peace theory, the origins of nonviolence and the nonkilling social project. For Freud, a person's neighbour allegedly represents:

a temptation ... to gratify ... aggressiveness on him ... to humiliate him, to cause him pain, to torture and kill him. *Homo homini lupus*,<sup>7</sup> who has the courage to dispute it in the face of all evidence in his own life and in history? This aggressive cruelty ... also manifests itself spontaneously and reveals men as savage beasts to whom the thought of sparing their own kind is alien. Anyone who calls to mind the atrocities of early migrations, of the invasion by the Huns ... even indeed the horrors of the last World War, will have to bow his head humbly before the truth of this view of man. (1961: 787)

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<sup>6</sup> The media have not yet digested the idea that famous historic discoveries were made by scientists who lacked modern knowledge and necessarily also made mistakes: the old masters are not error-free. Freud discovered the subconscious and showed that we are not totally rational beings, a great contribution to the knowledge of the human mind, but some of his other suggestions are now highly questionable. The same applies to Charles Darwin. He discovered natural selection (not evolution), but his poor knowledge of heredity led him to wrong statements about the mechanism of transformism. Even Konrad Lorenz, one of the founders of ethology, drew wrong conclusions about the origin of violence because he lacked modern knowledge of brain development.

<sup>7</sup> This Latin expression is normally attributed to Thomas Hobbes, but it was first used by the Roman playwright Plautus (*Asinaria* v. 495, "*lupus est homo homini*").

In the case of aggression and killing, Freud uses the same line of reasoning used for sexuality: “Men clearly do not find it easy to do without satisfaction of the tendency to aggression that is in them; when deprived of satisfaction of it they are ill at ease.” And then he concludes: “If civilisation requires such sacrifices, not only of sexuality but also of the aggressive tendencies in mankind, we can better understand why it should be so hard for men to feel happy in it. In actual fact, primitive man was better off in this respect, for he knew nothing of any restrictions on his instincts” (p. 787).

We are facing here a severe case of scientific anachronism and historical myopia. Serious studies of anthropology only started about two decades after the publication of *Civilisation and Its Discontents*. Therefore Freud could not know that *Homo sapiens* had inhabited the earth about 100,000 years before his “Huns and World War.” Moreover, modern scientists have no reason to believe that prehistoric people, our true ancestors,<sup>8</sup> used violence against each other, either individually or in an organised manner similar to war. The best evidence in support of our nonviolent prehistory is the general lack of man-to-man direct violence in prehistoric rock art (see Giorgi, Anati, 2004) and the nonviolent social organisation of hunter-gatherers who were studied in the 20<sup>th</sup> century before being physically eliminated or acculturated by colonialists (see Lee, 1979, 1988).

Freud’s intuition of a mismatch between human nature and modern society is interesting and worth pursuing. However his subsequent line of reasoning is not in agreement with recent advances in neuroscience and anthropology. Freud’s ideas of human nature were derived from Thomas Hobbes’ *homo homini lupus* (man as a wolf to other men, *Leviathan*, 1651), a 350-year-old view which lacks the support of modern human biology. It is amazing that the same idea today should remain an acceptable explanation for the origins of the State in political science.<sup>9</sup> The persistence of communication

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<sup>8</sup> Popular reports often refer to other species of Hominids (*Australopithecus*, *Homo habilis*, *H. erectus*, etc.) as “our ancestors,” while our ancestors are only *Homo sapiens*, a species that underwent a unique path of natural selection. We have only common evolutionary origins with other Hominids, just as we have common origins, much earlier on, with rats. Simply attributing to us behavioural traits of other Hominids, or rats as it is often done, is not good evolutionary biology.

<sup>9</sup> Interestingly, anthropologists as well are still struggling with an explanation for the origins of the State. For example, (Bodley, 1997: 182): “The rise of centralised state political power is perhaps the greatest anthropological mystery of all.” Most authors take a descriptive, historical approach, while the few attempts at a causal explana-

barriers between disciplines, particularly between sciences and humanities, is a serious limitation for the advancement of knowledge in human affairs.

In conclusion, Freud is right about one thing: human “discontent” is definitively there. It currently takes the form of a dramatic increase in cases of depression throughout the world (data from the World Health Organization). But Freud’s explanation for this discontent can be turned on its head. It may well be that the high level of structural and direct violence in modern society is not conducive to happiness for human beings, whose neurological make-up was selected to live in small, nonviolent, cooperative communities.<sup>10</sup> My explanation is just the opposite of Freud’s, as he believed that “primitive man”—a meaningless term in modern science—was free to kill and fornicate as his nature required, and now he suffers from prohibitions imposed by “civilisation.”

Let us now review what Freud did not know about human brain and evolution, which misled him into conceiving such an anachronistic hypothesis. Unfortunately it is still influencing social sciences and lay people.

### A Unique Strategy for Brain Development

Direct violence and killing are sophisticated, complex social behaviours—not just the simple and unavoidable result of stress, impulses, level of hormones, crowding, etc. as commonly described<sup>11</sup>—therefore their origins must be explained within what we know in 2008 about the definition of human social behaviour (Ellis, Bjorklund, 2005, cf. note 6), not with ideas

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tion (Spenser, Sahlins, Carnerio, Service) are based on very local, specific cases that lack the necessary general application.

<sup>10</sup> Modern population geneticists agree that *Homo sapiens* must have maintained its basic genetic make-up and neurological imperatives since its emergence 50,000-100,000 years ago. In fact a species with large populations that continuously mix would be prevented from stabilising significant genetic changes.

<sup>11</sup> After the news of a particularly brutal killing, TV programs offer interviews with high-level police officers or learned psychologists/psychiatrists, or even respected clergy, who try to reassure the worried public with “rational” explanations. In these occasions one can hear the most unscientific propositions: “he experienced a sudden drive to kill” or “his mind became split between reality and impulses,” etc. The more plausible explanation is, instead, that the killer experiences a situation of deep frustration and rage that unleashed a behavioural model built up in his subconscious after hours and hours of viewing of violent films. During these powerful experiences his brain “really” killed many, many times (see the discussion about “mirror neurones” in Ellis and Bjorklund, cf. note 6, p. 387-389) and linked everything with its emotionality and subconscious behavioural models (see deep culture).

formulated long ago. The strategies of the development of the human brain and behaviour belong to a well established and successful trend of reduction of instincts in favour of post-natal acquisition of behaviour, which started in Carnivores and Primates and reached its most refined version in *Homo sapiens*. In fact cultural transfer is more adaptive in social species than congenital behaviour. The following sections will show how genetic information is not able to define human social behaviour; therefore violence cannot be part of our congenital characteristics. For this conclusion one also needs to understand the meanings of behavioural predisposition and biocultural evolution.<sup>12</sup>

Three unfortunate trends keep the so-called nature/nurture debate (the relative importance of congenital factors and post-natal learning) outside the realm of healthy scientific speculation.

(1) *The persistent dualism of brain and mind.* While rapid advances are being made in the understanding of molecules, cells, functions and dysfunctions in all human organ systems, including the nervous system, the understanding of human behaviour is still hampered by a shroud of mystery, unjustified dualism,<sup>13</sup> and a general reticence of including behaviour with other biological parameters of *Homo sapiens*. The ideas of brain=genes, mind=social contribution represent bad science.

(2) *The exaggerated disciplinary fragmentation of the academic world.* Speculation about human behaviour is carried out separately by psychologists, philosophers, literary scholars, sociologists, anthropologists, and political scientists on one side (generally trained in humanities) and by ethologists, neuroscientists, clinical psychologists, neurologists, and psychiatrists, on the other (generally trained in biomedical sciences). A multidisciplinary approach is obviously needed to have a holistic (complete) view of human beings.

(3) *The inappropriate role assigned to genetic information.* Since the 1960-70 the biomedical world has enthusiastically elevated genes to the role of all-powerful controllers of living beings. This genomania, with its obvious political and commercial support, will be recorded by future science historians alongside medieval astrology, 18<sup>th</sup> century vitalism and 19<sup>th</sup> century phrenology. The belief in uncontrollable forces that determine our destiny (stars, fate, vital spirits, cranial bumps and genes) relieves us from personal and political responsibilities. The inappropriate role attributed to genetic information can be found in the theoretical basis of even the most ad-

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<sup>12</sup> For this see behavioural predispositions and biocultural evolution; Giorgi (2001, cf. note 5, Section 2.4, p. 101); Lopreato (1984).

<sup>13</sup> For a criticism of the dualistic view of brain and mind, see Damasio (2005).

vanced studies in developmental psychology, e.g., the school of Evolutionary Developmental Psychology (Ellis; Bjorklund, 2005, cf. note 6, especially Chapter 6). These researchers talk about “gene-environment interaction” without defining the nature of such interaction beyond evolutionary mechanisms and the suggestion of a 50-50 contribution of genes and environment. The concept of *behavioural predisposition* (see Glossary) would, instead, set the correct role of genetic information, which cannot define behaviour in any shape and form or proportion.

### **The Construction and Specification of Our Brain Continues After Birth**

Birth is an important turning point for what concerns the vascular-respiratory and digestive systems, but most other developmental processes follow a continuum. As during late foetal life, after birth brain neurones grow longer processes (axons), axon collaterals branch out, new synapses are formed and the established ones are strengthened, unsuccessful axon collaterals and weak synapses are eliminated, weakly connected; neurones die out, and more glial cells and myelin sheets are added.<sup>14</sup> Therefore the post-natal nervous system does not just increase in size, as do other organ systems; it still undergoes much structural specification, substantial aspects of internal design, new connections, and acquisition of new functions. This general strategy is the most important aspect of the post-natal development of the human nervous system.

Thus, after birth, the same foetal mechanisms of spatial-temporal information continue at the cellular and molecular levels, except that now *a new powerful information system* is at work: the sensory input provided by the rich environment of babies, children, and adolescents. If they grow up in a killing culture, they will obviously accept killing as normal, admire those who kill, and participate in the killing society. This cultural deviation has been transmitted from generation to generation for about 8,000 years.

### **The Nervous System does not Develop Uniformly**

As in other mammals, the human nervous system develops in foetal and post-natal life in keeping with a timetable of maturation.<sup>15</sup> Generally speaking, the spinal cord and the brain stem (the most caudal levels of the central nervous system) differentiate earlier than the cerebrum (middle and higher levels)

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<sup>14</sup> For simple explanations about the cellular structure of the brain, see Giorgi (2001), cf. note 5, Section 2.1.

<sup>15</sup> For a non-specialist description of brain structures, see Giorgi (2001, cf. note 5).

(see Nelson et al., 2006, cf. note 6). Within the cerebrum, functions (circuits and their connections, not brain regions) differentiate earlier than others in order to be functionally mature at appropriate stages of life. Hence certain functional aspects of smell, sucking, taste, neck movements, hearing and vision are quite mature at birth, in order to interact with the mother. Later in infant life initial functional aspects of limb and trunk motility develop, and a predictable, but individually variable, timetable of events takes place as the child grows. In humans the developmental timetable is such that the highest integrating region of the brain (the cerebral cortex) defines most of its functions well after birth, when it is exposed to appropriate environmental influences. In particular, the cortical regions in the frontal and temporal lobes concerned with memory, emotions and socialisation (most of the limbic system) are the last to reach their adult level of differentiation quite late in post-natal development (Ibidem). Some structures are still differentiating at 20 years of age.

This belated structural specification of the human brain and the correlation in time between environmental instructions and formation of the appropriate pathways in the cerebrum are very important for the strategy of a post-natal specification of brain and behaviour. This is particularly so in the case of the neural connections correlating memory, emotion and social behaviour.

Dramatic empirical evidence that the specific wiring of brain regions mediating social behaviour occurs under specific instructions from the particular social environment experienced by children and adolescents can simply be found in the extreme diversity of human social behaviours in different cultures. Moreover, the social behaviour of children adopted at early age becomes that of the adopted culture; a similar phenomenon occurs in the case of the social behaviour of second-generation migrants. This developmental strategy turned out to be much more adaptive for a species, such as *Homo sapiens*, characterised by sophisticated social interactions; instinctive behaviour would not be adaptive.<sup>16</sup>

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<sup>16</sup> The existence of instinctive behaviour in humans is a common folk belief. Statements such as “I did it instinctively,” “I was born that way,” “That’s me, I can’t help it,” etc. are not just colloquial expressions. If asked to expand on that note, a candid belief in instincts often surfaces. This belief in instincts has its basis in widespread ignorance about cultural transfer in babies and children and about non-verbal cultural transfer at all ages. This is probably the major source of confusion in the nature/nurture debate concerning human social behaviour. The basic misunderstanding springs from the difference between the popular meaning of “behaving instinctively” (doing something without a strong cognitive input because of familiarity with the situation) and the scientific meaning of “instinct” (a behavioural trait defined only by congenital information). Many be-

In view of the above, it is very difficult to see how violence and killing, sophisticated expressions of social behaviour, could be inscribed in the congenital pre-natal program of our brain and be an unavoidable aspect of human nature. Textbooks of cell biology explain that DNA can only inform for the sequences of amino acids to form proteins, not for other complex events in development, such as behavioural acquisition or behavioural learning.

### Higher Brain Functions are Very Plastic

The high level of plasticity of the brain structure subserving consciousness (the cerebral cortex) (see Kandel; Jessell, 1999) is not unique to humans. It only represents the latest—humans emerged only 100,000 years ago—expression of a very well established evolutionary strategy initially adopted by early mammals. Birds and early Mammals invest in some degree of parental care for a smaller number of offspring, rather than abandoning numerous offspring at the mercy of the environment (as fish and turtles do, for example). Parental care became particularly advantageous to social mammals (e.g., gazelles, wolves, chimpanzees), as the group also provided further protection and, importantly, post-natal information for the appropriate definition of developing brain structures and thus behaviour. These mechanisms of social information for brain development and behaviour are collectively referred to as cultural transfer.

Recent studies strongly suggest that sensory input is more than just a generic growth stimulus of the brain, but it is necessary to complete the differentiation of neurones and the establishment of important functional connections leading to an appropriate adult brain and behaviour. A selection of the most striking evidence is listed below.

- a) Binocular neurones in the visual cortex of carnivores and primates (species with frontal eyes) differentiate during a precise post-natal critical period (e.g. one week in cats, around eight months in babies) only if the two eyes are correctly aligned on the same visual

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havioural traits and attitudes acquired early in life by imitation and without explicit verbal instruction (Barnett, 1988: 251-253) are retrieved subconsciously, hence the conviction that they are congenital or “instinctive.” The memory of events and situations lived in infancy (up to 5-6 years of age) is lost by the time adulthood is reached, and so is the consciousness of how information was acquired. Some authors in education call this subconscious information “deep culture,” without clarifying its ontogenetic origins.

- field; there is no congenital information for the development of the important function of binocular vision.
- b) Species of birds that sing during courtship need post-natal cultural transfer to acquire this appropriate behaviour necessary for mating; congenital information only provides a rough and insufficient vocalisation (see Cherfas, 1979a, b, c).
  - c) Young carnivores need to learn from their mothers the skills necessary to capture prey; congenital information only provides the instinct to chase smaller animals, but not the specific strategies necessary to capture them (Chesler, 1973: 289-92).
  - d) Young female monkeys need to see adult females nursing a newborn in order to acquire the specific behaviour necessary for maternal care; there is no congenital information (instinct) for this important reproductive behaviour (Swartz, Rosenblum, 1981: 431-32).
  - e) Babies need to be taught how to walk on two legs by encouragement, help and example: *bipedal gait is not an instinct in humans*.
  - f) Babies need the opportunity to use their hands with the encouragement, help and example of adults, before completing the neuromuscular development necessary for opposing thumb and fingers: *hand dexterity is not an instinct*.
  - g) Babies need rich post-natal input in order to develop verbal communication: *articulate speech and language are not instincts*. Interestingly, zoologists use bipedal gait, hand dexterity and speech to tell us apart from chimpanzees, our closest Anthropomorphic Apes. This probably means that we are not born as human; we become human after birth. Even more interestingly, *Homo sapiens* has only about 30,000 genes, just like chimpanzee, and their sets of genes differ only by 1% in quality. Are 300 genes sufficient to explain differences between human nature and the chimpanzee's nature? These simple and easily understandable facts would be enough, besides other more complex evidence provided here, to become very suspicious about the idea of killing as part of human nature. It is much more likely that genetic information and congenital characteristics have little or nothing to do with human social behaviour.<sup>17</sup>

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<sup>17</sup> A simple, terse statement about the alleged genetic basis of social behaviour can be found in a modern textbook of cell biology in the section dealing with the development of the nervous system: "Clearly, no behaviour is inherited. What is inherited is DNA" (Alberts et al., 1994: 985).



## The Forbidden Experiment

Zoologists and ethologists define a given behaviour of a species to be an instinct, by raising newborn animals in isolation and showing that the normal behaviour is displayed even in the absence of special post-natal experience or cultural transfer. Ethical principles forbid carrying out such an experiment with newborn babies, in order to test the existence of social behavioural instincts, but we have accurate reports of a few cases of children who, by accident or cruel rejection, lived in severe isolation or in the total absence of human contact (see Lane, 1977; Candland, 1993; Rymer, 1993). The “wild child of Aveyron” (late 18<sup>th</sup> century France) was very well documented by Itard, the founder of speech therapy. A substantial amount of information about Kaspar Hauser (early 19<sup>th</sup> century Germany) was also collected. The case of “Genie,” a girl severely neglected and abused by her family, has been studied in many ways but it did not produce much information about basic concepts in brain development. In all these cases the poor or even zero input from other humans caused severe disability of the cognitive and sensory-motor functions of these children. They were not cases of congenitally disabled babies, because of their ability to recover part of their normal human functions when exposed to remedial treatment. The amount of recovery was inversely proportional to the length of isolation experienced and the age of the child.

The most dramatic case of so-called wild children was the well documented finding of two girls who lived in a wolf's den until the age of about 5 and 7 (Candland, 1993: 53-68). Amala and Kamala walked on all fours, howled instead of speaking and ate food on the ground without using their hands. One of them, who was subsequently looked after by a clergy, learned to walk, dress herself and use her hands, but she never learned to speak.

The question raised by these cases concerns the sources of information necessary for human behaviour. Without post-natal cultural transfer we cannot even demonstrate the very behavioural characteristics that make us human, when compared to apes: speech, bipedal gait and hand dexterity. If there is so little congenital information for these very basic characteristics, scepticism is justified about the substantial congenital information claimed for intelligence (Plomin, 1990), violent behaviour (Harth, 1991), and even political attitudes (Martin, et al., 1986), let alone the complex and sophisticated social behaviour associated with killing.

### Functional Potentiality, Congenital Predisposition and Behaviour are Different Concepts

Here we use the example of speech (Jablonski, Aiello, 1998) to clarify terminology and concepts which are essential to debate the definition of human behaviour on a scientific basis. Human speech and languages are subserved by congenitally defined structures (laryngeal cartilages and their muscles, specific muscles for breathing, specific cerebral cortical regions) and structures defined after birth (motor neurones regulating the function of the vocal cords, specific connections within the cerebral cortex).

*Speech is a functional potentiality of the human species.* This function is only a potential, because if congenitally defined structures are not combined with appropriate information (hearing adult speaking) at a critical period after birth, the child does not speak. The child may have normal laryngeal cartilages, but does not speak because the auditory system has not conveyed to the brain the necessary information to complete development.<sup>18</sup> This post-natal information would in fact have provided a child of 1-3 years of age with a language (Bavarian, English, Cantonese, Welsh, etc.), the functional potentiality of speech not being sufficient for post-natal function.

If functional potentiality is characteristic of a species, *congenital predisposition is characteristic of an individual.* To continue the practical example of speech, a child may have a congenital predisposition to high-level articulate speech, if foetal development has provided certain structural features conducive to a better-than-average skill in speech: a favourable shape of the tongue, rich innervations of its muscles, well shaped lips and teeth, richly innervated laryngeal muscles, well shaped laryngeal cartilages, appropriate brain stem and cortical areas well supplied with blood. When combined with average or above average sensory input, this favourable congenital predisposition would lead to better articulated speech, but it would not inform the child about which language to speak and what to say.

*The actual act of speaking represents a specific behaviour.* The language you are using and what you are saying is a very important aspect of social behaviour, which reveals the type of information you received after birth.

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<sup>18</sup> For specialists—The auditory system must convey to the cerebral cortex the information necessary to complete the development of cortical language centres (upper motor neurones), so these in turn instruct brain stem centres (lower motor neurones) responsible for innervating laryngeal muscles (nucleus ambiguus). Without such a sensory input human functional potentialities are not realised.

## What About Killing?

After this example of speech, we can analyse the special social behaviour of killing.

*Killing is a functional potentiality of human beings.* In fact, our biocultural process of evolution designed us to kill animals and plants (hunter-gathering) to feed ourselves. For this reason we are still born with the necessary physical characteristics and, most of all, with the necessary brain to know—through cultural transfer and personal observation—plants and animals and to build implements to collect and kill living beings. As in the cases of other species, our biocultural evolution did not, however, select us to kill members of our own species.

*Special features of a person's congenital predisposition can facilitate social acquisition and later learning for killing,* that is, hunting and gathering. That person would probably grow into a good coordinator of the hunt or a good leader in gathering, because he/she responded much faster and better to behavioural models offered by society. However, these models provided the information, not the congenital predisposition.

*The specific social behaviour of killing* (the actual behaviour) would reveal the particular social and physical environment that a person experienced after birth. If he was born into a Palaeolithic band, he would never experience any social channelling toward killing members of his own species; on the contrary he would have been reprimanded for seeking any form of violence when confronting a conflict of interests.

Oppressing, wounding, and killing other human beings probably began quite recently, after the invention of food production. Let us now consider the evidence for suggesting that such a cultural novelty occurred after about 90,000 years of an essentially nonkilling existence. We will briefly review the evidence that, as in the case of the development of brain and behaviour already mentioned, is being kept hidden from the wider public.<sup>19</sup>

## Nonkilling in Palaeolithic Art

In the last forty years or so palaeoarcheology has documented about 1-2 million images produced throughout the world by human beings before the invention of food production and the emergence of large human settlements. I suggest that artistic expression is part of human nature, a product of our

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<sup>19</sup> This censorship of scientific information has interesting political implications, whose discussion would go beyond the scope of this work.

biocultural evolution, therefore a constituent of human biology. Therefore the history of art does not start with the “great civilisations” of the Mediterranean region and Middle East, but about 40,000 years ago when Palaeolithic people began to engrave or paint images on the surface of rocks and bones and built small statuettes made of stone or bone (see Anati, 2003). These works are not only important for the history of art, but they also represent historical documents that need to be “read” and interpreted. Such intellectual enterprise is slowly finding its methodological and theoretical bases.

For our question about the possible nonkilling nature of human beings, it is interesting that among so many visual art items probably only 50 or 100 have so far justified suggestions, though not well founded, that they would represent violence (man-to-man aggression).<sup>20</sup> If the popular idea of “brutal cave men” was correct, Palaeolithic art should be full of violence. On the contrary, it is dominated by animal hunting, representations of nature, sex, and symbolic signs. Images of weapons, warriors, and killing only begin in the late Neolithic, after the onset of agricultural and pastoral economy.<sup>21</sup>

The other interesting fact is that this essentially nonviolent nature of Palaeolithic art is not being noted in specialist books, museum exhibitions, and the popular press. On the contrary, when a timid suggestion is put forward by an author that one particular item may perhaps suggest violence, the popular press launches into a wide publicity of the finding in support of the idea that we have been killing each other from the very beginning of our existence.<sup>22</sup> This unscientific attitude has, of course, important political implications, whose discussion goes beyond the scope of the present work.

### **A Nonkilling Primate Begins to Kill**

We have been accustomed to consider agriculture (domestication of plant and animals) as just another clever invention of human beings in the long sequence from simple stone implements to moon rockets. But the production of food (as opposed to hunting and gathering) has truly been a turning point for humanity.<sup>23</sup> The slow process of biocultural changes that made

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<sup>20</sup> For a criticism of the “reading” of violence in Palaeolithic art, see Giorgi and Anati (2004, cf. note 15), or Giorgi (2008, cf. note 5, pp. 72-74).

<sup>21</sup> See Giorgi (2008, cf. note 5, fig. in p. 70).

<sup>22</sup> See Giorgi (2001, cf. note 5, section 3.2, note 17, pp. 137-138).

<sup>23</sup> The domestication of animals and plants was independently invented in three places on Earth: in the Middle East about 12,000 years ago, in Southern China about 9,000 years ago and in Central America about 6,000 years ago. This led to the establishment

*Homo sapiens* emerge among other Hominids became a very fast chain of purely cultural changes for which our brain was not suited. Our neurological imperatives could not (still cannot) cope with life in large, hierarchical communities affected by competition, social injustice, wounding and killing each other, which soon characterised food-producing culture. In the last few thousand years the vast majority of human beings have become unhappy, ill and with limited material resources (goods and services), while a small minority has become apparently happy, ill and with a huge amount of material resources. It has not been a good innovation for humanity, *but we are still calling it civilisation*.<sup>24</sup> Killing other human beings, in particular, is a clear departure from 90,000 years of a well established nonkilling human tradition; it cannot be described in any conceivable way as a civilised advance. *We solved this contradiction by convincing ourselves that human beings are violent by nature* and have been killing each other from the very beginning. This might have been an honest mistake when put forward 350 years ago by Thomas Hobbes, but to keep perpetrating it now would look more like a convenient exploitation of public ignorance by those who benefit from violence.

In 1986, the International Year of Peace, twenty academics and intellectuals met in Seville to discuss the question of whether human beings are violent by nature. They concluded their discussion with the *Seville Statement on Violence* (issued on 16 May 1986 and adopted by UNESCO on 16 November 1989) that negated such an idea.<sup>25</sup> I agree with such a position,

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of settled communities and nomadic pastoral communities. These practices spread into neighbouring regions at the average speed of one kilometre per year. Importantly, clear signs of structural and direct violence soon appeared, as indicated by archaeological findings. Artistic and documentary evidence of war soon followed.

<sup>24</sup> Admittedly, professional specialisation and social injustice allowed a lucky few to develop art, science and literature. We now benefit from these acquisitions brought about by structural violence, but awareness of nonviolent strategies could bring about peace once again without having to give up useful and harmless inventions.

<sup>25</sup> The Seville statement contains five core ideas: "It is scientifically incorrect to say that we have inherited a tendency to make war from our animal ancestors. It is scientifically incorrect to say that war or any other violent behaviour is genetically programmed into our human nature. It is scientifically incorrect to say that in the course of human evolution there has been a selection for aggressive behaviour more than for other kinds of behaviour. It is scientifically incorrect to say that humans have a 'violent brain.' It is scientifically incorrect to say that war is caused by 'instinct' or any single motivation." The natural belligerence of human beings has also been questioned by Van der Dennen (1995), Bonta (1996) and Fry (2006).

but I consider it insufficient. It is also necessary to explain how it is that human beings are now killing each other systematically on such a large scale and, importantly, when this cultural novelty began.

In an attempt to stimulate a study about the origins of violence, I put forward a hypothesis about how structural violence started in the late Neolithic and how direct violence and war followed.<sup>26</sup> This hypothesis needs to be investigated and confirmed or refuted with specific research projects. Only after understanding the causal chain of events that lead us to killing other human beings, we can suggest appropriate changes in the current killing culture in order to again find our true nonkilling nature, that is, our human dimensions. If we continue to believe that we are violent by nature, no advance will be made in that direction.

### **Killing: Law, Punishment and their Contradictions**

If a man is accused of having killed a person, a court establishes facts and responsibility and he may go to jail.<sup>27</sup> This would seem fair and straight forward, but instead it involves serious problems. What are our motivations for committing a killer (or any other criminal) to jail? Ever since Cesare Beccaria's 1764 seminal book *On Crime and Punishment*, there has been much debate on this topic without shedding much light on the question of punishment. Unresolved contradictions in criminology and jurisprudence still leave doubts about six explanations about jailing.<sup>28</sup>

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<sup>26</sup> See Giorgi (2001, cf. note 5, pp. 152-170); Giorgi (2008, cf. note 5, ch. 4).

<sup>27</sup> In this case the use of the male gender has a purpose: so far the great majority of antisocial behaviour, criminal plots, murders and general killing are perpetrated by men. This gender difference is rarely emphasised or discussed in the media, as it goes against both popular beliefs (human nature is evil) and scientific facts (the Y chromosome does not carry instructions for criminality). We are left wondering why we keep on creating male delinquents so efficiently and consistently.

<sup>28</sup> Committing criminals to jail is a relatively recent solution. In the distant past jails were mainly used for political opponents. Criminals were killed, maimed, tortured, exposed to weather and public mockery or fined. Jail started being systematically used in the 19<sup>th</sup> century and soon saturated available space; forced labour in the colonies partially solved the problem. Now jails are overcrowded again: about one prisoner per 1,000 people is the average in Europe, while the United States has about one prisoner per 350 people, and increasing. This is one of several signs indicating that we are facing a tragically failing social system based on violence and punitive measures.

- a) *The killer is given the chance for rehabilitation.* The name often adopted for the government department dealing with jails, Corrective Services, would suggest that this may be the aim of jailing. But we know that jails are, on the contrary, training camps for young criminals, a reinforcing environment for mature thugs, and a corrupted institution permeated by drugs and violence.
- b) *Society needs to be protected from dangerous persons.* If this were the aim of jailing, all sentences should be for life, with later revisions if clear changes in his attitude and behaviour subsequently occurred.
- c) *Harsh punishments for crime are a deterrent for potential criminals.* But several studies instead have shown that harsher punishments for a given type of crime do not result in a lower incidence of the same crime. This is due to the irrational motivations of crime and/or the well-rooted hope of escaping arrest.
- d) *Punishment is a revenge offered to the victims.* This explanation is rejected by the judiciary and often by the victims themselves. But the joy and relief externalised by the victims and their relatives and friends following a “just” sentence would cast doubt about their real feelings.
- e) *While in jail the criminal pays a debt to society for the damages caused.* This popular belief becomes quite ironic when we consider the enormous cost paid by society to keep people in jail—often higher than the income earned by the criminal before being committed. Moreover, the alleged “payment of a debt” does not correspond to the erasing of the debt, because after his release he remains a “previous offender” with fewer civil rights and less chances to find a job and rehabilitate himself.
- f) *If a killer lacks an understanding of the consequences of his actions, he will be committed to a special psychiatric hospital.* The border between criminality and insanity is scientifically unclear, arbitrary, based on subtle legal cavils, and easily manipulated by the media and political considerations.

It is obvious that the theoretical bases of crime and punishment are weak and ignore fundamental aspects of human nature. Freudian concepts are still affecting the whole field of criminal justice: we have natural subconscious impulses to kill, which need to be suppressed by conscious moral values. As an alternative, I would suggest that killing goes against our non-violent predisposition that was selected as our species emerged. Therefore killing is the expression of pathological postnatal experiences and violent

behavioural models promoted in society. All killers should be treated as mentally insane and helped to restore their own humanity.<sup>29</sup> Of course, at the same time we should stop creating killers and criminals. But this would involve a revolutionary change in everyday lifestyle and social institutions.<sup>30</sup>

## Conclusions

In this chapter I have criticised the widespread idea that human beings are violent by nature (totally or partially) provided scientific evidence. This new position allows us to formulate practical proposals toward *positive peace* and, in particular, *the establishment of a nonkilling society*. Without a strong understanding of the origins of nonviolence and its application in modern social contexts, these proposals would be really naïve and utopian.<sup>31</sup>

I am suggesting that we are neither violent nor nonviolent by nature. We are only suffering from operating in a violent environment, as our biocultural evolution has selected a nonviolent culture in parallel with a suitable brain that operates more efficiently in such an environment, both traits being in our case successful in survival.

One can defend the concept of a nonkilling society on moral and/or scientific grounds. The moral position is by all means justified and useful, but it is not sufficient as an argument. We have tried to explain scientifically (in terms of human biology) that nonkilling other human beings is at the moment the most convenient strategy for survival, beside being the one adopted by human beings from their very beginning (100,000 years ago). A purely cultural accident happened about 8,000 years ago; at that stage a strong minority found it convenient to transmit from generation to generation the idea of congenital inevitable violence. Now advances in universal human values and scientific knowledge are exposing this recent, unfortu-

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<sup>29</sup> The psychiatric problems experienced by war veterans are well known in the United States, United Kingdom, and Australia.

<sup>30</sup> We have presented a proposal for a nonviolent transformation of society, which is currently being tested in a few small townships in Italy. See Giorgi (2007, cf. note 3).

<sup>31</sup> Nonviolence was first proposed by the Mahatma Gandhi and later developed by his disciple Bhave Vinoba and many more throughout the world (Martin Luther King, Jr., Desmond Tutu, the 14<sup>th</sup> Dalai Lama Tenzin Gyatso, Johan Galtung, Gene Sharp, Aung San Suu Kyi, and others) and in Italy (Aldo Capitini, Danilo Dolci, Giuseppe Lanza del Vasto, Ernesto Balducci, and others). Importantly, nonviolence should be mainly applied to correct structural violence in everyday life, the source of all type of violence, killing and war included.



nate deviation from the 90,000-year-old human adventure. If all forms of violence, killing included, were removed from our modern society, we would be happier, healthier and with more material resources.

### *Acknowledgements*

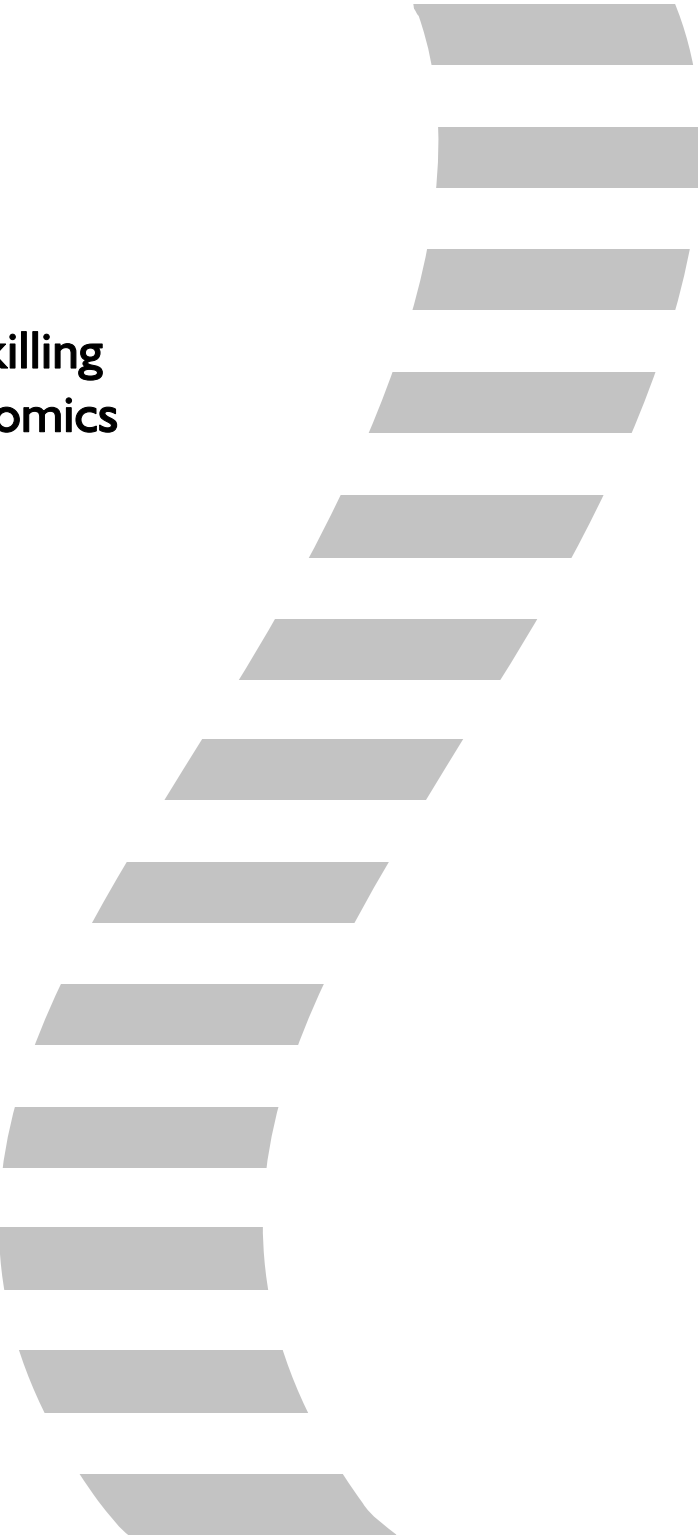
I would like to thank my teachers Johan Galtung and Ralph Summy for introducing me to the discipline of Peace Studies and to all my colleagues and students who offered healthy criticisms while I was exploring new ideas.

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**Nonkilling  
Economics**





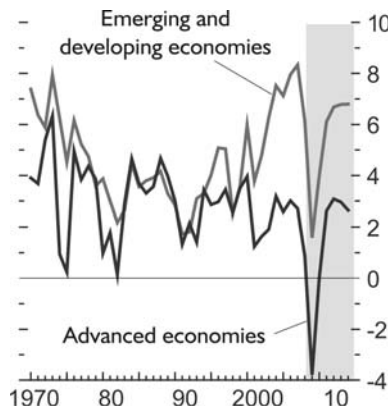
# Nonkilling Economics

## Calculating the Size of a Peace Gross World Product

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In April 2009, the International Monetary Fund (IMF) released an update of its *World Economic Outlook* (WEO) publication. Given a gross world product (GWP) in 2007, of about USD55 trillion, the IMF stated that advanced economies shrunk by an annualized 7.5% in the fourth *quarter* of 2008, and those of emerging and developing economies by 4%.<sup>1</sup> Nonetheless, for the *whole* of calendar year 2008, the world economy still grew by 3.2% as compared to 2007. For 2010, the IMF foresees an increase of world economic output by 1.9%. However, the worldwide economic decline that began in the second half of 2008 would result in a reduction, in 2009, of the size of the world economy by 1.3% (see Figure 1).

**Figure 1.** Real GDP growth (actual and projections)

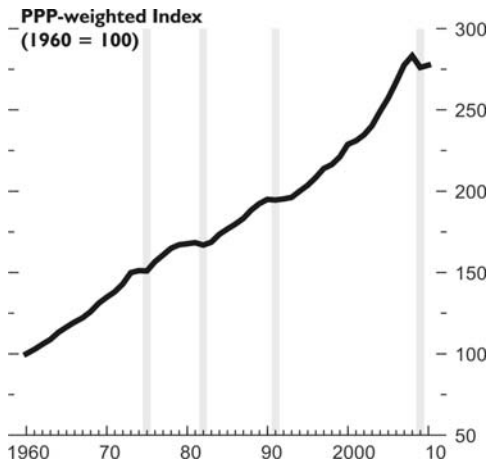


Source: IMF WEO (April 2009: 1)

<sup>1</sup> Unless we quote, we employ standard three-letter codes to denote currencies, e.g., for the U.S. dollar we use USD instead of US\$. See <http://www.iso.org/> and search for ISO4217 [accessed 1 September 2009].

In this chapter, we report on the computation of an estimate of the economic cost of worldwide violence for 2007. We estimate that violence, or the credible threat thereof, led the world to forgo about 9% of GWP that year. A major finding of the chapter is that the economic effects of the ongoing world violence crisis are much more severe than the effects of periodic world economic crises. For example, Figure 2 shows inflation-adjusted per capita GWP from 1960 to 2010 (projected). Worldwide recessions occurred in the mid-1970s, early 1980s, early 1990s, and late 2000s. Even if our 9% cost of violence estimate for 2007 overestimates the unknown annual cost of worldwide violence by two or three times, this cost still would easily outrank the economic crises, in part because economic crises occur only sporadically whereas the violence crisis is continuous.<sup>2</sup>

**Figure 2.** Real per capita World GDP



Source: IMF WEO (April 2009: 12)

Violence, or the credible threat of violence, interferes with education, health, and personal safety and thus with productivity, the pursuit of business opportunities, commerce and trade, economic development and growth, and with material well-being and subjective happiness. Business leaders might take different decisions if they knew, even approximately, not only the current

<sup>2</sup>. A companion chapter appears as Brauer and Marlin, "A Method to Compute a Peace Gross World Product by Country and by Economic Sector," in Goldsmith and Brauer (forthcoming).

cost of violence to the global business environment, but also the extent of business opportunities forgone by the continuous presence of violence that in some cases renders entire states largely unfit for business.<sup>3</sup>

We distinguish between economic activity that is criminal as opposed to that which is violent or, at any rate, related to violence. We are not interested in estimating a non-criminal (“ethical”) GWP but in estimating a peace GWP or nonviolence GWP, as distinct from a violence-infused GWP. We do not argue that it is feasible to eliminate violence nor that military forces and violence-related law and order functions are or will become unnecessary; merely that societies have choices between spending money on conflict-transformation, for example, as opposed to locking up people for individual or collective violent behavior. Business, in particular, has both the resources and the incentives to affect how societies respond to violence. Our purpose is to show how society, including business, might benefit from a reduction in violence.

The Stockholm International Peace Research Institute (SIPRI) estimates that, for 2007, world military expenditure as a share of actual gross world product (aGWP) was 2.5% (SIPRI, 2008: 175). If one adjusts this number for the typical under-reporting of military expenditure and for the economic activity involved in violent activities such as the prosecution of war, civil war, political repression, and activities in conjunction with criminal violence, including maritime piracy, it can be argued that the combined effect directly or indirectly implicates a conservatively estimated 4.4% or more of aGWP in violence.<sup>4</sup> The mere reallocation of economic activity from violence to peace would shift this 4.4% from violence industries to peace industries but would not, by itself, add to the size of the economic pie. We refer to this as the

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<sup>3</sup> We employ the term violence without indicating each time that we include in this the credible threat of violence or of defending against perceived, implied, threatened, or actual violence. For example, most of the time military forces are on stand-by status. They represent a threat (or counter-threat) rather than actual perpetration of violence. Similarly, private security forces, alarm systems, and bodyguards represent, in part, deterrence measures meant to lower the incidence of violence, e.g., of assault and robbery.

<sup>4</sup> For the United States of America, for example, U.S. Department of Defense outlays in 2008 understate overall national defense-related outlays by at least 78%. This is so, in part, because some military-related spending occurs through the Department of Energy (e.g., military-nuclear activities) and other departments, in part because some legacy costs of past military readiness and activity are budgeted for the Department of Veterans Affairs, and in part because a properly apportioned share of the interest payment due on the national debt (the cumulative annual budget deficits) should be attributed to military activity. For 2008, these adjustments alone would bring military expenditure as a percentage of U.S. GDP to 7.3% rather than to the widely reported 4.1%, where the latter is based solely on U.S. Department of Defense outlays (see Brauer, 2007, 2009).

static peace dividend effect, meaning that the size of the economic pie remains at first unchanged. Although some industries would decline precipitously (e.g., military aircraft manufacture), others would decline only slightly (e.g., sport and hunting firearms manufacture, by far the largest part of the manufacture of firearms), and still others would probably see no decline in economic activity at all (e.g., a law firm doing business in criminal and civil law might merely see less business in its violent crime case load but more business in its corporate law cases as economic activity shifts).

Beyond the static economic effect lies the realization that by suppressing economic activity, violence reduces GWP below what it otherwise could have been. For example, one study of the economic effect of terror suggests that in the absence of terror events GWP might have been up to 11% higher per year. If violence ceases and peace obtains, otherwise idle, underused, or misdirected labor and capital resources can be liberated and enter into the economy in productive ways. We refer to this as the dynamic peace dividend effect. Combined, the static and the dynamic effects account for the total economic effect of the cessation of violence and the utopia of peace. For 2007, this total effect could have been, in foreign-exchange based nominal terms, as much as USD7.2 trillion. One-third of that would have come from the static reallocation of resources but a net gain of about USD4.8 trillion, or 8.7%, over the actual 2007 gross world product of about USD54.7 trillion could have been realized from the dynamic effects of peace.

The remainder of this chapter is arranged as follows. Firstly it discusses peace economics, of which nonkilling economics is but one part. Then it summarizes prior literature, focusing on economy-wide effects of violence. The objective is to gain from the disparate and highly case-specific literature a sense of the likely global percentages across all states and all economic sectors that would guide the assumptions to be used in the computations to follow. The two next sections discuss how we compute static and dynamic economic effects of nonviolence. And the final section discusses limitations of the calculations and concludes the chapter. Appendix A contains some tables.

### **Nonkilling and Peace Economics**

Over the years, very many, very prominent economists have written articles, essays, chapters, and books on economic aspects of violent conflict, war, and peace.<sup>5</sup> It is false to say—as is sometimes claimed for example for the case of the United States of America in World War II—that violence,

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<sup>5</sup> See Brauer and Dunne (2006); Coulomb (2004).



killing, and war can make an economy better off. To appreciate this point, imagine a hypothetical four-person economy. The persons are (1) a farmer (F) who produces tangible goods; (2) a military officer (M) who patrols the perimeter of the state to protect F's fields from external threat; (3) a thief (T) who during the workday threatens F's and M's unguarded residences which are vulnerable to predation; and (4) a police officer (P) who is in charge of preventing T from succeeding.

In this economy, it may be said that two persons produce protection services (M and P), one person produces tangible goods (F), and one person produces disservices (T). The survival of all four depends solely on the product of F. Suppose that T becomes a farmer as well so that the economy now has two farmers, F1 and F2. Evidently, the need for P's services ceases and s/he may become farmer F3. On the assumption that all are equally productive, economic output or gross domestic product (GDP) can be tripled on account of internal peace. Alternatively, inhabitants can make do with the prior GDP, share the work load of farming, and enjoy more leisure. With external peace, M can become a farmer (F4) as well and the economy, or time for leisure, could be larger still. Thus, even if deemed necessary, it must always be true that violence, or preparation for violence, diverts resources, disrupts gains from trade, and destroys assets.<sup>6</sup> In real economies the ratio of peace to violence-based economic activity is not 1 to 3 (F as against M, P, and T) of course.

To our knowledge, the research upon which this chapter is based is the first attempt to calculate the size of world gross product (GWP) assuming the absence of violence. This is not just nonkilling but nonviolence, a more ambitious, indeed utopian, view. To undertake an estimate of this kind some broad assumptions must be made. The thinking behind our estimates is not that military expenditure and violence-oriented production have no value in imposing order and preventing disorder and further violence. Rather, we argue that if there were a way to achieve order with ever less violence production, or to reduce expenditure on violence industries, resources for peace industries would rise and generate more GWP.

GWP is a flow measure of income generated from a stock of wealth. GWP can be increased by using up wealth (e.g., paying people an income to cut down every tree in the world) but this reduces the stock of wealth (i.e., assets or capital) from which future income is derived. The economic crux of the matter lies in asset building, and therefore the economic crux of violence

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<sup>6</sup> For a textbook treatment, see, e.g., Anderton and Carter (2009).

lies in destroying assets or in diverting or disrupting their use, maintenance, or build-up. If a farmer in Colombia decides not to invest in irrigation because of the threat of appropriation or destruction, his/her income, and thus GWP, will be permanently reduced. Peace industries build income-generating assets. Violence industries either prevent this or help erect avoidance and defensive assets and thereby misdirect economic resources. Thus, peace brings not only static effects of reallocating resources from violence to peace but yields dynamic effects by injecting resources previously held hostage to violence into the economy. On account of peace itself, the economic pie grows. However, although income is necessary, it is not sufficient for human well-being and happiness. At some point, income is sufficiently high for people to substitute from income-generating work into pleasure and leisure. Any peace dividend that accrues may well be taken in the form of nonwork (leisure). To focus on GWP, even if it be a peace GWP, can be misleading.

## **Prior Literature**

### *Forms of violence*

The World Health Organization (WHO, 2002) classifies violence into the rubrics of self-harm (including suicide), interpersonal violence (e.g., violence between intimate partners and other forms of family violence, rape and sexual assault by strangers, violence committed in institutional settings such as schools, prisons, and work places), and collective violence (e.g., armed conflict within and between states, violent political repression and genocide, violent acts of terror, and organized crime) and speaks of an “ecology of violence” that progresses from individual to personal relationship-related violence to communal and broad collective levels of violence.

Violence is rarely costed, either economy-wide or business-specific, and we are not aware of any sustained effort to pull all the available information together to tell a consistent, complete, and regularly updated “story” on the cost of violence and the beneficial promise of peace. We summarize here findings from a somewhat haphazard selection of studies, the main objective of which is to gain a sense of the magnitude of the economy-wide cost of violence. No attempt has been made to conduct a comprehensive review.

A general observation is that few studies approach the question of violence from a business perspective.<sup>7</sup> Like most individual victims, business

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<sup>7</sup> International Alert and the International Business Leaders Forum maintain programs on business and conflict. See [http://www.international-alert.org/peace\\_and\\_economy/index.php](http://www.international-alert.org/peace_and_economy/index.php) and <http://www.iblf.org/> [accessed 15 April 2009].

simply adapts and rarely speaks up against violence, for peace, even though it has the resources and the economic incentive to do so. Prior studies have tended to focus, on the one hand, on war, military expenditure, and (anti)terror effects, and, on the other, on the economics of public health effects of interpersonal violence, especially sexual violence and the use of firearms. Rarely are the literatures brought together. A focused program of study on security economics, i.e., on the cost of antiviolence and security-related measures and of the cost of violence against employees, businesses, suppliers, and customers, does not exist.

*Violence: interstate war or preparation therefor*

There are many studies of the economy-wide costs of war and military spending budgets (for a small sample see Appendix, Table A2). These range from under 1% to well over 10% of country-specific GDPs. As regards the United States, its military budget alone, quite apart from its effects, is variously described as between 20% and 70% of the U.S. federal government budget or, for 2008, between USD500 billion and USD1 trillion (Brauer, 2007, 2009). We believe that the higher numbers are the more accurate measures, so that a peace GDP for the United States would release USD1 trillion for civilian use from the military sector alone, or over 7% of U.S. GDP. Estimates of the cumulative cost of the Iraq war to the United States, let alone to Iraq,<sup>8</sup> have varied between a few billion dollars to USD3 trillion and more.<sup>9</sup>

Since 1991, interstate wars have become rare or, at any rate, short-duration events. Examples include the 3-week long, U.S.-led war against Iraq in March 2003 (which became a civil war thereafter), the Israeli-Lebanon war in July and August of 2006, and the Russian-Georgian war in August 2008. The Israeli war is said to have cost USD20 billion for about one month of fighting, or about 12% of Israeli GDP (Phillips, 2006: 21).

As mentioned, in 2007, average world military expenditure, as measured by SIPRI, amounted to 2.5% of GWP that year. This number serves as a minimum guide of violence-related costs that, in a utopian world, could be converted and applied to an economy of peace.

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<sup>8</sup> On the war cost to Iraq see, e.g., Yousif (2006).

<sup>9</sup> See John Tepper Marlin, "Why Estimates of the Cost of the War in Iraq Have Been Rising," [http://www.huffingtonpost.com/john-tepper-marlin/why-estimates-of-the-cost\\_b\\_74026.html](http://www.huffingtonpost.com/john-tepper-marlin/why-estimates-of-the-cost_b_74026.html) [accessed 10 September 2009].

*Violence: transnational and domestic terror events*

We reviewed 23 studies that included estimates of the effect of terror events on the economies of various states (see Table A1).<sup>10</sup> Among those, Crain and Crain examine macroeconomic consequences of terror events using data from 147 countries from 1968 to 2002. Estimates for the economic effect of terror events on GDP, GDP growth, investment, and consumer spending, including tourism, suggest that a reduction in terror could yield large economic benefits, with the size of the effect depending on a country's demographics, base level of output, and investment level. The study provides a foundation for computing the costs of terror and the benefits of antiterror activities by analyzing 11,723 terrorist acts that killed or wounded 37,137 people. The authors use data compiled by the ITERATE project. For the United States, the study concludes that a reduction in incidents from 3 to 2 per year would be associated with a GDP increase of about USD40 billion and add nearly USD5 billion in fixed capital investment to the U.S. economy. For the world as a whole, the authors estimate that without terror incidents, GWP would have been USD3.6 trillion higher in 2002. This is 10.9% of the USD33 trillion GWP that year. Carrying this percentage forward to 2008 would result in a USD6 trillion number. Since terror is only one of several kinds of violence, the total GWP effect of violence, and therefore the GWP potential from peace, would be larger still.

*Violence: other collective and personal violence*

Although interstate war and transnational terror loom large in the world's public attention, in fact transnational terror events are relatively rare and no major interstate armed conflict, defined as involving at least 1,000 battle-related deaths during at least one calendar year of a conflict and at least 25 battle-related deaths in other calendar years, has been recorded at all since 2004 (SIPRI, 2008: 73). Instead, in economic terms some of the worst violence occurs in sovereign countries that are poor or to individuals in wealthy countries who are poor. The poor lack voice, and violence to them is, on the global communications network, often noiseless.

There are at least two ways to arrive at estimates of nonwar, nonterror costs of violence. One is to collect estimates from specific case studies on human rights violations, violent crime, and so on. The World Health Or-

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<sup>10</sup> The frequency of domestic terror events is about 10 times that of transnational terror events (Anderton and Carter, 2009: 128-129). The studies listed in Table A1 include transnational and domestic terror studies.

ganization, in a 2002 report, summarizes some economic research on the cost of violence as follows:

studies sponsored by the Inter American Development Bank between 1996 and 1997 on the economic impact of violence in six Latin American countries calculated that expenditures on health services alone amounted to 1.9% of the gross domestic product in Brazil, 5.0% in Colombia, 4.3% in El Salvador, 1.3% in Mexico, 1.5% in Peru and 0.3% in Venezuela. A 1992 study in the United States put the annual cost of treating gunshot wounds at US\$126 billion. Cutting and stab wounds cost an additional US\$51 billion.<sup>11</sup>

A follow-on WHO report in 2004 on the economic dimensions of interpersonal violence states that for the United States alone the cost is on the order of 3.3% of GDP. Intimate partner violence in Nicaragua was estimated at 1.6% of GDP, and in Chile at 2.0% of GDP (see WHO, 2004: x). Cook and Ludwig (2000) estimate the cost of gun-related crime in the United States at USD115 billion in nominal 1997 dollars (USD148 billion in nominal 2008 dollars, or about 1 percentage point of U.S. GDP). A 2006 World Bank working paper put the total cost of crime and violence in Latin America and the Caribbean at 14.2% of GDP for the region (Heinemann; Verner, 2006).

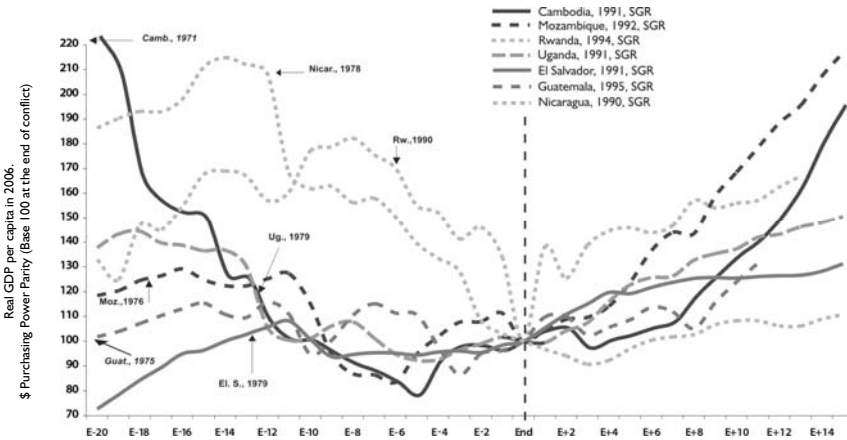
The methods underlying these studies are diverse and not necessarily consistent and focus, understandably, on personal costs to the victims and on public sector costs. Costs to business—direct, indirect, and in terms of forgone opportunities—are rarely mentioned.

The United Nations Development Programme (UNDP) summarizes recent studies estimating the economic cost of civil war, especially for Africa, as lying somewhere between 2.2% and 3.3% of GDP per country per conflict year prior to 1990 and perhaps as much more than 10% of GDP post-1990, that is, in the post-cold war era (UNDP, 2008: 35). Figure 3 provides an impression, in per capita purchasing power parity terms (ppp), of the drastic cumulative cost of violence in selected civil war countries. At the same time, the figure provides evidence that postconflict economic recovery is possible (all the lines turn upward) but that policy plays a role in the strength of the recovery (SGR and WGR stand for “strong” and “weak” growth recovery, respectively).

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<sup>11</sup> See WHO (2002). The quoted passage is taken from page 8 of the Summary, available at [http://www.who.int/violence\\_injury\\_prevention/violence/world\\_report/en/summary\\_en.pdf](http://www.who.int/violence_injury_prevention/violence/world_report/en/summary_en.pdf) [accessed 15 April 2009].

**Figure 3.** GDP per capita in selected civil war states (year conflict ended, group)



Note: Arrows point to starting year of conflict, unless where conflict is ongoing over the entire period covered (Cambodia, Guatemala), in which case the arrow points to the first year of the series.

Source: UNDP (2008: 111, Figure 4.2)

A Small Arms Survey review study done for the Geneva Declaration on Armed Violence and Development on the cost of lost productivity due to criminal violence estimates annual costs on the order of USD95 billion to USD163 billion, or about 0.14% of (2004) GWP.<sup>12</sup> The same study suggests that the consequences of armed conflict “decreases the GDP growth of an average economy by at least two per cent per year” and that the subjective cost of insecurity generated by armed violence results in costs of USD400 billion annually. Of course, many war-torn African country hardly reach 2% GDP growth to begin with, let alone in per capita terms. Losses stem from “fiscal effects, loss of productive capital, depleted financial capital, eroded human capital, rising transaction costs, and reallocation of development assistance (to less risky environments)” (GD, 2008: 89-90).

This state-by-state approach demands a painstaking, but eventually inevitable, trekking through the literature to arrive at a complete listing of these sorts of estimates. Although expensive in labor resources, this would be a merit-full undertaking because it would result in a specific and detailed shared resource and starting point for outcome-oriented, collaborate research in violence, nonkilling, and peace economics.

<sup>12</sup> See <http://www.genevadeclaration.org/resources-armed-violence-report.html> (GD, 2008).

In the absence of state-by-state estimates, another, and necessarily cruder, approach is to look only at the easily identified business costs of violence, especially from the terrorism-related studies, and assume for instance that terror or the threat thereof accounts for 80% of all violence-related costs. One could then argue that the Crain and Crain estimate of terror costs of 10.9% of GWP be boosted by the “missing” 20% to take account of nonterror-related costs of violent conflict. The total would come to 13.6% of foreign exchange based actual GWP of USD54.7 trillion. For 2007, this would be about USD7.4 trillion. Alternatively, if the terror-related costs, on the Crain and Crain estimates are only 50%, rather than 80%, of all violence costs to business, the total suppressed foreign-exchange based actual GWP would come to 21.8%, or USD12 trillion, of GWP—too high an estimate in our view.

*In sum*

Although the numbers vary widely across countries and studies, figures of the annual costs of violence of up to 10% of GDP are not uncommon, certainly not for cases of acute mass violence. Even in cases of “routine” violence, estimates run to 2% to 5% of GDP as the cost of perpetrated interpersonal violence, let alone for defending against perceived, implied, or explicitly stated threats of violence. Taking these results, we calibrated the base scenario coefficients used in a spreadsheet to arrive at what we believe is a plausible, indeed conservative, estimate of 4.4% of GWP as the current cost of violence and of about 9% in addition to current GWP (the dynamic peace dividend) if violence were to cease. In 2007 foreign-exchange based dollar terms the combined effect would be an annual USD7.2 trillion.

## Static analysis

*Results (summary)*

Given certain general assumptions, detailed in section 4.2, we compute in nominal 2007 terms a static peace dividend of USD2.4 trillion, or 4.4% of actual GWP. Of the total sum, USD1.0 trillion would be contributed by industry and the remaining USD1.4 trillion by the service sector. We develop a spreadsheet setup that permits future refinement of the calculations as our general assumptions are gradually replaced by country-specific information.<sup>13</sup>

*Method and details*

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<sup>13</sup> See note 2.

Static effects are computed both in terms of fx-based aGDP and ppp-based aGDP across 140 countries.<sup>14</sup> For now, we refer only to fx-based calculations. We collected data on nominal aGDP from the IMF's World Economic Outlook data base, which in 2007 summed to USD54.7 trillion in fx based dollars. The United States accounts for about 25% of that, the non-U.S. G7 (Canada, France, Germany, Italy, Japan, and the United Kingdom) for about 30%, and the BRIC countries (Brazil, Russia, India, and China) for about 13%.<sup>15</sup> We used World Bank data to record the breakdown of aGDP into percentage shares contributed by the primary, secondary, and tertiary sectors, that is, agriculture, industry, and services. Sectoral percentage shares of aGDP are converted into their USD equivalents. Using a summation function, aggregate worldwide dollar values for agriculture (USD2.1 trillion), industry (USD16.3 trillion), and services (USD36.4 trillion) can be computed. Military expenditure data is taken from the Stockholm International Peace Research Institute (SIPRI), with missing data supplied by recourse to CIA World Factbook data. Military expenditure as a percentage of aGDP is converted into U.S. dollar values. Summing this, world military expenditure in 2007 is about USD1.36 trillion. As a percentage of GWP, this amounts to 2.5% which, in spite of missing data for some countries, corresponds exactly to the SIPRI estimate.

We now assume that all of agriculture counts as a peace industry. Its violence share, and therefore the associated dollar value, is zero. With regard to industry, we assume that on the average across all countries one-half of world military expenditure goes to purchase inputs from industry and that an additional 2% of industrial output stems from production related to other violence-related activities (e.g., alarm systems to deter violence). If this assumption is correct, the worldwide violence industry-related output would amount to about USD1.0 trillion or 6.2% of all industrial activity.<sup>16</sup> As to services, we assume that the remaining one-half of world military expenditure buys service inputs and that an additional 2% of services is violence-related. We believe that this is a mild assumption, especially as all of government is part of the service category. Thus, all government functions at municipal, provincial, and federal levels related to violence prevention, administration of justice, rehabilitation, and restoration are part of the service category. If our assumption is

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<sup>14</sup> Fx-based: foreign-exchange based; ppp-based: purchasing power parity-based.

<sup>15</sup> In ppp-terms, the shares are rather different: U.S. 21%, non-U.S. G7 22%, and BRIC 21%.

<sup>16</sup> Half of world military expenditure amounts to USD0.678 trillion, and 2% of world industrial activity of USD16.3 trillion is USD0.326 billion, so that the sum is almost exactly USD1 trillion.



warranted, USD1.4 trillion worldwide is spent on violence service-related activity, or 3.9% of all service activity.

As mentioned, we assume that agriculture itself is not a violence industry. It is wholly a peace industry, called pGDP<sub>ag</sub>. Therefore the size of world agriculture of USD2.1 trillion is agriculture's contribution to peace. As to peace industry, pGDP<sub>in</sub> subtracts the violence-related part of industry from the overall dollar value of industry. The peaceful part of industry amounts to USD15.3 trillion, or about 93.8% of all industrial activity worldwide. The exercise is repeated for pGDP<sub>sv</sub>, the service sector, with the finding that about USD34.9 trillion are peace-related, or 96.1% of all service activity. In the aggregate, this sums to USD52.3 trillion. This, plus the violent part of aGWP (USD2.4 trillion) sums, as it should, to overall aGWP of USD54.7 trillion. In a final step, it is assumed that if all violent activity stopped, then all of vGDP (violence GDP) would be costlessly converted into pGDP (peaceful activity) so that the converse of vGDP becomes the static peace dividend of USD2.4 trillion. For the year 2007, this would have amounted to the aforementioned 4.4% of aGWP.

#### *Scenario analysis and simulations*

The base spreadsheet in hand, it is now a simple matter to change formulas, e.g., those that assign assumed coefficients to the violence share of the industry and service sectors, and to compute the effects on the size of the static peace dividend. For illustration, suppose that the service sector formula is changed to the assumption of one-half of world military expenditure plus 5% (instead of plus 2%) of all other service activity—still a conservative assumption given that the government sector and virtually all private household and business functions related to violence prevention or treatment of the effects of violence are captured in the service category. The dollar value of worldwide violence-related business would then amount to USD3.5 trillion, or 6.4% of aGWP.

Because the spreadsheet is country-based, future research may make it possible to insert country-specific coefficients into the relevant cells. For example, research may establish that there are systematic differences among high-income, middle-income, and low-income countries or between countries in acute violent social conflict (e.g., war, civil war, ongoing terror) and those that are not. In that case, it would be a simple matter to change the country coefficients in the spreadsheet and recompute the static peace dividend. Indeed, the point of setting up the spreadsheet on a country-by-country basis in the first place is precisely to permit this future development.

## Dynamic analysis

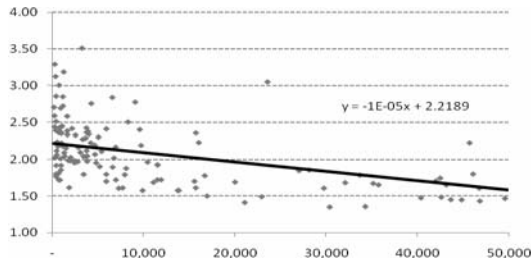
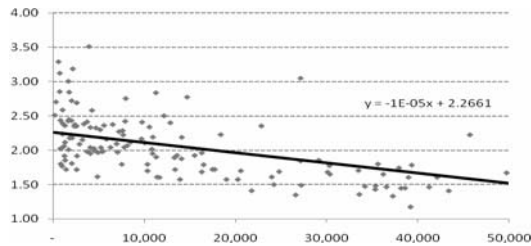
### *Results (summary)*

According to our assumptions and calculations, peace gross world product (PGWP) might be on the order of 9% larger than current actual GWP (aGWP). Actual GWP measured in nominal terms was USD54.7 trillion in 2007. A peace GWP might result in a (fx-based) gain of about USD4.8 trillion. When allowance is made for effects attributable to internal as opposed to external peace, using Global Peace Index data, the calculations change slightly (more information yielding more precise results), and the PGWP then amounts to USD4.7 trillion, USD2.8 trillion of which would accrue to peace internal to countries, and the remaining USD1.9 trillion to peace between and among them. This dynamic peace dividend effect is in addition to the static effect discussed in the previous section.

### *Method and details*

Figures 4 and 5 show on the vertical axes Global Peace Index (GPI) scores for 140 countries against, respectively, fx-based and ppp-based actual per capita GDP on the horizontal axes. Per construction, the lower is the GPI score, the more peaceful the country. Thus, the superimposed downward-sloping linear trend line shows an association to the effect that, on average, more peaceful countries also obtain higher per capita GDP or income levels. (A curvilinear line would show a more pronounced effect.) The causal effects run both ways: for example, peace makes capital investment safer from appropriation or destruction than otherwise would be the case, and it thereby stimulates growth and higher living standards. This, in turn, makes investing in peace more important as well in order to safeguard the economic achievements. Thus, a virtuous cycle between peace and prosperity can emerge. The World Economic Forum's Business Competitiveness Index and the World Bank's Ease of Doing Business Index correlate with the GPI in a similar way. Thus, basing our dynamic projections of PGDP on the GPI itself seems to be a reasonable first approach to take.

Our spreadsheet contains several PGDP sheets. The PGDPxI sheet contains our base scenario. Other PGDP sheets contain additional scenarios. The overall dynamic peace dividend is split into a part due to achieving internal peace and a part due to external peace. All calculations are carried out in fx-terms as well as in ppp-terms. The fx-based results are employed to gain a sense of the global effects of peace; the ppp-based results are used to gain a sense of country-specific effects of peace.

**Figure 4.** GDP per capita in selected civil war states**Figure 5.** GDP per capita in selected civil war states

The basic spreadsheet setup is as follows. Column A lists 140 countries, column B records the 2008 GPI rank, and column C the 2008 GPI score. Columns D and E contain the internal and external GPI sub-scores.<sup>17</sup> Column F expresses the raw internal score as a percentage of the sum of the raw internal and external scores. For example, for the United Kingdom that percentage is 40%. This means that its internal peace score is small relative to its external peace score (the remaining 60%). Put differently, the U.K. scores better on internal than on external peace. In contrast, Zimbabwe's percentage is, at 62%, relatively high. This means that its internal peace score is worse than its external peace score. Consequently, we would expect that the economic effects of peace for a specific country depend on

<sup>17</sup> The sub-scores are confidential data made available to the authors and cannot be released. When these sub-scores are weighted by 60% for the internal and 40% for the external peace categories, and then summed, the overall GPI score results. The 60/40 weighting is arbitrarily chosen by a committee of scholars overseeing the GPI work and does not reflect the implied weights given by the raw internal and external scores. We chose to work with the implied rather than the arbitrary weights.

whether that country is primarily at internal or at external peace (or not), or both, or in what mixture. For example, if state-on-state wars were abolished and the need for military forces disappeared, the United Kingdom would gain relatively much, whereas Zimbabwe would gain relatively little. If, in contrast, civil strife ceased, the United Kingdom would gain relatively little and Zimbabwe would gain relatively much.

Columns N and O contain the fx-based and ppp-based aGDP data. Columns H to K and columns P and Q convert the raw data into logarithms, a mathematical trick to eliminate country size effects. (This is necessary because, e.g., larger countries necessarily have a larger aGDP than smaller countries even if of equal development status.) Columns S to AF contain our base scenario assumption, expressed as a peace multiplier of size  $I$ . We proceed in three steps. First, column S adjusts a country's fx-based aGDP for 2007 for the size of its economy by using the logarithmic form of the raw data. Second, it multiplies the result by the country's size-adjusted overall GPI. The reason for this is that, by construction, a small GPI score means that the country is relatively peaceful to begin with and that the cessation of violence therefore cannot add much to its already existing aGDP. In contrast, a larger GPI score reflects a large upside economic potential to be obtained from peace. And third, a peace multiplier of size  $I$  is applied. This multiplier reflects an arbitrary assumption about how much of an economic boost may be expected from peace. This assumption is based on the literature review summarized earlier on this chapter. Although we believe the size of the multiplier to be plausible, reasonable, and conservative, it remains an assumption and is the principal reason why we varied it in the scenario sheets from a factor of 0 to a factor of 2 in increments of 0.5. We discuss this in the next subsection.

Columns T, V, and X repeat the calculations but applied to the internal and external GPI scores rather than to the overall GPI score. Our splitting of the calculations enables us to see how much each country might gain from pursuing internal as opposed to pursuing external peace. For example, for the United Kingdom about 43% of any gain would come from internal peace, whereas for Zimbabwe about 73% of any gain would stem from internal peace.

The remaining columns calculate the percentage gain of PGDP relative aGDP (for fx- and ppp-based aGDP). Under the assumption of a peace multiplier of size  $I$ , a worldwide change from violence to peace results in a 9% economic gain over current aGDP (with respect to the 2007 reference year used throughout).

*Scenario analysis and simulations*

Table 1 shows the result of scenario analyses carried out in the various PGDP sheets wherein the peace multiplier size ranges from a factor of 0 to a factor of 2. The first line in the table assumes that if there were peace there would be no economic benefit whatsoever and therefore returns the current actual fx-based and ppp-based GWP numbers. The base case, discussed in the prior subsection is highlighted in **bold type font**. The base case should not be interpreted as our preferred case. We express no preference; our intent is to produce a general method of computation of PGDP—and one that appears to return a result in line with the established case-study literature. As research progresses, it will be possible either (1) to chose a proper weight to be applied across all countries or (2) to apply country-specific factors for individual countries and sum up the resulting returns.

**Table 1.** PGWP scenarios

<i>Factor</i>	<i>FX-based (USD bn)</i>	<i>PPP-based (ppp bn)</i>
x 0.0	54,727.40	65,479.67
x 0.5	57,116.38	68,480.75
<b>x 1.0</b>	<b>59,505.35</b>	<b>71,481.83</b>
x 1.5	61,894.33	74,482.90
x 2.0	64,283.31	77,483.98

That a peace multiplier of size 1 is a plausible number might be illustrated with the example of the United States. From 1991 to 2000, the Clinton-era years following the end of the cold war, inflation-adjusted GDP in the United States grew at the high rate of an average of 3.7% per year, or roughly USD300 billion annually (base year 2000). During this time, inflation-adjusted U.S. military expenditure fell from USD730 billion to USD607 billion, or about 16%. Projecting this to a military expense of zero dollars, in 2008 terms, generates a nominal USD1 trillion available for reallocation between economic sectors right away, and it is not unrealistic to believe that an additional USD1.2 trillion could be generated through economy-wide follow-on effects, the way the post-cold war peace dividend appears to have worked in the 1990s. Note, in passing, that because of both the military and the economic size of the United States, 24.3% of the world-wide dynamic peace dividend effects would come from the United States.

## Limitations and conclusion

### *Limitations*

There are several important limitations to our approach. First, among economists it is well-known and acknowledged that measurement of GDP, and hence of GWP, is far from being a settled matter. For example, a long-standing and regularly updated effort by Professor Friedrich Schneider of Johannes Kepler University, Linz, Austria, estimates that in 2008 the average size of the shadow-economy in 21 of 30 OECD countries equaled 13.3% of measured aGDP. This refers to unreported rather than illegal economic activity.<sup>18</sup> This percentage varies from year to year and is likely to be higher in non-OECD countries. In addition to non-measurement, there is mis-measurement. As mentioned, GDP even if comprehensively measured, is no more than a measure of income and expenditure flows, or throughput. Thus, paying people to cut down every tree in the land or harvest every fish from the sea, generates wage expenditures on the workers, and this is counted in GDP. Focusing on GDP, and GDP growth, can therefore be a misleading measure of well-being, and this is part of the reason for questioning the portion of GDP related to violence in the first instance.

Also related to questions regarding measurement is a second limitation, namely that part of our calculations are based on fx-based dollars. For comparability across states, any one country's currency may be used as the standard of comparison, or *numeraire*. In practice, this is the U.S. dollar. Non-numeraire countries' GDPs are converted to the numeraire currency at the average of the prevailing exchange rate for a given time period, usually a calendar year. Annual exchange rate fluctuations can greatly affect the resulting U.S. dollar value of non-U.S. economic output. One way economists address this is by converting countries' currencies into purchasing power parity (ppp) values. Thus, a haircut that in New York might cost USD20 and in India USD1 (at foreign-exchange rate conversion) are equally valued under ppp-measurement so that both are valued at ppp20. The activity itself is valued rather than its monetary equivalent. India's ppp20 haircut GDP therefore is an "artificial" number and cannot be taken at face value. Using ppp permits comparability across currencies but at the disadvantage that the monetary values are value placeholders rather than actual dollar numbers by which business could gauge the size of potential markets.

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<sup>18</sup> *The Economist*, 2 April 2009.

For example, a dynamic peace dividend for India of ppp321 billion is, in USD-terms only USD135 billion at the exchange rates of 2007.

A third measurement-related limitation is that military expenditure, or *milex*, the one violence-related variable for which numbers for all states are available, also is mis-measured. As argued, it is a fair assumption that *milex* is under-measured. Other violence-related variables such as the cost of civil war, violent crime, administration of states' justice systems, and so on, likewise are inadequately measured. The very study of the economic causes, costs, and consequences of violence is not much advanced and is addressed in very disparate ways in the literature. There are no universal numbers available, let alone recorded to a uniform standard. We addressed this limitation by using coefficients in our spreadsheet that we regard as plausible, yet conservative.

Fourth, we examine numbers for only a single year, 2007, the most recent year for which reasonably complete data were available. It would be worth the effort to expand our spreadsheet to capture the other years for which the GPI has been produced and to keep both the GPI and the PGDP exercises going for some time to come to learn what variations occur in PGDP as the GPI changes.

#### *Conclusion and recommendations*

The overriding message is that business has nothing to fear from peace. For business as a whole, there only are upsides to peace. If 4.4% of business derives gains from violence, the other 96.6% derives gains from peace. Moreover, the 4.4% suppress the scope of peaceful business by about another 9% of gross world product. This alone should convince business leaders to be much more vocal and active in discouraging violence and promoting peace.

In conjunction with the G8, G20, and other such political meetings, it is now commonplace to see civil society organizations throng the streets of the locations where such meetings are held. Business is largely absent. Here is an opportunity to create an E20 and a B20—groups of 20 highly successful global entrepreneurs and of 20 traditional global businesses—and have them issue a common, evidenced-based statement and research update on the economics of violence, nonkilling, and peace. This should be careful to include not merely “western” entrepreneurs but to draw them from across the globe such as Mo Ibrahim of Africa and the Tata family in Asia. We imagine that media coverage would be huge, and influence-taking to turn the world away from violence toward nonkilling, nonviolence, and peace could be of epoch-making significance. An E20 might form a coalition with a

P20, that is, 20 renowned academically focused peace institutes, and perhaps even with an S20, leaders of social movements and civil society organizations. This would ally entrepreneurs and business with a very credible subset of civil society. Business is often looked at askance. To be able to form a credible alliance or coalition with 20 (or some other number) of renowned, academically based, globally distributed peace institutes would provide consistent civil society input into business and vice versa. A coalition for nonviolence and peace would permit previously disparate and often antagonistic groups to pull on the same string in the same direction.

As leaders of commercial, civil, and political society increasingly turn to theoretically informed and evidence-based decisionmaking, basic and applied research becomes more, not less, necessary. The pGDP and PGDP (the static and dynamic peace dividend) calculations should be carried out for the other years for which the GPI is already available and then continued each year so that along with a measure of relative peacefulness an economic measure can be reported as well. The cost of maintaining our spreadsheet will be comparatively minor.

The spreadsheet we constructed is aimed at providing a foundational structure that is logical, coherent, and substantive to permit one to produce systematic, feasible, replicable, spreadsheet-based computations by country by year and have it tied to the already existing annual production of the Global Peace Index. But although the structure now exists, the “sharing down” of the static and dynamic peace dividend calculations into economic sectors and subsectors still needs to be completed.

More important, and more costly, is the need to gradually replace the assumed coefficients underlying our computations with country and sector-based specific information on the cost of violence. At the moment, for example, we assume a reasonable but uniform peace multiplier of size 1, applied across all countries. Self-evidently, differences across countries imply differences in the multiplier to be used. Specifically commissioned studies could replace the single peace multiplier value with a range of country and sector-specific values. It might, at first, be easier to apply differentiated multipliers for groups of countries, but the ultimate goal should be to aim at country-specific multipliers, regularly reviewed and updated.<sup>19</sup>

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<sup>19</sup> The dynamic peace dividend is already computationally tied to the GPI. The GPI itself thus cannot be used as a multiplier. Instead the function of the peace multiplier is to translate how relative peacefulness multiplies into economic benefits, and this translation will vary from country to country even when two countries have identical GPIs.



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## Appendix A: Tables

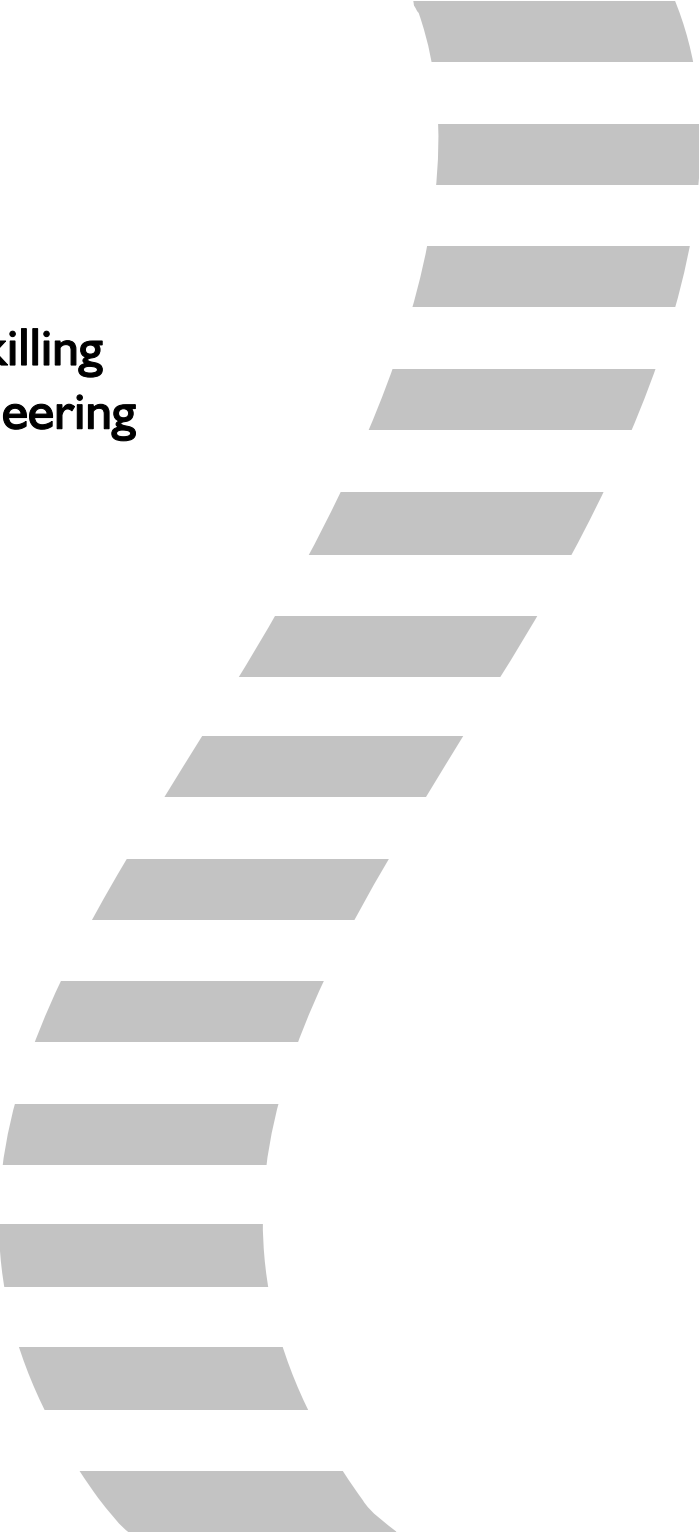
Table A1. Studies of the cost of terror events (billions of 2008 USD)

<i>Country (event)</i>	<i>Cost</i>	<i>GDP loss (%)</i>	<i>Source</i>
Argentina (cost of a terrorist act)	0.30	0.14	Crain, 2005: 335
Colombia (cost of a terrorist act)	0.10	0.06	Crain, 2005: 335
Colombia (annual cost of terror)	14.47	8.60	Karolyi, Martell, 2006: 12
Egypt (costs of terrorist attacks, July 05)	1.42	1.45	Negus, 2005: 35
Egypt (cost of a terrorist act)	0.26	0.25	Crain, 2005: 335
France (cost of a terrorist act)	1.37	0.05	Crain, 2005: 335
France, Ireland, U.S., Singapore (cost of a terrorist act)	64.00	0.36	Crain, 2005: 329
Germany (cost of a terrorist act)	1.90	0.07	Crain, 2005: 318
India (cost of a terrorist act)	1.34	0.23	Crain, 2005: 335
Indonesia (cost of a terrorist act)	1.81	0.78	Crain, 2005: 335
Israel (costs of terrorism per year, 2000-2003)	low: 13.69 high: 20.53	low: 10 high: 15	Eckstein, Tsiddon, 2004: 29
Israel (annual cost of terror)	2.36	2.00	Eckstein, Tsiddon, 2004: 23
Italy (cost of a terrorist act)	1.54	0.11	Crain, 2005: 335
Countries > 250 million pop. (cost of a terrorist act)	36.03	0.20	Crain, 2005: 335
Nigeria (annual cost of terror)	11.84	7.60	Karolyi, Martell, 2006: 12
Philippines (cost of a terrorist act)	0.14	0.16	Crain, 2005: 335
Russia (annual cost of terror)	2.75	0.26	Karolyi, Martell, 2006: 12
Spain (costs of ETA terror, Basque country)	low: 7.7 high: 10.2	low: 12 high: 16	Abadie, 2003
Spain (cost of a terrorist act)	108.77	13.36	Crain, 2005: 335
Sri Lanka (costs of LTTE terror to tourism)	0.18	0.93	Bandara, 1997: 272
United Kingdom (cost of a terrorist act)	0.98	0.04	Crain, 2005: 335
United States (cost of a terrorist act)	48.03	0.33	Crain, 2005: 335
World (global costs of terror, 2002)	4,300.00	10.91	Crain, 2005: 336

**Table A2.** Cost of war and defense (billions of 2008 USD and % change)

<i>Country (event)</i>	<i>Cost</i>	<i>GDP</i>	<i>Source</i>
Eastern Europe (no military spending)	333.2	9.8	Knight, et al, 1996: 31
Middle East, Asia, North Africa (no military spending)	116.0	0.6	Knight, et al, 1996:31
Israel (cancel defense increase of NIS3)	9.4	8.2	Barzilai, 2006: 1
Israel (end Israel's war spending, annually)	24.1	12.8	Barzilai, 2006: 1

**Nonkilling  
Engineering**





# Nonkilling, Professional Ethics, and Engineering the Public Good

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Taking illness to a physician, only a few centuries ago, was likely to result in the unnecessary loss of blood, if not premature death. The source of illness was occult, treatments were dangerous, and so more conservative physicians simply focused on methods that, if ineffective, were at least something less than immediately fatal. Physicians had physical contact with their patients, witnessed their suffering, and felt their loss. The concerned practitioner might draw a little blood, in a variety of ways, and thereby safely demonstrate both erudition and industry—encouraging the patient toward silence, if not health.

But because of the potential for harm, and because of their familial concern for the individual, ancient physicians chose the professional caveat: *Primum Non Nocere*. The potential for harm was, indeed, obvious, as well as morally compelling. And although germ theory gave physicians an important influence on *society*, doctors have retained the Hippocratic Oath in deference to their continued focus on the *individual*.

*Engineers*, similarly empowered with Baconian methods, address the community need for infrastructure, rather than healthy individuals. As a consequence, engineers primarily consider the potential for harm on a communal scale, and *our* professional constraint is to *hold paramount the public safety, health, and welfare*. Unfortunately, a lot of individuals can and will suffer before the *public safety, health, and welfare* even breaks a sweat. Further, because engineers deal primarily with an abstract social structure, rather than with individuals, engineers do not often see the anguished faces of those they impact. Historically, engineering developed as a branch of the military, and has no *explicit* professional constraint against doing individual harm (killing, being the extreme manifestation).

“Civilian” engineers acknowledge a professional duty to serve the public good, but we, arguably, have an even deeper, personal duty to respect individual life. After all, the public good is not defined by consensus, and even if it were, majority rule is practically, rather than morally compelling. Most

governments consist of leaders making decisions (some of which, engineers are expected to carry out) on behalf of the governed. But while even a *tyrant* might choose to define a public good that allows individual, human flourishing, the “public” is a social construct that does not bleed. When the public good tramples on individual life—even for the greater, actual good of collective individuals—diminished life compels us to respect a remainder obligation toward those suffering a socially imposed burden. While it might be comforting, engineers cannot simply shunt the administration of social justice onto someone else: we are morally obliged by the remainder obligations generated through our work.

The line between killing and letting die is fuzzy at best, and engineers need to reexamine their willingness to let individuals suffer for the greater good generated through engineering projects. Deaths, causally associated with a particular project, might be human or nonhuman; intentional or accidental; foreseeable or unforeseeable; immediate, proximal or distal. But when an individual’s death is attributable, at least in part, to an engineering project, that individual bears a kind of ultimate, social burden that cannot be distributed back and relieved by the society in general. Increasing the balance of good *overall* simply is not enough—our engineering projects need to avoid, mitigate, or *at least* respectfully consider the disproportionate burden born by those who suffer and die in the aftermath.

While *ahimsa* (nonkilling) has seldom been the focus of engineering, even with benign projects such as the delivery of clean drinking water, this deficiency is a moral failure resulting from a paternalistic sense of professional duty that “treats” the beneficiary, and, too often, ignores the collateral individual. This does not make our engineering designs *bad*, it simply makes them incomplete. It would be *wrong* for us to knowingly put forth an incomplete design; or to ignorantly put forth a design that we considered “complete” as an exercise in wishful thinking. On the other hand, if we *unknowingly* allow an incomplete design to progress through to realization, then we have committed an error of omission. While our motivation remains untainted, we are nevertheless obliged to correct mistakes as they come to our attention, and relieve inappropriately assigned burdens.

For example, the Golden Gate Bridge, completed in 1937, was a stunning engineering achievement, which must have been personally gratifying for the engineers involved. Realizing a greater good for thousands, the Bridge was an aesthetic, economic, and moral exemplar. The elegant lines, austere setting, and extreme attenuation (its 4,200 feet was the world’s longest clear span at the time of completion) make the Bridge a globally identifiable symbol of built



beauty. While the Bridge was actually constructed *under* budget by \$1.3 million, its exquisitely optimized main cables compare tellingly with the grossly over-designed structure of its contemporary, the record-setting Empire State Building (the main cables were so finely tuned as to thwart subsequent attempts to add the second traffic deck, common on less sleekly-spectacular Bay bridges). Finally, as has been frequently noted, Bridge construction pioneered the use of safety nets to protect exposed workers—saving 19 from assumed-fatal falls, and reducing the number of construction deaths to less than a third of what might have been expected by rule of thumb.

Yet, any engineering project interacting with individuals—even drawing nothing but awe and respect from most of us—is liable to entail *some* moral obligations. For this analysis, I would like to examine the Bridge, and consider those moral obligations that accrue subject to the potential for loss of life. With regard to *human* life, we need to consider:

- Accidental death during construction, and in traffic (on the Bridge itself, but also due to increased regional traffic generation)
- Intentional death through suicide, and from armed attack (on the Bridge, as a military or symbolic target of opportunity)
- Increased mortality from economic adjustment (among economic pilgrims, as well as the marginalized and excluded)

Additionally, I think we need to consider the death of animals:

- Directly as road-kill, and indirectly through displaced habitat (attributable to the increased number of vehicles, roads, and communities enabled in the North Bay counties by the Bridge's construction)

In each of these instances, Bridge engineers missed an opportunity to lessen the potential for loss of life, failing to commit adequate resources to understand incipient problems and realize effective solutions. If there is a failure here—with the stunning engineering success of the Bridge, and by inference, perhaps, with our more yeoman engineering designs—I feel that it might be justifiably laid at the foot of our professional ethic, which avoids an explicit reference to the individual.

### **Accidental Loss of Human Life**

Compared with the past, we seem less willing to simply accept the untimely death of a distal other. This is equally true of intentional, unintentional, and accidental death. In terms of intentional death, at least some responsible actors in our (US) government believe this, or they would not feel

compelled to obscure the level of carnage now taking place in the Middle East (no one similarly placed was concerned enough to conceal our level of troop loss, an order of magnitude greater, 40 years earlier in Vietnam). As for unintentional death, the epidemic of puerperal fever recognized in Vienna by Ignaz Semmelweis, might today generate outrage, rather than a 19<sup>th</sup> Century blend of ignorant denial and helpless acceptance. Finally, the expanding scope of current safety features indicates less complacency with *accidental* death, if not an increased willingness to relieve the suffering of victims (still distributing relief primarily on the basis of insurance).

I can remember working construction projects where safety equipment was minimal to nonexistent by current standards. I also remember a lot of old carpenters with missing digits, and was more-or-less amazed to discover that they lost fingers, like Civil War saw-bones, through haste and a well-sharpened hand tool rather than the introduction of unfamiliar and obviously dangerous power equipment. The greatest dangers are often concealed—sometimes behind over-reliance on safety devices—but individual accidents derive as much from human attitudes as innately perilous operations. Danger accrues to an industry as a function of process, rather than the ultimate industrial product.

Historically, the risks of a dangerous profession were naively assumed to be inevitable, and the subject of informed consent. Dangerous jobs often entailed higher wages, and the idea was that greater compensation—compensation for risk—was also adequate compensation for the burden of accidental loss. Payment for risk is fine, but the idea that there can be just, monetary compensation for accidental death is ludicrous. No one, in the absence of insanity, terminal illness, unbearable pain, or the duress of an impossible situation, would volunteer to surrender a *limb*, let alone end his or her life, purely for the sake of monetary compensation.

Yet in the recent past, industrial accidents were considered an act of God (or a random act of chance) rather than ultimately preventable occurrences, statistically skewed to particular industries by ignorance, greed, and neglect. Workers were given the economic status of a raw material—to be used up, or replaced by raw material from another source if prices became too dear. (If you believe this practice to occur *strictly* in the past, try hiring your neighbor to raise, slaughter, and clean the chicken you want to cook for dinner.) Injured long-term workers were typically dismissed with some minimal package of benefits, while short-term workers and the families of industry fatalities were left to the spotty care of external charities.

In a similar way, traffic fatalities were accepted as the simple inevitability of hurling people around at 70 miles per hour, surrounded by a ton of glass and metal, and oozing a few gallons of accelerant. The car I have owned for the last 18 years (a 1964 Plymouth Belvedere, which has never had seat belts) was built and originally purchased in 1963, the first year US traffic fatalities topped 40,000. By way of comparison, annual traffic fatalities always exceeded our troop losses in Vietnam (by more than a factor of 3, even during the year of the Tet Offensive). While traffic fatalities reached an apex of nearly 55,000 in 1972, the increasing emphasis on “safe” vehicles has reduced US traffic fatalities to mid-1960s levels. But historically, so many people died before their time, subject to accidents, infections, treatable or preventable disease, as collateral damage in wars, or subject to the vagaries of food production and famine—we just stoically accepted the fact that our lives would be touched, at various points, by premature death.

We seem more active today, looking for culpability in accidental death and assigning damages. I suppose it is tempting to play a utilitarian analysis with human life. Perhaps we imagine a minimum market value in terms of some abstract utile, like dollars (e.g., how many waking hours might a relatively alert human expect to live, and how much would the reasonably competent require, as compensation, to relinquish one hour). Market force estimations, after all, form the basis of how we value a (nonpet) animal life (so much per mature pork-belly, delivered to the abattoir, depending on timely supply and the instantaneous, global yen for bacon). And, of course, market forces were also used by slave owners, to place a value on “available” African-Americans before our Civil War.

But the assignment of damages, too often, is a *post hoc* measure of retributive, rather than distributive justice. Since a lost human life is irredeemable, unless, possibly, in exchange for some “equivalent” human life, justice after the fact is an illusion. Engineers should do their best to design useful projects, which enhance life—not to avoid damages, but because moral behavior is morally compelling. If fatalities occur, we need to correct the immediate and responsible causes, insure that the fatality is not simply accepted as the cost of doing business, and ease the burdens of those who, in Whitman’s terms, remain, and suffer. But justice is temporally beyond our grasp. Justice demands our attention *before* dangers become *de facto*.

The Golden Gate Bridge and post-war automobile safety requirements are rightly cited as the beginning of a gentler, more responsible attitude toward the victims of fatal accidents. Innovators like Joseph Strauss and Preston Tucker were obviously unsettled by the existing, callous attitude toward acci-

dental loss of life—and in their own ways, are at least partially responsible for leading our society away from its complacency. But Strauss and Tucker's innovations addressed *familiar* accidents, and made no real attempt to consider safety problems beyond the expected (*e.g.*, failing to account for gondolas crashing through safety nets, or lead poisoning from automobile exhaust emissions). Since many engineered works outlive their designers, we need to devote a significant portion of the design effort to considering just how each project might encounter an adjunct failure in unexpected and catastrophic ways (perhaps writing, disseminating, and critiquing imaginative reports). With the collective imagination of the engineering profession, I do not see why we would be unable to anticipate at least some of the new forms of accidents which inevitably follow in the wake of new technologies.

One might argue that the extreme boundaries of killing (intentional) and letting-die (accidental) encompass a well-distributed continuum of possibilities. While no single contribution to an accidental death may be necessary or sufficient, there is perhaps *some* culpability by simple contiguity (this seems to be the direction taken in US civil suits, assigning minimal, potential liability to caterers, for construction deaths at the sites they service). This being the case, there is a fractional aspect of killing associated with accidental death that makes our professional concern morally imperative. Perhaps accidental deaths are simply unintentional killing, as with the ignorant introduction of bacteria during childbirth in 19<sup>th</sup> century Vienna.

### Intentional Loss of Human Life

There are probably two types of intentional death one might associate with the Golden Gate Bridge—suicide, which has occurred (often) and should reasonably have been anticipated; and politically-motivated attack—blowing up the Bridge as a military objective, or as a symbol of something else, hateful, yet beyond weapon's range. While both types of deaths are, or would be killing (you cannot really argue Secondary Effect here—that someone might want to blow up the Bridge, without intending to kill the people driving across it in their cars), they otherwise seem to be quiet different.

Suicide is certainly a killing, but the *ill* of a suicide's death seems to be a function of motivation; we do not consider willing, self-sacrificial death to be suicide *or* killing—even if the sacrifice achieves nothing concrete. For example, the unsuccessful hero might use his body in a vain attempt to save someone else. Comparatively, a *suicide* might choose to die because he thinks it would be better for his family. Both deaths are untimely, but we hold the sui-

cide particularly culpable because we consider him inadequately informed, and think that he ought to have known better. We are less judgmental of the thwarted hero, and consider the world a better place, because of the occasional human willingness to make the ultimate sacrifice in an attempt—even if unsuccessful—to save the other. But if the suicide cannot know the state of the world in his absence, then neither can we. Further, if the culpability of *accidental* death exists somewhere on a continuum between killing and letting die, then perhaps suicide itself might not be an *absolutely* culpable form of killing (might retain a residual element of the accidental).

If a particular suicide *were* considered morally acceptable—for example, by controlling the manner, rather than the time of death, thereby avoiding a death that could be considered significantly premature—then jumping from the Bridge under the proper circumstances (no witness, no family or musing comrades left behind to wonder, and an out-going tide) might avoid censure. Under the right circumstances, the suicide would mitigate the physical aspects of a messy aftermath; and we know that the “well-tested” probability of success would be 98% (greater, if the suicide could control the angle of impact).

But if there were a morally acceptable suicide, it would be difficult to differentiate ahead of time. And for the purpose of this analysis, I will assume (along with Kant) that there is a perfect moral imperative against suicide—that suicide is a killing similar to the killing of someone other than yourself. This being the case, the engineers who designed the Golden Gate Bridge should have considered features to deter *all* potential suicide.

Of course, as originally configured with a pedestrian lane, the Bridge might be considered “suicide friendly.” Does the aesthetic Bay view seen from the walkway (admittedly stunning) offset the “attractive nuisance” appeal for potential suicides? On the other hand, lazy, or less-ambulatory suicides have certainly been willing to abandon cars on the roadway. More to the point, since suicides were jumping from the Brooklyn Bridge long before the Golden Gate Bridge was envisioned, the Bridge’s popularity with West Coast suicides should not have really surprised anyone.

As of 2005 (68 years of operation) more than 1,200 Golden Gate Bridge suicides have been documented (currently compiling at about one every two weeks). Importantly, there has been a continuing effort to reduce suicide attempts—through signage, alert officials (many potential suicides being thwarted by the California Highway Patrol) and with the introduction of sensors and strategically placed suicide nets. Perhaps there are additional *post hoc* palliatives (e.g., handing out anti-depressants at the pedestrian turnstile), but suicide prevention should have been incorporated into the

*original* design. Again, as with accidental death, *most* people will eventually recognize a problem and potential solutions, but engineers are particularly well-trained to consider technical problems in the abstract. And a brainstorming of unimagined, destructive applications should be a part of every engineering preliminary design. If this had been accomplished in the 1930s, perhaps the Bridge suicide toll would be less.

In the aftermath of 9/11, I am sure that there must be engineers somewhere considering the possibilities of a hostile impact loading on the Golden Gate Bridge. Because of its exposure to wind and seismic forces, the Bridge is probably well designed against the kind of lateral loads that might come from a bomb blast sufficiently small, or at some adequate remove. As a consequence, the problem might become one of keeping potential bombs far enough away from critical structural components (the two towers, the main cables, the two anchorages, the auxiliary cables, and the bridge girders, probably in that order). A military attack might provide enough warning to close the bridge and initiate countermeasures, but a stealth attack by land could use the Bridge roadway to access vulnerable features. Further, since the Bridge is an aerial, sight-seeing destination, attack from a private plane might not offer as much warning time as a more standard, military sortie.

Without trying to second-guess terrorists in a morbid way, the Bridge's principal weakness is probably in the material properties of the main cables—steel being particularly susceptible to heat and corrosion. While the ganged cables are statically determinant (enabling catastrophic failure at a single point) the redundant connections to the anchorage would require more points of attack, but correspondingly smaller explosions, and not all of the redundant connections would have to fail simultaneously (this type of failure analysis could be done by any of my upper-division engineering students). If engineers responsible for the Bridge are not currently thinking through potential attack scenarios, they obviously should be—in consultation with military engineers, who spend much more of their time trying to figure out how to efficiently blow things up, and how to patch battle damage.

For example, if a private plane loaded with jellied gasoline were to wrap itself around a cable support at the top of one tower, how much warning time would motorists have to vacate the Bridge? Should Highway Officials have a mechanism in place (do they?) to more or less instantaneously shut down the approaches (and how far away should vehicles be held)? How could fire retardants be efficiently placed at the site of combustion, or how might the heat of combustion be safely dissipated? If the ends of the Bridge were simultaneously blocked, could we safely evacuate motorists by static

lines or gondola to the respective shores? Assuming that someone with a grudge will eventually want to attack an American landmark on the west coast, should we “mis-direct” them by heavily defending the Bridge (e.g., studding the bridge with anti-aircraft drones), while posting minimal defenses, and advertising the “cultural significance” of some other, attractive target (perhaps San Simeon, from the perspective of historic continuity)?

The point is that a military attack on the Golden Gate Bridge was *not* part of the original design, although it probably should have been (Orson Welles and military planners were certainly considering the possibility of an attack on US soil). Today, there is no excuse for ignoring military/terrorist threats. In fact, since the Oklahoma City bombing, Federal buildings are now being designed to withstand internal blast loading (fairly simple, although perhaps counter-intuitive for someone habituated to thinking in terms of gravity loads).

As a profession, we have made progress in limiting the potential for our designs to further intentional killing. Although such killing is admittedly a bad thing, a determined killing is difficult to prevent. In the end, perhaps the current moral obligation of engineers is to prevent the easy deaths, while playing for time—enlarging the window for a timely response to developing threats. However, not all projects (the Golden Gate Bridge is a notable exception) retain the attention of engineers after their completion, so an exploration of dire contingencies needs to be a significant part of the project’s initial conception.

### **Economic Displacement and the Loss of Human Life**

In a finite world, the attraction of resources to one area will preclude their use in another. In the extreme, this polarizes wealth, and leaves behind pockets of marginalized humanity, incapable of realizing the life they desire. Such poverty is often accompanied by the loss of life—killing and otherwise—and the differential of wealth drives migration, taxing the typically minimal services available for new arrivals, and further decreasing the capacity of an abandoned homeland. In addition, indigenous inhabitants or early immigrants, if able to exercise sufficient power, will have an advantage over newcomers, and often use their advantage to exact privilege. In such an environment, the frustration of competing against unwarranted privilege might also motivate conflict resulting in the loss of life.

The history of California is rife with economic struggles between peoples and regions, and the Golden Gate Bridge was rightly seen as an economic stimulus to the North Bay counties (including Sonoma County, where I grew up). Under Anglo development, the location of San Francisco

benefited from natural port facilities, an existing presidio/mission with support infrastructure, and access along El Camino Real to the lush, surrounding farmlands to the south, and southeast. But originally located as a potential redoubt at the end of a narrow, highly defensible peninsula, San Francisco was separated from the counties to the immediate north by the Golden Gate. As a consequence, commerce to the north was traditionally limited by the availability of ferry traffic within the Bay. North Bay counties were therefore more isolated, agrarian, and economically limited. The Golden Gate Bridge improved access, drew capital as well as wealthier inhabitants, and contributed to the gentrification of the locals (or their exodus farther inland, to less pricey chunks of real estate).

Prosperity in the North Bay counties—augmented by the Bridge—fostered an unwillingness on the part of local inhabitants to do the nasty, or toilsome bits of work. For example, while I was growing up in Santa Rosa (the early 1960s) the public schools did not start until the end of September. Ostensibly, this was to allow school children to aid in the harvest of local prunes and to a lesser extent, English walnuts (both of which involved retrieving product from the ground). Yet, by the time I was there, few locals availed themselves of this opportunity (I certainly did not, although I did work construction jobs during the summer).

Mechanized farm labor is perhaps the most traditionally dangerous, nonbelligerent occupation, and if accompanied by inadequate wages, is understandably rejected by people with other options. However, migrant farm labor (drawn from regions low on options) had been fairly well established by the time of the Great Depression. While the end of the 1960s saw a few locals—otherwise stretching time between meals on communes, such as Lou Gottlieb's Morningstar Ranch—embark on farm labor, the region's less desirable, agricultural jobs (as now, throughout much of the West) were typically taken by "part-year" transients from Latin America.

This was not a new phenomenon, and the 19<sup>th</sup> century saw waves of Asian emigration—some, such as the Chinese, being met with extreme violence (more than one Chinese was simply killed at the end of the harvest, to avoid the cost of a meager wage). The point is that from a global perspective, the North Bay counties were already extremely wealthy. The Golden Gate Bridge enhanced this, and so is reasonably seen to contribute—admittedly, in a limited way—to the initial misery of the attracted poor.

Globally, corporations concentrate wealth and exploit the unprotected—particularly where they can operate off the radar of the obliviously empowered. If Malaysian children are working in clandestine, sweat-shop conditions



to fabricate sneakers, it is at least partially because some North Bay residents—from a position of relative affluence enhanced in a small way by the Bridge—choose to buy cheap footwear. Effort placed in the Third World producing export goods for the First World, gives the rank and file little of value, and detracts from the labor required to produce the food they need to eat, and the other goods that might stay and enhance the local quality of life. I do not know of an Irish Potato Famine in the works anywhere, but the potential mechanism is well understood. The Third World needs fewer “Hard Rock Café” T-shirts, and a larger percentage of its own resources, to develop local culture and a more satisfying lifestyle. “Trickle down” failed to work in our own (US) democracy, and it certainly will not work where the receptacles of poverty are so much more ubiquitous and overwhelming.

The problem for engineers is that most of their projects require capital—ready capital being primarily available in the First World. Engineering projects generate economic growth, and so the rich get richer (and, in a zero-sum world, the poor get poorer). If there is a possible solution here, it might be in the kind of *pro bono* engineering work demonstrated by groups like Engineers Without Borders. It would be helpful if such groups received better funding, maybe by levying a surcharge on all engineering projects in the First World. This is not the enormous “great leap forward” it might first appear to be, since some countries (like Japan) levy a similar engineering surcharge to support things like research and development.

The contributions of the Golden Gate Bridge are admittedly minimal in terms of global economic impact, but we are not justified in assuming they pass unfeared. While the motivation for economic enhancement in the First World is not death in the Third World, the lack of intention, or even ignorance of negative impact, does not absolve us of moral responsibility. Death, attributable to economic disparity is at least *partially* a form of killing, as opposed to letting-die. If the culpability for economic suffering is widely distributed, then the zero-sum impact of regional economic enhancement should be considered as part of the engineering analysis, at least for large, First World projects such as the Golden Gate Bridge. I know of no significant attempt to account for the economic disparity associated with engineering projects, and this certainly was not included in the analysis for the Golden Gate Bridge.

### **The Accidental Loss of Animal Life**

I suppose the intentional killing of animals on the Bridge is at least possible (as unimaginable as it is, there are probably individuals who find sport in

squishing small animals into the pavement). But the economic growth fostered by the Golden Gate Bridge also meant more space dedicated to human activities, with a correspondingly smaller habitat available for indigenous species. With the encroachment of humans, some species were displaced by others (wild oats and Eucalyptus trees, for example, while alien, have done quite well in northern California). And according to a *replacement* utilitarian theory, 100 happy dogs are equivalent to 100 happy coyotes (although the coyotes might not agree).

Perhaps, from a moral perspective, the most significant problem generated from loss of animal life is the increase in road-kill. For the most part, people who die in traffic accidents make the decision (perhaps ill-informed) to get into a car. While it may go unspoken, it seems reasonable that drivers and passengers, who contribute to the problem of vehicles with a dangerous amount of momentum, implicitly assume a proportionate risk. Do we not always feel worse about a pedestrian or bicyclist hit by a car, as opposed to someone similarly mutilated when two or more cars collide? However, with regard to animals, they seem simply caught in the headlights. Some die instantly and some linger, just as with human traffic casualties—but in the absence of an implicitly accepted risk.

The prevailing attitude with nonfarm animals has always been that those near a road would either develop car-savvy, or would be killed. In the case of feral species, populations would normally diminish (as they might, subject to the sudden introduction of thousands of hungry predators) and the scope of suffering would naturally lessen. On the other hand, sufficiently prolific species like squirrels might simply continue at culled numbers equal to the available food supply. In either case, large, less prolific, nonscavenging populations could easily dwindle and become genetically unviable.

In the case of pets, road-kill was easy enough to replace from the roaming excess of un-neutered animals, and the new pets, if unfamiliar with the perils of traffic, were given a similarly small window to come to grips with the presence of speeding vehicles. While pet road-kill continues, I seem to see fewer mangled pets now than in my youth. Possibly there are fewer free-range specimens among the un-neutered, but (although this evidence is just anecdotal) perhaps we have become better about taking care of our most cherished animals.

While I am currently living in a rural, mountainous part of the Great Basin, I see a lot of feral road-kill, ranging from moose, elk, and mule deer; to the magpies squished *into* the moose, elk, or mule deer they were feeding on. In the 25 years that I have been in this area, I have had two vehicular

encounters with mule deer (one became flustered and bolted head-first into the side of my parked car; and the other was head-to-head at 65 miles per hour, totaling my car as well as the deer).

The point is that when I moved to this area in 1985, I was told to watch for deer when their mountain feed became depleted (November through March), and the intent of the warning was to allow me to protect my *vehicle* rather than migrating deer. Hunters might bemoan the occasional road-kill with a nice rack—I've even seen the ignoble taking of coup (like elk eye-teeth) from an otherwise mangled carcass. But even with the massive, post-War addition of rurally-placed "National Defense" highways, no one was taking measures to limit the time a feral animal might spend in harm's way.

When I first arrived in the area, there still were range cattle and a number of "cattle-crossing" signs on lightly-used state roads—although one typically saw many more deer on the road than cows. But after I had been living in Utah for a decade or so, a newly completed section of I-40 near Jordanelle Dam was actually engineered for a deer-crossing, using cobbled terrain and fencing to channel the deer migration to a specific, well marked, and highly visible section of roadway. Such a limited application may or may not have saved any *actual* deer (there are still many opportunities to be run down on I-80, a few miles away) but it demonstrates the inkling of an admirable attitude.

The point is that while most humans are less concerned with animal life than human life, we need to recognize that engineering projects, like the Golden Gate Bridge, contribute to the death of a variety of living things, and that to a certain extent, living things—as moral patients—have a claim on us moral agents. As engineers, we should recognize this problem and provide proactive solutions (like engineered deer-crossings). Deer who lose their footing and fall off a cliff may succumb to accidental death; and deer shot by hunters may be killed; but deer who crumple to the side of a road do it from an insufficiently acknowledged engineering neglect.

## Conclusions

Death is not the problem; we are all born owing the debt of death. The problem is meaningless death, and the aspect of killing (intentional, unintentional, or partially accidental) implies that someone knowingly or ignorantly dropped the ball—denying the value of life and the meaning of death. Death is supposed to be a *natural* end, at least aesthetically required by our natural beginning, the declining efficiency of our biological containment, as a semi-closed system, and the Second Law of Thermodynamics. But nonkilling is

still a significant goal for the engineering profession, and except for the possible, indirect killing related to opportunity cost (born by the Third World for engineering projects designed to economically enhance the First World) engineering as a profession has contributed to a progressive attitude respectful of life. Even with the evils of economic disparity, Engineers Without Borders, as a 21<sup>st</sup> century organization, should certainly be seen as a positive step in the right direction. The problem is that we need to be careful to couch the requirements of nonkilling in an enabling way.

Elizabeth Anscombe (1981) made an interesting comment about pacifism between the two world wars. She held that a typical belief—professed by militant governments—was that pacifism, while noble, was beyond the reasonable expectation of existing regimes. While this categorical denial of a lofty goal is a little self-defeating (like denying hunger because there is no food in your mouth), Anscombe goes on to say that governments, thus self-absolved from nonkilling on practical grounds, took the “in-for-a-penny, in-for-a-pound” attitude. Since they could not be “noble” they felt no compunction to be “decent” (hence, neither side refrained from the indiscriminant bombing of civilian targets).

If engineers claim nonkilling as an absolute, professional goal, and if nonkilling is not within our zone of proximal development (to use Lev Vygotski’s term) then the goal of nonkilling might simply be dismissed as unobtainable. “Ought implies can;” and if the profession cannot achieve the nobility of nonkilling, at least some might feel absolved from the responsibility of maintaining a decent respect for life. To be absolved at one point, might be construed as a license to totally ignore one’s moral responsibility (certainly, one’s moral sensibility might be expected to erode).

Not too many years ago, engineering was simply a branch of the military, and I do not think we are very close to achieving *ahimsa*. Both engineering and the military are currently used to enhance or exact privileged status, and neither pays adequate attention to the holes they tear in our global fabric. Racism, nationalism, religious intolerance, and entrenched privilege are recalcitrant foes—feebly opposed by our efforts in the engineering curriculum, to address the problems of a nonkilling profession. I teach a class in engineering ethics to approximately 300 students a year—and consideration *here* is a miniscule step—but the moral dialogue needs to include active professionals. This is not something you can force with units of continuing professional education, and a serious dialogue may have to wait for the collective will to change. Perhaps volunteer organizations, like Engineers Without Borders will become so overwhelmingly successful that

the profession as a whole will desire their institutional subsumption, and be willing to abandon the limited attitudes of centuries past.

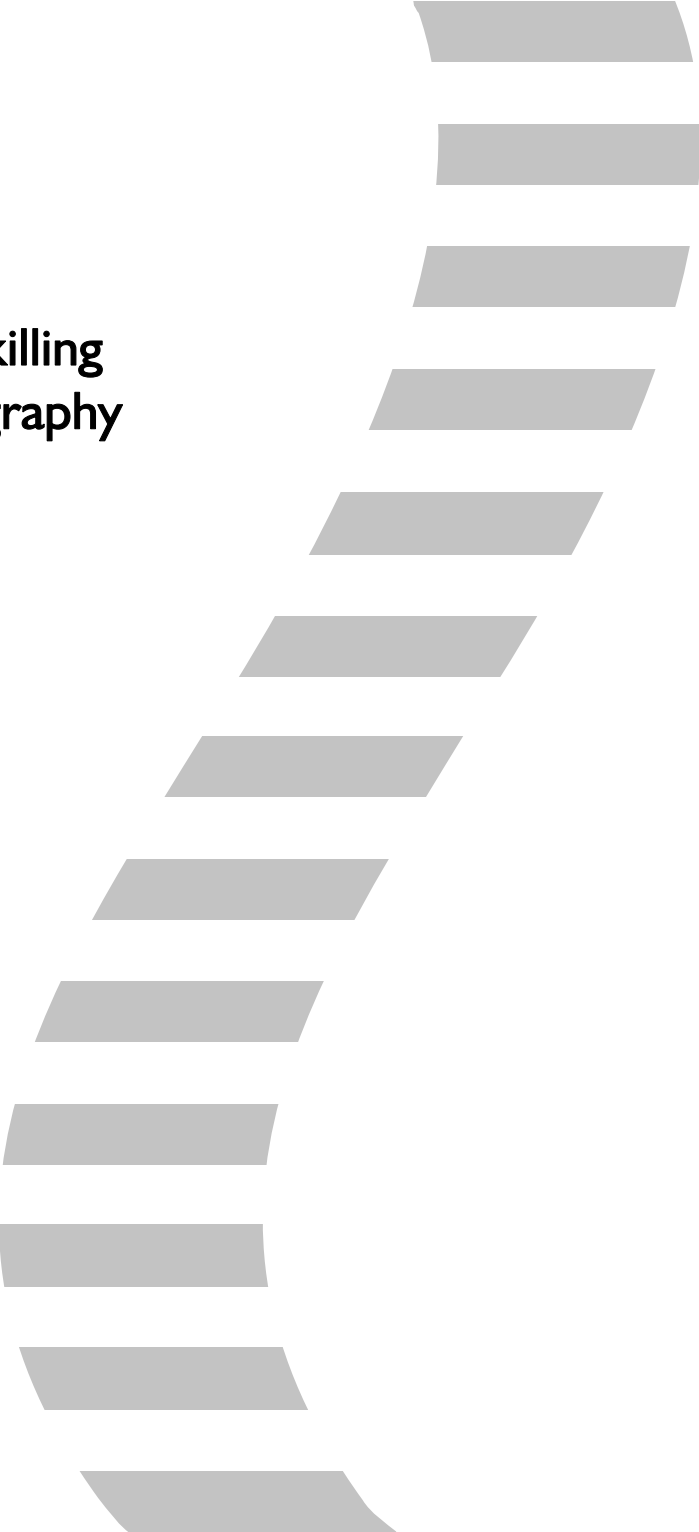
A dialogue as to the goals of *ahimsa* might help us to appreciate the negative impact, on isolated individuals, of our otherwise positive projects. With appropriately respectful attitudes, the private good becomes the public good, and recognizing our moral obligation to marginalized victims is an important step. Thus, engineering concern for the individual, comparable to the concern expressed by physicians, seems to be at the core of a viable professional ethic for engineers. As engineers, we must consider the needs of all individuals, along with our first inquiries into the possibilities of engineered solutions in support of the public good.

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**Nonkilling  
Geography**







# Toward a Nonkilling Geography

## Deconstructing the Spatial Logic of Killing

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In 2001 three researchers associated with the Center for Disease Control and the World Health Organization published an inherently geographic paper entitled “Epidemiology of violent deaths in the world.” Noting that the extent of global violence had never been described, Avid Reza, James Mercy, and Etienne Krug set out to document the patterns of violence-related mortality (including suicide, war, and homicide). Restricting their study to just one year (1990), they detailed an estimated 1.8 million violence-related deaths worldwide (35.3 per 100,000). Among their various findings, Reza, Merchy, and Krug (2001: 107) found that there were an estimated 211,000 and 291,000 war-related deaths among females and males, respectively, and that the war-related death rates for females in the world was highest for 0-4 year olds.

The statistical data provided by Reza and his colleagues conform with other studies on war-related killings, namely the increasing proportion of “civilians” being killed in war. Indeed, throughout the twentieth century civilians in general (and children in particular) have comprised an ever increasing proportion of both direct and indirect casualties of war. During the First World War, for example, civilian casualties comprised between 5 and 19 percent of all war deaths; during the Second World War, this figure jumped to approximately 50 percent. Now into the twenty-first century, at least 80 percent of the approximately 20 million people killed and 60 million people wounded have been civilians.

Unfortunately, the presentation of so many “abstract” numbers risks obfuscating our understanding of violence more than it reveals. What, for example, accounts for these deaths? Why has it become easier for people to kill other people at ever larger scales? To consider these questions, however, requires one to move beyond our normal comfort zones; it forces us, as researchers and teachers, to engage with violence and killing at a level to which we usually are not accustomed. And yet, as Dave Grossman (1996: xxxiv) explains, “Only on the basis of understanding this ultimate, destructive aspect of human behavior can we hope to influence it in such a way as to ensure the

survival of our civilization.” Glenn Paige (2007: 72) forwards a similar proposition, noting that a nonkilling paradigm for society requires, paradoxically, a need to understand killing. The salience, Paige writes, derives from the observation that “where killing is assumed to be inevitable and acceptable for personal and collective purposes, there is less urgency to understand and to remove the causes of lethality.” Consequently, as Paige concludes, “we need to understand processes of cause and effect, however complex and interdependent. Every case of killing demands causal explanation. We need to know who kills whom, how, where, when, why and with what antecedents, contextual conditions, individual and social meanings, and consequences.”

Although geographers have made substantial contributions to the study of violence (Valentine, 1989; Pain, 1997; Koskela; Pain, 2000; Gregory; Pred 2007; Tyner, 2009), missing from these studies has been an explicit engagement with *killing* as a form of violence within a context of war or genocide. Although widely studied by military theoreticians, military historians, and military psychologists, the actual killing of people has not been explicitly addressed by geographers. This lacunae, I argue, constitutes a serious deficiency in our understanding of violence and warfare. However, this disciplinary gap also provides a remarkable opportunity to contribute to the on going efforts to develop nonkilling curricula and, by extension, a nonkilling society.

In this chapter I argue that *geography* is foundational to the human behavior of killing. Indeed, I conclude that there exists a *spatial logic* to both the practice of killing and the justification for killing. Consequently, any prospect for the construction of a nonkilling society must be predicated on overcoming these geographies. Before proceeding, however, it is necessary to define what I mean by “geography.”

### Geography and a Geographic Perspective

For many readers, geography both as a term and a concept is unproblematic. Geography, it is understood, refers to the topography or morphology of a place. Geography entails the physical features (e.g., mountains, rivers, and oceans) of the earth’s surface. Consequently, studies incorporating “geography” must necessarily focus on the interrelations between human activities and the natural environment.

Such a narrow (but seemingly obvious) understanding of geography permeates both academia and the public. Remarkably, for those who identified themselves as Geographers, the subject matter is considerably more difficult. Indeed, since its inception as an academic discipline, there has been

little consensus as to what geography is and what Geographers do. In part, the “continual contest over the definitions of geography ... is due to the way in which different scholars conceptualize and rework the content and focus of the subject” (Hubbard et al., 2002: 12). This has important implications when one questions how Geography can contribute to the promotion of a nonkilling society.

For the purposes of this chapter, I concentrate on one thread of Geography, one aspect of a greater fabric that weaves together an understanding of the earth and its inhabitants. Here, I consider the basic concept of “space” and how this concept illuminates our understanding of killing specifically, and violence more generally.

Since Geography’s inception as a discipline in the early twentieth-century within the Anglo-American university setting, space has often been treated in absolute terms. Emphasis was placed on the uniqueness of spaces and regions; conceptually, space was based on fixed entities: on the arrangement of discernable objects anchored in an unchanging and undifferentiated space.

Throughout the 1940s and 1950s, this conception of space (within the discipline of Geography) was gradually transformed. The focus on the uniqueness of phenomena distributed across space was re-directed as geographers increasingly concentrated on the “spaces” between objects. Geography, it was argued, needed to direct attention to the spatial arrangements of phenomena; spatial relations were of importance, rather than objects per se. Consequently, a series of core geographic themes that were based on *relative* concepts of space began to emerge. Geography as a discipline began to emphasize distance, pattern, position, and location as the basic concepts of the field. As Ron Abler (1971: 73) and his colleagues write, the “shift to a relative spatial context ... is probably the most fundamental change in the history of geography.”

Hyperbole notwithstanding, the move away from absolute understandings of space did facilitate a remarkable *theoretical* and *philosophical* shift in the discipline of Geography, and that shift continues. Contemporary geographers wrestle with many competing understandings and interpretations of space and its associated concepts of distance, pattern, position, and location.

Although this abstract conception of space remains dominant in many geographic centers of learning, another, more *relational* understanding has been forwarded. Rather than conceiving of space as an inert backdrop, a stage on which humans (for example) operate according to abstract physical laws, space is now increasingly understood as an actor in its own right.

Space, in effect, is thought to be *produced*; likewise, space also is thought to *produce*. As Doreen Massey (1994: 254) writes, “Space is constituted through social relations and material social practices.”

A relational conception of space directs attention to how space is constituted and given meaning through human interactions—including violence. To this end, Ed Soja (1989) has introduced the term “spatiality” in reference to socially-produced space. Rob Shields (1997: 186-87) follows with a further justification for a conception of space as relational. “If one still bridles,” he argues, “at the idea of a social ‘production’ or cultural ‘making’ of ‘spaces’ then perhaps one might refer to the remaking of empirical space by social groups.” This remaking of space, he explains, “takes place almost invisibly” because “the social categories in which space is conceived and perceived structure the most elementary aspects of our interaction with our physical context and setting.”

In the following sections I consider killing as human behavior. I do so, however, through a dual usage of space. First, I consider the *act* of killing with reference to relative conceptions of both space and distance. Second, I emphasize that the *legitimation* and *justification* for killing—the meanings behind the actions—may be understood within the context of a relational (and moral) space. Lastly, I should note that in this chapter my emphasis is primarily on the conduct of killing within contexts of war, mass violence, and genocide. Although parallels may be found with other practices of killing (e.g., homicide), immediate concern is to question the prevalence and continuance of more large-scale practices and processes of killing.

### **Killing as Human Behavior**

Humans are unique in their ability to kill members of their own species—often on a scale that borders on the unimaginable. Throughout the 20<sup>th</sup> century, approximately 230 million people died in wars and other forms of mass conflict. As Milton Leitenberg (2006) concludes, these deaths resulted from *human decisions*. During the First World War, for example, an estimated 13 to 15 million people died because of political decisions that led Germany, France, Russia, Austria-Hungary and other European states into war. The Second World War, likewise, contributed to the death of between 65 and 75 million people. Embedded within this latter figure are the estimated 6 million Jews who perished in the Holocaust.

What accounts for humanity’s ability to engage in such large-scale violence? What allows (or impels) humans to kill one another? There are many existent models, theories, and frameworks that seek to account for this vio-

lence. Notable are the works of Kuper (1981), Staub (1989), Chalk and Jonassohn (1990), Gilligan (1997), Hinton (2005), Chirot and McCauley (2006), Kiernan (2007), and Shaw (2007). Common to all approaches, however, is a recognition that killing—ranging from homicide to genocide—is not an irrational act from the standpoint of the perpetrator. Indeed, as James Gilligan (1997: 9) concludes, “even the most apparently ‘insane’ violence has a rational meaning to the person who commits it, and to prevent this violence, we need to learn to understand what that meaning is.”

It is imperative, moreover, to affirm that the killing of humans by other humans is neither natural nor inherent. Although genetic evolution may have contributed to a propensity to engage in violence, including killing, this does not imply that humans are natural-born killers. Indeed, as Daniel Chirot and Clark McCauley (2006: 51) write, “all but those most habituated to extreme brutality or a small number who seem to lack normal emotional reactions to bloody violence, have to overcome a sense of horror when they engage in or witness slaughter firsthand.” In fact, numerous studies on the psychology of combat-related killing have demonstrated, within a variety of geographic and historical settings, that humans are exceptionally reticent to kill. Soldiers may not flee, but they also may not kill in the heat of combat. Studies from the American Civil War onward have indicated that most soldiers do not fire at all (Marshall, 1978; Dyer, 1985; Grossman, 1996). Dave Grossman (1996: 28), for example, concludes that “There is ample evidence of the resistance to killing and that it appears to have existed at least since the black-powder era. This lack of enthusiasm for killing the enemy causes many soldiers to posture, submit, or flee, rather than fight; it represents a powerful psychological force on the battlefield; and it is a force that is discernible throughout the history [of warfare].”

Soldiers—and people in general—do not readily kill; why not? According to Grossman (1996: 31), “Looking another human being in the eye, making an independent decision to kill him, and watching as he dies due to your action combine to form the single most basic, important, primal, and potentially traumatic occurrence of war.” Grossman (p. 5) elaborates that a significant misunderstanding of the psychology of the battlefield is a misapplication of the fight-or-flight model of human behavior. It is commonly assumed that when confronted with a threatening situation, people will either fight (and possibly kill another person) or flee the situation. However, the reality of combat is decidedly more complex. Within a potentially threatening or violent situation, the first decision may be to flee, but it may also be to posture: to

appear more powerful to the opponent. Such posturing serves to intimidate the enemy, and indeed might result in the enemy fleeing the battlefield.

Studies have also found that soldiers across cultures may either *not* fire their weapons in combat, or may deliberately shoot above the enemy. Grossman (1996: 39) concludes that "There can be no doubt that this resistance to killing one's fellow man is there and that it exists as a result of powerful combination of instinctive, rational, environmental, hereditary, cultural, and social factors."

Not surprisingly, military officials have sought to transform these inhibitions to the taking of life. From studies of combat behavior, and military training programs, some tentative conclusions on the actual practice of killing may be identified. And from these conclusions, we may better develop educational programs to reduce the prevalence of killing within society.

### **Killing and the Distance-Decay Effect**

So how do humans kill other humans, or: What is the spatial logic of killing? To answer this question, we must consider more directly the relation between geography and human behavior. Dave Grossman (1996) identifies that a qualitative distinction exists between killing people in a bombing raid as opposed to killing with a grenade, rifle, or knife. The difference, he argues, is *distance*.

Geographers have long understood the importance of distance. In 1955, for example, J.W. Watson defined geography as "a discipline in distance." His comments, however, originated during a time when geographers were re-conceptualizing both "space" and "distance" as foundational concepts. Reflecting a more *relative* understanding of space, geographers argued that relative distance is defined by distances along several dimensions. Previously, distance was understood from the standpoint of absolute space; the measure of distance was unchanging (i.e., measured solely in miles or kilometers). With a relative conception of space, however, distance was understood to vary based on other factors, such as time, costs, and barriers to interaction.

The shift toward a relative understanding of space was significant in that it directed geographers to the proposition that the "spaces in which people live are much more psychological than absolute" (Abler et al., 1971: 75). This led to Waldo Tobler's pronouncement of the "first law of geography: everything is related to everything else, but near things are more related than distant things." Tobler's law, in fact, directs attention to the concept of *distance-decay*, whereby activities or processes between two locations are

presumed to decrease in their intensity (or interaction) with increasing distance. According to Peter Haggett (2001: 399), as a general rule, “the degree of spatial interaction (flows between regions) is inversely related to distance; that is, near regions interact more intensely than distant regions.”

The concept of “distance-decay” has a surprisingly important role to play in our understanding of killing as human behavior. Grossman (1996) for example identifies that physical distance is crucial in understanding the behavior of killing. As the distance between perpetrator and victim increases, it becomes easier and less traumatic to kill. Grossman (1996: 107) notes that at “maximum range”—a range at which the killer is unable to perceive his individual victims without using some form of mechanical assistance (e.g., binoculars, radar, remote camera)—the act of killing is remarkably simple. Indeed, Grossman (p. 108) has not identified one instance of individuals who have refused to kill the enemy under these circumstances.

As the range decreases, however, killing becomes more difficult. Grossman (1996: 109) notes that at “long range” (e.g., sniper weapons, tank fire) there begins to appear some disturbance at the act of killing. At mid-range, a distance at which the soldier can see and engage the enemy with rifle fire though unable to perceive the extent of the wounds inflicted or the sounds and facial expressions of the victim, there is an increased emotional toll. Grossman (p. 111) explains that killing at this range is often described as reflexive or automatic, and that the soldier experiences a range of emotions, from an initial feeling of euphoria or elation, followed by a period of guilt and remorse.

Killing becomes increasingly difficult at close range. Here lies “the undeniable certainty of responsibility on the part of the killer” (Grossman, 1996: 114). Indeed, Grossman (p. 118) concludes that at “close range the resistance to killing an opponent is tremendous. When one looks an opponent in the eye, and knows that he is young or old, scared or angry, it is not possible to deny that the individual about to be killed is much like oneself.” As will be discussed later, appeals to justice and legitimacy must increase as the physical distance of killing decreases.

In short, Grossman (1996) develops a distance-decay model of violence. A geographic spectrum of killing exists, and we may assert that the resistance to killing increases with spatial proximity. At one end of the spectrum is the use of aerial bombers, inter-continental missiles, and drones. Here, people kill from thousands of miles away. At the other end is the use

of knives and other weapons designed for hand-to-hand combat. Such intense and personal killing is decidedly more traumatic.<sup>1</sup>

This “geography of killing” has important implications for our broader understanding of killing as human behavior, particularly as it relates to the killing by “ordinary” citizens in the context of genocide and mass violence. Soldiers, we may argue, are trained to kill and thus “better” equipped to overcome humanity’s resistance to killing. But what about the rest of us? What of the nonsoldiers who participate in massacres and other forms of direct violence? This question has been addressed in a number of genocidal contexts (Browning, 1992; Hinton, 2005; Semelin, 2007).

Whether one considers the Holocaust or the genocides in Cambodia, Rwanda, Darfur and elsewhere, one cannot escape the fact that many (if not most) killings were conducted by “ordinary” people. Indeed, as Christopher Browning (1992: xvii) writes in his seminal work *Ordinary Men*, “the Holocaust took place because at the most basic level individual human beings killed other human beings in large numbers over an extended period to time.” Such sustained killings throughout the Holocaust and other settings by “ordinary” people, to be sure, were the result of many factors: a broader context in which killings were permitted and sanctioned by state authorities; an organizational structure that facilitated killing; and the availability of weapons.

At an individual level, however, other more psychological components must be considered. As Chirot and McCauley (2006: 53) explain, “Most humans have a sense of fairness that governs relations with others.” Consequently, physical distance—while important—must be tempered with an additional component. Distance is not simply spatial; it also entails a social component. This in fact ties into our earlier discussion on the concept of space, for *spatial* relations are also *social* relations. And as Taylor (2009: 44) writes, “No perpetrator acts, no victim suffers, in total isolation, even though they may kill, or die, alone.” The human act of killing must be viewed as a socio-spatial relation.

### **Killing and the Spaces of Moral Exclusion**

Why do “ordinary” people kill and even engage in mass killing?

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<sup>1</sup> Significantly, military practices (but especially beginning in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries) have been to extend the range of kill. This was most pronounced with the advent of the large-scale carpet bombing campaigns of the Second World War and the development of inter-continental ballistic missiles and pilotless drones. With each technological advance, killing has become easier.



“People who kill in spite of the inhibitions and penalties that confront them,” Daly and Wilson (1988: 12) write, “are people [who are] moved by strong passions.” These passions may be (and frequently are) intensely personal; but they also may be exceptionally social and political. A person’s passion to kill may arise ironically, paradoxically, from a broader “desire to build a world without conflict or enemies” (Semelin, 2007: 33). In other words, the moral justification to kill another may be predicated on the belief that such violence will, ultimately, prevent violence. As Gilligan (1997: 12) notes, “the attempt to achieve and maintain justice, or to undo or prevent injustice, is the one and only universal *cause* of violence” (emphasis added).

All human societies moralize and thus share basic categories such as obligatory, permitted, or forbidden actions (Taylor, 2009: 37). To this end, Susan Opatow (2001) suggests that norms, moral rules, and concerns about rights and fairness govern our conduct toward other people. However, not every person or group is necessarily included within the scope of justice. Rather, she explains that “Inclusion in the scope of justice means applying considerations of fairness, allocating resources, and making sacrifices to foster another’s well-being.” Conversely, moral exclusion “rationalizes and excuses harm inflicted on those outside the scope of justice. Excluding others from the scope of justice means viewing them as unworthy of fairness, resources, or sacrifice, and seeing them as expendable, undeserving, exploitable, or irrelevant” (Opatow, 2001: 156). In short, moral exclusion works against the reticence of taking another person’s life. To morally exclude another human is to pave the way to kill that person.

Earlier, I noted that Geographers have increasingly focused their attention on *relational* understandings of space. This is captured in David Delaney’s idea of *geographies of experience*. He writes, “Our lives are, in a sense, made of time. But we are also physical, corporeal, mobile beings. We inhabit a material, spatial world. We move through it. We change it. It changes us. Each of us is weaving a singular path through the world. The paths that we make, the conditions under which we make them, and the experiences that those paths open up or close off are part of what makes us who we are” (1998: 4).

Delaney prefigures a discussion on the meanings and uses of space, questions that are never removed from considerations of power. Who, or which group, is granted or denied access to certain spaces? What activities are deemed appropriate, or not? And who has the authority, the ability, to define (and enforce) those spaces? It becomes clear, therefore, that the process leading to social inclusion or exclusion has a geographic component.

The construction of community and the bounding of social groups are part of the same problem as the separation of self and other (Sibley, 1995: 45). According to Young (1990: 43), a social group is a collective of persons differentiated from at least one another group by cultural forms, practices, or way of life. More precisely, groups are expressions of social (and therefore, *spatial*) relations; groups only exist in relation to other groups. However, as Young (p. 53) elaborates, many groups find themselves socially (and spatially) marginalized. Indeed, a “whole category of people may be expelled from useful participation in social life and thus potentially subjected to severe material deprivation and even extermination.”

The geographic component of moral exclusion is identified as the *extent* of moral exclusion. This refers to the scope of collective inclusion or exclusion and is seen, for example, in socio-spatial practices that marginalize both people and groups of people. This is particularly prevalent in “us-them” thinking and the promotion of nationalist rhetoric. According to social psychologists, the process of ‘us-them’ thinking originates with social categorizations. These mental constructs (e.g., man/woman, black/white, citizen/alien) are cognitive tools that segment, classify, and order our social environment (Waller, 2002: 239). Indeed Waller (2002: 239-240) suggests that the use of social categorizations in assigning people to populations has four salient effects: assumed similarity, out-group homogeneity, accentuation, and in-group bias. Not surprisingly, these effects are explicitly geographic. First, people who identify themselves as part of an in-group tend to perceive other in-group members as more similar than out-group members. Second, people perceive members of out-groups as all alike; generalizations, moreover, are often based on one or two members. Third, perceived differences between in-groups and out-groups tend to be accentuated, or exaggerated. Finally, the mere act of dividing people into groups inevitably sets up a bias in group members in favor of the in-group and against the out-group. These four effects, moreover, are spatially manifest, as in practices of segregation and community policing. The establishment of Jim Crow in the United States and apartheid in South Africa are prime examples. So too are the examples of Jewish concentration camps in the Second World War and the strategic hamlets developed by American forces during the Vietnam War. In all cases, a perceived “Other” is spatially excluded from the larger society (Tyner, 2009).

Underlying these four effects is also a process Kathleen Taylor (2009: 9) defines as the “essence trap.” According to Taylor, this “involves the *imagining* that everyone has a core character, the essence of who they are” (emphasis added). Significantly, these essences are frequently portrayed as

natural and invariable. The Tutsis in Rwanda, for example, were perceived as alien Others.

The process of social (and spatial) categorization, however, does not proceed based on natural divisions of humanity. Indeed, social categories do not simply *include* groups; rather, the relational process of categorization *produces* groups. Consequently, there is an immediate spatiality to the processes of social categorization. As Waller (2002: 239) writes, “Not only do social categorizations systemize our social world; they also create and *define our place in it*” (emphasis added). Social categorizations, in effect, produce geographies (Tyner, 2009: 37). This is why it is so important to acknowledge Marc Pilisuk’s (2008: 30) argument that people “are distinguished as a species by their capacity to kill large numbers of their own kind as well as by their symbolic *representations of reality*” (emphasis added).

Social reality is structured through language. It is language about events rather than the events themselves that people experience. Likewise, it is often “languages” about other peoples (i.e., stereotypes) and places that are experienced, rather than those people and places per se. Another way of approaching “language” however is from that standpoint of knowledge. Knowledge about people and places, we can say, entails *geographical knowledges*.

What is meant by geographical knowledge, and how can this concept contribute to our understanding of killing? In common usage, geographical knowledge consists of that information used to explain, describe, and/or interpret the distributions and characteristics of peoples and places. Alternatively, however, geographical knowledge may encompass a normative dimension in that it prescribes *where* people are to be located. According to Derek Gregory (2004: 803), imaginative geographies involve a politics of space. He asks, “Who claims the power to represent: to imagine geography like this rather than that?”

There exists an underlying *geographical imagination* to killing. As Semelin (2007: 9) explains, humanity’s ability to kill one another is “mainly born out of a mental process, a way of seeing some ‘Other’ being, of stigmatizing him [sic], debasing him, and obliterating him before actually killing him.” In other words, our imagination empowers us “to see beyond the actual to the possible” (Smith, 2007: 101). This includes the ability to envision a world *without* others, a world “purified” of unwanted or undesirable others. Marc Pilisuk (2008: 31) extends the argument, noting that the “evolved tendency for humans to use presentational symbols to categorize ourselves into nations, religions, and other symbolic groups serves both to fortify a positive self-image and to find purpose and meaning in existence” However, this “tendency to

identify with one group over another sets the stage for group comparisons and rivalries” (Pilisuk, 2008: 31). This tendency, this ability to envision and to imagine alternative geographies may also pave the way to justify killing.

One common approach to justify the exclusion (and killing) of others is to dehumanize the other. Simply put, dehumanization is a composite psychological mechanism that permits people to regard others as unworthy of being considered human (Pilisuk, 2008: 34). Through practices of dehumanization, isolated groups are stigmatized as alien. Waller (2002: 245) explains that dehumanization facilitates the practice of exclusion, discrimination, oppression, and, ultimately, violence. Once dehumanized, Waller explains, one’s body “possesses no meaning. It is a waste, and its removal is a matter of sanitation. There is no moral or emphatic context through which the perpetrator can relate to the victim.” Hence, the practice of dehumanization serves to increase the psychological and relational distance between the killer and the victim. Such a dehumanization practice is readily seen in the rhetoric and propaganda genocides and mass killings, including the Holocaust. Waller (2002: 246) explains: “In the Holocaust ... the Nazis redefined Jews as ‘bacilli,’ ‘parasites,’ ‘vermin,’ ‘demons,’ ‘syphilis,’ ‘cancer,’ ‘excrement,’ ‘filth,’ ‘tuberculosis,’ and ‘plague.’ In the camps, male inmates were never to be called ‘men’ but *Haftlinge* (prisoners), and when they ate the verb used to describe it was *fressen*, the word for animals eating. Statisticians and public health authorities frequently would list corpses not as *corpses* but as *Figuren* (figures or pieces), mere things ... Similarly, in a memo of June 5, 1942, labeled ‘Secret Reich Business,’ victims in gas vans at Chelmno are variously referred to as ‘the load,’ ‘number of pieces,’ and the ‘merchandise.’”

Dehumanization constitutes a justification system within one’s beliefs that destroying an inherent evil is not the same as killing a human being. People whose ordinary reality contains sharp inhibitions against inflicting violence may switch into an alternative reality that permits killing and even genocide (Pilisuk, 2008: 35). When we now reconsider the spatial logic of killing, we are confronted with the relational, or *moral*, distance of human interaction. As the physical distance between perpetrator and victim increases, it becomes easier to maintain the fiction, the imagination, that the enemy is somehow less than human.

To restate the argument thus far: To overcome the reticence of killing, especially at close physical range, it becomes more imperative (from the standpoint of the perpetrator) to increase the moral distance between killer and victim. A moral distance, according to Grossman (1996: 164), involves legitimizing oneself and one’s cause ... which on the one hand involves the determination

and condemnation of the enemy's guilt. On the other hand, moral distance likewise provides an affirmation of the legality and legitimacy of one's own cause (Grossman, 1996: 164). The Other *may* be recognized as human, but exists outside the realm of moral inclusion. The death of the Other becomes legitimate and justified. In short, the killing of the Other is *rationalized*.

The psychology of rationalization that underlies the way in which reluctance to kill is overcome goes by the name of "dissonance theory," whereupon dissonance refers to an unpleasant arousal that comes from seeing ourselves as having chosen to do something that is wrong (Chirot and McCauley, 2006: 54). Consequently, to engage in killing requires one to rationalize one's beliefs about the action: to distance oneself from either the act or the victim. Studies, moreover, have found that such rationalization may become easier as killing becomes more repetitive. Chirot and McCauley (2006: 56) write of a psychology that reinforces desensitization and routinization of killing:

Each additional killing makes the next one easier because each killing leads to changes in beliefs and values that justify the preceding one: I have been ordered to do this; those being killed are doing something wrong; they stand in my way; they deserve it; they are a threat to my own people; they are not quite human; they are polluting. Desensitization and routinization of killing thus occur in two ways. There is reduced emotional impact of originally disturbing stimuli associated with death, and there is increased cognitive and moral rationalization of the act.

Moral distance also contributes to one's moral engagement in exclusionary practices and also killing—whether as active participant or bystander. Engagement, in this sense, refers to a person's responsibility for, and response to, exclusionary and other violent practices. Opatow (2001: 158) suggests that engagement may range from unawareness to ignoring, allowing, facilitating, executing, or devising moral exclusion. Consequently, questions of engagement relate directly to the notion of impunity, with this latter term referring to the exemption from accountability, penalty, punishment, or legal sanctions for a crime.

Similar to the distance-decay effect of killing, there is also a spatial logic to the concepts of moral engagement and impunity. As Joseph Nevins (2005: 11-13) explains, geographic proximity, power, and distance must be accounted for in discussions of violence. He argues that social (moral) distance and geographic distance combine to make the plight of others more peripheral and, by extension, less relevant. The killings in Darfur, we say to

ourselves, is unfortunate; but it is *their* problem. Likewise, the “indifference by the international community to earlier massacres of Tutsi by Hutu” in Rwanda offered “encouragement to the ... elites that the Hutu could commit genocide [in 1994] and get away with it” (Smith, 1999: 4).

Lastly, we should note that while an understanding of impunity often focuses attention on the alleged perpetrators of violence, more broadly, though, we should speak of a “culture of impunity.” This occurs when impunity is institutionalized and widespread, when torture, crimes against humanity, and mass murder are overtly or tacitly condoned and unpunished as a result of amnesties, pardons, indifferences, or simply “looking the other way” (Opatow, 2001: 150). It is a culture of impunity that sanctions war as a viable political strategy. It is a culture of impunity that enables states in the abstract, but global citizens more specifically, from acting to prevent mass violence.

Barry Sanders (2009: 3) laments that “In the twentieth and twenty-first centuries, human beings do not die.” He explains that the “Nazis did not see humans when they looked at Jews, but rather vermin and cockroaches. They saw a multitude of pests in desperate need of wholesale extermination. Following that same tradition, in the more recent past, we read of entire villages of Vietnamese “pacified;” Tutsis and Serbs “ethnically cleansed;” men, women, and the youngest of children in Darfur and Chad ‘lost to religious strife.’ All too often and all too easily, the geographical imaginations of politicians, military planners, and others seeking power and riches have been spurred to justify and legitimate mass violence. Howard Zinn (2005: 15) writes that “The most powerful weapon of governments in raising armies is the weapon of propaganda, of ideology. They must persuade young people, and their families that though they may die, though they may lose arms or legs, or become blind, that it is done for the common good, for a noble cause, for democracy, for liberty, for God, for the country.” Needed are alternative imaginations, visions that instead reveal a global humanity—visions that eschew warfare, violence, and killing as acceptable political tools.

## Conclusions

“The structure of society,” Glenn Paige (2007: 2) writes, “does not depend upon lethality.” He explains that there “are no social relationships that require actual or threatened killing to sustain or change them. No relationships of dominance or exclusion—boundaries, forms of government, property, gender, race, ethnicity, class, or systems of spiritual or secular belief—require killing to support or challenge them.” James Gilligan (1997: 21)

likewise maintains that “it is really quite clear that we can prevent violence, and it is also clear how we can do so, if we want to.” According to Paige (2007: 71), the “assumed attainability of a nonkilling society implies a disciplinary shift to nonkilling creativity.”

What does this shift imply for the discipline of Geography? And how might a re-oriented Geography contribute to a nonkilling society? First and foremost is recognition that innumerable geographies underlie the actual human behavior of killing. While humans are exceptionally violent, they are not necessarily prone to violence. In other words, killing is not a natural or inherent trait of humans; humans in fact exhibit a strong abhorrence to killing and must be socialized to engage in these acts. Indeed, humans must provide a rationale for their actions. As James Gilligan (1997: 11) explains, “all violence is an attempt to achieve justice.” All violence must be legitimated, either to oneself or to the group.

“Given the right circumstances,” Chirot and McCauley (2006: 57) argue, “it is not too difficult to turn a significant proportion of humans into mass murderers.” Simply put, the “disgust one may feel, the identification with the victims, the sense of unfairness can all be overcome and have routinely been overcome with training and experience” (Chirot; McCauley, 2006: 57). The ability to overcome antipathy toward killing and violence, however, provides the opportunity to promote a nonkilling society.

A fundamental aspect of killing as human behavior involves the identification (or identity formation) of human difference. At both the communal and individual level, an awareness of group boundaries serves to socially and spatially marginalize and exclude others. This awareness, this geographic imagining, also provides a psychological justification and rationalization of killing.

Geography is an important contributor both to the act of killing and to the justification for killing. Consequently, geography must be considered in the construction of alternative frameworks for a nonkilling society.

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**Nonkilling  
Health Sciences**





# Nonkilling Public Health

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A nonkilling society, through the unique lens of the public health approach, is one in which the threat of violent death has been effectively eliminated. Indeed, with violence increasingly recognized as a major public health problem, the prevention of violent death and injury has moved to the forefront of international efforts in this field. As with other serious health threats, the eradication of violence, and thus the creation of nonkilling communities, is the ultimate goal of the public health approach.

Violence is a critical threat to the health of individuals and a leading cause of death worldwide. In 1996, the World Health Assembly adopted a resolution recognizing violence as a serious and urgent public health problem. This was followed by the World Health Organization (WHO)'s first *World Report on Violence and Health* (Krug; Dahlberg; Mercy; Zwi; Lozano, 2002) documenting the nature and scope of violence globally. This report revealed that, in 2000 alone, more than 1.6 million people worldwide lost their lives to violence (Krug, et al., 2002). Homicide accounted for almost one-third (31.3%) of these deaths, with a global rate of 8.8 people per 100,000. Another 18.6% of violent deaths were war-related, affecting 5.2 people per 100,000. The largest proportion of fatal violence was self-inflicted, with suicide accounting for almost half (49.1%) of these deaths at a rate of 14.5 fatalities per 100,000. These rates vary considerably by region with the highest rates of homicide found in Africa and the Americas, and the highest rates of suicide identified in Europe and the Western Pacific. The risk of violent death also varied significantly by age, and between racial and ethnic groups, rural and urban populations, and rich and poor countries. For example, in the United States (US) in 2006, African-Americans between the ages of 10 and 24 were 5 times more likely to die from homicide than White youths (Centers for Disease Control and Prevention, 2006). Further, in 2000, the rate of violent death was more than twice as high in low- to

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\* The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

middle-income countries than in high-income countries. Overall, males accounted for the majority of perpetrators and victims worldwide, including 77% of all homicide victims and 60% of suicide deaths (Krug et al., 2002).

Compounding the loss of human life, violence also results in significant economic costs to nations around the world. Violence-related health care, law enforcement and judicial services, lost work days, and reduced productivity cost the global economy billions of US dollars per year (Krug et al., 2002). For example, suicide deaths cost Canada almost US\$ 80 million in 1999 alone, at a rate of more than US\$ 849,000 per suicide (Clayton; Barcel, 1999). The costs of interpersonal and collective violence in Latin American countries ranged from 5.1% of the gross domestic product (GDP) in Peru to 24.9% of the GDP during a conflict period in El Salvador during the 1990s (Buvinic; Morrison; Shifter, 1999). The estimated cost *per* homicide is US\$ 15,319 in South Africa, US\$ 602,000 in Australia, US\$ 829,000 in New Zealand, and more than US\$ 1.3 million in the U.S. (Corso; Mercy; Simon; Finkelstein; Miller, 2007; Fanslow, 1997; Phillips, 1998; Walker, 1997; Waters et al., 2004). Some of this variability in cost estimates is due to differences in the methods used, including the types of costs included and the year the estimates were calculated. Violent deaths exact disproportionate costs on society; victims tend to be younger than those who die from internal causes, thus increasing the years of potential life lost and decreasing a nation's average life expectancy (Pridemore, 2003). Inclusion of life expectancy as one of only three indicators in the United Nation's human development index suggests that these premature deaths may have important consequences for the development of nations (Pridemore, 2003; United Nations Development Programme, 2001).

Of course, fatal violence represents only a small fraction of the physical and sexual violence perpetrated across the world. Available national surveys have reported lifetime prevalence rates of 10% to 34.4% for physical assault and 15.3% to 25% for sexual assault (Krug et al., 2002). However, reliable estimates of nonfatal violence and related injuries are more difficult to obtain due to the necessary reliance on self-report surveys for these data. It is likely that these methods underestimate the full scope of the problem, especially under cultural conditions that discourage disclosure. As an extreme example of such conditions, data from Alexandria, Egypt indicate that 47% of female homicide victims were killed by a family member after being raped by someone else (Mercy; Abdel Megid; Salem; Lofti, 1993). More subtle pressures to maintain silence about victimization affect men, women, and children exposed to violence around the world.

Despite difficulties in estimating the extent of nonfatal violence, attention to the full spectrum of violent behavior and intentional injury is necessary in any conceptualization of violent death prevention. In many instances, violent behaviors that are not intended to kill, such as fighting, deliberate self-injury, or shaking an infant, can result in severe and lethal injuries (Dahlberg; Krug, 2002). Further, victims of homicide or suicide attempts may ultimately survive if prompt and effective treatment for injuries is available. Indeed, recent research suggests that advancements in emergency medicine account, in large part, for the stability of US homicide rates between 1931 and 1999, despite a 700% increase in rates of aggravated assault (Harris; Thomas; Fisher; Hirsh, 2002). These authors reported that, between 1960 and 1999, mortality rates among assault victims were reduced by nearly 70% in the US, with only 1.67% of aggravated assaults in 1999 ending in death. Interventions that prevent the lethality of violence may significantly reduce the number of violent deaths in a community. However, interventions aimed only at preventing violent deaths or reducing mortality among victims will ultimately be ineffective at creating societies free from violent victimization. For this reason, a core focus and contribution of the public health approach to violent death prevention is an emphasis on *primary* prevention—that is, preventing violent behavior *before* it occurs. If effective primary prevention strategies for reducing interpersonal, self-directed, and collective violence can be identified and implemented in combination with complementary *secondary* and *tertiary* prevention efforts that aim to reduce the short- and long-term effects of fatal and nonfatal violence, the movement toward a nonkilling society could be importantly advanced.

### **The Public Health Model and Violence Prevention**

The public health approach to violence prevention is unique in several ways. First, as noted above, the public health approach emphasizes *primary prevention* efforts aimed at preventing violence before it occurs. This stands in contrast to what has been the predominant, more reactive approach to violence, in which the majority of resources are focused on responding to violent offenders with deterrence, investigation, and incarceration efforts (Mercy; Hammond, 1998). The primary prevention efforts of public health complement criminal justice, mental health, or medical interventions that serve to reduce recidivism or ameliorate the negative consequences of violence. With a focus on identifying risk and protective factors that increase or reduce the risk of violent behavior and developing interven-

tions that address these factors, the public health model starts “upstream” in order to prevent the cascade of circumstances and behaviors that may result in violent injury and death in the future.

Because risk and protective factors associated with violence have been identified by researchers across various fields of scientific inquiry, including psychology, sociology, criminology, law, medicine, and education, an interdisciplinary approach is considered integral to the public health approach. By integrating multiple disciplines through a *cross-cutting perspective*, the public health model can more effectively address complex, multifactor problems, such as violence. Indeed, not only do the predictors of violence overlap multiple fields, but the various forms of violent behavior often co-occur, have shared risk factors, and are linked to a variety of other health problems. Thus, the use of a cross-cutting approach allows public health to address the complexities inherent in preventing behaviors as multi-faceted and intertwined with other aspects of social and political life as violence.

Another unique aspect of the public health model involves commitment to the creation of a *rigorous science base* to illuminate and identify ways of confronting these complex relationships and systems. The public health model is focused on the development and use of high-quality research to understand and act upon the threat of violence at multiple stages, often concurrently. These include: monitoring trends in perpetration and victimization; identifying risk and protective factors to reveal high-risk populations and targets for prevention efforts; rigorously evaluating the effects of interventions, programs, and policies; and developing methods for disseminating and implementing effective approaches to encourage widespread adoption. Thus, public health provides a multidisciplinary scientific approach with explicit attention to the development of effective prevention strategies (Mercy; Hammond, 1998).

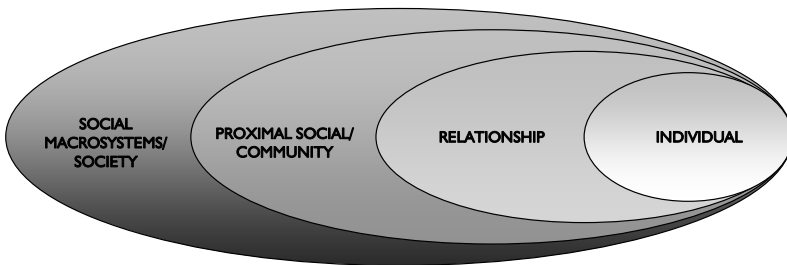
Finally, the field of public health can be differentiated from other disciplines by its attention to improved outcomes *population-wide*, rather than at the individual level. While the likelihood that an individual will be victimized by or perpetrate fatal violence can be reduced through medical care, incarceration, mental health treatment, or skills-training, for example, the goal of public health is to identify solutions that can reduce the risk for an entire population, as evidenced by lower overall prevalence rates. The potential for achieving change at the broadest level can be increased by moving beyond approaches that address *only* individual-level factors to incorporate risk and protective factors at multiple levels of influence, from individual risk characteristics to the cultural and social determinants of violent behavior.



## The Social Ecological Model

One way of conceptualizing the broad spectrum of risk and protective factors influencing violence perpetration is within the framework of the social-ecological model (Bronfenbrenner, 1979; Figure 1). This model organizes risk and protective factors for violence within four overlapping levels of influence affecting the development of human behavior. As shown in Figure 1, factors at the inner levels of the social ecology include those with the most immediate and direct influence on behavior.

**Figure 1.** The Social-Ecological Model



At the *Individual* level are biological and personal history characteristics, such as personality traits, attitudes and beliefs, or life experiences that function to increase or decrease risk for violence.

At the *Relationship* level, family members, friends, and peers can also have important effects on an individual's risk for violence, through parenting behaviors, socialization efforts, or behavior modeling, for example. At the outer levels, the model captures factors that have a broader, and perhaps less direct, influence on the risk levels of individuals and populations.

*Community* level factors include aspects of the physical and social contexts in which relationships occur (e.g., schools, workplaces, neighborhoods) that can influence violent behavior, such as institutional policies, availability of weapons, local law enforcement resources, or employment rates.

Factors at the *Societal* level include those which foster a larger climate or culture in which violence is either promoted or restrained. Such factors might include the presence and enforcement of laws, social or political conflict between social groups, social disorganization or inequality, and social or cultural norms about violence.

The arrangement of these levels in concentric circles (see Figure 1) highlights the interactive nature of the relationships between factors across the social ecology, and points to the critical importance, recognized by the public health model, of addressing factors at multiple levels concurrently in order to improve the health and safety of entire populations of people.

**Primary Prevention Strategies across the Social Ecology**

Violence and killing are multifaceted problems resulting from the complex interaction of biological, psychological, environmental, and social factors. Ultimately, therefore, substantial progress in reducing rates of violence is possible through an array of interventions targeting potent risk and protective factors at each level of the social ecology. These approaches may take many forms and the most promising interventions may be those that address multiple levels simultaneously. Table 1 provides examples of prevention efforts at each level of the social ecology.

**Table 1.** Examples of Possible Strategies to Prevent Violence and Promote Nonkilling

	<b>Homicide</b>	<b>Suicide</b>	<b>Armed Conflict</b>
<b>Individual</b>	Provide social development training to children in primary and secondary schools in anger management, social skills, and problem-solving. Provide enriched preschool education for all children. Provide therapy for children who have been exposed to violence.	Screen for depression and suicidality in schools, hospitals and clinics. Provide school-based, skills-based training in coping skills, suicide warning signs, and helping friends or acquaintances who are mentally distressed.	Provide social and economic transition for child soldiers back into productive roles in society. Provide mental health care for individuals affected by conflict who may be at an increased risk for suicide or interpersonal violence perpetration.

Relationship

Provide social support and training in parenting skills to new parents.

Teach adolescents how to form healthy relationships.

Provide adult mentors for high-risk youth.

Visit homes of families at high risk of child abuse during infancy to provide professional support and skill-building for parents.

Improve parent management strategies and parent-child bonding in the families of aggressive children.

Train gatekeepers or community members likely to come into contact with those at high risk of suicide (e.g., coaches, bartenders, school counselors, etc.) in suicide warning signs and referring those at risk to appropriate services.

Educate parents of youth with risk or history of depression and/or suicidality about controlling access to lethal means of committing suicide.

Decrease risk for family separation during conflict and displacement.

Provide adequate services for children who lose or are separated from caregivers to reduce their risk of becoming involved in the fighting as combatants.

Proximal Social/Community

Initiate after-school programs to extend adult supervision of youth.

Create safe havens for children in homes and businesses on high-risk routes to and from school.

Establish violence prevention coalitions in high-risk neighborhoods.

Provide adequate shelter space for battered women.

Disrupt illegal gun markets in communities.

Train health care professionals in identification and referral of family violence victims.

Improve emergency response and trauma care.

Promote interventions by bystanders to prevent or interrupt violence.

Implement community-based approaches to increase connectedness between individuals and their families, schools, and workplaces.

Improve emergency response and trauma care.

Promotion of safe storage of firearms and other lethal methods.

Train primary care physicians to identify risk factors for suicide in patients.

Create integrated community associations to encourage interdependence and cooperation between conflicting groups.

Disseminate public health information to high-risk communities on ways to prevent injury from implements of war such as landmines and unexploded ordinance.

Reduce media messages supporting violence and enhance messages supporting nonviolence.

Reduce income inequality.

Promote gender equality.

Deconcentrate lower-income housing.

Establish meaningful job creation programs for inner-city youth.

Increase enforcement and severity of penalties for sexual and intimate forms of violence.

Utilize diversion or alternative sentencing approaches to provide preventive services to high-risk populations.

Public information campaigns to promote pro-social norms.

Reduce access to the lethal means of committing suicide (e.g., fencing high bridges, requiring monitoring of prescriptions by doctors, controlling access to poison, reducing firearm access among high risk groups for suicide, etc.).

Use public health communication strategies to reduce stigma of mental health treatment.

Identify and monitor risk factors for armed conflict to permit advance preparation for diplomatic prevention efforts and humanitarian aid responses for high-risk settings.

Provide assistance to governments in political transition to encourage peaceful transfer of power and institutional development.

Reduce income inequality within nations.

Reduce access to biological, chemical, and nuclear weapons.

Note: The strategies presented here include those with proven effectiveness, as well as some that are promising or untested.

The prevention strategies in Table I fall into two general categories. The first category includes those approaches that attempt to prevent violence from occurring in the first place. These strategies promote nonkilling by reducing the likelihood that violence will be expressed. These types of strategies include, for example, social development training which has the potential to reduce homicide by providing children and adolescents with skills intended to reduce aggressive or violent behavior that can underlie it (e.g., emotional self-awareness, emotional control, self-esteem, positive social skills, social problem solving, conflict resolution, or team work; Hahn, Fuqua-Whitley, Wellington, et al., 2007). The second type of general strategies includes those which reduce the lethality of violence, without necessarily reducing the expression of violent behaviors. These types of strategies include, for example, efforts to improve trauma care and

emergency response for victims of assault, suicide attempt or war. Unless death occurs immediately, the outcome of a violence-related injury depends on its severity and the speed and appropriateness of treatment (Committee on Trauma Research, 1985). The establishment of trauma and emergency response systems designed to more efficiently and effectively treat and manage injured victims is an important factor in reducing the likelihood that an injury will result in death.

The strategies in Table 1 include those with proven effectiveness as well as some that are promising or untested. Home visitation for families at high risk of child maltreatment is among those strategies for which we have strong evidence of effectiveness for the primary prevention of violence. The Nurse-Family Partnership program, for example, which provides home visitation to low-income, first-time mothers from pregnancy through their child's infancy, is designed to systematically engage mothers and other family members in improving prenatal health-related behaviors (e.g., smoking, alcohol use, health access), providing more responsible and competent care of infants and toddlers, and improving parents' economic self-sufficiency (Hill; Uris; Bauer, 2007). Results from several randomized controlled trials have shown this program to effectively reduce child maltreatment and injury (Hill; Uris; Bauer, 2007). A 15-year follow-up study of the program found reduced rates of crime and violent behavior among both children and mothers (Olds et al., 1998). This program, therefore, has the potential to prevent child homicides by reducing maltreatment as well as to reduce the future potential for children to engage in violent behavior that could lead to killing.

Another set of strategies for which we have interventions and policies with evidence of effectiveness includes approaches that reduce the lethality of violence. For example, efforts to reduce access to lethal means of suicide can reduce the likelihood of lethal suicidal behavior. This strategy was applied to the problem of self-poisoning with pesticides, a primary means of attempting and completing suicide in many developing countries. In Samoa, the introduction of paraquat, an agricultural pesticide, was associated with a 367% increase in suicide rates between 1972 and 1981 (Bowles, 1995). Efforts to control access to paraquat began in 1981 and the suicide rate dropped by over two-thirds by 1988. Thus, although levels of suicidal behavior may have been unchanged, deaths due to suicide declined substantially.

A strategy with potential for reducing the likelihood of collective violence between culturally and/or racially distinct groups in geographical proximity involves the process of creating integrated community associations to encourage interdependence and cooperation between potentially

conflicting groups. Hate-motivated violence appears to flourish where racially or ethnically distinct groups cling to negative beliefs and stereotypes about each other (Senechal de la Roche, 1996). A lower frequency of interaction and level of functional interdependence between such groups sustains negative beliefs and stereotypes that contribute to greater frequency and severity of collective violence (Black, 1998; Senechal de la Roche, 2001). In a study of communal violence between Hindus and Muslims in India, cities with strong associational forms of civic engagement, such as integrated business organizations, trade unions, political parties and professional associations were much less likely to experience ethnic violence than those in which Hindus and Muslims were segregated (Varshney, 2002). Interventions and policies that support the creation and maintenance of formal mechanisms of association between social groups, otherwise at odds with one another, may be useful for preventing collective violence that can contribute to killing.

The evidence base supporting the effectiveness of the strategies for preventing violence or killing listed in Table 1 is stronger for some strategies than others. Research is needed to more fully evaluate the effectiveness of the strategies listed in this Table, as well as other potential options. More complete discussions of the evidence base for violence prevention can be found in a number of key sources (e.g., Doll; Bonzo; Mercy; Sleet, 2008; Krug et al., 2002; Pinheiro, 2006; Rosenberg et al., 2006).

Although the evidence base for specific strategies is still developing, it is clear that the problem of violence and killing represents a serious, though not intractable, threat to the health of individuals and nations. Many countries have begun to utilize the public health approach to track the incidence of violence in their communities, to develop and implement prevention programs, and to engage their citizens and governments in action to reduce the impact of violence. These important efforts show promise that, through the development and widespread adoption of effective, multi-dimensional primary prevention approaches for violence prevention, the vision of a nonkilling society may be realized.

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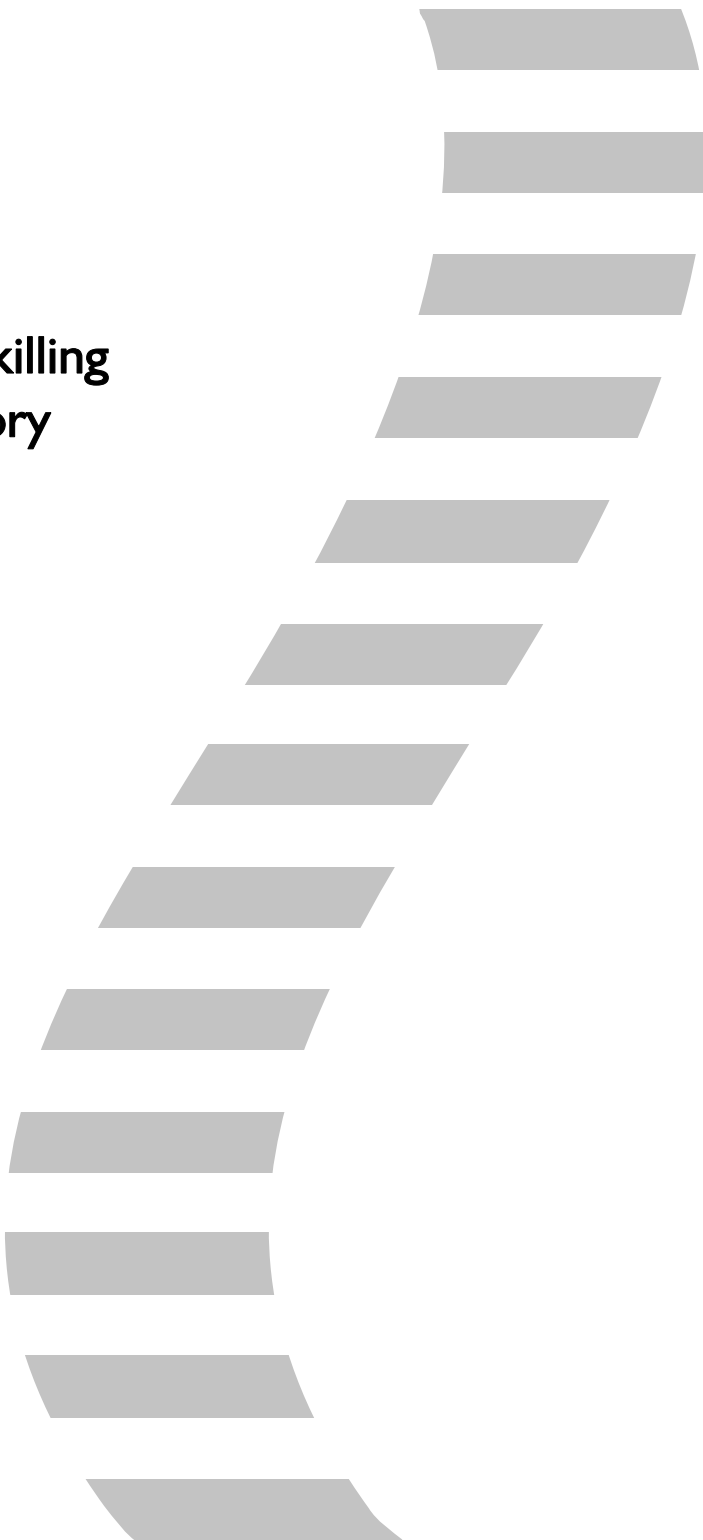
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# Nonkilling History





# How to Historicize What Did Not Happen (But Makes the Past, Present and Future Possible)

Antony Adolf and Israel Sanmartín

## Introduction: Rhinoceros for Breakfast and the Survival of Humanity

History is, as a rule, about the when and where of what was done by whom and even, sometimes, about the why. Overwhelmingly, focus is on the done. We know from material, documentary and firsthand evidence engrained by force of repetition, for example, that across Europe millions of Jews and others considered degenerate by Nazis were killed by them during World War Two. As a result of this rule applied as the perennially predominant historical theory and practice, what was (and is) *not* done tends stalwartly to be considered at best historically uninteresting and at worst not history at all. To stress the point: no one cares why or how they did not eat rhinoceros for breakfast. But, we believe, they surely would if it explained why they are alive today and predict whether they may be tomorrow (*sic*). It is as usual the exception that proves the rule and, in the case of history, makes it possible both as a lived experience as well as a field of study, debate and always already impending influence on the present and future.

There is little if anything in history that more pertinently puts the practice of this valid rule—and especially its as-valid exception—into theory or vice versa than particular histories of nonkilling within ever-wider histories of nonviolence, peace and, ultimately, humanity and life on earth. Here, our concern with the particular is both informed by and informs the wider. In one sense, the historicization of nonkilling explains behavioral, psychological, social and other conventions or status quos that have *de facto* sustained our survival as a species literally from before time immemorial up to and including the moment you are reading this, despite constant blinding focus on their temporary lapses, such as violence, conflicts and wars. In a second sense, the histories of nonkilling are the interpreted records of attempts and successes at preventing or overcoming acts and systems of killing, which if they had failed completely you would not be reading this. Para-

doxically, then, historicizing what did not happen (but makes the past, present and future possible) is at once radically revisionist in reversing the most elemental hierarchy of traditional historiography and dogmatically orthodox in reaffirming what was/not done, when, by whom, how and perhaps even why, as in traditional historiography.

We seek neither to reconcile nor to argue exclusively for one or the other of these two approaches by which arguably the most important events that never happened actually did not can become intelligible and useful. Nor do we present a “third way” of any kind because, strictly speaking, there cannot be: what is not part of the historical record is determined by the historical record rather than the other way around, in the same way that what is not known is determined by what is known. Instead, the case is made that only by taking these two approaches separately and together can any viable, pragmatic accounts of nonkilling specifically and nonviolence generally be given with the purpose of perpetuating the principles and learning from the practices thereby gained, debated and applied. The history, nonhistories to be precise, with which we are engaged are scientific in that they involve what is concurrently visible and invisible and equally legitimate, like the proverbial Newtonian apple which in falling revealed the force of gravity. You can see apples falling, you cannot see gravity: it must be deduced or induced. Technically, gravity did not actually happen as the falling apple actually did, but the negative actuality of gravity explains why and how the apple positively fell on Newton’s head in the late 17<sup>th</sup> century (or so his story goes), and can predict how other objects will fall in the present and future. The key difference between gravity and historicizing what did not happen are the vastly greater influence and concomitantly added complexity of continually evolving sets of conditions and participants involved in the latter, as in reflexive relativity not relativism (contrasted below).

A clear and unequivocal distinction must also be made between the facts of what actually did not happen and the fictions of what could, would or should have happened. It is feasible, if easier said than done, to account for rhinoceros not being eaten for breakfast; it is not for neon rhinoceros. This distinction, its methodological implications, its import to better understanding related (non)phenomena and (non)histories in ethical to socio-economic to political realms and beyond, their practical uses in policy formation, identity construction, conflict resolution, peace-building, the course of cultures and so on are at the heart of our project. *Deductive historicization* of what did not happen begins within the context of a theory, posits a hypothesis, collects data by observation and analyzes it, finally confirming or invalidating the hy-

pothesis or theory. *Inductive historicization* of what did not happen is not the reverse. Beginning with observation, data and its analysis leads not to a hypothesis, but to the identification of patterns in the observed that then may form a hypothesis or theory that can inform inquiries into what did not happen in other ways. Deduction seeks specificity, induction generality, and so only the two together can provide a full view of what has not happened, the unification of which is a challenge unto itself. If you were to stack up all that has happened in one pile, and all that has not in another, the latter would immeasurably out-proportion the former. Likewise, to account for every instance of nonkilling would be counterproductive if not nonsensical, and so foci of historical attention with the most contextually-relevant didactic and/or predictive potential must be determined. Thus it is our purpose here to show how to historicize what did not happen indicatively more than definitively.

### Deductive Historicization

Positing nonkilling as a field of historiography is itself based in a theory and hypotheses that must be validated deductively before proceeding; doing so in tandem indicates how other related theories or hypotheses can similarly be validated. Namely, that the *concept of nonkilling* is: (a) sufficient to account for and/or explain at least a discrete set of historical phenomena, the theory; (b) of sufficient import to justify the allocation of resources and efforts to historicize it, hypothesis one, covered in the next section on inductive historicization; and (c) is didactical and/or has predictive powers, hypothesis two, covered in the conclusion below. Glenn D. Paige's foundational conceptualization of nonkilling is our starting point: the absence of killing, threats to kill, and conditions conducive to killing in human society (2002; 2009). Our end-point must be how, if valid, the historiographical theory of nonkilling, and the hypotheses and observations upon which it rests, fits within those of nonviolence, peace and humanity more widely. However, to get to the deductive historicization of nonkilling, the spectacular extent to which historiographical theory and practice is currently and always has been paramously preoccupied with killing, violence, conflict and war must be acknowledged, confronted and overcome, which can only be done cursorily here (see Adolf, 2009).

To witness the predominance of violence, conflict and war over nonkilling, nonviolence and peace in historiography first-hand simply walk into any bookstore or library and ask for their military history section, or sections. Upon receiving your directions and following them, you will encounter stack upon stack and row upon row of erudite studies and their populariza-

tions with focuses on aspects of war you did not even know existed, and you wish never had, even if the military is your chosen profession. Problematically, under the Dewey classification system used by many libraries, many of the various "War" sections fall under "Public Administration." All the periods in warfare, all the types of warfare, all the strategies of warfare, all the instruments of warfare, all the causes and consequences of warfare, all the changes in warfare, all the conditions of and participants in warfare, all the approaches to studying warfare historically may stun you no matter what your predispositions toward warfare are and, by seeing all this at once, become. Then, you try to look for sections on nonkilling, nonviolence and peace history, only to realize that there is comparatively little to be stunned by, even if you know peace studies as a discipline is well-established (see Katz and López, 1989; Wallerstein, 1988). You may wonder who is to blame: scholars or writers, publishers or book-buyers, readers or funders. Does this situation say more about historians, their vehicles and audiences or about human history itself?

The answer to this question is decidedly that historians, their vehicles and audiences must be held accountable for not accounting for the better part of human history, qualitatively and quantitatively. This answer forms the deductive bedrock of the theory of nonkilling upon which its historicization is to be based for now. The widely held contention that the principal collective actors in history (groups of people, nation-states, etc.) have conceived of war as an end in itself is predicated on the fact that in being able to carry out wars against their enemies they were not busy killing themselves, each other or their allies (see Bobbitt, 2002). That they did not do so on bases of kin, clan, country or culture is of prime import. They all had to be alive in order to kill so many people, but historians are consistently more concerned with the latter acts than former states, and so put their carriage before their horse. Violence, conflicts and wars are for historians and readers generally like shiny things are for children: easy to focus upon and so attention-grabbing. As a historical fact nonkilling is, paradoxically, what makes them possible (though as an ethical principle against them) and what limits them in success or failure insofar as being and remaining alive is a precondition for each. Even the glorification of war is a testament to its abnormality. In this light, the intimate relationship between historians and war from ancient times up to the present is, from a factual point of view, fetishistic and perverse (see Bermejo, 2004: 182-191). Historians, by centering violence, conflict and war have also, if counter to their very intentions, contributed to their enduring legitimization, popularization and perpetuation by marginalizing nonkilling, nonviolence and peace.

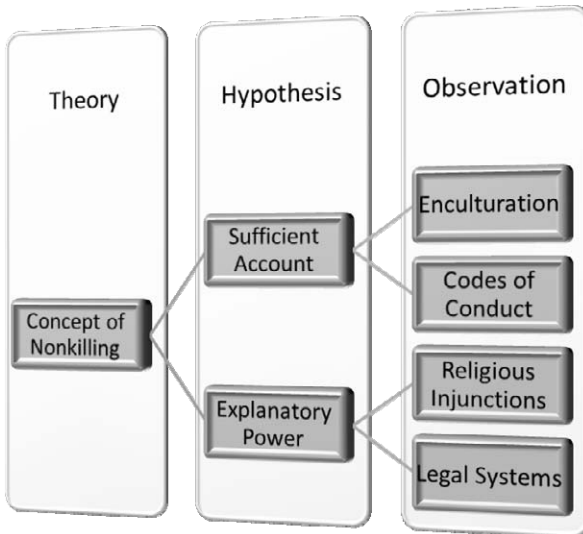
Here, in a troublesome way, we begin to see how the concept of nonkilling is not only sufficient to account for discrete sets of historical phenomena, but to a certain degree *a priori* in order to account for any.

Productive encounters with the explanatory powers of the concept of nonkilling requires moving into the realms of observation, data accumulation and analysis to be firmly grasped, links illustrated in the graph that follows. Two “zones” Paige identifies as key to transformation in the present and future also, in retrospect, provide foci for finding, documenting and analyzing nonkilling as a negative actuality in the past, with present and future import (the other three are discussed in different context below). The diverse and specific spatiotemporal locations in which predispositions toward killing are or are not instilled in individuals and/or groups Paige calls *cultural conditioning zones*. Within these zones, distinctions between and convergences of the two senses of the historicization of nonkilling put forth above become immediately evident. For example, nonkilling as a convention or status quo among the Semai and Tasady tribes is well-documented, and begins with implicit enculturation mechanisms as children’s games. In a more explicit but still within the same sense, nonkilling in Euro-American culture is enshrined in Hippocratic Oaths doctors take to do no harm, even as help (among other codes of conduct). The concept of nonkilling transcends these two very different cultural conditioning zones, but its manifestations and modes, participants and conditions are immanently within them.

Likewise in the second sense, nonkilling as attempts at preventing or overcoming acts and systems of killing have come down to us and exist in several domains, notably though not exclusively as religious injunctions and legal systems. Paige’s *structural reinforcement zone* of institutions and material means brings out this sense. The degrees to which, for example, the Judaic and Christian divine Commandment not to kill has or has not been followed by adherents; the justifications put forth to break it (the “just war” tradition) or uphold it (Church proscriptions on killing under the Pax and Truga Dei of the Middle Ages); the Buddhist Eightfold Path, at the center of which is nonviolence toward all living creatures; the actual laws of different national traditions which prohibit and punish killing of different (but usually not all) kinds; the human and other resources allocated to enforce or uphold these laws, from police to peacekeepers; all these are insightful and practical foci of observation, data accumulation and analysis that can confirm or validate more specific historical hypothesis about nonkilling. Remember, however, that religions and laws do not (not) kill people, people do not (not) kill people. As mentioned here, they and the examples of the

first sense above, taken together, double as the observational basis confirming the validity of the concept of nonkilling as a field of historiography. As the graph below shows, historiography—and particularly the deductive historicization of what did not happen—is a rude awakening to those who still hold that theory is of no consequence.

**Figure 1.** Deductive Historicization Visualized



### Inductive Historicization

*I did not kill anyone yesterday or today, did you?... No, did he?... No, did she?... No, did we?... No, did they? Why? Do you think I, you, he, she, we or they will tomorrow? Why?*

The preceding elementary questions are but partially apt for nonkilling history fieldwork and more so for opening up discussions about how to conduct inductive historicization. From a historical standpoint, if we understand nonkilling as a “not done” that is “not done on purpose”, what we lose of it as a normative status quo we gain as an individuated intention, as something special but not abnormal. When we do this, historicizing nonkilling turns into the psychology of nonviolence because the orientation of individual intent tends toward an obscurity from the point of view of an observer equipped



with lenses and analytical tools meant for other tasks. The elusive historical question, *why*, proposed as an area of inquiry above can, should and must be asked, but its answers insofar as historicizing nonkilling is concerned are to be limited to the extra-individual: social, collective, material, systemic, structural, etc. It makes no sense to ask someone why they did not eat rhinoceros for breakfast when the asker knows the answer would be a product of imagination rather than memory, closely related as they are. However, knowing that rhinoceros was not eaten for breakfast opens up questions which the individual who did not, cannot answer but the historian can, a heuristic scenario that opens up to inductive historicization as a second, separate and equally insightful and practical as deductive historicization.

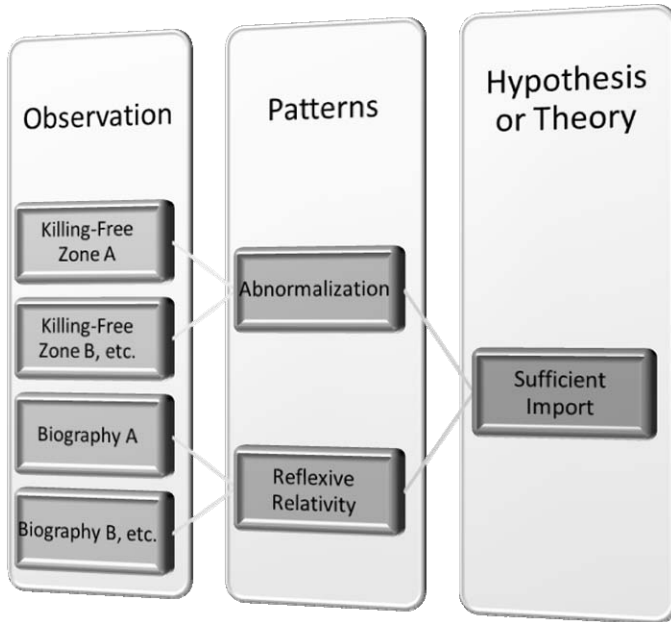
Just as deductive historicization requires acknowledging, confronting and overcoming historiographers' preoccupation with killing, violence, conflict and war, so the inductive requires overcoming among the most charged epithets that can be hurled at it, as at other humanistic disciplines, today: *relativism*. The basic tenet of cultural relativism is that social and collective norms (behavioral, truth regimes, power legitimization, beauty constitution, group formation) are determined exclusively within a given culture, heterogeneous as all are to some degree; are only valid within that culture; and so the norms of other cultures are irrelevant in ascribing value to them from the outside even if that is the only vantage point observers have. Universalism holds there are absolute norms valid in all times and places. The point here is not to debate relativism vs. universalism, but to distinguish them from the domain of historicizing what did not happen, particularly nonkilling. As we have seen, nonkilling, like nonviolence and peace, belong to a distinct category of norms that simultaneously transcend cultures and are imminently within them. The concept of *reflexive relativity*, in stark contrast with relativism and universalism, is in our particular case: nonkilling is culturally-specific (relative), inter-subjectively understood and enacted (reflexive), and historically constant (norm). Gravity on Earth and on the Moon has a different value because of astronomical factors; nonkilling in the Southern U.S. and Northern Nigeria in the 1970s likewise has different values because of historical factors. However, agency exists vis-à-vis norms like nonkilling that does not vis-à-vis gravity, no matter where you are. That is, no matter how well-established, nonkilling norms are always violable; technically, you cannot defy the law of gravity anywhere, no matter who you are. Reflexivity lies in this agency, omnipresent and circumscribed; relativity in this historicization, psychological as intent and historiographical as a wider actuality, positive or negative.

Some may counter that Paige's *neuro-biochemical capability zone*, comprising physical and neurological factors that contribute to both killing and nonkilling behaviors, reduces the psychological to a biological determinism that in the end invalidates the historiographical. It may be more precise to say, also as a first inductive step addressing the hypothetical line of questions above, that when neurology joins psychology and historiography to become *biography*, the lines are productively blurred. The life stories of individuals are a prime starting point for inductively historicizing nonkilling. Comparative biographical or autobiographical studies, within or across cultures and timeframes, can point both to how nonkilling as a status quo allowed agents to do or not do what they did, and can indicate how they were able to prevent killing or overcome acts and systems of killing in their own ways as defined participants in definite conditions. We know, for example, that practitioners of certain philosophical (Stoic and Epicurean, among others) and religious schools (Zen, cenobite and eremite monks) retreated from highly violent societies or proscribed modes of intervention for their members inside in order to transform individuals and societies at once. We also know that they contingently succeeded, but the causes, consequences and means of the efforts have barely been scrutinized in relation to the import they may have as duplicable common denominator patterns of thought, behavior and otherwise.

Yet another ground for historical observation can be located through what Paige calls the *killing zone* (where people kill) and its correlates, killing-free zones (where people do not kill). In prehistoric societies the most common social structure was "home bases," where people lived and ate, and from which the animal killing site was always at a distance. With the introduction and sustenance of geo-semantic distinctions between "military" and "civilian" in Mesopotamia continuing to Roman, Medieval and modern times to today, war zones were often separated from militarily killing-free zones, civil wars and invasions here being the exception. Aerial bombing of towns and cities, atomic bombs and terrorists acts were shocking developments in warfare because they erased these long-held lines of demarcation between killing and killing-free zones. Gang warfare, police brutality and lone wolves in cities are historical forces, among many others, threatening killing-free zones considered militarily. Within twenty years of the first deployment of nuclear weapons, regional and world bodies created nuclear-free zones, and places for asylum and sanctuary exist in most cultures in some form. Nation-state neutrality, neutral-zones enforced by peacekeepers, buffer zones created to avoid war-triggering skirmishes between conflicting states, the list of nonkilling zones with distinct but comparable histories goes on. Considering the

tremendous number of participants and conditions required for any item on this very topically limited list to be an actuality, historians of nonkilling, non-violence and peace have their work cut out for them, and the beneficial roles they can play in world affairs also cut out for them.

**Figure 2.** Inductive Historicism Visualized



Even within peace studies broadly, professional and activist documentation, critique and transformation of what is often called “structural violence” significantly preponderates what may called “structural nonviolence,” with nonkilling at its core. The Global Peace Index and Global Corruption Index are in this sense writing the history of the future. The point here is that there is significant tension between the two ways in which we have taken nonkilling. As a historical constant status quo, nonkilling is so obvious it has for the most part remained unseen. Deductive and inductive historicizations are ways to “see” the history of nonkilling for their didactic and predictive enablement. The abnormalization of killing—making killing abnormality effective—can be reactive or proactive in preventing or overcoming acts and systems of killing. The ten-

sion is not represented in Figure 2, depicting the inductive historicization process we have just enacted as an example. If one becomes ubiquitous, universal status quo or universal abnormalization, the other would lose much of its import; but if history is any indication, then this tension is unlikely to be resolved any time soon, probably for the better. This is where inductive and deductive historicization combined can have their greatest impact: by providing the best possible theoretical or hypothetical lenses through which patterns based on observation can be identified. Patterns most closely or best relating to now or the future can be accurately determined, modified and applied, a process we turn to in closing, wherein lies the import that justifies the allocation of resources and efforts to historicize what did not happen.

### Conclusion: Historical Didacticism and Predictive History

Nonviolence since Tolstoy and Gandhi has generally been asserted as a principle that *should* be followed for moral or religious or political or other reasons. As an imperative in this sense, nonviolence was put into practice by Martin Luther King, Jr. and Petra Kelly, among others, who both drew on the principle and attempted to institutionalize it within the nation-state system as equitability and total structural nonviolence. In focusing on nonkilling here, we have shown how the principle of nonviolence—prior to being *imperative* along this line of thought and practice—has always been, is and is likely always to be a *precondition* of history; in other words a *necessity* for human and all life as we know it, the source of the perennial import of nonkilling to all branches of knowledge and action. Deductive and inductive historicization, then, are essential tools in experiential progressions that debunk the notion that nonkilling is impossible by accounting for participants and conditions in order to explain them and, in the end, to assert that not only is nonkilling possible, its indispensability is extendable as far and as deep as we can muster the wherewithal. Breaking with the playful rhinoceros-for-breakfast analogy, little is more serious than historicizing nonkilling, nonviolence and peace.

The purposes of proposing historical didacticism and predictive history as next steps after deductive and inductive processes are precisely to ensure that extending the indispensability (not to mention self-evident, to-be-discovered benefits) of nonkilling in particular as a synchronized stride within wider nonviolence and peace studies is expedient and effective through ongoing investigation, critical dialogue, innovation, adaptation and perpetuation. So before proceeding to the didactic and predictive, it is important to sketch where the historiography of nonkilling, and the hypothe-

ses and observations upon which it rests, fit within those of nonviolence, peace and humanity more widely. Put simply and succinctly, nonkilling is at the core of nonviolence studies in that, by providing a fixed physiological basis (life/death), it also can provide practical, theoretical and empirical breakthroughs difficult to come by and even more difficult to apply in more ambiguous areas. The two fields of study are linked and run parallel to each other by the dichotomy supporting them, in each case the “non-” tied to the inferences of its absence, methodological, conceptual and otherwise. Continuing this linkage and parallel with peace studies requires reverting to notions of “negative peace” as the absence of war, etc. and “positive peace” as the presence of justice, etc., which have proven to be more limiting than enabling as historiographical concepts. The infrastructure of how peace is made, maintained and broken on the levels of individuals (within and between persons), societies (within groups) and collectives (between groups) may be more propitious for shared advances in peace, nonviolence and nonkilling historiography and studies generally, leading to a more complete, diverse, accurate, etc. overall understanding of human history and life on earth. Breaking with the heuristic gravity analogy, historicizing nonkilling, nonviolence and peace is not just an empirical science, nor relativistic or universalistic, but a human and life science strictly bound by reflexive relativity.

To be effective, historical didacticism first and foremost must fend off the connotation of its term as being boring, preaching to the choir or belaboring. Here is where the historian’s skill at defining profiles of their intended audiences and targeting them is vital. Students at different levels, policymakers in different areas, scholars or activists with different interests, people of different identities (age, class, ethnicity, gender, religion, etc.), professions, nationalities all stand to learn something from the history of nonkilling, nonviolence and peace. What that something is, however, and how to present it is the crux of shedding these connotations of didacticism so that its proper business through choices of subjects and methods of instruction can be carried out. With this in mind, two crucial modes of historical didacticism can be put forth. First by *analogy*, the drawing of which is always easier than the drawing of lessons from: for instance, no shortage of comparisons has been made between the U.S. war in Iraq today and its war in Vietnam in 1960s. Futile for us to point out that had historians used the powers of historical didacticism through analogy to effectively inform a concerted effort within the U.S. and abroad, lives may have been saved. It is in this spirit that H.G. Wells gave up fiction in order to write his *Outline of History* after the Versailles Treaty of 1919, and that history itself can be consid-

ered, in Paige's term, as a *socialization zone* where people learn (not) to kill. Of course, this is not to criticize historians for not being activist enough, but for not doing their jobs well enough. Drawing out relevant assumptions is a second crucial mode of historical didacticism, as say determining what underlay the Pax Romana, Pax Islamica, Pax Britanica and whether this can determine if or how a Pax Americana takes shape now. Historical didacticism makes possible a direly needed shift from a disingenuously amoral science aimed at professional or popular success to a self-aware and ethically responsible one, and no they are not mutually exclusive (Kung, 1991).

History can be predictive without being deterministic (say in an apocalyptic, Marxist or other teleological sense) or hallucinogenic (say in any flavor of utopia or dystopia) if it is based on probabilities rather than creeds. All that teleological and hallucinogenic constructs achieve is privileging particular histories. This is another way historicizing nonkilling in particular, and nonviolence and peace more widely, can directly contribute to the peaceful coexistence of our planet's billions of inhabitants (see Muñóz, López Martínez, eds., 2000: 1-10). As analogy and assumptions are two turnkeys for historical didacticism, *patterns* and *implications* are for predictive history. For example, advocates for global liberalism (nation-state sovereignty, free markets, individual liberties, etc.) today tend to present liberalism as a set of social and collective patterns based on the "best" in Western traditions, universally applicable to local conditions and participants. Commonalities and innovations that inductively make up such historical patterns are of great import because they justify the reproduction of liberalism everywhere (see Thompson, 1992). Among the major shortcomings of alter-globalization movements is that their efforts to "resist" this liberalism and implement albeit disconcerted alternatives are primarily deductive—except when they point out actual implications of liberalism (poverty, inequality). And so alter-globalization movements by and large neglect the primacy of the inductive in recognizing and implementing positive patterns, which liberalists have seized in their universalism and alter-globalists seem unable to in their relativism, even while their inductive critique of liberalism is compelling (see Houtart; Polet, 2001). The promising notion of progress on several paths at once, devoid of determinism, with individualized options and participations is itself devoid of patterns (if purposefully) because it scarcely builds on any, and so fails to offer the predictive powers the patterns of liberalism do despite their implications (see Barros, 1995). The point here is to stress how patterns and implications can serve as aids to probabilistically predict the future based on interpretations of historical facts; in turn, such predictions become active, living argu-

ments that do in the end influence the shape the future takes by influencing participants and conditions. Reflexive relativity and historical didacticism can serve as arbiters in these debates, which are worthy of never ending because the past, present and future depend on them.

What remains to be worked out, but is far beyond our mandate here, is how existing resources within what is still a zero-sum academic-economic game can be reallocated on a global scale to pragmatically address the tyrannical asymmetry of information available on nonkilling and killing respectively. For indeed they must or we risk being judged by posterity as those who missed the calling to set records straight, and so save humanity from itself for the last time. If we imagine that peace and the environmental movements started in the 1960s (which, of course, they did not even if they surely received a boost), and think of them today as competing for media attention, government and corporate support, private donations, social entrepreneur initiatives and technological developments, few if anyone would say that peace is “winning.” Although it reinscribes the very structure it seeks to overturn, this last metaphor presents itself as a significant opportunity to figure out why environmentalism is doing so well, and peace from most points of view (though not the one held herein) could do so much better. Apparently the 60s peace symbol is, in North America, “in” this summer as a fashion accessory or imprint on any piece of clothing you can imagine, including underwear. If the point of this essay can be summed up in one sentence, it’s that while fashions change, wearing clothes does not.

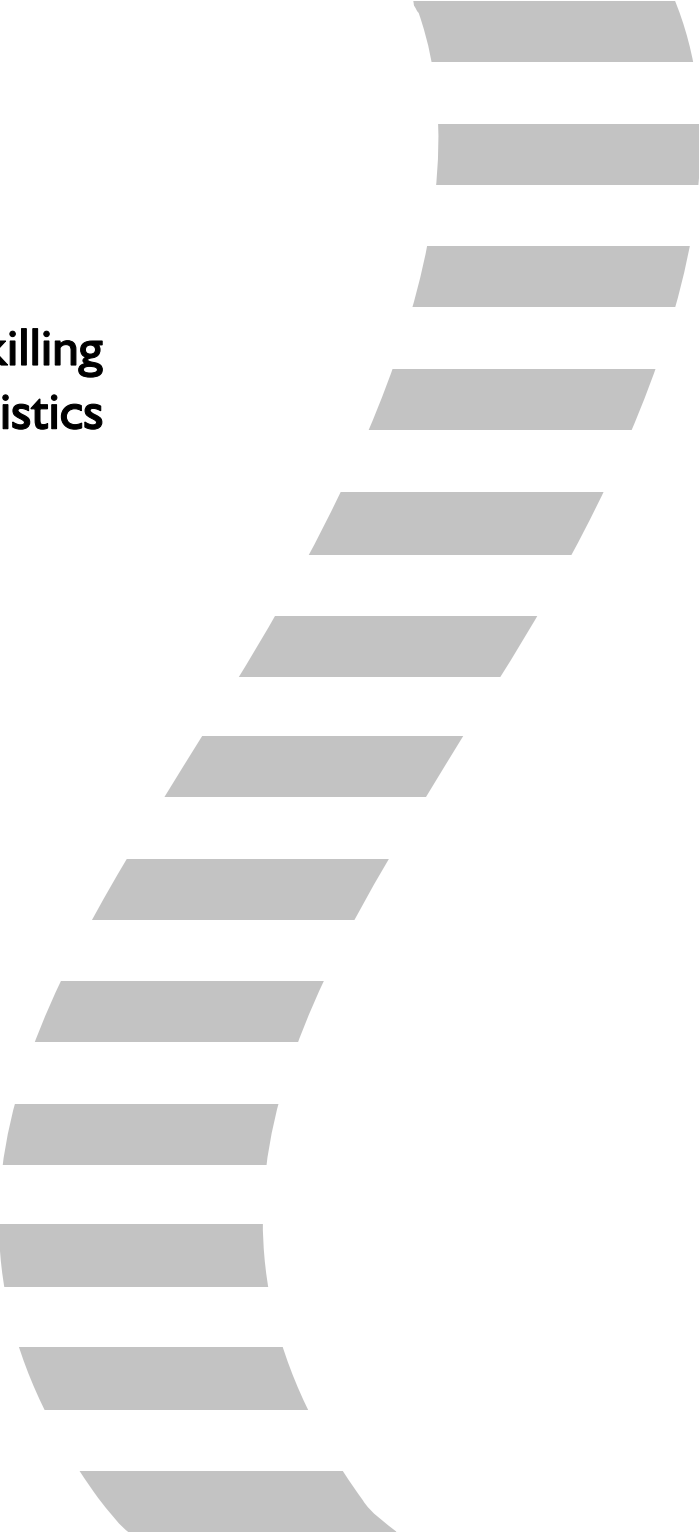
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**Nonkilling  
Linguistics**





# Toward a Nonkilling Linguistics

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More than a universally avoided violence  
It's the constructing of peaceful permanence  
More than preventing the evils of violence  
Let's universally sustain Nonkilling sense.

(from "Nonkilling Sense," a poem by Francisco Gomes de Matos,  
dedicated by the author to Glenn D. Paige)

It is the age-old question: are human beings naturally predisposed to violence and therefore bound to a perpetual and elusive quest for peace, or are we a peaceful group falling prey to the traps of aggression and hostility?

In *Nonkilling Global Political Science*, Paige (2009 [2002]) raises the question of whether or not a nonkilling society is possible and what it would take to build such a society. He explains that a nonkilling society is,

a human community, smallest to largest, local to global, characterized by no killing of humans and no threats to kill; no weapons designed to kill humans and no justifications for using them; and no conditions of society depend upon threat or use of killing force for maintenance or change. (p. 21)

Paige acknowledges that the answer to the first part of his question is a product of one's "personal experience, professional training, culture, and context" (p. 22). The answer to the second, in case one agrees that such a society is possible, would in our view, depend upon a collective effort in which each member of the society employs their expertise and special skills to contribute to the nonkilling paradigm. Our contribution to a nonkilling society would involve the use of languages and the social power derived from such use.

In our nonkilling linguistics we can express our desire for languages to be employed in all of their peace-making potential. It is easy enough to observe that languages can be employed as instruments of harm; one can, for example, hurt with the words he or she chooses or yet segregate and exclude those who share a different linguistic background. Thus, it seems intuitive to us that we need to tip the scale in the opposite direction by rein-

forcing instead those humanizing uses of language which help boost respect for human dignity and social inclusion. By doing so we may in some direct and indirect ways be advancing a nonkilling mentality.

The linguistic power conveyed by the juxtaposition of the negative prefix *non* and the noun *killing* recalls another felicitous combination, namely, *nonviolence*, a Gandhian concept-term which according to Random House (1995: 891) originated in 1915, meaning “the policy or practice of refraining from the use of violence, as in protesting oppressive authority.” That same source tells us that *violence* made its debut in written English at the beginning of the 14<sup>th</sup> century. How about *killing*, the reader might be wondering? The verb *kill* first appears in written form in 1175. According to the *American Heritage Dictionary* (2001: 469), *kill* can mean: To put to death; To deprive of life; To cause to cease operating. When, however, we add the prefix *non*, we positivize what would otherwise be destructive terms. Another history-making concept-term in that respect is, for example, that of *nonproliferation* as in the Nuclear Nonproliferation Treaty, signed in 1968 by the U.S.A., the then USSR, the UK and over 80 nonnuclear weapon states.

What these examples show is that language plays a significant role in the way we see and build the world because it has the power to transcend and transform. In the current state of affairs, Paige argues, “Language reflects and reinforces lethality, contributing a sense of naturalness and inescapability” (p. 30). His examples are many; for instance, the way in which metaphors which make reference to violence, war and conflict abound in the English language. He reminds us of expressions such as “making a killing in the stock market,” or being “stab[bed] in the back,” or movie stars being dubbed “bombshells.” We can add our own: Lou Dobbs’s constant reference (2006, for example) to the “war on the middle class,” the disagreements between men and women as “the battle of the sexes,” or taking part in a discussion as engaging in a “war of words.” There are also two ecolinguistically inappropriate—unfair!—nouns in English referring to animals: “killer bee” (for African honeybee capable of stinging repeatedly) and “killer whale” (large carnivore which is intelligent and relatively docile). Such labeling is biased against those species and again emblematic of our desensitizing toward the use of linguistically violent terms. English is not the only language through which we display violence-inspired metaphors. In Portuguese, for example, the combination of either “morrer” or “matar de vergonha” (to die or kill of embarrassment) fits this description as well (see also Arabic and Chinese for languages which extensively use linguistically violent terms). The existence, in several languages, of reference works on

insulting words and expressions attests to the near-universal omnipresence of violent or *killing* communication across languages-cultures.

Because we live in a world which has, to a certain extent, been the backdrop for a rather indifferent attitude toward killing, allowing us to become also somewhat unmoved by it, linguists might be interested in mapping the lexicon of violence, an area which is in need of cross-cultural data collection. For a useful section on violence in a reference work, a starting point could be Glazier (1997: 634-638). That work features subsections on violent events, fights, attacks, violent actions, and violent persons. The listing of over 300 types of violent actions provides evidence to support the hypothesis that human beings are the most destructive creatures on Earth. However, we must also ask what listing would be made to exemplify the opposite, that is, the fact that human beings can/could be constructive creatures as well.

Other contexts of use also evidence this indifference and actually give away a certain acclamation of violence. A quick search through a movie guide (Maltin, 2008) for example revealed the popularity of such titles as *Kill Bill* (2003), *The Matador* (2005) and *A Time to Kill* (1996). An interesting challenge could be to try to find an equivalent number of titles displaying peace-fostering terms. This challenge could be a desirable practice among conscientization (to use a Freirean term) activities aimed at communicatively enhancing constructive vocabulary, humanizing uses of languages and linguistic activism.

Of course the role of language in both the maintenance of peace and unfortunately the pursuit of violence is not restricted to its more metaphorical or purely linguistic uses. Effective diplomacy through peace talks, for example, can mark the divide between practicing peace through constructive dialogue or engaging in war through armed conflict. Further pacific pursuit of agreement and understanding can be exemplified by the growingly researched phenomenon of public peace dialogue (Saunders, 1999).

At the micro-level, the use of language can signal our desire to respect and honor human dignity on the one hand, or to offend and attack one's self-esteem on the other. Recently, a friend of the senior author received a phone call from a stranger telling her that her daughter had been kidnapped. What ensued was a near-killing communicative exchange. The would-be kidnapping turned out to be a horrible prank, that is, an instance of *killing* use of Portuguese, for the mother, in this case, had to receive medical treatment to overcome the shock. Whereas this is an extreme example of both physical and psychological harm through language, human beings do indeed have the capacity to use linguistic boundaries to segregate, to deny membership, to belittle or conversely to educate, to empower, to establish contact and to elevate.

Surprisingly enough, given the ubiquitous nature of language, it took linguistics quite a long time to be more formally recognized as an important element of peace and the establishment of fairer social institutions. Luckily for us and our contemporaries, Peace Linguistics (Gomes de Matos, 1996; Crystal, 1999; Crystal, 2004; Friedrich, 2007a and 2007b) now figures alongside Peace Psychology, Peace Education and other disciplines, among the contributing subjects helping in the development of interdisciplinary Peace Studies which in turn can inform those interested in the building of a nonkilling society.

However, the task ahead for linguistics scholars, teachers, language policy makers, government officials and language users themselves is not a small one. Language is so intricately connected to human experience that it can be said to permeate all aspects of our lives, from school to work, from entertainment to family relations, from conflict to diplomacy and governmental action. Yet, we often take language for granted and fail to recognize its power and reach, and we often trivialize its use. We neglect to engage in peace-fostering dialogue or we become cocooned in our own silence. We often find it hard to say “I am sorry,” to yield to the other speaker, and to choose our words according to their potential for peace. We at times fall short of recognizing situations in which language, if used constructively, could avoid serious conflict both at the personal micro-level and at the global macro-level.

In a nonkilling society, language must play a pivotal role as a tool for peace, as it needs to be widely engaged. Language users need to be empowered, and constructive dialogue needs to replace violence. This chapter is organized around the idea that several elements related to language are central to the establishment of a nonkilling society. We will visit but a few. While these elements relate to linguistics in its more abstract form, which means that they do not refer to any one particular language and at the same time include all languages, examples of their applicability are given *vis-à-vis* existing languages and the dynamics of power that unite and unfortunately also divide them. While many of our examples come from English, we do not in any way mean to imply that the use of English is more “harmful” than the use of any other language. We truly believe that the power to change a language as a vehicle of peace and nonkilling power lies within the realm of the users (i.e., language as an abstract entity cannot be to blame). Therefore, the list which includes many instances of uses of English is simply an acknowledgement that we share English with the readers and thus can rely on an understanding of our examples. Whereas the list is not exhaustive, it is guided by two encompassing, fundamental principles and two general pleas as follows:

- **First fundamental principle:** “Language is a system for communicating in nonkilling ways.”
- **Second fundamental principle:** “Language users should have the right to learn to communicate nonkillingly for the good of humankind.”
- **First plea:** “Let us be communicative Humanizers, treating all language users with compassion and dignity.”
- **Second plea:** “Let us opt for communicatively nonkilling uses of language.”

### Respect for Language Users and the Uses they Make of Language

Languages are not autonomous entities. They exist to serve the perceived needs of the societies who build them. They are made into tools or weapons depending upon their users. They are not intrinsically good or bad; however, they are used as vehicles of good or evil by the people who utilize them. Each user of language impacts the language in many ways by modifying, creatively applying, denying, or embracing it. Each language user is also unique because no one’s experience with language and with the world is the same as anyone else’s. Even considering identical twins, obviously born to the same parents in the same place and roughly at the same time, we will come to realize that the twins’ experiences with language are unique; each will speak to different users, read different books, and develop unique interests which in turn will help shape language use differently. Recognition of the multiplicity of users, realms of use, cline<sup>1</sup> of proficiency, and educational environments of different languages and language varieties is paramount to building a nonkilling society.

Multiple users will present different linguistic features. Pronunciation will vary, and choice of vocabulary and type of variety will also oscillate according to the situation of communication, educational background, geographical location, gender and age of participants. While we must recognize and seize such diversity, we must also learn to refrain from using it against language users. How many times has violence resulted from denied membership due to linguistic separatism? How often do negative attitudes toward users or groups of users of specific dialects end up impacting people in nonlinguistic realms of life? Fought (2002: 127) provides an example of such attitudes. In a study con-

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<sup>1</sup> The continuum that extends itself from not proficient at all to fully competent.

ducted with college students from California about attitudes toward the various regional dialects of the United States, she found out that “the South was labeled as a separate geographic area more frequently than any other region.” In addition, “a majority of terms associated with the South are negative.” The same stigmatization of regional dialects is true for Japanese (Gottlieb, 2008).

Scientifically speaking, no evidence exists that using a certain linguistic variety correlates with accomplishment, intelligence or skill. Yet, people are often stereotyped and pigeonholed with dialectal variation and language proficiency as criteria, and these criteria are then later wrongly reapplied to include or to exclude users. In a nonkilling society, multiple linguistic expressions exist in harmony, and people have a chance to develop their full potential regardless of the native status of their language use (i.e., whether they are native speakers or not), the regional origin of their dialect, or the functional range of their language use.

Additionally, notions about cline of proficiency and frequency of use are not employed judgmentally. Some people will use a certain language for a variety of functions (e.g., the speaker of English who uses the language in his medical practice, to talk to his kids, to write in academic journals and to chat with friends) while others will use it for only one (e.g., the airport controller in a primarily Spanish speaking country who uses English for a specialized function at his workplace). In a nonkilling society, all kinds of users have a right to use such languages, and for those languages to be recognized and revered. They feel they are valuable members of their linguistic communities, and other members of such societies are grateful that because of those people’s linguistic skills others have access to, for example, a medical diagnosis or the safe landing of their plane.

Thus, in a nonkilling society, beside the respect for dialectal variation, the questionable deficit approach to language use (i.e., the view which focuses of language users’ shortcomings) is replaced with support for the further development of their skills and appreciation for the skills they already possess.

### **Respect for a Healthy Ecosystem of Languages**

Recently, *The Economist* (October 23, 2008) published an article on endangered languages. The renowned publication reflected on the fate of thousands of languages which may disappear by the end of the 21<sup>st</sup> century, languages such as Hua, spoken in Botswana, and Manchu, from China. The most optimistic estimates foreshadow that about 50% of the almost 7,000 languages of the world are endangered (Wurm, 2001; Gordon, 2005; Austin



and Simpson, 2007); the most pessimistic bring the number of those endangered up to 90% (Krauss, 1992).

Disagreements aside, most specialists concur that the rate at which languages are disappearing is unprecedented, and part of our inability to know what to do is intimately connected to its uniqueness—no historical antecedent tells us what needs to be done. Austin and Simpson (2007: 5) point out that besides being unparalleled, “[l]oss of linguistic diversity on this scale ... represents a massive social and cultural loss, not only to the speakers of particular languages but to humanity and science in general.” Scanlon and Singh (2006), referring to Maffi’s scholarship (2001), cite colonization, the rise of the nation state, globalization, and environmental degradation as the most important phenomena contributing to the disruption of linguistic diversity and a healthy ecosystem of languages (see also Mühlhäusler, 2003).

The fact that many languages are currently endangered has to be juxtaposed with the fact that languages also do fade away more ‘naturally’ too and that some of the sociolinguistic phenomena accounting for such disappearance is beyond our scope of action. Nevertheless, despite the fact that we might not be able to save all endangered languages, we do not need unnaturally to push for their demise. In a nonkilling society, the danger of languages displacing other languages is diminished because respect for language diversity also signifies that multilingualism is revered and encouraged (Phillipson, 1992). In that case, the need for languages of wider communication (which fulfill a pragmatic purpose) does not need to clash with the desire to build community and preserve local language and culture.

Notice, however, that the term “preserve” is a tricky one; some preservation efforts are an attempt to catalog and document the language as it was last conceived. Such efforts are to a large degree undertaken by language preservationists when there is no hope of a language surviving (e.g., when the last few speakers are of an advanced age and no young users can be found). The other complementary effort is to preserve a language’s ability to continue changing, that is, to continue to be used functionally by a community. In this case, policy making, which includes sound educational policies, can be an important step to maintaining a language. Smith (2000: 174) argues “... mutual recognition of all linguistic heritage should be the goal. Without such mutual respect and tolerance, internal and international tension and hostilities may result.” While Smith is referring more specifically to languages indigenous to Europe, the researcher’s reflection bears relevance to all relations among languages with regional and international status and those used only within

smaller communities. It also establishes the connection between disrespect for linguistic diversity and social unrest (see also Fishman, ed., 2001).

Therefore, as individuals interested in upholding the ideals of a nonkilling society, ideals which can be extended to the nonkilling of languages, we should take measures to preserve dying languages, counteract unnatural homogenizing forces when necessary, and recognize the necessity of lingua francas (but strive to establish them alongside local languages). In a nonkilling society, languages and speakers of languages are not purposefully exterminated. There is no effort of an educational, political or armed forces nature to decimate linguistic groups and extinguish their language and culture.

### **Focus on Diplomacy: Negative Peace**

Galtung's (1964) widely known concept of "negative peace" refers to the absence of war, thus the word "negative." Attempts to uphold peace in situations where conflict has already erupted fall within the realm of negative peace. Thus, a great deal of the effort to re-establish and restore peace in undertaken by diplomacy. In a nonkilling society diplomacy also is the primary vehicle used to resolve differences because armed conflict is not an option. The use of language in diplomatic talks is paramount to sustaining a nonkilling paradigm. Gomes de Matos (2001) has created a very thorough list of principles for diplomatic communication to be carried out "constructively." Some highlights include:

- Avoidance of dehumanizing language
- Investment in handling differences constructively
- Emphasis on language with a potential for peace rather than language employed with a strategic agenda
- Focus on agreement rather than on polemics
- Avoidance of pompous language used to separate and hide

Gomes de Matos (2001) also speaks of the importance of upholding the ideals of diplomacy to the utmost degree and believing in the ability of diplomats and other representatives to pursue their ideals through pacific and honorable means. We would add that in a nonkilling society efforts need to be undertaken and investments made in research and education so that we can increasingly understand which features of languages make them more apt to generating peace in diplomatic talks. As Gomes de Matos (2001) similarly points out, our efforts should not be to take advantage of language to "win" peace talks but rather to arrive at the kind of understanding which will lead to longer lasting peace.

### Focus on Building Strong Social Institutions: Positive Peace

Galtung's (1964) other form of peace, "positive peace," can also be framed in terms of language use. Positive peace refers to the building of strong social institutions which would help prevent war in the first place. As pointed out elsewhere (Friedrich, 2007b), language, as a uniquely human institution, can largely contribute to this effort because, if individuals see their linguistic rights respected, they will be less likely to engage in violent conflict. Amongst the necessary steps to building a strong language institution, we can highlight efforts to offer sound, peace-promoting education with a curriculum which emphasizes rights and duties, moral values and ethic, and sound linguistic skills. Complementary, a solid linguistic structure also relies on access to resources, information and opportunities by speakers of different languages and by users of various dialects. In a nonkilling society, individuals are encouraged to use their language-related skills for the development of society as a whole and for the upholding of human dignity.

Peace educators, peace psychologists, peace linguists and all those concerned with the nonkilling education of language users are urged to exercise their right to be communicatively creative for peaceful purposes and, in such spirit, to add, adapt, expand, refine, and probe the practices found most relevant to specific socio-cultural contexts. The overall goal should be to make learners aware of the open-ended practical activities aimed at enhancing one's nonkilling communicative potentialities. Group discussion of results achieved is desirable since communicating is above all an act of sharing. Examples of educational activities which could help fulfill this goal are:

**Practice 1.** Answering the question "When do we kill a person linguistically?" by adding verbs or verb phrases to the list in the suggested answers. Answer: When we antagonize, coerce, desecrate, frighten with threats of harm, intimidate violently, oppress, provoke in a violent way, exclude from our network.

**Practice 2.** Answering the question "How can we humanize a person linguistically?" by adding verbs, phrases or sentences to the list of suggested answers. Answer: When we refer to him or her in admiring respectful ways. For instance, when we call the person a peacebuilder, an expert, a connoisseur, a creative genius, a luminary, a mentor, a patriot, a prodigy, a role model, a trendsetter, a virtuoso, a visionary, a prophet.

**Practice 3.** Creating nonkilling sayings (adding to the challenge and the fun by using alliterations, rhyme, etc.). Examples: Wicked words wound the world/ Nonkilling words nourish nonviolence.

**Practice 4.** Creating constructive alliterations.

Example: Challenge yourself to add other letters:

AAA = Activate life-Affirming assertions

MMM=Monitor manipulative messages (in the media)

TTT = Transform tension into tranquility

VVV =Value a vital vocabulary

**Practice 5.** Creating a poem celebrating the power of nonkilling communication or celebrating the vision of a nonkilling “planetary patriot,” such as Mahatma Gandhi or Johan Galtung.

**Practice 6.** Creating some entries for a dictionary of encouragement and praise, so conspicuously absent in the literature (there are Dictionaries of Insults even in Portuguese.) or a dictionary of (name of language) for nonkilling purposes.

**Practice 7.** Paraphrasing inspiring statements by Glenn Paige in his seminal book.

**Practice 8.** Adapting famous quotations to a nonkilling perspective. For example: Confucius’ statement “ Without knowing the force of words, it is impossible to know men” could become “Only by knowing the nonkilling power of words it is possible to humanize human beings communicatively.” Another example: “Beauty is eternally gazing at itself in a mirror” (Kahlil Gilbron, *The Prophet*, “On Beauty” [1923]) could become “A nonkilling society is Humankind swimming in a Sea of Serenity.”

**Practice 9.** Listing more reasons for not killing, besides those mentioned by Glenn Paige.

**Practice 10.** Creating practical, transforming communicative alternatives. Examples: Turning an intended threat into a thought-provoking text; turning an intended intimidation into an invitation. In these two examples, the belief in loving one’s linguistic neighbor is challengingly applied.

**Practice 11.** Composing a poem on “Why more nonviolent people are needed.”

**Practice 12.** Completing a Nonkilling paradigmatic set with nouns in –ation. Example: nonkilling is (a) moral obligation, spiritual elevation, humanizing conscientization, global salvation, life-affirming education, planetary cooperation, vital preservation, etc.

**Practice 13.** Engaging your students in this creatively humanizing activity of building a repertoire of actions to avoid, with the use of non+noun words in an alphabetically arranged paradigm (for a complete list, see appendix): nonaggression, nonanimosity, nonantagonism, nonattack(ing), nonbelligerance, nonbrutality, nonbombing, nonbombarding, nonconspiracy, nonconcealment.

When will educational systems all over the world include the systematic learning of nonkilling language in their language programs? How can *peace* educators, psychologists, linguists and other peacebuilding humanizers get

together and help design *nonkilling language* programs for use in schools at all levels? Herein lies a formidable universal educational challenge. Besides learning to systematize one's nonkilling vocabulary, every planetary citizen could be educated in a Critical nonkilling Linguistics framework, or in other words, learning to question *killing* uses of language(s). In such spirit, human beings would learn not to *kill* their "linguistic neighbors" communicatively, by avoiding linguistically violent actions.

If we take the above considerations about education seriously, it becomes clear that a curriculum of nonviolence and peace should be the next step to fostering a nonkilling mentality. Such a curriculum should include teachings about communicative aspects of peace, linguistic ecology, peace linguistic terms and language appropriate for peace-fostering action. Crystal (2004) writes about the importance of fostering a curriculum of peace from the early grades. Alongside teachings about ecology, he explains, young students can receive education on linguistic ecology, linguistic rights and other language-related topics.

Other scholars have addressed the importance of the classroom as a site for all facets of peace education. Gomes de Matos (2002), reviewed by Rector (2003), explains aspects of his "humanizing pedagogy" which integrates Dell Hymes's concept of *communicative competence* (1966) expanded to include *communicative peace*. He urges the reader to promote language uses which reflect a preoccupation with the linguistic rights of others as well as respect for the participants in communicative acts regardless of their status or of the communication site.

In Friedrich (2007a and 2007b), an argument is found for the importance of linguistic peace education in promoting encompassing peace and for the appreciation of the classroom as a prime environment for education about peace (Peace Education), education about linguistic forms which enhance peaceful communication (Peace Linguistics) and education about all things sociolinguistic which impact the ways in which we communicate (Peace Sociolinguistics).

In a nonkilling society, classroom education, as well as life-long education in all of these language-related aspects of peace, is taken very seriously and given a position of relevance and influence alongside other disciplines.

### **Respect for Individual Linguistic Choices**

The matter of linguistic choices has largely become a political one. Whether one chooses to remain monolingual, embrace bilingualism or multi-

lingualism, or primarily use a language other than one's native tongue has social implications. Furthermore, these choices are usually framed by critics in terms of group membership rather than individual decisions. The widely debated phenomenon of linguistic imperialism (Phillipson, 1992) is an example of how choices are made into political entities. Phillipson argues that the global use of English is a result of linguistic imperialism and that people in the "periphery" (countries where English is acquired as second or foreign language) are victims of the imperialistic moves by countries such as the US). However, what theories of imperialism fail to recognize (among the many other elements brought forth by nonsupporters of this view) is that whether or not to use English or another language is ultimately a matter of personal choice and that individuals in the so-called periphery make these choices consciously based on weighing the benefits and drawbacks of using a given language<sup>2</sup> (regardless of the original intentions of leaders in the alleged imperialistic countries).

In a nonkilling society, these choices are easier to make because language use is not seen as part of an "either/or" paradigm in which languages are disseminated (rather than spread) for purposes of domination. Since human beings have an infinite capacity for language acquisition, if we could remove the fear that language could be used as a weapon of domination and subjugation, then individuals would be free to make these choices based on functional needs and personal interests. In that kind of society, we would also be able to abandon all metaphorical references to killing vis-à-vis languages of wider communication, e.g., "killer languages," as used by Skutnabb-Kangas (2000) to refer to English and other dominant languages, and we would focus on a language's capacity to bring people together instead while maintaining diversity and a healthy ecosystem of languages.

### **Respect for Language Change**

Languages go through a natural process of birth, change and death. Many times the "death" of a language actually means that it changed so much that it gave birth to new varieties which in time became so independent (and ultimately partially or totally unintelligible) that these varieties originate new languages.

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<sup>2</sup> It is our belief that in former colonial contexts, the languages first introduced through imperial power have come to change so as to express the culture, values and linguistic choices of their users and have therefore defied the colonial structures that first brought them there. (See also Mufwene, 2001).

Geopolitical phenomena also contribute to such a development because these new languages, by virtue of being embedded in different societies with different state-ruling and outside influences, continue the process of differentiation and modification. That was the case, for example, of Latin and such languages as Portuguese, Spanish, French, Italian and Romanian. Because of spread and then concentration in different regions, different outside influences, and even different climates, what was once one (Latin) became many (Romance languages). So languages also die because their functional uses have ceased, no new native speakers exist and, as a consequence, linguistic change within that language becomes stagnated.

Language change will occur whether we like it or not. In a nonkilling society, however, the process of language death is not accelerated unnaturally because linguistic decisions are forced upon language users; nor is language change arbitrarily stopped in the name of language purism. In a nonkilling society, there is no policy impeding users to employ a given language and no violent and unnatural attempts to impact the ecosystem of languages. Legislation exists to protect individual linguistic choice but not to forbid it (see also the section on North Korea in Kaplan and R. B. Baldauf, eds., 2003 and the work of Baldauf Jr. and Kaplan, 2003).

On the other hand, in a nonkilling society individuals are not punished for engaging in linguistic change processes. Change is not seen as corruption, impurity, or error. It is seen as a natural process of linguistic evolution, one which is brought about by social transformation and/or one which aims at transforming society as well.

### **Respect for Language Teachers, Language Learners, and Users with Special Language Needs**

Language learning environments are not immune to some of the problems which plague other spheres of our society. In fact, in many cultures, learning settings suffer from a lack of resources and conditions because education has yet to be recognized in real and concrete terms as an important part of the foundation of any society which values human development. As a result, too often we see teachers working from a position of scarcity, with fewer resources than minimally necessary to perform their duties adequately. In other places, while the infrastructure is adequate, educational decisions are made capriciously or in the name of political interests.

In a nonkilling society educators are given a prominent social role because members of such a society recognize that violence is to a great de-

gree a result of ignorance. Once we empower (the term is used in the *Freirean* sense) individuals to the point that they feel the safety of being in control of their own future (and education can do just that), they can feel less inclined to resort to violence.

In a nonkilling society, we empower language teachers, and in fact all teachers by offering them a safe, clean and appropriate environment in which to work. We compensate them with fair wages for the important service they provide, and we encourage them to make pedagogical decisions based on sound knowledge and experience, not on their political impact.

By supporting the work of teachers, we directly affect the lives of students and consequently the whole social structure in which they are embedded. The classroom has been shown to be a perfect site for peace education, peace linguistics education, and for discussing ecological concerns vis-à-vis languages with the students (Crystal, 2004). Any society which places education anywhere but in a prominent position is bound to be faced with ignorance which in turn breeds violence, disrespect for human dignity and a relentless sense of underdevelopment. On the other hand, any society which values education and places it amongst the strategic elements greatly contributing to social justice and dialogue (also as understood by Freire), is on its way to greater social inclusion and ultimately nonkilling potential.

People with language-related disabilities (e.g., hearing and speech impairment and impediment, paralysis impacting speech production, aphasia) also have a right to education and communication in a dignified manner. We have the opportunity to provide them with tools, adaptive technology and other forms of support to allow them to express themselves, to claim their rights, and to contribute to their communities. In a nonkilling society the rights of all language users, including those with language-related disabilities are not only acknowledged but also, and more importantly, observed.

### **Upholding of a Vocabulary of Peace rather than One of War**

Because language changes both to *reflect* social transformation and to *affect* such transformation (e.g., we created the word “computer” because society had changed and needed it, but we employ politically correct terms because we want to change society), revising our metaphors to express a preoccupation with peace is a necessary step to becoming nonkilling. In that paradigm, as mentioned elsewhere in this chapter, terms such as “killer languages” (Skutnabb-Kangas, 2000: 46), which is attributed to Singaporean linguist Anne Pakir, are replaced with peace fostering ones. We stop the



“fight” for human rights and start the educational process toward upholding such rights. We do not scare social groups into action by denouncing the “war on the middle class” but instead establish a dialogue in which different constituencies in society can pursue social justice.

Within that paradigm we also avoid resorting to “scare tactics” or appeals to fear to sell products or change one’s mind. Everywhere, from political campaigns to television commercials, we emphasize the positive rather than the negative. Fear tactics only make us perceive reality as one of danger rather than harmony, and fear only fuels violence. On the other hand, wise linguistic choices can help change our perception and act more sensibly toward one another.

### **Forging of New “Humanizers”**

Although linguists kept refining their enumeration of aspects of language, one trait was conspicuously absent: the humanizing nature of language use. Thus, in Gomes de Matos (1994) a plea was made for such a conceptual gap to be filled, since by merely stating that language is human we do not do justice to its humanizing power. Humanizing has to do with both acknowledging language as a system shared by human beings as well as investing in making language humane. Realistically, such characterization of language would be worded so as to cover both its humanizing and dehumanizing power, after all, linguists such as Bolinger (1980) and Crystal and Crystal (2000) have already expressed that language unfortunately can be employed as a weapon (Gomes de Matos, 2006: 159).

Humanizers are persons imbued with the ideals of human rights, justice, and peace and who apply such values in everyday interaction. In such spirit, language users, depending on their humanizing or dehumanizing uses of languages, can be described as Humanizers or Dehumanizers, and of course we need many of the former. While language is a mental marvel for meaning-making used by members of one or more communities in varied sociocultural contexts for humanizing or dehumanizing purposes, the latter dimension seems to have received the most interest by linguists, especially when dealing with detrimental effects of language use. Jay (1999), for example, adopts a neuro-psycho-social approach for developing a theory of speech that can be explanatory of cursing. Of interest to researchers in Nonkilling Linguistics is his section on “Do words wound?” in which he summarizes research on harmful, psychological effects of words on listeners. It seems appropriate for us as humanizers to ask that linguists take fur-

ther interest in investigating the neurological, psychological and social makings of a theory of language which explains positive uses of language such as praising, comforting, and reassuring. Additionally, we need linguists, psychologists, sociologists and language users in general to employ their time, energy and knowledge in becoming humanizers themselves.

### **Implications for an Applied Peace Linguistics**

An awareness of or conscientization about the need for a Nonkilling Society not only helps shed light on an equally needed Nonkilling Linguistics but also provides insights on actions to be implemented which can contribute to the rise and development of an Applied Peace Linguistics. Among the implications which could be drawn, derived from an initial study of Nonkilling Linguistics as presented here, five stand out:

- a) Nonkilling Linguistics prioritizes nonkilling, peaceful, humanizing uses of languages at the individual, group, community, national, and international levels.
- b) Nonkilling Linguistics needs to interact with many other fields so as to help build an interdisciplinary approach to Nonkilling communication, in varied types of societies.
- c) The preparation of Nonkilling linguists calls for a keen perception and thorough analysis of both constructive and destructive ways of interacting intra- and internationally, in face-to-face or online situations.
- d) Nonkilling Linguistics can also be thought of as a humanizing realization of an
- e) Applied Peace Linguistics. As such, it should be able to join other interdisciplinary areas within the ever-growing macro-field of Applied Linguistics. For an overview of the latter, see Kaplan (2002).
- f) A steady, universal increase in the number of killings and homicides—sometimes deplorably labeled “justifiable”—calls for immediate nonkilling action by all individuals and organizations committed to protecting and preserving human linguistic health and life.

May we close this section with a plea for the systematic application of principles and practices of Nonkilling Linguistics all over the world. May Glenn Paige’s prophetic, transformative wisdom of a Nonkilling Society also influence the work of linguists committed to helping improve the living conditions of human beings as language users at the service of universal, communicative Peace.

## Conclusion

Our list of elements connecting language and peace or language and nonkilling ideas could go on for a long time. It would come to include the importance of empathy and sensitivity to different rhetorical patterns in cross-cultural communication (e.g., Kaplan, 1966; Hofstede, 1980; Friedrich et al., 2006). It would also describe the need to respect and preserve linguistic artifacts, from books to original manuscripts, so often destroyed for political reasons. What all of the elements above and the many still missing from the list have in common is their central role in making human beings, in their uniqueness as producers of complex linguistic expression, feel included, valued, and revered (see also Lee, Mikesell, Joaquin, Mates, and Schumann, 2009). Respect for human communication and human dignity is paramount to building a nonkilling society and as such should be pursued in all aspects of our lives.

*Languages per se are not dehumanizing, lethal, or killing  
It is the linguistic choices made by the users that may be  
The new, universal challenge school systems could be facing  
Has to do with why and how nonkilling language uses should be  
May all education systems their citizens prepare  
As communicative beings of an unprecedented kind  
By assuring them of a human right beyond compare  
Learning to use languages for the good of humankind.*

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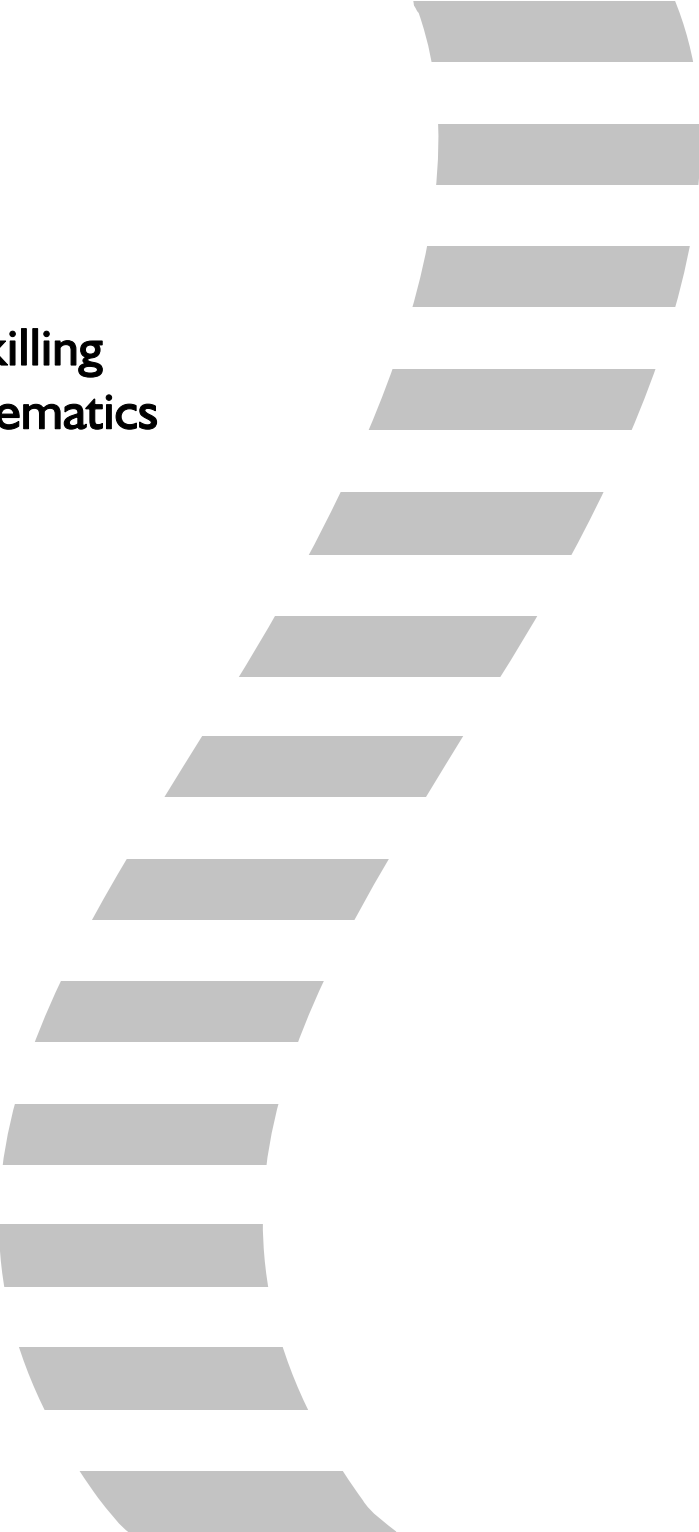
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## Appendix

Here is the full list of terms positivized by the prefix NON. We invite you to add your own contribution to the list.

NONaggression, nonanimosity, nonantagonism, nonattack(ing), nonatrocity  
NONbelligerance, nonbrutality, nonbombing, nonbombarding  
NONconspiracy, noncealment  
NONdestruction, nondevastation, nondiscrimination, nondomination  
NONexploitation, nonexplosion, nonextermination, nonescalation  
NONfrightening, nonfear  
NONgore  
NONharassment, nonhatred, nonhumiliation  
NONintimidation, noninvasion, noninterversion  
NONjeopardy, nonjeer  
NONKILLING  
NONlethality  
NONmurdering  
NONnegativity, nonnegativism  
NONoffending, nonoppression  
NONpersecution  
NONquarreling  
NONretaliation  
NONslandering, nonslaughter  
NONterror(ism), nontorture, nonthreat(ing)  
NONusurpation  
NONVIOLENCE, nonvillainy, nonvillification, nonvengeance  
NONwar, nonwarmaking, nonwickedness  
NONxenophobia  
NONzealotry

**Nonkilling  
Mathematics**







# A Nonkilling Mathematics?

Ubiratan D'Ambrosio  
*State University of Campinas*

But nothing will ever quench humanity  
and the human potentiality to evolve  
something magnificent out of a renewed chaos.  
(D.H. Lawrence, 2001)

Nonkilling is the magnificent scenario we are struggling for. I want to envisage a road that makes Lawrence believe in man.

Political scientist Glenn D. Paige published, in 2002, a pioneering book on *Nonkilling Global Political Science*, featuring a very provocative and basic chapter entitled *Is A Nonkilling Society Possible?* In it Paige says:

The structure of society does not depend upon lethality. There are no social relationships that require actual or threatened killing to sustain or change them. No relationships of dominance or exclusion—boundaries, forms of government, property, gender, race, ethnicity, class, or systems of spiritual or secular belief—require killing to support or challenge them. This does not assume that such a society is unbounded, undifferentiated, or conflict-free, but only that its structure and processes do not derive from or depend upon killing. There are no vocations, legitimate or illegitimate, whose purpose is to kill. Thus life in a nonkilling society is characterized by no killing of humans and no threats to kill, neither technologies nor justifications for killing, and no social conditions that depend upon threat or use of lethal force. (p. 30)

A document elaborated by an international group of scientists, convened by the National Spanish National Commission for UNESCO in Seville, Spain, in 1986 and adopted by UNESCO, became known as the *Seville Statement on Violence*. In the last paragraph, it claims that:

Just as wars begin in the minds of men, peace also begins in our minds. The same species who invented war is capable of inventing peace. The responsibility lies with each of us.

In the 8<sup>th</sup> World Summit of Nobel Peace Laureates, conveyed in Rome in 2007, participants produced the *Charter for a World without Violence*, which states:

We are convinced that adherence to the values of nonviolence will usher in a more peaceful, civilized world order in which more effective and fair governance, respectful of human dignity and the sanctity of life itself, may become a reality.

In implementing the principles of this Charter we call upon all to work together towards a just, killing-free world in which everyone has the right not to be killed and responsibility not to kill others.

To address all forms of violence we encourage scientific research in the fields of human interaction and dialogue, and we invite participation from the academic, scientific and religious communities to aid us in the transition to nonviolent, and nonkilling societies.

I agree with the *Seville Statement on Violence* in accepting that I am also responsible for inventing peace and, as invited in the *Charter for a World without Violence*, I join Glenn D. Paige in committing myself to the enormous task of participating in the effort to create a World society in which there is no killing of humans and no threats to kill.

The great challenge which I face in writing this chapter is how, as a mathematician and mathematics educators to act to fulfill this commitment. How to go beyond the humanitarian dream? I believe an academic quest of the nature and history of mathematics may be helpful. This will be the focus of this chapter.

## Introduction

As Peace Educator Leah Wells once said, “Violence comes from fear, fear comes from incomprehension, incomprehension comes from ignorance ... we eliminate ignorance with education.” To recognize, to respect and *not to fear* different values is the way to eliminate violence.

Education is a practice present in every culturally identified group. The major aims of education are to convey to new generations the shared knowledge and behavior and supporting values of the group, and, at the same time, to stimulate and enhance creativity and progress.

Let us consider groups of individuals who share modes and styles of knowledge and behavior, supported by a system of values, which were generated and accumulated throughout a common past. This characterizes a culture. Thus, a culturally identified group, be it a professional guild, a family, a community, a nation, shares sets of modes and styles of knowledge and behavior and values, embedded in traditions, which support knowledge and behavior. Knowledge, behavior and values which come from the past justify present behavior and, at the same time, entice and make possible the

advancement of knowledge. Inevitably, the supporting values also go through permanent revision. This is the essence of progress.

The phenomenon of globalization leads us to consider a much larger group, indeed the total group of humankind. This leads us to envisage a universal culture. The major challenge is to recognize shared knowledge and behavior and supporting values for this total group, that is, for humankind. This asks for universal and transcultural knowledge, behavior and values. Examples of transcultural and universal knowledge are mathematics and the sciences in general. Modern, euphemistically called civilized, behavior, as expressed in manners, in dressing, in the appropriation of technology, particularly the media, is advancing worldwide as universal behavior. A strong force of resistance is, as it has historically been, the systems of values.

Education has been focusing on knowledge, behavior and values of culturally identified groups and on past struggles for keeping the identity of the group. The violent facet of the struggles has dominated the historical narratives within education. If we accept the initial premise that action in the present reflects the past, it is undeniable that education has been favoring violence. The historical narratives are impregnated with hostilities and atrocities, and emphasize moments of success or failure. Although the moments of temporary success are sometimes marked by efforts to build up new styles and modes of knowing, behaving and accepting different values, these efforts have not been deserving attention in history education.

Every human being experiences biological, physical, social, psychological, spiritual needs and also wants. A road to peace is to achieve a balance between needs-wants and rights-responsibilities. Education for peace must consider the realms of inner peace, social peace and environmental peace, paving the way to military peace. These four are intimately related. To achieve peace between human beings, we must understand how man is integrated in nature and we must respect the equilibrium that exists in nature. This means that man must be in peace with the environment. Taking advantage of natural resources allows a few to accumulate wealth which, perpetrated at a structural level of the economy, generates social injustices, which is a factor that causes violence and killing.

In this chapter I will discuss mathematics, the earliest and most recognized universal system of knowledge. As it has been said by historian Mary Lefkowitz, “the evolution of general mathematical theories from those basics [mathematics of Egyptians, Sumerians and others] is the real *basis of Western*

*thought* (emphasis added).”<sup>1</sup> History shows that Mathematical ideas have been expropriated by the Arts, Religions, Sciences and, in modern civilization, by the technological, industrial, military, economic and political complexes. Mathematics and mathematicians benefitted, and continue to draw resources, from these complexes, relying on them for the material bases of its continuing progress. I will also discuss the origins of mathematics and how a set of universal values, essential for peace, is intrinsic to mathematics.

I raise many issues, leaving most of them unanswered. This text is an introduction to a large and ambitious program of looking into mathematics as the real basis of civilizations; hence into the relations of mathematics with the arts, religions, sciences, economics, politics and architecture and urban life; hence with *peace*.

To achieve peace is essential for the survival of civilization. We are a threatened species. When I refer to peace, I am concerned with peace in its several dimensions: *inner peace*, *social peace*, *environmental peace* and, of course, *military peace*. Violations of peace in all these dimensions permeate the history of the world.

Violations of peace in all dimensions are frequently shown in the media and are dramatized in the arts. Recently, the Academy of Motion Picture Arts and Sciences recognized the violation of inner peace in American society by granting an Oscar to the movie *American Beauty*, which denounced this situation. Research institutions such as The World Watch Institute and many nongovernmental organizations systematically denounce violations of Social Peace and Environmental Peace.

Violations of Military Peace, that is, the insane practice of war, are a recurrent theme of the artistic, religious and scientific discourses. The impact produced by Picasso’s “Guernica” synthesizes dramatic visualizations of the horror of wars in literature, music, photography and the plastic arts. Appeals to sanity and to stop war are frequent. The exhibit “Thermonuclear Garden,” installed by Sheila Pinkel in several cities of the United States from 1982-1992, is an example of appeal to the American people to protest against production and export of weapons. Ecumenical meetings all over the world call for forgiveness and tolerance, love and harmony. And scientists lead the call for a stop to the insanity of war. Most pungent is the appeal of Albert Einstein and Bertrand Russell in the Pugwash Manifest, 1955: “We appeal, as human beings, to human beings: remember your humanity, and forget the rest.”

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<sup>1</sup> Interview given to Ken Ringle, *The Washington Post*, June 11, 1996.

The Pugwash Movement or Pugwash Conferences on Science and World Affairs, which was awarded the Nobel Peace Prize for 1995, has the motto “Thinking in a new way.” Indeed, to go beyond wishful thinking and inspiring discourses, some bold, innovative action is need.

I have a utopia: a world in peace! We need utopias in the sense given by Karl Mannheim, who sees utopia as the substratum of will. And will guides our actions. Mannheim says:

The disappearance of utopia brings about a static state of affairs in which man himself becomes no more than a thing. We would be faced then with the greatest paradox imaginable, namely, that man, who has achieved the highest degree of rational mastery of existence, left without any ideals, becomes a mere creature of impulses. Thus, after a long tortuous, but heroic development, just at the highest stage of awareness, when history is ceasing to be blind fate, and is becoming more and more man’s own creation, with the relinquishment of utopias, man would lose his will to shape history and therewith his ability to understand it. (1954: 236)

### **Global Responsibility**

This paper basically deals with the global responsibility of Mathematicians and Mathematics Educators. The guiding question is, “How do we fulfill, as Mathematicians and Mathematics Educators, our commitments to humankind?”

To be highly provocative, I invite people to reflect about the embarrassing fact that people who have attained a high level of cultural development, particularly excellence in Mathematics, have performed the most despicable human behavior in recent times. Let me make it very clear that this is not an insinuation of an intrinsic malignity of Mathematics. But it is clear that Mathematics has been an instrumental companion in the historical events that we all deplore. Let me also make very clear that I see Mathematics playing an important role in achieving the high humanitarian ideals of a new civilization with equity, justice and dignity for the entire human species, without distinction of race, gender, beliefs and creeds, nationalities and cultures. But this depends on the way we understand how deeply related are Mathematics and human behavior. Mathematicians, Historians of Mathematics and Mathematics Educators rarely consider these questions.

It is undeniable that Mathematics is well integrated into the technological, industrial, military, economic and political systems of the present world. Indeed, Mathematics has been relying on these systems for the material bases of its continuing progress. We may say that Mathematics is intrinsic to

today's culture. Thus we are led to examine the History of Mathematics as related to World History.

In order to appreciate the real significance and importance of Mathematics in different cultures and in different times, it has to be viewed through what might be termed a "cultural lens." It is hoped that this approach will illuminate many areas of mathematical thought and indicate new directions of research. As a result, we may better understand the implications of mathematical research, its contents and its pedagogical methodologies, for the achievement of peace in its several dimensions: military peace, environmental peace, social peace and inner peace. This is essential for building up a civilization that rejects inequity, arrogance and bigotry, which are the behaviors which initiate and support killing. Paradoxically, the intense rejection of these behaviors sometimes are, themselves, arguments favoring killing and violence.

As a mathematician proposing strict nonviolence, it is for me very difficult to understand why and how the recognized pacifist Albert Einstein sent to President Franklin Delano Roosevelt, on August 2, 1939, the decisive letter to build an atomic bomb, that killed thousands of Japanese civilians, families, elder and children and deflagrated the Cold War. In his letter, Einstein says:

Some recent work by E. Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation which has arisen seem to call for watchfulness and, if necessary, quick action on the part of the Administration.

The United States was then neutral. After the Japanese attack on Pearl Harbor on December 7, 1941, the United States declared war on Japan, and Germany, drawn by its alliance with Japan, declared war on the United States. But the atomic bomb project was well under way.

This is supported by the concept of being prepared for a just war. The argument is that the destruction and killing of civilians is necessary, although regrettable. This argument is as old as civilization, and continues to be employed to this day.

Can the argument of just war be supported? In the name of what? The maxim "For the winners and just, medals and paradise; for the losers and wicked, scaffolds and hell" seems to be universally accepted. The concept of *bellum iustum* is as old as humankind. Laurens Winkel synthesizes it well:

The term *just war* is misleading, though, suggesting as it does that at some point in time there has been or may be a conflict in which one side is morally perfect—as if there is an ideal or precedent that may serve as a role

model for future just warfare. Yet, historically the concept of holy war has made precisely this claim, and holy war apologists have rendered such conflicts by analogy with heavenly battles between the forces of light and darkness; and even e.g. the cold war concept of ideological war was often expressed in similar terms. (1999: 6)

### The Prevailing Attitude

It is not sufficient to say, as it is common in our profession—indeed, in every profession—that we are fulfilling our commitment and responsibility to humankind “By doing good Mathematics” or “By being a good Mathematics teacher.” Doing good mathematics should be complemented with the question, “What will be done with the Mathematics I am helping to develop?” And a good mathematics teacher must always be asking, “How will my students perform? Will they be conscious of their moral commitment in their professional life?” Our responsibilities include the uses society makes of our intellectual production and what is the influence we have in the behavior of future generations.

It is naïve or sarcastic to say, as G. H. Hardy has said, that:

Real mathematics has no effect on war. No one has yet discovered any warlike purpose to be served by the theory of numbers... So, a real mathematician has his conscience clear; there is nothing to be set against any value his work may have; mathematics is, as I said at Oxford, a ‘harmless and innocent’ occupation. (1967: 140)

Indeed, the theory of numbers is a fascinating subject, even for children in early schooling. But what bothers me is that the most attractive jobs for specialists in the theory of numbers are offered by the Department of Defense. It is one of the most important resources for military purposes.

The possibility of final extinction of civilization on Earth is real. Not only through war. We are now witnessing an environmental crisis, mounting social crises in just about every country and, above all, the recurring threat of another World War. I can not accept that it is normal to solve regional conflicts by military means and that isolated wars can be tolerated. Mainly as retaliation, which produce a chain of retaliatory actions, inevitably chastising innocents who are conveniently used as human shields, thus serving as a very efficient argument for cooptation. Although isolated, the violence and violation of human dignity going on in these conflicts are abhorrent. It is perturbing that discourses of “pacifists” open the way for necessary wars and just wars. Even in Tao Te Ching, #31, we read:

Weapons are the tools of violence; all decent men detest them. Weapons are the tools of fear; a decent man will avoid them *except* (italics mine) in the direst necessity and, if compelled, will use them only with the utmost restraint.

History has shown us that regional and limited conflicts eventually lead to larger involvement of nations. Escalation paves the way to World War.

Even more alarming, because it is a subtle violation of peace, is the lack of inner peace of individuals, leading to drugs, nihilism and violence.

To survive as a species we have to achieve peace in its several dimensions: Inner Peace, Social Peace, Environmental Peace and Military Peace. This means peace with dignity. In a correspondence to Albert Einstein, Sigmund Freud said:

perhaps our hope that these two factors—man's cultural disposition and a well-founded dread of the form that future wars will take—may serve to put an end to war in the near future, is not chimerical. But by what ways or byways this will come about, we cannot guess.<sup>2</sup>

We all, particularly mathematicians, have a responsibility to find these ways. As it was mentioned earlier, Mathematics is well integrated into the technological, industrial, military, economic and political systems and mathematicians have been relying on these systems for the advancement of their professional career and for material reward.

Rare, but exemplary, is the attitude of Derek Smith who in 1992, was working in speech recognition for Texas Instruments. When he learned that the results of his work were playing a role in the control systems of an anti-radar missile developed by the Pentagon, he decided to quit his job and joined, thanks to his expertise, a research group to model the immune system recognition of influenza viruses (*Science*, April 18, 2008, pp. 310-311).

Cooperative subservience is not restricted to specialists in Science and Technology. They are found in Economics, Communication, even in Philosophy—indeed in all fields of academic specialties and professions. It is extremely difficult to avoid. The cooptation strategies are subtle, and sometimes, intimidating. Ideological and even academic zealots play a fundamental role in this.

If, as Mathematicians and Mathematics Educators, we try to answer the challenge of Freud to Einstein, it is natural for us to reflect on our personal role in putting an end to and avoiding future wars. According to Freud:

Thus it would seem that any effort to replace brute force by the might of an ideal is, under present conditions, doomed to fail. Our logic is at fault if

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<sup>2</sup> <http://www.public.asu.edu/~jmlynch/273/documents/FreudEinstein.pdf> (27/01/09).



we ignore the fact that right is founded on brute force and even today needs violence to maintain it. (op. cit., p. 12)

The issues are essentially political. There has been reluctance among mathematicians, and to a certain extent among scientists in general, to recognize the symbiotic development of mathematical ideas and models of society. Mathematics has grown parallel to the elaboration of what we call Modern Civilization. Historians amply recognize this. Particularly explicit on this is Mary Lefkowitz, as quoted in Note 1 above, in recognizing that mathematics is universal.

We can not disregard the fact that *the most universal problem*—that is, survival with dignity—must have much to do with *the most universal mode of thought*—that is, mathematics. I believe that to find the relation between these two universals is an inescapable companion to the claim of the universality of mathematics.

Our commitment implies that we must adopt a broad view of the world and of humankind in general. This is possible through a reflection about the future and a broad perception of the state of the world, which is disturbing. It is a general feeling that human behavior has not been ethical. In particular mathematicians and mathematics educators have not been explicit about comprehensive ethics guiding their practices. An ethics of responsibility is needed. But, given the universality of mathematics and of its effects, this ethics must go beyond professional codes of behavior and professional ethics, such as the Hippocratic Oath.

It is natural to express discontent with the state of the world by chastising Science and Technology, which are recognized as the embodiment of modern society. Science and Technology are thus blamed for the malaise of humanity. Mathematics is, obviously, directly affected by this criticism.

The challenges and counter-challenges we are witnessing reflect a defensive posture that is growing to contain the wave of discontent. For many generations, access to facts has been controlled by moral and material instruments, among them norms and codes, language and literacy, and all organized as systems such as religions, sciences, languages, and technology. Reminiscent of the ideological zealots of the Senator Joseph McCarthy era, academic mobbing is a powerful control instrument. Paradoxically, the same instruments, which were fragmentarily constructed to preserve the prevailing order, became so complex that they are no longer effective and became increasingly permeable. An old Spanish refrain says “*Cría cuervos y te sacarán los ojos*” [“Raise crows and they will peck your eyes out”]. The

creature escapes the control of the creator. The fall from grace of Senator McCarthy, as well as metaphors such as Adam, Frankenstein, Hal of *2001*, the androids of *Blade Runner*; all point into this direction. Our hope is that a new thinking in Science, mainly in Mathematics, will be able to go through the control mechanisms.

### The Reaction to the Challenge

Raising questions is sometimes interpreted as opening doors to anti-science and irrationality. In his recent book, Carl Sagan cautions about the lure of new directions in inquiry. In his denouncement of the "new Dark Age of irrationality," Sagan says:

Each field of science has its own complement of pseudoscience. Geophysicists have flat Earths; hollow Earths, Earths with wildly bobbing axes to contend with, rapidly rising and sinking continents, plus earthquake prophets. (1996: 43)

It is misleading to denounce discontents such. Indeed, these conflicting postures have led to the so-called "Science War." Research done by Sociologists of Science have been more focused on the relations of Science and Society. But the new field of Social Studies of Science has been criticized. Alan Sokal drew much attention to the theme in a hoax published in one of the cherished journals of postmodern critics.<sup>3</sup>

The polemic thus started is not different from those focusing on afrocentrism and feminism. The polemics surrounding the discussion of scientific knowledge by postmodern critics reveal the real issue of the subordination of Science, which is a political one, that goes much beyond national arenas. Ideological labels are often subtly used to justify fundamentalism in the defense of the prevailing academic order. This is very well illustrated by the fact that Sokal's hoax was used, a few weeks after its publication, by Brazilian Congressman Roberto Campos to support his political rightist harangue. A few days later, Alan Sokal published a reply to Congressman Campos in the same influential Brazilian newspaper, explicitly criticizing Campos as a

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<sup>3</sup> See the polemics around the article by Alan Sokal published in *Social Text*, criticizing postmodernism, particularly Sociologists of Science, and also the article by Steven Weinberg: "Sokal's Hoax," in *The New York Review of Books*, August 8, 1996, pp. 11-15. Particularly interesting are articles by Sullivan (1996) and Harrell (1996). It is illustrative to look at the exchange of letters between Noam Chomsky and Marcus G. Raskin in the book by Marcus G. Raskin and Herbert J. Bernstein (1987: 104-156).

rightist and declaring himself as a leftist. Another example is the television debate between candidates Clinton and Dole on October 6, 1996, during which Senator Dole frequently used the word “liberal” to attack the policies of President Clinton. There is a danger that these polemics result in the deviation from the main objective, which is to “condemn injustices and inequities of the capitalist system and try to eliminate or, at least, minimize them,” using the same words of Alan Sokal, which contradict his posture in deflagrating a total Science War.

To challenge scientific, religious, socio-political and historical knowledge does not mean to regress. It has always been a coherent response to the state of society and it can be understood if we look at the full cycle of knowledge from a historical perspective, of course freeing ourselves of the epistemological biases that are adopted to justify the prevailing socio-political and economical order. The essence of these biases is the argument that Science is an object of knowledge of a different nature, in the realm of the ratioïd (the “ratioïd” encompasses everything that can be scientifically systematized into laws and precepts). This is particularly strong when we refer to Mathematics. Metaphorically, Mathematics is manichaestic. Its foundations rely on very strict dichotomies.

Knowledge is generated by individuals and by groups, is intellectually and socially organized, and is diffused. The full cycle of the generation, organization and diffusion of knowledge intertwines with needs, myths, metaphors, and interests. The human species develops, like other animal species, strategies of hierarchical power. Intrinsic to hierarchical power is the control of knowledge.

In the discussion about the current state of the World, it is not so important to claim that although the Egyptian, Sumerian and other civilizations were ahead of the Greek, the contribution to build up general mathematical theories was indisputably Greek.<sup>4</sup> It is irrelevant, though largely accepted, that the medieval scholars received Euclid through the Arabs. What is very relevant is the fact that Mathematics as it is recognized today in Academia, developed parallel to Western thought (philosophical, religious, political, economical, artistic and, indeed, every sector of culture). It would be redundant to give examples justifying this assertion. Indeed, Mathematics and Western Civilization belong to each other.

When we question the current social, economical and political order, we are essentially questioning the righteousness of Western Civilization in the face of a real threat to its continuation. How is it possible to avoid ques-

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<sup>4</sup> This is the main issue of the polemics about Afrocentrism. See Lefkowitz (1996).

tioning its pillars, Science and Mathematics? How can discussions about these pillars be closed to nonscientists and nonmathematicians? Arguments of authoritative competence lead to intimidation and passionate arguments, as discussed above about the ideological zealots. How can we reach the new by refusing, discouraging, rejecting, or denying the new? Indeed, a subtle instrument of denial is discouragement through intimidation. Language plays an important role in this process, as every schoolteacher knows. Particularly in Mathematics, the use of a formal language, inherent to academic Mathematics, has been a major instrument in deterring critics.

The organization of this language is the realm of epistemology. Epistemologies and histories, the same as norms, differ from group to group, from society to society, and are incorporated in what is called culture. The crux is the dynamic process of encounters of cultures and the resulting mutual expositions, which underlie the construction and reconstruction of knowledge and the maintenance, substitution, dissolution and modification of epistemologies and norms. When authority dominates this process, as it was in the colonial process and equally characterizes conservative schools, the outcome is predictable: contest. The problem thus resides with authority and the denial of participation in the dynamics of this process.

Social and political scientist Marcus G. Raskin and physicist Herbert J. Bernstein, in their analysis of the linkage between the generation of knowledge and political directions, claim that

science seeks power, separating any specific explanation of natural and social phenomena from meaning without acknowledging human attributes (such as love, happiness, despair, or hatred), the scientific and technological enterprise will cause profound and debilitating human problems. It will mask more than it tells us about the universe and ourselves. (op. cit., p. 78)

### **The Nature of Mathematics**

The criticism inherent in reestablishing the lost connection of mathematics, the sciences, technology and human values is causing unavoidable conflicts. This is particularly true with Mathematics, in which the acknowledgement of human attributes is conspicuously absent in its discourse.

This has not been so in the course of history. Mathematics, as with the other sciences, used to be impregnated with religious, as well as social and political considerations. Current Epistemology and History, and above all the educational framework, were constructed to justify the prevailing socio-political and economical order, in which we recognize different “theories of science.”

The theories of science largely fail to recognize that the generation of knowledge is the result of a complexity of sensorial, intuitive, emotional and rational factors. We are “informed” by these factors and process the information in a way as yet unknown. We need more understanding on how the human mind functions. A holistic approach to knowledge, going from reality to action, owes much to artificial intelligence, biology and sociobiology.<sup>5</sup>

Let us now turn to the question of political power. There are indicators that students spend less time studying or doing homework and that they are bored in class. There is no point in putting the blame on youth, claiming that the current generation is uninterested in learning and intellectually “lost.” Perhaps we should look into the blamers. The problem does not reside in youth, but in the older generation, in family, in schools, in the institutions in general. Chiefs of staff are ready to justify sending troops of young age, even teenagers to the battlefield. I know of no decision taken by a young chief of staff to engage in a war and sending the older generation to the battlefield!

As Fred M. Hechinger (1992: 206) puts it,

The drift toward a society that offers too much to the favored few and too little to the many, inevitably raises question among young people about the *rewards of hard work and integrity* (emphasis added).

The real problems facing education are political, essentially the result of unequal distribution of material and cultural goods, intrinsic to modern economy. There is no need to elaborate on these issues. I suggest a few sources where we find discussion of property, production and global issues in modern society.<sup>6</sup>

Some readers will claim that this has not much to do with the relations among Violence, Mathematics and Mathematics Education. I claim they have everything to do with it. This relationship has been avoided in the discussions about the state of the world and Mathematics and Mathematics Education have been absent in the critical views on the main issues. Cultural consumerism practiced both in schools and in Academia, has been efficient in trimming processes and focusing only in results. Mathematics and History of Mathematics are delivered as frozen systems of knowledge, conforming to the *status*

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<sup>5</sup> See Ubiratan D’Ambrosio (1981). I am particularly indebted to Wiener (1948), Maturana and Varela (1987), and Lumsden and Wilson (1981).

<sup>6</sup> For example, see Ubiratan D’Ambrosio (1999). Also interesting the book by Avishai Margalit (1996). The International Network of Scientists and Engineers for Social Responsibility offers a good electronic forum for discussion of these basic issues.

*quo*. A frequent inappropriate argument, when one calls for a broader view, is “this belongs to another discipline, not to mathematics classes.”

Exceptions are notable. We have to mention the activities of the research group on “Political Dimensions of Mathematics Education/PDME” and also the movements “critical mathematics” and ethomathematics.<sup>7</sup>

There have been few writings about values attached to Mathematics and even less about the moral quality of our action. Search for a correlation between the current state of civilization and mathematics has been uncommon among mathematics educators. Particularly the political component, which was so well studied by Paulo Freire, Michael Apple, Henry Giroux and others with respect to education in general, seems to have drawn little attention of Mathematics Educators.

To a great extent, the polemics around the postmodern discourse of sociologists of science is a reflection of the ideology intrinsic to words. Indeed, language has been the main instrument in denying free inquiry. There is an implicit intimidating instrument in the language of academia and society in general. One must be reminded that of the major confrontations of the sixties, particularly the Civil Rights Movement, the demonstrations against the Vietnam War and the student movements of 1968, probably the first of such contestations of the established order was the Free Speech Movement, initiated by Lenny Bruce.

The human mind is a complex of emotional, intuitive, sensorial, rational perceptions, involving all at the same time. Maybe we have been overemphasizing rational perception and denying, rejecting and repressing the others. Indeed, there is a general feeling that, as a math teacher, one has to teach “serious math” (i.e., objective reason), and to stimulate rational thinking among the students. It is not uncommon to see a child punished for being “too happy” in the classroom. And we all know of teachers saying to a boy, “Stop crying. Men do not cry!” Is it possible to build knowledge dissociating the rational from the sensorial, the intuitive and the emotional?

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<sup>7</sup> Three conferences of the PDME movement were realized: 1995, Bergen; 1993, Cape Town; 1990, London. Proceedings of all three are available. In the Eighth International Congress of Mathematics Education/ICME 8, in Seville, Spain, July 14-21, 1996, the WG 22 chaired by Richard Noss, entitled “Mathematics, education, society, and culture,” focused on the political dimensions of Mathematical Education. Frankenstein’s work (1989) is representative of this movement. Also see the book by Powell and Frankenstein (1997).

I am reminded of the case of a school teacher who asked children to draw a color picture of a tree seen through the window of a classroom. Jane came up with a tree painted red. The teacher corrected the child, even suggested to the parents that Jane might have a vision problem! A few days later the teacher was sitting in the same place as Jane had been, at the same time of the day, and the Sun was in the same position. The teacher saw the tree as red. Many say that this example is misleading, since it does not deal with objective reason.

I see multidimensionality in building up knowledge as a very important aspect of the History of Mathematics, one which has been practically ignored. And, of course, this is very important in learning.

There has been a resurgence of interest in the intuitive, sensorial (hands-on projects) and affective aspects in Mathematics Education. We must go beyond education and question the discipline itself. What is the role of emotions in Mathematics? When Gustave Flaubert (1987) wrote “Mathematics: the one who dries up the heart,” what did he have in mind?

The usual reaction to these comments is: “But this is natural, since Mathematics is the quintessence of rationalism.” Indeed. But much of the polemics ongoing relate to the prevailing acceptance of the superiority of rationality over other manifestations of human behavior. This was one of the main concerns of the mathematician-writer Robert Musil in his masterpiece *The Man Without Qualities*. Commenting on scientists and engineers, the main character Ulrich says,

Why they do seldom talk of anything but their profession? Or if they ever do, why do they do it in a special, stiff, out-of-touch, extraneous manner of speaking that does not go any deeper down, inside, than the epiglots? This is far from being true of all of them, of course, but it is true of a great many;... They revealed themselves to be men who were firmly attached to their drawing-boards, who loved their profession and were admirably efficient in it; but to the suggestion that they should apply the audacity of their ideas not to their machines but to themselves they would have reacted much as though they had been asked to use a hammer for the unnatural purpose of murder. (1980: 38)

Musil’s *oeuvre* anticipates the intellectual framework of Nazi Germany, in which he identifies the incapacity to tolerate pluralism. Indeed, much of the reactions against irrationalism are mixed with a latent emotional incapability of accepting the different. The denial of access to knowledge is a strategy for the exclusion of the different.

The threat of extinction is a fact. Paraphrasing Martin Luther King, Jr. in his 1963 speech, the change to nonviolence instead of violence is, indeed, a

decision between nonexistence and nonviolence. Do we prefer nonexistence to eradicating violence?

As human beings, we can not relinquish our duty to cooperate with each other with respect and solidarity, for the preservation of the natural and cultural patrimony. This is the essence of an ethical behavior of respect for the other, who is different in many natural and cultural aspects; solidarity with the other; cooperation with the other. This is a sure road to quality of life and dignity for the entire humankind.

Our main goal is nonkilling. Otherwise, we are on the road to extinction. I am simple in my proposal—we need ethics; and didactic in my style—every individual, whether the sophisticated intellectual or the common man, has a responsibility and should find the means to direct his energies to socially constructive goals.

This is an unusual piece on Mathematics and Mathematics Education, many will say. But if we accept, very clearly and unequivocally, that our professional commitments are subordinated to a more vital commitment to nonviolence, it is absolutely necessary to understand how and why mathematics became such a central instrument, both intellectually and materially, in human knowledge and behavior.

### **The Essence of Being Human: Survival and Transcendence**

Peace, in all its dimensions, depends on an ethical posture not only on human behavior, but also in the production of knowledge. Current systems of knowledge give to the prevailing social, economical and political order a character of normality. Both the religions and the sciences have advanced in a process of dismantling, reassembling and creating systems of knowledge with the undeniable purpose of giving a sense of normality to prevailing human individual and social behavior.

The fundamental problem in this capability is the relation between brain and mind. It is possible to know much about the human body, its anatomy and physiology, to know much about neurons and yet know nothing about why we like or dislike, love or hate. This gives rise to the modern theories of consciousness, which claim to be the last frontier of scientific research.<sup>8</sup>

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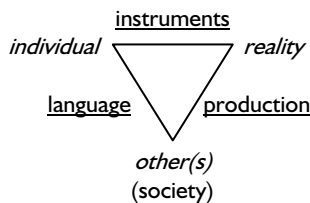
<sup>8</sup> See the important *oeuvre* of Oliver Saks, particularly *An Anthropologist on Mars*. Theories of consciousness also give rise to several academic controversies. See for example the review by David Papineau (1996) of the book by David J. Chalmers, *The Conscious Mind: In Search of a Fundamental Theory*.





and nature is responsible for nurturing, the relation of the individual and the other of opposite sex for mating and continuity of the species. Gregariousness is responsible for individuals organizing themselves in groups and herds, and hierarchies develop, most probably as an evolutionary strategy. The group, thus organized as society, relates to nature aiming at general equilibrium, following basic principles of ecology. Thus, the primordial triangle keeps its integrity. The rupture of each of the six elements eventually causes the extinction of a species.<sup>9</sup> Individual and social behaviors are actions taken “here” and “now.”

Individuals of the human species, differently than other species with neocortexes, are provided with *will*, that subordinates instinct.<sup>10</sup> Every individual has the ability to generalize and to decide actions that go beyond survival, thus transcending survival. Individuals acquire the sense of before/now/after and here/there. Individual and social behavior transcend here and now. Thanks to will, individuals develop preferences in nurture and in mating. They protect themselves and their kin and they plan ahead and provide. Physiological and ecological principles are not enough. Humans have to go beyond them and the relations (sides) and increment the primordial triangle by creating intermediacies. Between individual and nature, humans create instruments; language intermediates individual and the others; the relation between groups/society and nature is intermediated by production. In the process of recognizing the potential of these intermediacies, humans acquire an enlarged perception of nature. It becomes what is generally understood as *reality*, comprising natural, cultural and social environments. The primordial triangle becomes an *enhanced triangle*:

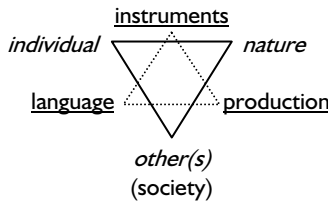


The three intermediacies are clearly related. Instruments, both material and intellectual, are shared through language and decisive in the production system. The distinguishing feature of language is that it goes beyond mere communication and is responsible for the formation of new concepts. Lan-

<sup>9</sup> For inspiring reflections, see the novel of paleontologist George G. Simpson (1995).

<sup>10</sup> Will is a recurrent theme in philosophy, religion, and neurosciences.

guage becomes essential in forming thought and determining personality features. It is the root of emotions, preferences and wants, which determine the enhanced relations of the individual and the other(s). Language is also essential in the definition and distribution of tasks, necessary for organizing systems of production. Thus, the intermediacies also have a form of solidarity which synthesizes what is called culture. Culture may be thus metaphorically expressed as a triangle, which I call the *humanness triangle*.



Human life is thus synthesized as the pursuit of the satisfaction of the pulsions of survival and transcendence. It is a mistake to claim, as many mathematicians do, that this refers to other forms of knowledge and that Mathematics has little to do with these pursuits. A holistic view of History of Mathematics traces the origins of mathematics in pursuing the satisfaction of these two pulsions.

Engaging in survival, humans develop the means to work with the most immediate environment, which supplies air, water, and food, necessary for nurturing, and with the other of opposite sex, necessary for procreation. These strategies, common to all superior living species, are absolutely necessary for the survival of individuals and of the species. They generate modes of behavior and individual and collective knowledge, including communication, which is a complex of actions, utilizing bodily resources, aiming at influencing the action of others. In the species *homo*, behavior and knowledge include instruments, production and a sophisticated form of communication, which uses, as its means, language, as well as codes and symbols.

In the search for transcendence, the species *homo* develops the perception of past, present and future and their linkages, the explanation for and creation of myths and mysteries to explain facts and phenomena encountered in their natural and imaginary environment. These are mentifacts (ideas, values and beliefs of a certain culture) incorporated in the individual memory and retrievable only by the individual who generated them. Material representations of the real, which we generally call artifacts, are organized as language, arts and techniques. Artifacts are observable and inter-

preted by others. In this process, codes and symbols are created. Shared mentifacts, through artifacts, have been called sociofacts by biologist Julian Sorell Huxley (1887-1975), who also introduced the terms artifacts and mentifacts. Huxley memetic concept of culture contemplates artefacts, mentifacts and sociofacts have a life of their own, spanning over generations.

Explanations of the origins and the creation of myths and mysteries lead to the will to know the future (divinatory arts). Examples of these arts are astrology, the oracles, logic, the *I Ching*, numerology and the sciences, in general, through which we may know what will happen—before it happens! The strategy of divinatory arts is deterministic.

Divinatory arts are based on mathematical concepts and ideas: observing, comparing, classifying, ordering, measuring, quantifying, inferring. Indeed these concepts and ideas are present in all the steps of the search for survival and transcendence.

As every form of knowledge, mathematical artifacts, in the form of practices and tools, and mentifacts, in the forms of aims or objectives, concepts and ideas, are first generated by individuals trying to cope and to deal with the natural and social environment, to resolve situations and problems, and to explain and understand facts and phenomena. These *ad hoc* artifacts and mentifacts are individually organized and are transmitted to other(s) and shared. They attain objectives, they serve, they are useful, they become methods which are shared and acquired by the other(s), by society. They are part of the sociofacts of the group. How are they transmitted and shared? These are the basic questions when we ask for the origins of mathematics. Was the transmission and sharing through observation, mimicry? Eventually, using language. But when? This is historically unknown. We have indications of the emergence of mathematical ideas thanks to artifacts, as will be discussed later in this chapter.

We have no idea when language was used in this socialization. Indeed, the origin of language was an academic “forbidden” theme about one hundred years ago. When language occurred, most probably systems of codes and symbols and specific words were created to design mathematical objects and ideas. This is a major research subject for oral cultures. With the appearance of graphic registry, like cave drawings and bone carving, we have more elements to understand the development of mathematical concepts and ideas. The progress of mathematics through history, in different cultural environments, is a central issue to understand the nature of mathematics. In a recent book, Ladislav Kvasz (2008) discusses the historicity of linguistic tools as a major factor in the development of mathematics.

We may infer that, socially, this factor, which isolates mathematics from consideration of those that are outside the restricted circle of professional mathematicians, is a form of censorship. This kind of obstacle to critical views on the advances of mathematics, of its purpose and appropriation for interest, sometimes, unacceptable, was already discussed above. Research that can not be disclosed is euphemistically identified, in academic circles, as “classified” research, not as “confidential” research. This was clearly illustrated in the movie *A Brilliant Mind* (2001), directed by Ron Howard, a fiction based on the real life of John Nash.

Sharing mathematics advances with the general population requires demystifying mathematics language. In an emblematic phrase, Hilbert (1862-1943), probably the most eminent mathematician of the 20<sup>th</sup> century, said in the major conference of the 2<sup>nd</sup> International Congress of Mathematicians:

An old French mathematician said: A mathematical theory is not to be considered complete until you have made it so clear that you can explain it to the first man whom you meet on the street. (1902: 438)

Demystifying mathematical language may open the way to a new form of mathematical education, with more space for critical analyses of mathematical development.

### **The Threat of Extinction**

The only possibility of escaping the threat of extinction of civilization is to attain peace in its broadest sense, in all its dimensions; that is, inner peace, social peace, environmental peace and military peace.

I see peace not as the nonexistence of conflict, since, as discussed in the beginning of this paper, every human being experiences different biological, physical, social, psychological, spiritual needs and wants. Since the individual and the other are different, conflicts are to be expected. The crucial point is to resolve the conflicts without violence. Violence ranges from evident confrontation and aggression and the resource of oppression, but also in more subtle forms of arrogance and bigotry, intolerance and fanaticism.

The only road to peace is through conflict resolution, based on a global understanding of the life phenomenon and intermediacies created by humans, which implies the acknowledgement of differences in the inter- and intracultural dialogue.

A primordial ethics recognizes the mutual essentiality of the three vertices and three sides of the primordial triangle and aims at the preservation of its integrity and survival with dignity. This primordial ethics is synthesized in the box:

- respect for the other with all the differences  
[which are inevitable, since the individual and the other are different];
- solidarity with the other;
- cooperation with the other.

### Mathematics in General Education

I repeat what I said above. Many will say that this is an unusual piece on Mathematics and Mathematics Education. Without denying the fundamental importance of nonviolence, they claim that the role of a mathematician and of mathematics educators is to act, seriously and with competence, to attain the specific objectives of the discipline.

But this competence, without a firm ethical commitment, may be directed to reproachable consequences. Particularly, to military innovation. An unsustainable argument of the neutrality of analytical treatment is a resource to support reproachable actions. The seduction of mathematics is responsible for “promoted tricks in technique and the assimilation of dogma at the expense of considered thought” (Hodgson; Screpanti, in Keir, 2006:22),

This is coherent with what some philosophers of science claim. There is, indeed, a seduction in mathematics. Based on the remarks of Thomas Reissinger, Sanford L. Segal says:

Mathematical training, however it prepares the faculties for analysis, is not only of no aid in judging historical/political situations, it perhaps inclines toward misjudgment. Furthermore, intellect has no necessary connection to the ability to reason. ... the ability to reason about ideas depends upon free exchange with others leading to critical examination. The solipsistic aspect of mathematical training and practice does not, however, favor such uses of reason. (2003: 13)

This attitude does not differ from what other professionals say of their responsibility *vis-à-vis* their discipline. But if we do accept, very clearly and unequivocally, that our commitment to humankind is much more important than our commitment to the discipline and to its objectives, we cannot, passively relinquish our action and give this responsibility to other educational constituencies. Our professional commitments must be subordinated to global ethics, such as the primordial ethics proposed above. Otherwise,

it will be impossible to engage in deeper reflection about our roles as mathematicians and mathematics educators.

It is an undeniable right of every human being to share all the cultural and natural goods needed for material survival and intellectual enhancement. This is the essence of the Universal Declaration of Human Rights (1948), to which every nation is committed. The educational strand of this important profession of faith in the future of humankind is the World Declaration on Education for All (1990; see Haggis, Fordham and Windham, eds., 1992), to which 155 countries are committed. Of course, there are many difficulties in implementing the resolutions contained in the document. But as yet this is the best instrument available that may lead to a planetary civilization, with peace and dignity for all humankind.

The crux is to understand how Mathematics and Mathematics Education can be directed as a response to these principles. I see my role as an Educator and as a teacher of my specific discipline, Mathematics, as complementary instruments to move toward my utopia of a world in peace.

In order to make good use of these instruments, I must master them, but I also need to have a critical view of their potentialities and of the risks involved in misusing them. Of course, this has everything to do with ethics.

I believe most mathematicians and mathematics educators share these views. No doubt they are authentically concerned with nonviolence, quality of life and dignity for humankind. But sometimes the relationships between concern and professional practice is not clear. Particularly in Mathematics, there is a general acceptance that if we do Mathematics well, thus instilling attitudes of rigor, precision and correctness in the students' behavior, we are fulfilling our broad responsibilities. Undeniably true. But this is not enough. This must be subordinated to a much broader attitude toward life and toward how mathematics can be used for good or for bad.

The first issue is to understand how Mathematics, as a knowledge system, emerges as a result of the search for survival and transcendence.

My proposal for achieving this understanding is to discuss the elements of the primordial and enhanced triangles; then to proceed with the knowledge and behaviors acquired in the search of survival and transcendence. Mathematics, as manifest in the techniques of observing, comparing, classifying, ordering, measuring, quantifying, inferring, is inherent in these searches.

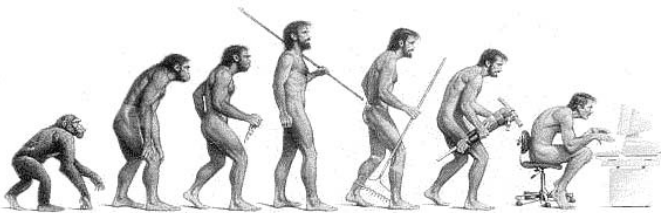
The curriculum I propose below is organized in two steps. The two steps must be integrally covered, but the level of exposition and the required complementary reading is absolutely flexible. I have been developing this curriculum in courses for both future mathematicians and teachers. I frequently have

among my students, individuals coming from other specialties. It is the teacher's responsibility to adapt the exposition to the level of the students. It has been possible to develop the curriculum in elementary classes.

### The Proposed Curriculum

- **Step 1.** Life is explained as the solidarity of individual, other(s), nature and how they relate. A methodology is to discuss the *primordial triangle* and explain the biological factors keeping its integrity. A first mention of the *primordial ethics* is important in this step
- **Step 2.** In discussing the evolution of the human species, to reach the *en-hanced triangle*, we elaborate on individual, other(s), reality, instruments, language and production. Attention should be given to the concept of reality, as enlarged perception of nature, comprising natural, cultural and social environments. A return to the *primordial ethics* is needed.

I have been using an image of the evolution of the species which is very convenient, since it allows for talking about the emergence of the basic ideas of mathematics, particularly observing, comparing, classifying, ordering, measuring, quantifying, inferring. There is much to be explored in this image. Particularly, the autonomy of the individual, which is symbolically represented by its erect posture.



It is very important to pay attention to the various phases of human evolution. *Bipedism*, the first differential from apes, allowed the new species to move using two feet and to discover other things to do with the idle hands (equilibrium is the mathematical manifestation in such a step). Among these discoveries: *stone tools*, for which the mathematical concept of comparison of dimension, rendering the tool appropriate for the designed use, became necessary; and the invention of the *spear*; late developed into arrows and



bows, which required the identification of a target in a distant complexity and the development of the mathematical concepts of distance, direction and force (nowadays characterized as a vector, which has magnitude and direction). In this phase, there is good motivation for philosophical reflection about the autonomy of the individual, well exemplified by the possession of a sword in medieval times, and about the generation of a sense of accuracy through mental discipline, as seen in archery. The next phase, leading to history and modern human behavior, is the invention of *agriculture*, and the necessary consequence of coordinated labor, hence hierarchy and power of a different nature (not deriving from physical strength), and of property. It is appropriate, in this phase, to discuss the roots of the capitalist system. The next phase is the development of industry, due to the invention of nonanimal power. A reflection about the mathematics involved in this invention is very appropriate. Again, it is the appropriate moment for socio-political reflections on the condition of the new character of being a worker and the emergence of modern capitalism. The next phase, *humans-with-media*, represents the dominating presence of informatics in all sectors of the modern world.<sup>11</sup>

The figure above reflects a very relevant fact: the ascent of man to individual autonomy, through bipedism, stone tools and culminating with the spear and its derivatives, arrow, bow and sword. The symbolic status of possessing a sword in medieval times is most relevant for reflection about autonomy. In a sense, with the emergence of agriculture, individual autonomy was lost. The attachment to the small group of family and tribe was subordinated to an increasingly complex social structure. Agriculture brought the end of nomadism, and brought the concept of property and collective labor and the development of astronomy, a very important moment in the development of mathematics. Industry paved the way to modern capitalism. The age of informatics requires new concepts of privacy. Every one of these phases marked the emergence of new directions for mathematics. Each of these steps demands a deeper discussion of the *primordial ethics*, which is the most important pedagogical practice leading to nonkilling and peace.

### Final Remarks

In this curriculum proposal, the right moment for discussion about the search for survival and the search for transcendence is the move from *Step 1*

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<sup>11</sup> I use the expression *humans-with-media* after the important book by Marcelo de Carvalho Borba and Mónica E. Villarreal (2005).

to *Step 2*. This discussion shall emphasize the nature of mathematics as an instrument to deal with the human pulsions of survival and transcendence. This is the moment to elaborate on examples of the relationship between Mathematics and religion, Mathematics and tool making, Mathematics and art.

It is fundamentally important to stress the fact that breaking the primordial triangle implies nonexistence. The enhanced triangle does not change this. The only reason for the enhanced triangle is to make it possible to keep the integrity of the primordial triangle. Again, this is a discussion of how essential is behavior according to primordial ethics for avoiding total destruction of civilization. Paraphrasing Martin Luther King, Jr. it is either adherence to the primordial ethics or nonexistence.

How about a nonkilling mathematics? This is an ill-posed question. Mathematics is in the realm of ideas and, as such, is abstract. For reasons not explained in human nature, its results, methods and language may be appropriated, but does not master, as it was made very explicit by eminent physicist Eugene Wigner in a classic paper:

Mathematics, or, rather, applied mathematics, is not so much the master of the situation in this function: it is merely serving as a tool... The miracle of the appropriateness of the language of mathematics for the formulation of the laws of physics is a wonderful gift which we neither understand nor deserve. We should be grateful for it and hope that it will remain valid in future research and that it will extend, for better or for worse, to our pleasure, even though perhaps also to our bafflement, to wide branches of learning. (1960)

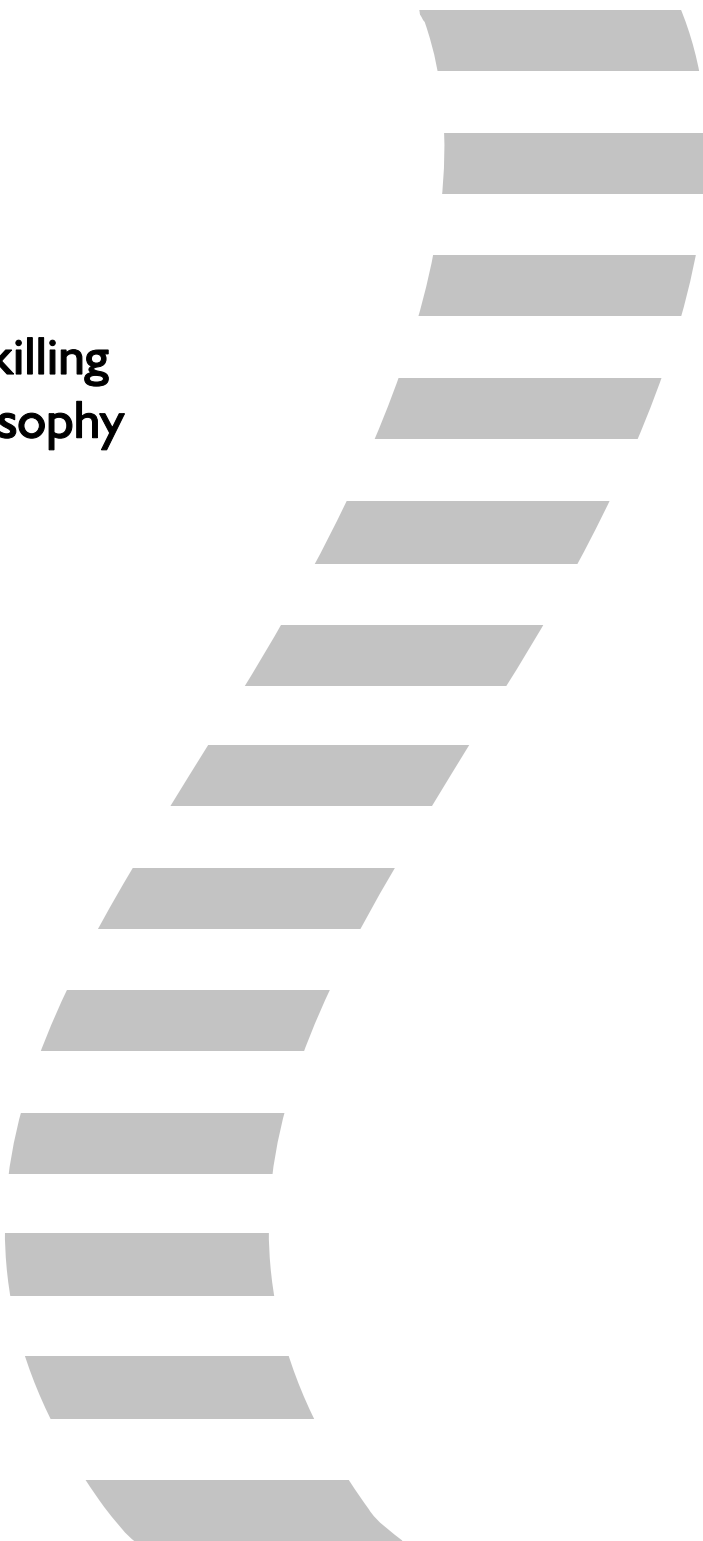
Regrettably, Mathematics is practiced and presented both in its pure and applied forms, as a cold and austere sequence of formal steps. In a figurative, somewhat imprecise way, we might say that it emphasizes syntax over semantics. I believe this is responsible for the easy cooptation of mathematicians, as well as of other educated individuals, to put mathematical results, methods and language at the service of material and ideological wants and needs. We might identify this facility to coopt mathematics, a cold and austere sequence of formal steps, as prone to be a killing mathematics. On the contrary, a practice and presentation of mathematics, critically and historically grounded, as proposed in my model of curriculum above, emphasizing semantics over syntax, may resist cooptation and be prone to be used for humanitarian and dignifying purposes. This might be a nonkilling mathematics.

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# Nonkilling Philosophy





# Nonkilling Philosophy

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Philosophic reflection can and should help us to transform the suffering of both humans and nature. Philosophy, with its etimological significance of love for wisdom, or rather, the love of knowing how to live, constitutes a practical knowledge, committed to *praxis*. In this chapter we will outline the contribution of Philosophy in the construction of a nonkilling paradigm. In order to achieve this we have organized our analysis into four sections. Firstly we introduce the discipline and concept of Philosophy. Following this introduction we will consider the two fields of work, in this case Peace Studies and Gender Studies, with which philosophy has, since the middle of the 20<sup>th</sup> century, established a reciprocal relationship of an interdisciplinary nature in order to begin its conversion into a nonkilling philosophy. Finally we will conclude with some epistemological and paradigm change reflections.

## **A New Paradigm for Human Sustainability**

At the present time, it would appear that Philosophy *is losing* all of its value. If we listen to certain conversations that are taking place around us (are being held around us), we will hear such things said as “it is useless to study and learn Philosophy or to reflect philosophically, because nowadays, society is going in a different direction.” It has reached the point where the very role of Philosophy is being questioned, even in the field of education, and this fact has led to very few people deciding to study Philosophy as an academic career.

Why does Philosophy seem to be losing its value? Certainly one of the causes is related to current scientific views (which have endured since the time of Modernity with Galileo and, later, with Positivism), whose most relevant features are *objectivity and neutrality*. In other words, priority is given to the opinion that, scientific disciplines must be value free and they have to be developed, if possible, in a laboratory under some sort of experimental conditions. In this sense, it is evident that Philosophy loses its scientific character, as do the disciplines of the humanities and the social sciences, as *values* form an important part of Philosophies dealings with human and social issues.

However, if Philosophy discusses human beings and all that surrounds them; is it not necessary in our society? Are philosophical reflections about human beings, about the situations that threaten us and about the circumstances in which we live, not fundamental to the sustainability of life? We live in times marked by violence of all types. The media inform us daily about cases of gender violence, of classroom violence, bellic conflicts, terrorism, etc. Therefore, we believe that it is ever more necessary to recuperate philosophic reflection as a means of understanding the cause of these events, and find viable alternatives that help to transform them peacefully. Evidently, these reflections would make us consider the life situations that are conflicts; they would make us open debates about them; they would allow us to stop being so technical; and they would humanize us so as to enable us to listen and be listened to.

The etimological meaning of the word Philosophy as “love for wisdom” and its sense of *thaumatzeln* (amazement) can help us to understand to what, we were referring when we mentioned the importance of philosophical reflection to the sustainability of life. That is to say, one significance for the term Philosophy that come from the two senses already mentioned above could be the following: Philosophy takes place when we feel amazed by things and situations that seem strange to us, when instead of distancing ourselves from them we question them, we decide to find out more about them. With this attitude we could help to manage many of the previously mentioned violences, thereby favouring the sustainability of life. For example, one case might be when we are amazed by a culture that appears strange to us and we decide to get to know it better rather than excluding the people that form a part of it and starting an intercultural conflict.

So, could we consider Philosophy as a science if we take into account the notion cited in the previous paragraphs? Only if we question the vision of science already mentioned, and we learn to perceive it from another perspective. We have said that Philosophy is a basic element for the sustainability of life because it helps to reflect on the situations experienced by human beings, and on the human being itself. In this context, from the UNESCO Chair of Philosophy for Peace of the University Jaume I, we work with the purpose of finding alternatives for the transformation of the suffering of both humans and nature by peaceful means, and thereby achieve greater and better sustainability of life (Martínez Guzmán, 2001, 2005). This Philosophy for Peace allows us to question the notion of science (both modern and positivist) based on objectivity and neutrality, thanks to the formulation of an Epistemological Turn



which at the same time enables us to recognise as sciences those disciplines that traditionally have been denied such recognition.

The Epistemological Turn (Martínez Guzmán, 2001, 2005) becomes a new paradigm, subverting the notion of traditional science when it is affirmed that this science is not even acceptable for the natural sciences, because even the more technical disciplines are neither objective or neutral. Or rather, objectivity and neutrality cannot exist because we value everything, from our training as mathematicians, physicists, historians or philosophers. In this regard, it promotes a new image of science which places the human being in society at its foundation.

We will continue by resuming the fifteen points that make up the Epistemological Turn (Martínez Guzmán, 2001: 64; Martínez Guzmán, 2005: 114-116):

1. Instead of objectivity we should highlight the *intersubjective* character of science and show the mutual demands made by those implicated on each other.
2. Instead of the perspective of the observer, we should highlight the *participative perspective*.
3. Rather than focus on the relationship between subject and object, we should highlight the *relations between people*.
4. Rather than the dichotomies between facts and values, we should highlight the role of *values* and the inexistence of “pure facts.”
5. Instead of neutrality we should highlight *commitment with its values*.
6. Rather than the paradigm of conscience, we should highlight the *communication paradigm*.
7. Rather than questioning the idealism of Peace Studies, we should highlight its *realist* character because it is from this character that we understand the different ways we do things, whether they are violent or peaceful.
8. Rather than unilateral reasoning, we should highlight the relationships between reason, sentiment, emotion, care/tenderness and affection.
9. Instead of neutral justice, we should highlight the existence of justice based on solidarity and “care.”
10. Rather than seeing the world as an abstract space, we should highlight its existence as a *world made up of a diverse number of places*.
11. Instead of considering nature as objective and distant, we should highlight the *union between nature and the human beings that form part of it*.

12. Rather than the dichotomy between nature and culture, we should highlight the links between the two and allow for the *social construction of nature*.
13. Rather than emphasizing the masculine, we should highlight the *category of gender* to understand how much women have been excluded in the name of neutrality.
14. Instead of only seeing human vulnerability in the development of mechanisms of aggression, we should highlight its *value in generating care and affection*.
15. Rather than understanding peace as a thing for heroes and saints, we should highlight that *peace is for people like us*.

The Epistemological Turn is then converted into a fundamental tool for sustaining life, if we take into account that working from it we can formulate a new vision of science. This turn is complemented by parallel proposals formulated by other fields of understanding, such as the notion of *imperfect peace* Francisco Muñoz is elaborating, with his academic training as a historian. The defining characteristics of the notion of *imperfect peace* basically revolve around two ideas. Firstly, there is the recognition of the experiences of peace that can be found in every social reality that may serve as guidelines and as inspirations for peace building. Secondly and directly related with the first, peace is understood as an unfinished process, in constant development.

Besides the proposal to construct a nonkilling paradigm, more inclusive and committed to *praxis*, we will consider in depth two fields of understanding that, as we have already said, nourish themselves in a reciprocal manner with philosophy in the construction of a new paradigm: peace studies and gender studies. In the next section we concentrate on the image of conflicts that appears in the Epistemological Turn of this Philosophy for Peace. We will carry out this analysis by means of a philosophical reflection that will allow us to once again perceive the value of Philosophy to the sustainability of life.

### **Peace Studies and the Peaceful Transformation of Conflicts: Challenges for a Nonkilling Philosophy**

Nowadays, people experience many different types of conflict such as gender violence, classroom violence, environmental violence, armed conflict or different forms of terrorism. Violence can be found everywhere or, at least it seems that this form of human interaction is the only one to be emphasised. We say this “form of human interaction” because it is true that we can do things in other much more peaceful ways and are characterized

by capacities for recognition, empathy, linguistic understanding and cooperation. It has already been pointed out that this is the understanding that Martínez Guzmán (2001, 2005) provides for one of the theses that make up the *Epistemological Turn* of his Philosophy for Peace when he indicates that we the pacifists are the realists because we do not deny the presence of violence; instead we make the affirmation that it exists together with peace. Evidently, all of our effort as people working for peace is focused toward learning peaceful means that will aid us to achieve peace.

The constant presence of violence has been favoured by the media. So much so that we continually read of, listen to and see news charged with violence, and that are read, listened to and observed by a public that seems to demand it, and that is being ever more absorbed by the spectacular form of reporting that is promoted by these media (Rivière, 2003; Sánchez Noriega, 1997; Sartori, 2002). This fact and the way in which we have traditionally learned to regulate our conflicts has led to violence being converted into a habit difficult to overcome, which in turn has led to a negative image of conflict being increasingly predominant due to the destructive effects that are produced on a material and personal level by the use of violence. Identical ideas can be found in the work of Cascón Soriano (2001) where the lack of energy and time are identified as two other causes of this negative interpretation of the predominant conflicts in our society.

In the previous lines we have talked about *violence as a habit*. On the contrary, the aim of this text is to propose the need to disaccustom ourselves to violence and learn these other forms of peaceful interaction that have been previously cited. It is true that many of the conflicts that we experience are regulated with violence. Then again, it is equally true that many others are treated peacefully. This has been affirmed by Muñoz (2004a; 2004b) in some of his work when he states that the majority of our interpersonal conflicts are managed peacefully even though we do not stop to think about it. It is possible that the very fact that we do not pay as much attention to these conflicts that are managed by peaceful means, as we do to those managed violently, results from the emphasis that is placed on violence as was indicated previously.

In order to *disaccustom* ourselves to violence, a new, different and more positive image of conflictive situations needs to be learnt so as to favour the sustainability of life. That is to say, the capability of transforming conflicts by peaceful means would allow us to view them in a more positive light, because their consequences stop being destructive once they do not cause material or personal harm to the same levels as is the case with the use of violence. Therefore, the working hypothesis that we deal with in

these pages will be that *conflict can be positive or negative depending on the means that are used to regulate it* (Muñoz, 2001). Thus, the principle question is not that which searches for solutions that will put an end to the conflict, but rather that which searches for peaceful alternatives that avoid the use of violence in the transformation of conflicts.

It is this *positive vision* of conflict that we want to make people aware of with this work, because it helps us to understand another image (as a new paradigm) of conflicts that has not been taken into account up until now, and it is now being highlighted by those of us who dedicate ourselves to working on these themes. This new interpretation emphasises a series of characteristics that can be summarized in the following manner (Fisas, 1998; Lederach, 1995):

What is it?	An interactive process
What Characterises it?	It is inherent to human relations Its character favours change
How to confront it?	Provide multiple responses

1. *Conflict is an interactive process*: the experience of a conflictive situation brings different people together who interact in order to regulate it.
2. *Conflict is inherent to human relations*: It is recognized that people cannot live without conflict if they want their relations to evolve. Therefore, if they are inherent to their relations, it is wise to seek peaceful means to transform them favourably for all the parties involved. Much in the same way, transforming conflicts by peaceful means helps us to understand the presence of conflict and thereby overcome the need to seek solutions at any cost.
3. *Conflict favours change*: it is accepted that the existence of conflicts favours the development of relationships and social change. If there are no conflicts, it will be because we are happy with what we have. However, conflict represents a disagreement that, if managed peacefully, may be overcome, thereby providing for an improvement in relations.
4. *Conflict has multiple responses*: Each conflict can be dealt with in many ways depending on the context in which it is taking place and the people implicated.

Understanding this interpretation of conflicts and its positive vision will be made possible if we learn to transform conflicts by alternative means. Hence we propose the use of the methodology for the peaceful transformation of conflicts in an effort to disaccustom ourselves to violence and take up *peace as a habit*. Consequentially, this reflection from the Philosophy for Peace perspective has allowed us to once again see the value of Philosophy to the sustainability of life, given that, as we said earlier, philosophy and peace studies relate to one another in a reciprocal fashion.

Within the framework, the peaceful transformation of conflicts is the third term to be used to denominate conflict studies. *Conflict resolution* and *conflict management* were the two denominations used previously. Each one of these terms proposes a methodology for dealing with conflictive situations and at the same time they have different implications (Lederach, 1995).

*Conflict resolution* was the first academic denomination which appeared in the 1950s and has been strongly criticised since the 1960s. It has a negative vision of conflicts, as it emphasises destructive consequences of conflicts and, thereby, signals that they need to be resolved. This interpretation gave rise to a whole series of criticisms during the decade of the 60s, from those who believed that forced resolutions were not always just, and from those who questioned whether it was really necessary to end conflicts.

*Conflict management*, the second academic denomination started to be used in the 70s and it was strongly criticised from the 80s onward. With *conflict management* a more positive vision of conflict is introduced, although its destructive consequences continued to be emphasised. According to *conflict management*, conflicts are the same as all the other natural elements that can be regulated by laws, models and norms. This conception gave birth to criticisms in the 80s from those who were of the opinion that conflicts are unlike any of the other natural elements, because they form a part of human affairs, and as such, they cannot be managed by laws. Furthermore, they believe management to be too greatly influenced by business interests.

*Conflict transformation* is the third academic denomination that arose in the 90s and continues to be used nowadays. However, although this methodology currently takes precedence, the terminology of resolution is still the most widely used.

Concentrating on the peaceful transformation of conflictive situations, a notion that we want to highlight with this text, it can be said that its main interest is in highlighting a positive image of conflict, in such a way that these situations of conflict may be understood as *situations that have to be confronted by peaceful means with the intent of overcoming them and creating new objec-*

*tives, which will make it possible to maintain relations into the future.* Conflict therefore favours the strengthening of relations and their continuity, due to an end of tensions and from the experience of positively transforming a conflict. This context is achieved by the use of *peaceful communication* as a method characterised by the principles of *Discourse Ethics*. In this sense, it presupposes the conditions for the liberty and equality of all speakers during the speech act, together with the three validity claims of speech that focus on the truth in what is being said, the veracity of intentions and the corrections used in the grammatical process (Cortina, 1994; Habermas, 1993, 1989, 1979).

The importance granted to communication by transformation is such that, what is said ends up being what is done due to the influence of Austin's Speech Act Theory (1976). Therefore, any transmitted message is converted into an act with consequences and, for this reason, it is necessary to be careful with how we say things and be aware of the consequences that they might have, if we are to successfully achieve the positive transformation of a conflict. This idea identifies the sense of *responsibility* that each person should have with every physical or verbal act carried out, as is illustrated by the cited theory of Austin, if we remember the three parts that this philosopher of language has pointed out for all speech acts: 1) *Illocutionary force* refers to the force with which we say something. In other words, what force is used if what is said is a promise, a threat, etc. Therefore it is the responsibility of the emitter to measure the force and form with which a message is transmitted to ensure that it is apprehended by the receiver. 2) *Illocutionary effects*, such as comprehension and apprehension take place when the receiver understands what has been said. In this case the responsibility belongs to the receiver. 3) *The perlocutionary act* represents the consequences derived from what we say. Here once again we find that it is the responsibility of the emitter to be conscious of the effects of his or her words and listen to the petitions of the receiver.

To take this responsibility into account during communication helps to create a *link of solidarity* between those who interact favourably in respect to the peaceful transformation of conflicts. In itself, it favours the recognition between the parties that goes beyond mere linguistic recognition, as it is perceived as a necessary aspect of what constitutes human integrity. This understanding has been patented by Honneth (1992; 1996) who positively values recognition in the following three ways: 1) *In our physical integrity*, with the concrete particularities of our bodies (stature, weight, skin colour, etc.). 2) *As members of a juridical community* that have rights and obligations. 3) *In our lifestyle* with our tastes, our way of dressing ourselves, our way of being, etc. (from a perspective based on the principles of interculturality).

In summary, the peaceful transformation of conflict is converted into a methodology (as a new paradigm) to be followed because it highlights the *value of peace* by putting into practice a peaceful and facilitating form for the communication of experiences based on responsibility and recognition. In the same way, these principles make it possible to witness cooperation between the parties implicated in the conflict, and allow them to experience its empowering faculties in the aim of finding suitable agreements for the reconciliation and rebuilding of relations. This rebuilding process may be favoured by the experience of women as will be seen in the following section. We shall now go on to analyze the reciprocal exchanges that take place between philosophy and gender studies in the construction of a new paradigm.

### **A Nonkilling Philosophy: The Care Ethics Perspective**

The practice and theory of the feminist movement has had a revolutionary or innovative effect on philosophy (Amorós, 2006: 217), especially in reference to the construction of a nonkilling philosophy and a new paradigm. We could say that there appears to be a mutual interaction between the new epistemological models and the newly emerging actors. These newly emerging actors, until recently kept in silence, are characterized by two principal features: culture and gender. Women and the nonwestern countries have had their voices excluded from epistemological paradigms. Occidental science has in this sense operated a form of triple exclusion: ontological, epistemological and sociological, by determining what merits being the object of investigation, by determining what types of research methods or knowledge are valid and which are not; and by indicating who are the experts and who are not. Thus the need to elaborate epistemologies that are capable of making visible those who before were submerged actors, invisible to other epistemological positions (Amorós, 2006: 259). This notion frames the *Epistemological Turn* that we have been working on and is what we consider to be one of the shifts axis in the incorporation of the gender perspective.

Nonviolence and nonkilling have not only been methods of struggle to transform conflicts, to condemn the existing levels of violence and killing or to deal with the representative changes in the different societies. They also try to renovate other knowledge disciplines, such as: history, political theory, sociology, anthropology, religion, ethical philosophy (with the denominated *care ethics*), economy, feminism and also the so-called experimental sciences (López Martínez, 2001: 232). This incorporation of nonkilling into the episte-

mological paradigms has come about as a direct result of different legacies, among which it is worth highlighting the experience of women.

Even though not all women are pacifists nor are all men violent, it is not less true to say that there exist relevant gender differences regarding the use of violence. More concretely it can be proved that the majority of violent acts, those acts of direct violence, are committed by males or that males are more sensitive than women to those environmental factors that have an important influence on antisocial behaviour. There have been a variety of reasons given to explain the difference in attitudes toward violence between women and men, from which we can discern two principal differences (Magallón Portolés, 2006). The fact that women have in their majority been excluded from having access to power, the army, and the political decisions of government related to wars and military doctrine, and the historical socialisation of women in the tasks of caring and sustaining life has meant that women value life greatly, and that they are more inclined than men to protect and maintain life. Even though, both aspects contribute to this difference in social construction between men and women, the second one, the socialisation of women in the tasks of caring, is the one that provides a more solid foundation and greater support regarding women's legacy in the construction of nonviolent thinking (Ruddick, 1989). The practice of caring implies, in itself, the development of a determined set of capacities and abilities such as empathy, responsibility, patience, tenderness or commitment, all of which are elements that constitute a nonkilling paradigm. It works on the premise that what we do is who we are, and that historically the role of caring has been attributed to women, as much in the private sphere (caring for the children, the elderly, the sick, the home, etc.) as in the public sphere (women in nursing, teaching, etc.), certain peace competencies have developed in women that could be shared with all of humanity if the tasks of caring were to be shared with men.

Carol Gilligan expressed for the first time, in her work *In a Different Voice* (1982), the different moral capacities that women have developed as a result of the socialisation in and practice of care. Up until then the Theory of Moral Development followed without exception the theories of her professor and mentor Lawrence Kohlberg. Gilligan amplified the moral theory of Kohlberg including an analysis of the moral experiences of women, given that Kohlberg's theory was based on the study of eighty-four male children during a period of more than twenty years (Gilligan, 1996: 18). Through her work Gilligan discovered that, women persistently scored poorly when compared with their male equivalents on Kohlberg's scale of moral development. This discrepancy in the scoring was due to the fact that the Moral



Development Theory was built on the study of male experiences but was applied under the pretence of universality among women and men. However, Kohlberg is not alone in this; Rousseau, Hegel, Freud and Piaget have also considered women to be of lower moral capacity.

Gilligan detected in her study that women have a more relation-based moral voice that gives preference to the preservation of relations, as opposed to justice ethics, where preference is given to the abidance of universal moral norms. This different moral perspective of women results from the division of work based on gender and the acute division between public and private spheres. Men and women therefore develop two distinct moral perspectives in function with the unequal attribution of responsibilities: “Care Ethics” versus “Justice Ethics.” While the ethics of justice is based on the premise of equality—that everybody should be treated the same—the ethics of care is based on the premise of nonviolence: that no one should be hurt (Gilligan, 1996: 174). Here it is necessary to point out that women are not more apt for the task of caring due to any biological explanation, but rather because of their learning process; it is the result of a social construction, more specifically a gender construction, and not features of sex. If women have different ethics, as Carol Gilligan suggests, if they have different priorities or a different attitude toward the world, then this is clearly a result of the sex based division of labour and the acute division between the *public* and the *private* that exists in the social world in which we live (Perrigo, 1991: 321-322).

The theory and practice of care implies the development of moral values, abilities and competences such as empathy, patience, perseverance, responsibility, commitment, accompaniment, the ability to listen and tenderness. All of which are important values for building a Culture of Peace. To illustrate this, Betty Reardon suggests that “above all a culture of peace would be a culture of caring” (Reardon, 2001: 85). Furthermore, with these moral values the practice of care contributes to the development of fundamental abilities for the construction of Peace, and it is not restricted exclusively to the private domain, but rather it extends into the public sphere: abilities to peacefully transform conflicts and abilities for civil and social commitment.

Sara Ruddick in her work *Maternal Thinking* identifies the way in which the practice of caring for children develops techniques in women for the peaceful transformation of conflicts. In the home and outside it, women normally feel themselves as being weak or powerless. Normally they are socially poor, the objects of rather than the agents of wars, economic plans and political regime. As it is with other powerless combatants, mothers often resort to strategies of nonviolence and peace (Ruddick, 1989). Beyond caring for children, or *mater-*

*nal thinking*, socialisation in care values generally develops techniques for the peaceful transformation of conflicts. In this case there are three contributions worth highlighting (Comins Mingol, 2007: 93-105). From the care ethic understanding of conflict it is considered important that nobody comes out losing, that all come out satisfied with the outcome of least some issue, so that they do not break interpersonal relations. It is also important to listen to all the possible voices. Sensitivity toward the needs of others and assuming the responsibility to care for them leads women to listen to voices different from their own and to include different points of view in their judgments. In this way the apparent diffusion and confusion of women's judgment is discovered, thanks to the work of Carol Gilligan, to be an example of the moral strength and responsibility of women. Finally, from a care perspective, when confronting a conflict, priority is given to satisfying needs rather than handing out punishment. Against this, with the ethics of justice, even though the theorists take into account the important role of satisfying needs, they focus their attention on the penalizing and regulation of aggressiveness.

The socialisation and the practice of care develops in women a commitment to the welfare of society in general and not only the family in particular. In this way we get to see how women are the majority presence in social movements, as volunteers and in different forms of participation in informal politics, or as they have been denominated civil society. More concretely, it has been in the decade of the 90s in the last century and the first years of this century that we have seen the proliferation of women's peace movements and initiatives. This has come about as a reaction to the ravaging wars that have been taking place, the peace processes and the programs of postconflict reconstruction, to the same extent both in countries immersed in armed conflicts and those countries that in recent decades have not suffered directly from war. Here we can draw attention to the efforts of movements such as the *Mujeres de Negro* (Women in Black) and the *Madres and Abuelas de la Plaza de Mayo* (Mothers of the *Plaza de Mayo*), among others.

The historical analysis of women's behavior leads us to consider that the key to peace building and the new paradigm is not to give life, in itself key to the perpetuation of the species, but rather is to care for it. Care for life in its broadest sense, from the micro to the macro, can and should be the responsibility of both men and women (Magallón Portolés, 2006). To think ethically is to think of others. If we want this understanding to be a practice, it needs to be translated into legal measures and care attitudes, both of which are essential. The only thing that care ethics does is draw our attention to how care has been forgotten as a basic ethical prescription (Camps, 1998: 75).

## Conclusion

On the basis of our analysis, a nonkilling philosophy is necessarily a philosophy committed to the recuperation of and the recognition of human potential for peace. From this point of view we challenge the old assumption that human beings are naturally violent by arguing that in parallel to the capacity to be aggressive, human beings also possess many abilities that favor a harmonious coexistence, for reciprocal care and the peaceful transformation of conflicts.<sup>1</sup>

The paradigm of traditional science, which we commented upon at the beginning of the chapter, and is pulled down in part by its own features of quantification, experimentation and objectivity. It has been seduced to a certain extent by the analysis of violence and war as human phenomena, leaving aside the analysis from the perspective of peace, nonviolence and nonkilling. This seduction characterizes the Natural Sciences to the same extent as it does the Humanities and the Social Sciences. There is one systematic deviation that converts violence and war in objects or materials worthy of investigation, but does not do the same for peace. Francisco Muñoz refers to this phenomenon as *cognitive dissonance*, which they search for and value peace more, but they continue to think in terms of violence (Muñoz, 2001: 24). According to the peace researcher Francisco Muñoz, we often fall into a cognitive dissonance similar to schizophrenia where we find that peace is strongly desired and felt whereas violence has been well thought out and studied (Muñoz, 2005: 283). This is what he also denominates as the *violontology perspective* (Muñoz, 2001; 2005: 284). This *violontology perspective* has the perverse effect of—with its emphasis on violence through research, analysis, and description—making it seem as though violence is more present, even, as was previously mentioned, in the media. According to authors such as Douglas Fry this emphasis on violence and war does not correspond with the empirical evidence; on the contrary it is due to a collection of cultural beliefs on the inevitability of violence and war that slants our interpretations and affects the way we see ourselves and others (Fry, 2006).

There are two premises that justify and award working toward a nonkilling paradigm: violence, killing and war are not inevitable; on the contrary, human beings have a great capacity for peaceful coexistence and for dealing with conflict nonviolently. Secondly, cultural beliefs regarding the inevitabil-

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<sup>1</sup> Cultural anthropology data has provided us with the evidence that the building of a more peaceful world is possible (Fry, 2006).

ity of violence, killing and war skew our interpretations and affect our vision of human nature, to such an extent that they blind us to the possibilities of developing alternatives to killing, war and violence.

The belief that aggression and killing are inevitable in human beings, according to empirical evidence, is erroneous. The anthropological data show that there is a real human potential for peace, it is not just a utopian dream. Furthermore these beliefs are not only false, but they present a grave threat and obstacle to peace building, as they obsess us and hence dissuade us from searching for alternatives. We are dealing with beliefs based in a cultural tradition that has been emphasized from the book of Genesis to the writings of Hobbes or Darwin, with its conflictive, egotistical and competitive vision of humanity without ever taking other dimensions into account. These cultural beliefs have not only been seen to be empirically unilateral and biased, but are further considered to be in danger of becoming a *self-fulfilling prophecy*. If we were therefore to believe that war is inevitable and societies prepare themselves to fight against each other—building an army or procuring weapons that will threaten their neighbors—war could easily be the result. Apart from becoming a philosophy that fulfills these cultural beliefs it can also end up creating a bias in research by focusing it in such a way that it reinforces the previously existing belief. Hence it is a prophecy that fulfills itself and justifies itself. These beliefs affect us as they do the sciences that, while interpreting history, psychology or philosophy through these lenses, see only violence and war wherever they look.

Fortunately, and thanks to the previously mentioned epistemological turn, there is a change taking place in the way that we approach and perceive reality. Fundamental to this change have been the contributions that philosophy has received from two more recent fields of work or disciplines: *Peace Studies* which stresses our capacities for the peaceful transformation of conflicts and *Gender Studies* which stresses our common capacity to care for life. With these tools philosophy can sensibly carry out its traditional functions related to: public commitment, criticism, and the preoccupation for transforming human suffering.

The definition of philosophy as love for wisdom, and as the illustrated search for the knowledge to live, also includes within the framework of its own epistemology the search for the knowledge to live in peace. It is a condition of the possibility to live well, to live a good life, to be able to live a life of peace. Hence philosophy as love for wisdom, love, and the search for the knowledge to live, in itself includes the love and quest for the knowledge of how to coexist peacefully. Our work as philosophers publicly

commits us to transform the suffering of both humans and nature by peaceful means (Martínez Guzmán, 2005: 28).

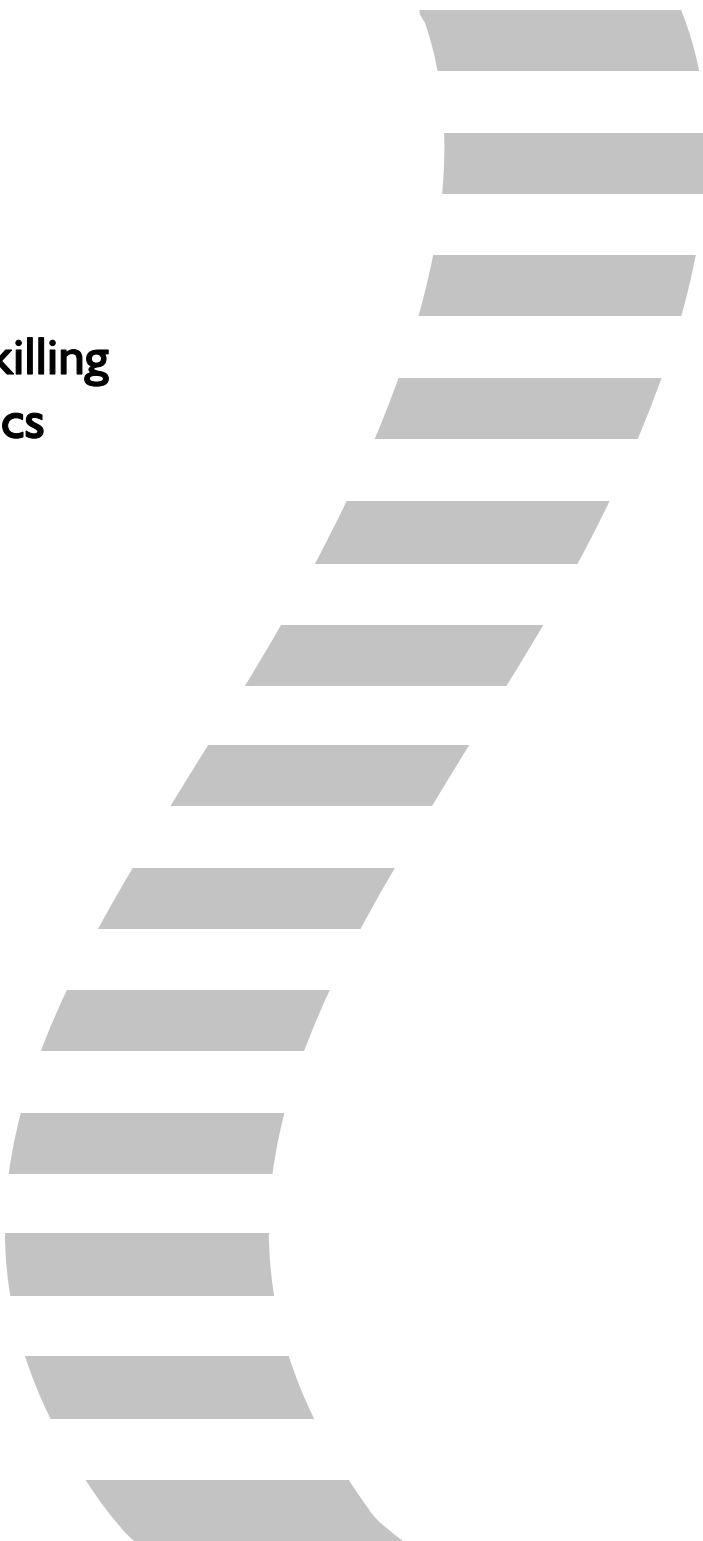
On the other hand the critical function of philosophy means that it must also critique the suppositions on which our society is based; it questions them, questions their appearances that we commonly accept as being natural members of a given culture. This questioning is not frivolous, rather it aims to test the validity of these phenomena, in search of the knowledge that best shows us how to live and coexist. Philosophy in this context is, according to Celia Amorós, a critical discourse, that speaks out against indiscriminately set opinions and prejudices, so as to show the hidden interests and the blind spots (2006: 222). In order to definitively reveal the cultural violence that by means of different discourses can legitimize the structural and direct violence that exists in the world (Galtung, 1996). Cultural violence, as a principal characteristic, dulls our moral responsibility, so that we live with it without questioning it. A nonkilling philosophy should be sensitive to this phenomenon and work in two directions: on the one hand, visibilizing and removing the veil of cultural killing, with its discourses that marginalize, exclude and ultimately serve to legitimize structural and cultural killing; and on the other hand, working to construct and reconstruct discourses that legitimize and promote nonkilling, inclusive rather than exclusive, a philosophy committed to the recognition of human diversity, intercultural solidarity and peace.

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# Nonkilling Physics







# Nonkilling Science

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What relationships are possible between science and technology, on the one hand, and peace, on the other? In our times neither science nor peace are defined in one single way; any current meaning is questioned and unstable. Owing to this fact, I will offer four meanings of the notions of both science and peace—the dominant ones, the Marxist ones, the religious ones, the nonviolent/nonkilling ones—from a historical perspective. I will then present a way of recognising a nonkilling<sup>1</sup> science in the past development of science and then formally define it together with an alternative way of solving international conflicts. The implications for the relationships between science and ethics are derived.

## **Military Science and Military Technology**

Historically, in order to defend a country from enemy attacks, both science and technology have always been applied for military purposes; that means, in brutal terms, to kill men, provided that they are qualified as enemies.<sup>2</sup> In particular, in the last three centuries improvements in weapons

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<sup>1</sup> One may prefer the word “nonkilling” to the word “nonviolence” because the latter one negates an abstract notion; hence, a priori it is included in the Greek way of arguing through abstract, fixed ideas; that implies the cost of defending the word “nonviolence” from the charge to mean passivity. Instead the word “nonkilling” negates an action which is well identified; hence, it does not leave room for misunderstanding. On the other hand, the word “nonkilling” has the disadvantage of referring to a material action, so that it seemingly forgets the psychological violence. However, each of them, because it is a double negated word, is adequate to manifest the alternative way of thinking.

<sup>2</sup> *Bulletin of the Atomic Scientists*, March, 1978, illustrated the historical increase in killing capability by the scientifically improved weapons of all times; killing capability is defined as the number of casualties produced by an hour’s use of a weapon against unarmed persons, whose density on the ground is four per square metre: Sword 20; Cross-bow 32; 19<sup>th</sup> Century gun 150; WWI machine-gun 13,000; WWI tank 68,000; WWI cannon 470,000; WW2 cannon 660,000; WW2 tank 2,200,000; WW2 bomber 3,000,000; A-bomb of 20 kton 49,000,000; H-bomb of 1 Mton 660,000,000. Of course, these figures represent virtual events because they require such a large and densely grouped popula-

powerfully supported an unceasing arms race, each country thus wanting to achieve the winning strategy for all kinds of war.

In the 1940s the Manhattan project to construct nuclear bombs in the US, constituted a milestone in the history of both progress of the arms race and of scientific research; the latter was subsequently organised as an industrial initiative of large groups of scientists financed by funds that only a powerful State could afford. No surprise that the gap between advanced countries and developing countries in scientific research is the greatest (it was, before China started its momentous progress, 97% against 3%); it is similar to the gap in military arsenals only, in particular in nuclear arsenals.

Moreover, military technological progress, and in particular the nuclear arms race, was pursued even by those countries that, being against Western dominant policy, could have reversed this strategic trend; indeed, both Communist and Islamic countries embraced this policy.

In this intellectual framework *peace* is meant in a passive sense, as a trustful delegation by citizens to the experts (and in their turn, to computers!); they, in the name of the best scientific practices, assume the charge of resolving all acute conflicts. In fact, most scientists are working to achieve peace with this attitude.

But as a result of the universal arms race, the level of insecurity of the entire World grew to an unhealthy and absurd level. Through science, which constitutes the best symbol of mankind's highest intelligence with respect to all other species, the human species was able to construct the tools for perpetrating its own destruction. Moreover, the more powerful countries organised their collective defence in such a way that they would be able to launch an attack in a very short span of time, say some minutes, through a highly complex apparatus which for the most part works automatically; the likelihood of a mistake made by this apparatus is very high if we consider the catastrophic consequences of such a mistake. Thus, at the present stage of our development mankind's survival is safeguarded by partially reliable machines!

The story of Einstein constitutes a warning. At the beginning of the 20<sup>th</sup> century Einstein discovered the formula for producing nuclear energy ( $E=mc^2$ ). Then, in WW2 he, although he was an anti-militarist and anarchist, was so frightened by the short-term prospect of Hitler being armed with nuclear bombs launched by means of V-2, that he asked the head of a State (i.e., the US) to build a nuclear bomb; he thought that this was the

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tion which does not exist over 100 persons. But these figures well represent the growth of the killing power that has been at the disposal of those managing wars.

only way of opposing the Nazis' plan to dominate the entire World. But Hitler failed to obtain the nuclear bomb, the US got there first, and then, even though it was not necessary,<sup>3</sup> tested two different bombs on the Japanese people. Of course, Einstein was deeply troubled by the result of his initiative. He was then very active in promoting peace by other means. In particular, he promoted, together with B. Russell, a celebrated Manifesto in which many Nobel prize scientists warned mankind that it faced a dilemma: either to maintain the considerable likelihood of self-destruction, or to promote an unprecedented period of welfare, which could be obtained through the peaceful application of the new scientific theories.<sup>4</sup>

However, his warning was not heeded by dominant World leaders. Nuclear arsenals grew beyond any possible reasonable use for destructive and threatening purposes. After Einstein the link between science and war became so strong that military research prevailed over civil research; for example, in the percentage of US federal funds for research<sup>5</sup> (it was certainly the case in several countries, above all in developed countries). In the 80s US scientific-military research for "star wars" for the first time surpassed both the dimension and the amount of funds of the Manhattan Project; such a gigantic amount of funds polarized the whole of US scientific research. It was unsuccessfully opposed by half of academic scientists, who undersigned a specific declaration of conscientious objection to funds, careers, academic and political power derived from this kind of research.

According to common opinion, unless a new way of defending a country is shown to be viable for the entire population, military violence has to be pursued whatever the costs to other societies, but also whatever social costs are to be supported by its own society.

### Peace as a Scientific Solution

What justifies this deeply rooted attitude? Civil society is led to accept the above costs by their enjoyment at the same time of a large number of new commodities produced by Science and Technology for civil welfare.

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<sup>3</sup> It is known that in July 1945 the CIA intercepted and decoded a message from Hirohito to Stalin who was at that time neutral, asking for an honourable peace.

<sup>4</sup> A. Einstein and B. Russell: "Manifesto," 1955, see the site <http://www.pugwash.org>.

<sup>5</sup> When the East-West struggle was at the height of intensity, an investigation by Woollett (1980), claimed that  $48 \pm 4\%$  of the scientists in the United States were employed full time in arms production.

Indeed, in the history of Western civilisation the interaction of modern science with technology created a virtuous circle; science produced useful technological applications and at the same time technology produced hints for new theoretical ideas. As a result, science significantly improved, beyond any artisan's imagination, the previously primitive development of technology. And technology achieved such a powerful capacity to transform the World that it now constitutes for each person an exoskeleton (Mumford, 1967), which supports an amazing improvement in his life.

Western historical progress in the last three centuries has been greater than any time in the history of mankind. No surprise if it became the fundamental value of the leading Western societies. Furthermore, such progress was able to involve almost all peoples of the World.

Science and Technology are seen to be intelligent, rational tools that produce the best solutions to both social and individual problems. Scientists volunteered to unravel the knotty problems of the World: hunger (the green revolution, GMOs), energy planning (nuclear power), disease (scientific medicine, genetic modification), etc. Owing to this historical and social capability to transform the entire world rationally, science includes within itself a perspective of peace. Indeed, science is supposed to bring peace in so far as it proposes what is the best solution according to the universal reason: *Calculamus!* (Let us compute!) (Leibniz), and the resolution of a dispute will come without any personal effort. In short, according to this dominant attitude, *peace* can be obtained by supporting science, and scientists are the most effective operators for peace in the World, notwithstanding the enormous destructive power that science was capable of achieving for fighting wars.

In the Western world, this pro-science ideology became established because it was accepted by even the strongest political alternative, i.e., the politics of the workers movement. In particular, the Marxist school always supported this kind of science and this kind of progress, wanting to qualify itself as the first political ideology of a scientific nature; it mocked the mythical Luddite worker, who tried to destroy machines in order to save workers' jobs; and moreover it called "renegades" both Duehring and Bogdanov who tried to construct an alternative science of nature.

Some leftist groups criticised science when it became scientism, i.e., an acritical attitude which puts so much trust in science that it attributes to it the power to subjugate politics. The Chinese Cultural Revolution (1958-72) was an attempt to find an alternative to that Western scientific progress that characterized development in the Soviet Union. In Europe the Apollo II mission of US astronauts to the Moon gave rise to a heated debate among leftist scientists.

But they all distinguish Science sharply from Technology; according to them, the latter only is influenced by the dominant centres of social power. Hence, *peace* can be obtained by supporting pure science, while selecting the positive part of technology and at the same time leading people against the negative part of technology. That means pursuing, beyond demonstrations for peace, a political struggle for not only improving positive technology, but also for conquering, through a revolution (which according to traditional Marxism is a violent one), that new society which alone provides social justice, which then generates both good technology and peace.

### Science and Cultural Violence

Putting aside the questions on social misuse of Technology and bad technologies, let us investigate the social role played by Science. We know that in Western civilisation the organisation of Science was such a macho social structure so as to be comparable to nothing less than the institution of the Army. Is the social role played by Science actually a violent one?

Galtung (1990) wisely articulated the notion of violence in the three notions of direct, structural and cultural violence. A culture is violent (at least) when it supports structural violence. By applying these qualifications, it is apparent that scientific culture plays a violent role in present society. If we refer to the most apparent violence, a violence that kills, one has to recall the constantly increasing number of people suffering from hunger (913 million, more than 10% of the World population). Hence, present scientific development proves to be disastrous for the majority of mankind. But people justify the present distressing situation by assuming the prospect of World welfare in the near future, which will be achieved through a certainly beneficent progress for all. Surely, science is one of the main supporters of this justification when it promises for all peoples significant increases in crop production, new powerful technological tools for agriculture, important improvements in social health and all the other benefits of an advanced social life.

Let us ask: Does Science's violence contingently originate from a number of malevolent people misleading it, or from some negative production structures, or does it even originate from within in itself?

In order to answer, let us closely inspect science. Science is a characteristic cultural phenomenon of modern times, unlike any cultural phenomenon of nonwestern societies or even ancient times. Science results from joining experiments with formal (i.e., mathematical) hypotheses. The main characteristic feature of each of its conclusions is to be verified by experiments.

Science is a collective initiative which accumulates objectively verifiable results according to directions of research which explore all sectors of Nature and even the relationship of man with himself. Present Science is a theoretical framework that represents the real world so well that it leaves almost no disagreement between its conclusions and known phenomena. In history, it has become such a great intellectual construction as to constitute a systematic ideology without equal if we look at other systems of thought, which all prove to be weaker, less systematic, and less persuasive in their conclusions. This ideological construction aims to empower mankind to manage Nature in all the specific sectors which it studies.

But it is just this project of empowerment that leads us to suspect a violent role played by science in the history of modern civilisation. As a first approach to a better understanding of the nature of science, let us ask: was the historical development of modern science violent with respect to other cultures?

The birth of science itself had a violent impact on institutional theology, which at that time dominated intellectual life. On that occasion, the Catholic Church won out over the Italian scientist Galileo. But afterwards in Europe modern science had its revenge; it persuaded people that traditional theology was unable to oppose its truths rationally. Then theology was progressively confined to a backward intellectual attitude (Kline, 1953, ch. 17).

Science grew, both in the number of scientists (at present it is carried on by almost a million scientists in the World), in the results (for instance, let us recall that chemistry introduced several tens of millions of new molecules into the environment), and in the fields of human knowledge (from astronomy and mechanics to acoustics, hydraulics, chemistry, geology and psychology), that have been re-formulated on new foundations.

But the expansion of science was so rapid and its impact so great that the single human mind could not grasp it in its entirety. Indeed, modern philosophers have been unable to follow its momentous development. Kant's attempt to reconcile the two ways of conceiving the philosophy of knowledge, i.e., rationalism and empiricism, collapsed when a further development of science—i.e., the birth of the noneuclidean geometries—shook the premises that Kant had maintained to be eternal and ineluctable (in particular, the category of space). Later, most scientists burnt all their bridges with philosophy as well, charging it with being an obstacle to healthy scientific research. Subsequent philosophy was able to suggest merely subjective analyses of science, although science is both a collective initiative and a structural institution of the

present society. Three centuries and half after the birth of modern science, present philosophy is unable to define scientific culture.<sup>6</sup>

In short, the birth of science also determined a crisis in philosophy; not only was faith humiliated, but also reason, as it is developed in a philosophical system. In fact, for three centuries there has been no intellectual system that could rival that of science.

Being constituted by universal laws of Nature generated by objective experiments in a collectively verifiable way, over the centuries science claimed to be absolute and not subject to any kind of constraint, and confidently presented itself as an intellectual enterprise devoid of internal conflicts and therefore able to offer an absolutely certain solution to any human conflict. In particular, Newton (1704, 31<sup>th</sup> Query) wanted to build a new ethics on mechanical laws, encompassing all human behaviour. A century ago, mathematical formalism (Hilbert's programme) claimed that science, when axiomatized, is independent from any link with the outside and is capable of re-stating rigorously the whole of scientific, and even world, culture.

### **Is Western Progress Truly a Development for Mankind, Or Does it do Violence to Spiritual Life?**

In the 1930s the sociologist R. K. Merton (1938) characterized the underlying ideology of the West, i.e., Science, as an individualist, Anglo-Saxon and mainly Puritan initiative. The best representative of this kind of scientific initiative was the chemist R. Boyle, owing to his rigorous curriculum of studies, personal goodwill, the spirit of self-denial in devoting himself to discovering nature's secrets, the universalistic passion for mankind's welfare; in short, he interpreted a modern way of living a monk's life; while the architectonic representation of this kind of scientific initiative was constituted by the University colleges, which were built on the model of the old Roman or Gothic convents and moreover were usually named after Saints or even the Holy Trinity.

Most Christian Churches shared a favourable attitude toward Science. Moreover, a pro-science ideology of this kind penetrated to the common people and was brought to the Third World by priests and missionaries, who believed that scientific progress would give human dignity to the primitive. In this sense, the expansion of science and technology, which brought with it increased welfare, appeared to naïve persons as a spiritual blessing. Indeed, most people embraced an ideology in which science is a modern salvation

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<sup>6</sup> An exception is the posthumously published analysis by E. Husserl (1970).

not only materially (let us recall epidemics or the work of slaves), but even spiritually in that it eliminates both social and psychic evils.

On the other hand, the powerful Catholic Church accused science of being against both religion and spirituality. However, finally, after long, hard struggles, in the 20<sup>th</sup> century the attitude of the Catholic church became favourable. Without an official document, during the Second Vatican Council the group of “incarnationist” theologians gained ascendancy over the group of “eschatologist” theologians; in other words, in the present attitude of the most authoritative theologians, the will to be involved in even the contradictions of the world prevails over the will to emphasise the separation of spiritual life from the evils of the society.

As a consequence, the same theological theory took its place among the other sciences, as a specific science mimicking the techniques and the aims of the sciences that are closest to it. In conclusion, the previously severely condemned Science was accepted as an inevitable reality.<sup>7</sup> What had previously been the enemy, i.e., the Catholic Church, was thus conquered by Science. As a consequence, in the last century, society in general formed a favourable conception of science’s relationship with spiritual life (even in an atheistic sense).<sup>8</sup> In particular, Catholic theology passed from conceiving peace as a metaphysical “gift from God” to taking up the social slogan: “[scientific] progress is the new name of peace.”<sup>9</sup>

Finally, the scientific conception of the World as suggested by Science seemed to be the only one possible. Never in the history of mankind did a cultural phenomenon occur that was so pervasive and so dominant among the people of the World (we find something approaching it in Europe under the Roman Empire and in Christianity in medieval Europe).

### **A Radical Criticism by the Nonviolent Authoritative Figures of the Dominant Scientific and Technological Progress**

What has been said above raises the following question: Is it possible to object to science? The history of the 20<sup>th</sup> century left two legacies; i.e., a bloody list of scientifically performed slaughters (wars), occurring mainly in

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<sup>7</sup> An international Vatican conference has been announced, to be held in the spring of 2009, in which Darwin’s evolutionist theory will be re-habilitated.

<sup>8</sup> See the investigation on 60,000 academic professors reported by R. Stark and F. Roger (2000) and the more recent investigation by E.H. Ecklund (2007).

<sup>9</sup> It is the title of the “Conclusion” of Pope Paul VI: *Populorum progressio*, 1968.



Western countries; but also a marvellous achievement, obtained in a non-western country. Gandhi renewed the people's ability to solve conflicts—even extreme conflicts such as anti-colonialist struggles and rebellions against dictatorships—with nonkilling means, i.e., without weapons that threaten the survival of the adversary.

This achievement also produced a new way of thinking with respect to the Western tradition, nonviolent political theory.<sup>10</sup> In particular, the nonviolent movement did not share the State's belief that in war ever more colossal carnage represents mankind's progress; this social movement radically opposed wars, the arms race and all social structures supporting them. Owing to the strong link between the arms race and social progress, they concluded that the dominant progress itself had to be contested, including the most monumental product of Western thought over the centuries: Science. The great teachers of nonviolence (Tolstoy, Gandhi and Lanza del Vasto) radically criticized Western science. They shared the thesis that science represents the wrong direction taken by the human soul gone astray. The nonviolent Tolstoy started a radical attack on Western science by asking the question: "Science can give answers to everything but the important question 'What is life for?'" (Tolstoy, 1963 [1882]);<sup>11</sup> that is, Science is separate from our life since it lacks an ethical dimension.

Twenty years later, just a century ago, Gandhi (1909) wrote the "red-book" of the Indian revolution: *Hind Swaraj*;<sup>12</sup> in it Gandhi radically questioned, from the viewpoint of ethics and nonviolence, one after the other, all the areas of Western progress. He also suggested how to re-build them on a clear ethical basis, at the cost of being accused of a backward attitude. He also criticised Western science.<sup>13</sup>

Gandhi's criticisms mentioned above have been considered too crude even by the politicians who followed him. But fifty years later, his one Western disciple, Lanza del Vasto, improved on them. He based them upon two sacred texts of the Western tradition.

He interpreted the Original sin (Genesis 3) as an inversion of human knowledge, from the loving contemplation of the World to the knowledge-

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<sup>10</sup> Beyond the several books by authoritative nonviolent thinkers, see Drago (2007).

<sup>11</sup> Weber (1919) reiterates this question as one of the most important ones.

<sup>12</sup> Indian tradition qualifies this epoch as the *Kali Yuga*, the Dark Age.

<sup>13</sup> Anthologies of Gandhi's writings (an endless number of short articles comprising more than a hundred volumes) usually miss these criticisms. In Gandhi (1986), sections 108 and 110, are quoted the more mild ones.

calculation of good and evil used for utilitarian purposes.<sup>14</sup> This exploitative attitude regards not only nature but also people. Hence, this original sin is not the product of the times, but is the origin of every society; it is essentially a structural sin. Within social relationships it grows by exploiting formalities to cover up selfishness. Above all the most formal intellectual activity, i.e., the making of laws, which actually formalises pyramidal social power in a society, and even more so may Science, whose aim is to exploit nature for the benefit of all, hides any number of malicious political aims.

By hiding the attitude of domination of the few over the many, the above *formal* institutions may grow until they completely dominate the people, as an impersonal dictatorship. According to Lanza del Vasto, this extreme social situation is described by Apocalypse 13, through a Beast rising from the sea and dominating the world. He interpreted it as modern Science, because “The irreparable lack of modern science is that it lacks someone who knows it entirely” (Vasto, 1959: 240); that means that at present we are subordinated to the super-human project constituted by scientific progress. Then Apocalypse 13 describes a Beast rising from the earth, whose authority depends on the power of the former Beast. Lanza del Vasto interpreted it as the Machine, or the State-Machine; which, by dispensing numerous facilities and conveniences, leads to a false kind of development, where even the wisest seek personal profit rather than cooperative fairness; so that social life becomes based on such a degree of alienation as to become entirely subjugated by the two Beasts:

And he shall make all, both little and great, rich and poor, freemen and bondmen, to have a character in their right hand or on their foreheads: And that no man might buy or sell, but he that hath the character, or the name of the beast, or the number of his name.

It is easy to see in this description the dictatorships that infested advanced European countries some decades ago. Thus, modern civilisation, by

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<sup>14</sup> Vasto (1959). Summarised in three lectures in English which he gave in Gujarat Vidyapith in 1977; see [http://www.wikilivres.info/wiki/Pilgrimage\\_to\\_Non-violence](http://www.wikilivres.info/wiki/Pilgrimage_to_Non-violence). A similar interpretation of original sin has been already suggested by Toynbee (1948). Incidentally, notice the following statement by Toynbee on religious violence: “A church is in danger of lapsing into this idolatry insofar as she lapses into believing herself to be, not merely a depository of truth, but the sole depository of the whole truth in a complete and definite revelation.” By merely replacing the term “church,” this statement may be applied to Science.

relying upon the worldwide expansion of Western science, is seen by Lanza del Vasto as the greatest renewal of Original sin.<sup>15</sup>

At present this negative attitude toward modern science goes against the present attitudes of Christian churches. It is on this issue that there is greatest divergence between the nonviolent attitude and the attitude of Western Churches, otherwise very sympathetic to nonviolence. But at present this critical vision of Science is shared, at least in part, by some political movements, e.g., the radical ecological movement.

According to the above nonviolent teachers, the meaning of *peace* is the opposite to that attributed to peace by the traditional scientific vision for which its meaning is abstracted from the person's life; while the former, by trying to solve conflicts through interpersonal relationships, relies heavily on the personal witness of the kind of life one chooses. Moreover, peace is understood not just at an individual level; a new ethics is actively sought at the political level of society as a whole. Let us recall that Gandhi's life united Indian and Western culture through the notion of "law"; which in the West is juridical law (of which Gandhi, as a lawyer, was a representative) and in the East is inner law ("the little inner voice"). Therefore, in the wide arena of all social relationships peace is achieved by promoting a new kind of social ethics which relies on co-responsibility,<sup>16</sup> egalitarianism, sharing, justice, community. In short, an ethics relying on trust in man and therefore anti-Machiavellian.

### Any Conflict within Science?

But, if the nonviolent position of the great teachers is correct, i.e., that science represents the breeding ground of the present cultural violence, then should we reject Western science?

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<sup>15</sup> In the history of interpretations of Apocalypse 13, the one above is the first interpretation of a structural kind, i.e., it sees the actors in terms of social structures, instead of some individuals or even abstract ideas. As a consequence, it involves a conversion not only at the personal, but also at the collective level, by means such as the conscientious objection. The foundation of a communitarian life is an instance of an alternative society [Lanza del Vasto founded, first in France (1948) and then in some other countries, the Ark communities, which are similar to Gandhian communities] and struggle to change both evil institutions and negative society.

<sup>16</sup> Some decades later, H. Jonas (1979) started a renewal of social ethics by supporting the view that we have to be responsible with respect to both mankind's survival and the welfare of future generations.

Indeed, the above criticisms of science come from outside science. They may be the result of pre-conceptions, insistently maintained by some who are nostalgic for the past, as well as by those resistant to change.<sup>17</sup> However, I have taken these criticisms seriously, especially those of Lanza del Vasto, and I have devoted thirty years of my scientific life trying to clarify the problem (Drago, 1978, 1986). I asked: Does an alternative science exist? Does a nonkilling, nonviolent science exist? First of all, is there a conflict between two ways of producing science?

Let us start to explore science on the basis of the above questions avoiding what cannot be fully grasped by laymen, i.e., the technicalities or a philosophical debate. We will look at the historical development of the relationship between science and conflict; and then at the conflicts within science.

Two historians of science introduced the subject of the conflict into their illustrations of past science. Fifty years ago, A. Koyré (1957) cleverly interpreted the birth of modern science as determined by the use of the notion of infinity. Remarkably, at that time some scientists (Huygens, Descartes, etc.) supported potential infinity (whose best instance is a counting of natural numbers, i.e., an unlimited process which lacks a final number), whereas other scientists (Newton) supported actual infinity (whose two best instances are the final end, i.e., the point at infinity, of a straight line and the infinitesimal, which is defined as a number which is less than all real numbers).<sup>18</sup> Hence, Koyré highlighted a basic conflict at the birth of modern science. (Notice that in this dispute it was Newton who finally won. But I remark that a century and half later, an entire physical theory, thermodynamics, was born by making use of a mathematics that lacked actual infinity.)

The historian T.S. Kuhn (1969) also suggested a conflictual vision of the history of science, which in his case concerned the development of classical physics as a whole. He thought that science proceeded by constantly applying a paradigm that is shared by the scientists that make up the scientific commu-

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<sup>17</sup> For instance, there exist several celebrated books on the relationship between modern science and Eastern philosophies; e.g. Capra (1976), Zukov (1983). But they compare intuitively scientific notions with those of Eastern philosophies, without examining the formal notions of science.

<sup>18</sup> This shows that science includes a philosophy. Already a century ago one scholar concluded his investigation into the foundations of science by the following insight: "Metaphysics they [the scientists] tended more and more to avoid, so far as they could avoid it; so far as not, it became an instrument for their further mathematical conquest of the world" (Burr, 1924: 303).

nity. But it may occur that a specific case-study (such as the black-body theory in theoretical physics at the end of the 19<sup>th</sup> century) halts the successful applications of this paradigm; such a case-study constitutes a theoretical anomaly, which brings about a scientific revolution (in the above case-study, the quanta revolution), leading to the replacement, through a Gestalt phenomenon in the minds of the entire scientific community by a new paradigm (the corpuscle-wave complementarity) of the previous paradigm (the continuous vision of reality). Owing to the Gestalt change, the new paradigm proves to be incommensurable with the previous one, with the risk of untranslatability, and even incommunicability, between the two paradigms. In other terms, according to Kuhn, science suffers conflicts between successive paradigms.

However, both Koyré and Kuhn made use of, rather the basic notions of the science itself, some philosophical notions; respectively, infinity; and paradigm, anomaly, revolutions. Hence, their analyses are merely philosophical analyses which are cleverly supported by suggestive historical cases; but they did not achieve scientific proof of the validity of their interpretations.

A more accurate inspection of past science reveals that some scientists also introduced conflicts within science. Already at the end of the 19<sup>th</sup> century, Haeckel proposed a new science, i.e., ecology. It originated from a new, global scientific vision of reality (*oikos* = home), as opposed to the local, analytic vision of dominant science. It was moreover based on the notion of cycle rather than on either ideal notions (absolute space in Newtonian mechanics) or functional relationships (the field in electromagnetism). Haeckel's theory was almost ignored by the scientific community. But after a century, it was realised that the various kinds of pollution, the result of ecological ignorance of cycles in nature, constituted a threat to human life on the planet. Although reluctantly, the academic world had to inaugurate a specific University curriculum on ecology; however, it conceived the curriculum as the study of a series of analytical techniques, rather than a global scientific method.

More recently, I. Prigogine (1984) charged Newtonian mechanics with having led to the catastrophic exploitation of Nature; in order to establish "a new Alliance" with nature it is necessary to understand life, for the first time, scientifically. To this end, he proposed thermodynamics as the more appropriate theory for starting to establish a new, harmonious alliance between mankind and Nature. Such a proposal added the mathematical theory of chaos, which claimed to go beyond the deterministic conception of Newtonian mechanics and hence radically changed the previous scientific conception of the world. In addition to the theory of chaos, Prigogine, together with several other scientists, proposed the mathematical theory of

complexity as the new direction of scientific research. In other words, through a new scientific attitude he supported a program of scientific research which would achieve a new kind of scientific development.

Hence, ecology, Prigogine's program and complexity theory propose for the future a vision of scientific progress that will renew that derived from mechanistic science. But they do not clarify the nature of their opposition to traditional science, i.e., whether it is merely cultural and therefore collateral or complementary to traditional science; or whether they are proposing a truly alternative science.

Although they are unable to recognise at what point in the foundations of science there exists a conflict and what its nature is, all the above scientific proposals suggest some philosophical distinctions, e.g. analytical and global, deterministic or chaotic, simple and complex, etc.

Let us now consider what the above implies for the notion of *peace*. Both scientific programs, Haeckel's and Prigogine's, involving respect for life and hence outlawing the very ideas of war, enemy and destructive solutions to conflicts, suggest an active process for achieving peace. They therefore imply positive peace, rather than the passive peace suggested by the dominant science.

This radical change in the meaning of peace is in agreement with the nonviolent meaning of peace. Such an agreement encourages us to proceed in search of a nonviolent, nonkilling science. However, nonviolence adds to the previous meaning by specifying the global method with which one searches positively for peace; nonviolence suggests that in the process of achieving peace in an alternative way to war, it is necessary to focus attention not only on the aim, however positive it may be, but above all on the tools employed, which have to be nonviolent if they are to be adequate for achieving the positive aim.

### **The Birth of Conflict and Pluralism in Science during the French Revolution**

A more accurate analysis of Kuhn's history of science does not support one crucial point of his interpretation, i.e., the birth of classical chemistry, which was not determined by any "supra-mechanical aspect";<sup>19</sup> rather, it is

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<sup>19</sup> Kuhn (1969, ch. 9): "The large body of eighteenth-century literature on chemical affinities and replacement series also derives from this supra-mechanical aspect of Newtonianism. Chemists who believed in these differential attractions between the various chemical species set up previously unimagined experiments and searched for new sorts of reactions. Without the data and the chemical concepts developed in that process, the later work of Lavoisier and, more particularly, of Dalton would be incomprehensible

wellknown that it was the result of a cultural battle against the Newtonian tradition of interpreting chemical affinity through gravitational force. Moreover, a similar analysis does not support Prigogine's thesis that the birth of thermodynamics was no more than "an abortion" of the alternative that he is searching. Rather, past historians have been unable to understand the genius of the founder, Sadi Carnot;<sup>20</sup> moreover, one has to remark that thermodynamics seems at a first glance to be an alternative theory to Newtonian science because it was formalised without actual infinity and all its variables are global in nature. A more accurate historical appraisal is therefore necessary of the origins of these two scientific theories, and, more in general, of the corresponding period of the history of science.

The French Revolution wanted to reform Newton's science, accusing it of being mythical in nature (Gillispie, 1962). Lavoisier is known for having done so in chemistry by rejecting Newton's notion of affinity as gravitational force. He intentionally published his main book in 1789, the same year as the French revolution; in the introduction he wrote that he sought to bring about a "scientific revolution." Moreover, during this period all scientific theories were founded anew: geometry (Monge, L. Carnot, Poncelet), infinitesimal calculus (L. Carnot, Lagrange), mathematized mechanics (L. Carnot, Lagrange, Navier, Poisson) and, in addition, thermodynamics was born (S. Carnot) (Drago, 1982, 1990, 1991a,b, 1997, 2004). Historians evaluate the revolution in geometry, i.e., Lobachevsky's invention of noneuclidean geometry in the remote Kazan University, as a long-term consequence of the French revolution.<sup>21</sup>

A leading figure of this renewal of science was L. Carnot. In opposition to celestial mechanics (the best application of Newton's mechanics, which relies upon the metaphysical notions of absolute space and absolute time), he founded terrestrial mechanics (dealing with the impacts of bodies; and

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[this footnote refers to the historian Metzger]. Changes in the standards governing permissible problems, concepts, and explanations can transform a science." Here it is apparent that Kuhn wants to attribute Lavoisier's foundation of classical chemistry to a "supra-mechanical aspect of Newtonianism." Hence, he does not see any alternative to Newton's mechanics. Otherwise, his conception of the scientific conflict as a conflict between a paradigm and its successive paradigm only (not among contemporary paradigms), produced a paradoxical result; classical chemistry was to be considered the new paradigm, succeeding in the subsequent theoretical physics to Newtonian paradigm.

<sup>20</sup> Fox (1988) offers a final appraisal on the research carried out according to the dominant attitude among the historians of this case-study, i.e., interpreting S. Carnot's exceptional theoretical novelties by means of historical factors of technological nature.

<sup>21</sup> Yushkevitch (1989); Drago (1995); Cienia, Drago (1995).

more precisely, the mechanics of machines; notice that each of them is a complex aggregate of bodies, which was considered by L. Carnot globally); he founded the theory on the practical concept of work and not on the metaphysical one of force-cause. Moreover, he re-formulated both of the mathematical theories of his times, i.e., geometry and infinitesimal calculus, in an alternative way; furthermore, he suggested to his son Sadi the key ideas that gave rise to thermodynamics, whose theoretical structure is very different from that of Newton's theory.<sup>22</sup>

L. Carnot's main scientific achievement was to suggest an alternative to the dominant organization of a scientific theory. Instead of the pyramidal organization (which we find by Aristotle and then in both Euclid and Newton; at the top it puts "evident" principles, from which all laws are deductively drawn; we will call it AO), L. Carnot's new kind of organisation (we will call it PO) is centred on a general problem (in mechanics: that of finding the invariant quantities during a phenomenon of an impact), *to which the development of the theory finds a general solution.*<sup>23</sup>

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<sup>22</sup> L. Carnot (1783, 1803, 1813, 1803). A first comprehensive study of Carnot's work is C.C. Gillispie (1971). About the scientific relationship between the two Carnots see ch. III D. Notice that L. Carnot's theory (which tackles an extremely complex situation, constituted by a machine composed of an unlimited number of levers, wheels and impacting parts), and even more so S. Carnot's theory (which tackles the complexity of a gas, where there is a jumble of millions of billions of billions of molecules mutually impacting), show that a complex situation may be easily solved in scientific terms when the appropriate theoretical parameters are recognised. In fact, the aforesaid theories have abandoned the analytical attitude of examining the single parts, or molecules (a typical feature of Newtonian mechanistic physics), composing a system, and instead proceed to assess the situation using global parameters such as energy, volume, temperature and gas pressure. These theories were the beginning of a conflict with Newtonian theory, hence a conflict between the various physical theories. Notice that nothing is more complex than a conflict, because it is always changeable and unforeseeable in all its implications. Hence, the birth of complexity theory, underlining the complex phenomena which have to be formalised by a non-local, non-analytical attitude, may be seen as the first approach to notion of conflicts between scientific theories; in my opinion, such complexity is more relevant than complexity in reality. The weakness of present complexity theory also appears when one considers that it does not make a clear choice between the analytical and the global attitude.

<sup>23</sup> See the lucid presentation of the alternative in the organization of a scientific theory, although he qualified as "empirical" the OP: L. Carnot (1783: 101-103; 1803: xii-xix); Drago (2004). Independently, both H. Poincaré and A. Einstein arrived at



Also S. Carnot founded thermodynamics by posing a central problem (maximum efficiency in energy transformations); and by then finding a new method (Carnot cycles) that solves this problem.

The discovery of two ways of organizing a scientific theory suggested to L. Carnot a pluralistic attitude toward the foundations of science. He clarified it in infinitesimal analysis. In this theory he accepted and supported all the various foundations of analysis on the basis of a pluralistic attitude. His book received wide popular acclaim, but was then dismissed by the “war-like” attitude of the academic world of the subsequent age, according to which in any scientific theory proposed—if only for didactic reasons—there was only one foundation which cancelled out all others.

Soon after the French revolution in Kazan, a remote town in Russia, Lobachevsky (who had studied French books) was able to propose a new kind of geometry. He did not just change a single postulate (the fifth), but posed the problem of how many parallel lines there are and put forward an original method for solving it. He thus changed the entire theoretical framework of Euclidean geometry.<sup>24</sup> A few decades after the failure of the French Revolution, the labour movement (unfortunately ignoring the new scientific theories) wanted to start an alternative theory in social sciences. Marx’s theory tackled the central problem of how to overcome capitalism in the history of mankind; first he studied the relationships between factory owner and workers, rather than that between buying and selling in the market; then through his studies he sought a new political method, based on scientific principles, for bringing about the social revolution.

I would also point out that the both Carnots and Lobachevsky’s theories are alternative not only in their organization, but also in their use of mathematics; instead of Newton’s (metaphysical) infinitesimal calculus, which includes actual infinity (or its inverse, the infinitesimal  $dx$ ), they make use of a mathematics that is appropriate for operative calculations; i.e., it relies on potential infinity only. We might conclude that the French revolution gave rise historically to pluralism in scientific theories.

What was the relationship in this period between science and conflict (war)? Over the centuries, science has always been exploited for war purposes.<sup>25</sup> However, an alternative attitude came into being during the

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the same result: H. Poincaré (1903, ch. “Optique et Electricité”; 1905, ch. 7); Einstein (1957); Miller (1981: 123-142)].

<sup>24</sup> Drago (1995); Cicenia, Drago (1995); Drago, Perno (2004); Bazhanov, Drago (sub.).

<sup>25</sup> For a general view, see Nef (1952). A relevant exception was C. Huygens who

French revolution. The military devoted itself to improving civil society. In other words, at that time there was a process of conversion of those working in the military to civil purposes. Most of the new scientific theories of the French revolution were the work of military scientists: Monge, L. Carnot, Poncelet, Navier, Poisson; in particular thermodynamics was born almost entirely when former soldier S. Carnot turned his attention from cannons, mythologised as having almost unlimited power, to civil machines, which he studied from the point of view of maximizing their efficiency (Salio, 1982).

On the other hand, during the French revolution civil society wanted to apply human reason to social life as a whole, in particular to creating an alternative State to the old absolute, metaphysical State (recall the blue blood of the kings!).

In fact, the French revolution succeeded (notice, before Napoleon) in reforming the State's military sector. It turned the mythical military structure of the aristocracy, which was aimed at the kingdom's expansion, into an institution that was an expression of the people's will simply to defend civil society. Indeed in 1793, when the European monarchies united against revolutionary France, a military structure was rapidly re-built by means of the first great "levée en masse." It was launched by the supreme head of the French army, Lazare Carnot. With a military background, he before 1789 had theorized the new strategic theory of total (popular) defence (as opposed to the ideology of "total war" that had just come into being). In 1793 he successfully applied this strategy to defending democracy. The French people, although weaker in destructive weapons, achieved "Victoire."

Exactly two centuries later, in 1989 the peoples who freed themselves from the dictatorships of Eastern Europe reiterated this policy of people's defence and defeated a super-power which was ready for the greatest destructive confrontation in mankind's history. The French Revolution had therefore anticipated the only possible alternative we have today to the mythical and disastrous arms race, i.e., collective defence only; and moreover a defence that is not entrusted to the mythical destructive power of an enormous military arsenal, but to the solidarity of a population wanting to protect both itself and its democratic institutions. Hence, in national defence there exists an historical tradition which constitutes an alternative to merely destructive defence, of which nuclear defence is an example.

More in general, in the history of the relationship between science and war, the link between the dominant science and the development of ever

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wanted to exploit cannon powder to build an engine.

more destructive weapons is clear. However, the French revolution established a new, alternative link; even extreme conflicts are solved in the wisest way, as it was first exemplified by Gandhi and in the 20<sup>th</sup> century by many other peoples. What is extraordinary in the French revolution is that the new notion of defence was developed by individuals from the military.

But in the following period, the policy of the Restoration was to present science as it had been before French revolution, i.e., without internal conflicts, and to outlaw many scientific theories. After 1850, when the bourgeoisie took social power, most of them were rehabilitated; but some of the previous theories have never been accepted;<sup>26</sup> in particular, Marx's theory; but also some "revolutionary" scientific theories (e.g., those of L. Carnot). On the other hand, Lavoisier's chemical theory survived despite academic opposition, because it was supported by chemists and chemical engineers, who were indispensable to contemporary society.<sup>27</sup>

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<sup>26</sup> Indeed, the Restoration institutionalized academic science according to a number of authoritarian constraints: (1) the setting up of scientific academies with rigid professional roles; (2) "rigorous" procedures to communicate and accept scientific results; (3) embedding science in a sophisticated (mathematical) language which acted as a barrier against those who wished to discuss fundamental problems; (4) splitting up scientific work in several fields, that are sharply separated one from another (e.g., economics from physics, in particular thermodynamics; mathematics from computing machines, etc.); (5) maintaining scientificity as the final criterion also for solving social issues; that is, a monolithic science set above all other social values. See Ben-David (1974).

<sup>27</sup> Three decades ago an alternative within scientific theories was suggested by an important social problem, i.e. the energy crisis, which recalled the scientific alternative of one century and a half earlier. Owing to the oil crisis of 1973, the Western world discovered that as a society it had never taken into account energy consumption and energy waste. In reaction, the dominant scientific attitude foresaw the same rate of progress as in previous years, i.e., an exponential growth of energy consumption; as a consequence, society had to produce a huge amount of energy (mainly electrical). It seemed that nuclear power, developed thanks to most advanced modern scientific theory, i.e. nuclear physics, could guarantee such levels of production. It was presented as the only viable solution and its opponents were not credited with rationality. Yet surprisingly, the second principle of the older theory of thermodynamics contradicted the development of nuclear power. The American Physical Society discovered that, strangely enough, for over one hundred and fifty years Western society had not applied the specific scientific theory of energy, i.e., thermodynamics; whose central idea is that in any energy transformation the optimum yield is given by a S. Carnot cycle, whose efficiency depends on the difference between the temperatures of the heat source and the temperature of the final use; hence, it would be wise to choose that

### Formally Qualifying the Conflicts within Science

We have considered some conflicts concerning the history and the philosophy of science; there have even more decisive conflicts within science after an acute crisis in the first years of the 20<sup>th</sup> century, through studies investigating the internal structure of science; that is, the foundations of both mathematics and logic.

The study of the foundations of mathematics recognised an essential conflict between two kinds of mathematics; i.e., the dominant mathematics that is taught in scientific Faculties and includes actual infinity (which we will call AI), and the mathematics that makes use of potential infinity only (we will call it PI); the latter mathematics is closely approximated by the mathematics that represents the working of the computer. Four decades ago this conflict was formally founded.<sup>28</sup>

As evidence for the idealistic nature of the dominant mathematics, it should be noted that past mathematics, being metaphysical in nature owing to the use of actual infinity in several specific notions, such as infinitesimals, never dealt with conflicts before World War I; i.e., two centuries and half after the birth of infinitesimal analysis, some scientists succeeded in doing so when they discovered that two coupled difference or differential equations describe phenomena of mutual competition, including the arms race. Euler could have developed this theory two centuries before, if he had not been prejudiced by the idealistic nature of the dominant mathematics. Between the two World Wars game theory was born; it analyses in detail the aspects of a conflict by

energy source whose temperature is as close as possible to the temperature of the final use. By disregarding this principle, the present social organization systematically leads to an enormous waste of energy (APS Study Group, 1976). The alternative energy planning chooses low temperature and renewable sources of energy, because they are more suited to the final use of energy at the local level. Hence, the question: "How much energy?" was followed by the question: "What kind of energy?" The debate made it clear that there exists a distinction between two radically different ways of producing energy for a society (US Senate, 1975; Lovins, 1977). One may trace back the internal conflict within technology to S. Carnot who began his booklet on thermodynamics discussing energy planning for a society; moreover, he warned of energy crises and foresaw the great change in future society brought about by the widespread use of heat engines; and even more importantly, he suggested the criteria for achieving the greatest efficiency in energy transformations.

<sup>28</sup> Bishop (1967). Notice that the dominant mathematics, the so-called "rigorous" mathematics which was developed by both Cauchy and Weierstrass in the 19<sup>th</sup> century, includes actual infinity even in the basic notion of limit. See Kogbetliantz (1968, App. 2).

means of few integer numbers; the mathematical technique is so elementary that even Archimedes or Galileo had the technical capabilities to develop it.<sup>29</sup>

As an important consequence, game theory inaugurated a new mathematical relationship with reality which is alternative to the relationship established by Newton's theoretical physics; instead of the metaphysical mathematics of the infinitesimals, it makes use of the more elementary theory of constructive mathematics, i.e., the theory of integer numbers.

It should be noted that almost in the same period of the birth of game theory, theoretical physics too had to admit that all reality is constituted, in a "complementary" way to waves, by quanta which require the mathematics of integer numbers; and soon after game theory, theoretical biology also came about in association with discrete mathematics (e.g., a neuron as a two-state switch, the constitution of DNA by an integer number of bases, etc.) all outside continuous mathematics and even more outside the AI. Since that time a conflict was apparent between the new scientific theories and traditional science linked to the idealised mathematical continuum (including AI; for instance, the notion of infinitesimals).

In the above we have already seen that this novelty was anticipated by science during the French revolution. Chemistry was born from the mathematics of integer numbers; and more in general both L. Carnot's mechanics and S. Carnot's thermodynamics made use of the mathematics of the PI only.

At the end of the 19<sup>th</sup> century there was confidence that logic, having been mathematicized, had achieved an absolute nature. Nevertheless, at the beginning of the 20<sup>th</sup> century a conflict also arose in mathematical logic; in addition to classical logic, several kinds of different mathematical logics were discovered. In particular, it was discovered that it is not the law of the excluded middle (either "A is true" or "not-A is true"), but the law of double negation ("Two negatives affirm"). This distinction constitutes the borderline between classical logic and almost all kinds of nonclassical logic; in the latter kinds of logic two negations do not affirm (for example: "Absolved owing to the *lack* of evidence of *guilt*" does not mean that the accused person is clean-handed, but that the court had insufficient evidence

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<sup>29</sup> Newmann, ed. (1956); Rapoport (1964). A celebrated application of Rapoport's cleverly describes the arms race, carried on by the two super-powers, through the game of prisoner's dilemma.

to establish whether he was guilty or not). Hence, mathematical logic is split into (at least) two incompatible branches.<sup>30</sup>

Again one can trace back the use of nonclassical logic to some centuries before, in particular to some scientists of the period of the French revolution. In their original scientific work one finds several sentences which are doubly negated statements of nonclassical logic: “We call element what we *could not* yet *decompose*” (Lavoisier); “A *never* ending motion is *impossible*” (L. Carnot and S. Carnot); “This hypothesis [of two parallel lines to a given one] does *not* lead to any *contradiction*” (Lobachevsky); “These two postulates [constancy of the light speed and relativity] are *only apparently irreconcilable*” (Einstein); “One *cannot* simultaneously measure an object's position and speed with *absolute* [= *not* relative] accuracy” (Heisenberg). Each of them play a fundamental role in the respective scientific theory.

It is precisely on this logical point that the enormous experience of Freud, who founded the theory of inner conflicts, was based. He explained his method in a paper of a few pages (1925). He points out that the analyst asks the patient to speak freely about say, what he dreamt. The patient tells a dream; he met his mother; but a dispute arose and he, in a fit of rage, nearly killed her; but then he urges: “I did *not* want to kill her.” The analyst must notice this negation and, in turn, has to add one more negation: “It is *not* true that the patient did *not* want to kill his mother.”

The doubly negated sentence provides the clue to recognising the trauma that the patient has repressed in the past (i.e., denied in his inner self), which, however, emerges again and again. This enables the analyst to recognise the repressed part of the patient and hence to start the healing process.<sup>31</sup> Let us remark that Freud's whole theory is in agreement with the PO theory; he poses the problem of the patient's healing, then solves it through the invention of a new method, which interprets the dialogue inductively through doubly negated sentences constructed upon the patient's negated sentences.

Nonclassical logic also plays a fundamental role in conflict resolution when it is considered in general terms. Let us recall that the great discovery of the 20<sup>th</sup> century was the nonviolent method. In fact, the very term nonviolence (as nonkilling) is a double negation (killing being a *negation* of life); notice that it

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<sup>30</sup> Dummett (1977); Prawitz, Melnnaas (1968). In the following I underline the negative words in a doubly negated statement in order to show its nature.

<sup>31</sup> It is also wellknown that Marx, the theoretician of social conflicts, tried, by turning up side down Hegel's metaphysical dialectics, to obtain a new logical way of arguing; but unsuccessfully, although he made use of many double negations.

does not have a positive equivalent (notwithstanding Gandhi's efforts to substitute for it the affirmative word "satyagraha"); thus, the two negations do not affirm. On the contrary, the military way of theorising the resolution of a conflict in the barracks makes use of classical logic, enforcing absolute certainties: "The *enemy* of my *enemy* is my friend" where the two negations affirm; and also of the equivalent logical law of the excluded middle: "Either friend or foe," "Either patriot or stranger," "Either obedience or disobedience," etc.

Hence, unlike the classical logic of the military, the word "nonviolence" introduces an entirely new way of reasoning with respect to the dominant one. This fact is also apparent in logical terms; indeed, classical logic guarantees rigorous deductions, whereas nonclassical logic is the basis of inductive argument.

Since both logic and mathematics are the foundations of all branches of science, from the above two kinds of conflicts it follows that there is a fundamental division within science as a whole, giving rise to intellectual conflict.<sup>32</sup>

Such a division within both logic and mathematics generates divisions within each scientific theory through both the plurality of its formulations and the radical variations in meanings of its basic notions when changing the formulation of the theory and even more when changing the theory itself. For instance in geometry, a straight line conceived of either as an infinitely prolonged segment (Euclid and Lobachevsky) or as possessing two end points (Hilbert); in theoretical physics, either absolute (in Newton's mechanics) space or relative space (in L. Carnot's mechanics, and even more in special relativity); continuous time and time as before and after (in the same two different formulations) and even space-time (in special relativity for which, moreover, mass fuses with energy); the classical notions of both wave and corpuscle playing complementary roles in quantum mechanics, etc.

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<sup>32</sup> We have already remarked that in the energy debate, involving essentially scientific principles, there were two different and irreconcilable positions, of equal scientific validity; i.e., nuclear energy planning and soft-energy planning. In fact, a similar division occurred in each applied scientific sector. A similar division is clear in agriculture, between chemical-industrial agriculture on the one hand, and organic, or biodynamic, or permacultural agriculture, etc. on the other. A similar division also exists in the health sector, between the dominant bio-chemical medicine and homeopathy, or acupuncture, or herbal medicine, etc. In general terms, "alternative technologies" were invented and were claimed to be independent of dominant technologies. There is no easy definition of these alternatives; however some instances are the bicycle instead of the motor car, wooden instead of concrete houses, solar panels instead of electricity for heating water.

Notice that the two different logical worlds are mutually incompatible in their basic tenets. But, each doubly negated sentence is an open sentence; hence, nonclassical logic is not exclusive in nature (as is classical logic; let us recall military logic) it allows mutual dialogue and co-existence; that is, it introduces a fundamental pluralism.

### A Verification: Pluralism in Stating the Inertia Principle

The clearest demonstration that science as a whole diverges with regard to its formal foundations is obtained by an examination of the inertia principle, which, being the starting point of the most important theory of traditional science, Newton's mechanics, represents the beginning of modern science.

Descartes-Newton's version is: "Every body perseveres in its state of being at rest, or of moving uniformly forward in a straight line, except insofar as it is compelled to change its state by a force acting on it" (Newton, 1687: 12). An alternative version was suggested by (again!) L. Carnot (1803: 49): "Once a body is at rest, it will *not move* by itself; once it is in motion, it *will not change* either its speed or its direction" (where *changing* and *moving* are the negation of "rest," the only situation which does not require scientific explanation).<sup>33</sup> It is worth noting that L. Carnot's doubly negated sentence (e.g., *not move*) does not have a corresponding positive word in science; in fact, in order to be able to express the same idea positively, Newton makes use of the verb "to persevere" (or sometimes "to continue"), which is clearly a moral and animistic word. Here we have a drastic alternative about which kind of logic, either classical or nonclassical, shapes a theory. Being a basic principle, the version of the inertia principle determines the entire organisation of the subsequent development of the theory; Descartes-Newton's version is an AO of mechanics, whereas L. Carnot's version a PO.

In addition, it is worth noting that Newton wrote: "Every body." These two words include even the bodies that we will discover in the future; here we recognise an *infinity in action*. He also appeals to infinity in action when he wants to establish with total accuracy—an accuracy which implies the actual infinity—when a force is impressed upon the body or not, if the body is absolutely at rest or not, if the motion is perfectly rectilinear or not, and perfectly uniform or not; and if the distance that the body covers is infinite or not (Hanson, 1965). All these qualifications require such accuracy as to

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<sup>33</sup> This remark was made by Hanson (1965) who ingeniously produced an almost exhaustive analysis of the inertia principle. See also Drago (1988).



sever the null value of each of the above magnitudes from any other value, however little; they require not an unlimited infinity, but an actual infinity. All the above qualifications are avoided by Carnot's version of the inertia principle, which instead includes only the typical properties detectable by experimental physics, i.e., the only ones that are operational and calculable, and which do not use actual infinity. Being a basic principle, the inertia principle establishes the kind of mathematics of the subsequent development of the theory; Descartes-Newton's version mathematics with AI and L. Carnot's version mathematics with PI.

In the history of mechanics this kind of alternative theory of mechanics had already been put forward by Leibniz.<sup>34</sup> He moreover added two basic ideas. First, in the human mind there exists "two labyrinths of human reason." One is about infinity, either actual or simply potential. We recognise that in our times the first labyrinth was formalized by the option concerning the kind of mathematics, either the classical or the constructive. The other dilemma is between "law" (i.e., to behave according to some a priori principles) and "free will" (i.e., to investigate heuristically). We recognise that at the present time this second labyrinth is formalised by the option concerning the way of organizing a theory, either by using a few abstract principles from which all laws may be rigorously derived, as theorems, by means of classical logic; or organizing a theory to search inductively for a new method for solving a general problem.

Leibniz (1686) also suggested that there are two basic principles of the human mind: the principle of noncontradiction and the principle of sufficient reason. The latter was stated by him with the following words: "*Nothing is without reason*";<sup>35</sup> really, a doubly negated sentence. We recognise that he was suggesting the two basic principles of the two different kinds of logic, respectively the classical and the nonclassical. In short, the two dilemmas that Leibniz cleverly recognised represent, although in no more than philosophical terms (i.e., infinity and organization), the two above-illustrated basic options, which at the present time are well formalized in, respectively, mathematics and logic.

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<sup>34</sup> Drago (2001, 2003). In retrospect, Leibniz' mechanics lacks two theoretical improvements: the introduction of the index of elasticity and the principle of virtual velocities (which was formulated by Bernoulli one year after Leibniz's death).

<sup>35</sup> As an improvement of Leibniz' philosophy of science, see Drago (1994). In particular, Popper's celebrated philosophy of science is interpreted as a new attitude inasmuch as it first made an implicit use of non-classical logic (Drago, Venezia, 2007).

Every theory chooses one of these two options. Being two independent dimensions, when we cross them we divide the space of all theories into four quadrants and each may be considered to represent a particular *model for scientific theory*.<sup>36</sup> Being severed one from the other by mutually conflictual choices, these models represent a well-rooted pluralism in science. Moreover, the two options provide the human mind with the cardinal points of a compass by which it is oriented among the innumerable theories of the modern world. In such a way one obtains an answer to the problem put by Lanza del Vasto (see section 5); a person can obtain a comprehensive knowledge of science.

### **Away from Monopolies in both Science and National Defence**

The general conclusion is that, despite the changes brought about by the French Revolution, for two hundred years the scientific community refused to consider the internal conflicts in science. Scientists tenaciously presented Science as a monolithic construction with no possible alternatives, i.e., as the only possibility for all activities and human thought to be “at peace.” This undisturbed science claimed to be capable of reconciling all social conflicts: for example, in the early years of the 20<sup>th</sup> century, Science claimed to be capable of reconciling social conflicts in the factory system by introducing Taylor’s scientific principles for equitably evaluating human labour; between the 50s and the 80s science claimed that it could reconcile the East-West clash through scientists’ superior formulae on disarmament. In the 70s science imposed nuclear power; in solving the problem of energy planning, they wanted to guarantee mankind universal welfare and therefore peace. These solutions (the choice of nuclear power) were justified by the belief that science is making the greatest rational effort possible to avoid such internal conflicts.

Let us recall that Galtung’s important distinction between three types of violence: personal, cultural and structural. We see that the dominant science falls within cultural violence, not only because it justifies structural violence but also because it monopolizes the truth by means of its results, which are obtained regardless of human life, presenting itself as the only, unquestioned solution to human problems. The *violence of science consists*,

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<sup>36</sup> See Drago (1996). A crucial philosophical notion proves to be the incommensurability between two theories (Drago, 1999). Nowadays many think of science as a variety of “scientific models” by means of which one sketches reality. In the present paper the word “model” has a more precise meaning; here, there are only four models, each having its own peculiar features, which can be traced back to a pair of choices regarding the two options, which constitute the foundations of science.

*more than in justifying structural violence and war, in its claim to monopolise the truth on any subject, including wars.* All of which was dictated by the motto (which parallels the old Catholic Church's motto: "*Nulla salus extra hanc Ecclesiam*"; No salvation outside this Church; which monopolises souls): "*Nulla ratio extra hanc scientiam*" (No reason outside this science), which monopolises human reason.<sup>37</sup>

And indeed, notwithstanding the scientists' formulae, the factory conflicts, the East-West clash and the energy problem have persisted, showing that historically the initiatives of modern science look like a huge, terrible deception, even a form of subservience to a super-human power, as Lanza del Vasto suggested.

What I have shown above regarding the foundations of science leads precisely to the opposite conclusion of the belief in peaceful science; i.e., *the fundamental nature of science is conflict*, owing to the options regarding its foundations. In the previous sections I argued that at least through the different versions of the inertia principle, science does not have a monopoly of truth; every single scientific theory (even mechanics) is divided in formally alternative formulations.<sup>38</sup>

But even at the present time the dominant science hides such a conflictual nature by presenting one truth only, which actually is just the truth of the dominant model of scientific theory, which in turn corresponds to the dominant power in society. Thus it is necessary to dethrone the cultural violence which is operated by science which monopolizes truth and claims, in a pre-conceived manner, to bring peace. In order to understand how to achieve peace we need to find a new scientific approach which will generalize the solutions to conflicts concerning the foundations of science; i.e., we have to change from the paradigm of the monopoly of the truth to the pluralism of the four models of scientific theory.

### **Formalising the Alternative in National Defence and in Conflict Resolution**

In the last decades several authors have supported the idea of an alternative to destructive nuclear capacity. Some of them even proposed a nonviolent strategy in national defence; against nuclear weapons they set

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<sup>37</sup> My motto sums up the paper by Feyerabend (1984).

<sup>38</sup> Of course, alternative science does not concern experimental laws, but only the foundations of a scientific theory; i.e., the mathematical techniques for formalising experimental laws, the theoretical principle for understanding them systematically, the organization of them, and the logic for arguing about them.

people's noncollaboration and nonviolent mass demonstrations.<sup>39</sup> The 1989 nonviolent revolutions against the Yalta division based on nuclear threat occurred in both China and successfully in Eastern European countries. However, going beyond historical events, is there a possible alternative rationality to that underlying both military institutions and its conflict resolutions? What kind of rationality would it be?

Let us remark that, owing to the mechanical effects of military technology (even those involving other scientific theories, i.e., chemistry, electromagnetism, nuclear theory, etc.), the military appeals to the rationality of the dominant mechanics.<sup>40</sup> But previously we saw, through the two versions of the inertia principle, that there exists an alternative in mechanics; and, more in general, there are alternative formulations for each scientific theory.

A possible objection is that L. Carnot's alternative inertia principle, because it belongs to a mechanics based on impacts, necessarily concerns violent events. But the history of impact theory in physics is almost unknown.<sup>41</sup> At the beginnings of modern science Wallis suggested that in order to formalise the impact of bodies one had to refer to the ideal model of a perfectly hard body, whose shape never changes. (Newton agreed; he thought that God created the World that was constituted by hard bodies, which in time were transformed into soft bodies.) The perfect hardness of the ideal body did not allow resilience; hence the conservation of energy, as a general law, was considered invalid for two centuries.

But Leibniz objected that in human relationships it is desirable to behave flexibly; hence, the most suitable model of the theory of the impact of bodies is the perfectly elastic body; owing to its resilience, the impacts among bodies of this kind conserve energy and other quantities (momentum, momentum of momentum) that the bodies have in common; so that in the new idealisation the impact is no longer a macho clash, but a mutual exchange of these three common quantities. The birth of thermodynamics (1850) was necessary for the conservation of energy to be established as a general law, and, as a consequence, Leibniz's model of elastic impact. Here we have an instance of positive scientific progress promoting nonviolence, since Leibniz-L. Carnot's mechanics, which is based upon the

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<sup>39</sup> Let us recall King-Hall (1958). Then nonviolent defence was supported by Bose-rup, Mack (1974); Ebert (1981); Galtung (1984); Sharp (1985); and Drago (2006).

<sup>40</sup> On mechanics and social thinking, see Haret (1932); Freudenthal (1986).

<sup>41</sup> For the basic notions, see Scott (1971). For Leibniz' basic remark see Leibniz: Letter to Lambert van Velthuysen (1671). For general considerations see Drago (1996).

elastic impact, is a nonviolence-oriented theory rather than the Newtonian theory of hard bodies which is a macho-oriented theory of impact.

Is this kind of rationality relevant to national defence? One of the greatest strategists of all times was (again!) L. Carnot. His strategy was an exclusively defensive defence, which relied upon the use of strongholds, since they “oblige the enemy to fight against bastions and walls, rather than human beings.”<sup>42</sup> Moreover, he theorised strongholds as machines, to which he applied his formula for the highest efficiency, based upon the conservation of energy.<sup>43</sup>

Surely, after the failure of the Maginot Line L. Carnot’s defensive strategy has to be changed. But we can retain L. Carnot’s basic scientific notion, that of the greatest efficiency. It is determined by acting in a reversible manner; i.e., never perform an action that cannot be subsequently reversed without loss of work. Such a notion constitutes a representation of the gentle way that is necessary to solve a conflict through consensus. In weaker terms, this imperative constitutes the precautionary imperative, which is strongly supported by the ecologist movement.

This notion of maximum efficiency was then applied by his son, Sadi, giving rise to thermodynamics. By going beyond S. Carnot’s partial results, we recall that in thermodynamics the greatest efficiency means the minimum of the entropy change ( $\Delta S = \min$ ). This idea was already stated in the social sciences as the ‘thermodynamic imperative’ and it was emphasised as being able to address the whole of social life (Lindsay, 1963). When we apply this imperative to conflict resolution, in specific wars, it dictates the minimum cost of human lives since the death of a human being is the most irreversible process (Drago, Sasso, 1993).

Moreover, given that entropy is the notion that approximates most to the notion of the disorganisation of a system, we can translate the above formula as the minimum of change toward disorganisation in the system. Now such an imperative no longer implies the defence of something material, i.e., the stronghold, but of democratic social institutions; precisely what the German term for alternative defence (*Soziale Verteidigung*)

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<sup>42</sup> It is the main notion of L. Carnot’s “Eloge de Vauban” (1985).

<sup>43</sup> This formula states the equality of the work done from the outside and the work of resistance performed the machine; work being defined as force times velocity times time, we have the formula  $FVT = fvt$ . From it one sees that the main advantage of a stronghold is to oblige the besieger to act more rapidly than the besieged, so that a smaller number of besieged persons are able to resist a greater number of besiegers.

emphasises. In short, such a scientific formula appears to human reason to be the best imperative even with regard to national defence.

Which kind of general rationality then results? First, the rationality of making use not of absolute tools (AI), such as nuclear weapons; but above all interpersonal relationships, which are merely unlimited tools. Secondly, the rationality of the alternative in organisation (OP), which in social terms means a self-reliant organisation that aims to solve an important social problem: in our case, a people's defence.

It is not so surprising that this kind of rationality was anticipated by some of the greatest strategists: Sun Tzu, L. Carnot and Clausewitz. They wrote books illustrating their strategies and wanted, unlike Napoleon, to share the strategy of the chiefs with the people, down to the humble soldier. Moreover, they all posed the problem of the best strategy to be chosen, the criterion for which was the saving of human lives. Furthermore these books are full of doubly negated statements; that is, they argued with that nonclassical logic which is necessary if a new method of solving a problem is to be found.<sup>44</sup>

We thus confirm what Gandhi often repeated, that nonviolence is a science that is even older than Papin's invention of steam pressure power.<sup>45</sup>

Over the last few decades a radical change of this kind has begun in our way of reasoning deriving from a notion from the history of science. According to Kuhn, changes of paradigm do occur after all. The historical change that should take place today in national defence may be defined with the following phrase: "Peace as a change of paradigm" (Nagler, 1981). The present paradigm is the arms race and the achievement of maximum destructive power. The anomaly is constituted by the threat of an Armageddon as the result of the application of this paradigm by two nuclear powers. Fortunately, a new model of conflict resolution is already known and was pointed out by great scientists (Einstein, Born), i.e., nonviolence. Indeed, it suggests an empirical method for solving conflicts through "experiments with truth," as Gandhi put it; using a method that we have already seen in Freud, against the instinctual idea "He is my *enemy*," it sets its doubly negated sentence: "It is *not* true that he is my *enemy*." By putting it in different words, we have seen in the above that the very word "nonviolence" implies a completely different logic.

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<sup>44</sup> These strategies are analysed in some papers edited in Italian; they are quoted and summarised in Drago (2006).

<sup>45</sup> See a detailed justification of this dictum of Gandhi in Drago (2000).

This radical change in the cultural paradigm of collective defence was already recognised as a need by the highest political World institution. The last UN Secretary-General, B.B. Ghali (1992), instituted the Corps of civil Peacekeepers and civil Peace-builders which were to be considered on a par with military bodies. The paradigm change began from that date on; in other words, a period of trans-armament—a period of democratic struggle between the two main models of defence—began, at least in principle, at the level of World politics. At present, we are preparing the beginnings of trans-armament within each State.<sup>46</sup>

### A New Relationship Between Ethics and Science

As a consequence, there is a new relationship between science and ethics. No longer is science an absolute value, to which ethics is subordinate. When a scientist constructs a scientific theory, at very start he makes two basic choices, respectively on the kind of infinity and the kind of organisation; owing to these choices found the theory, ethics comes first, science second. As a consequence, Tolstoy's question is answered; the traditional science claiming to come before ethics is dethroned, and science is subordinate to ethics. In the following table I summarise the relationships between science and ethics according to both the past (i.e., Western) attitude and the nonkilling attitude.

**Table I.** Western and nonkilling attitudes to both science and conflict

	Western attitude	Nonkilling attitude
<b>Science</b>	"One" science, i.e., <i>Unity</i> of science; unresolvable conflicts between scientific theories do <i>not</i> exist	Among scientific theories there exist conflicts which are <i>unresolvable</i> ; pluralism even in science
<b>Ethics</b>	There exist human conflicts which are <i>unresolvable unless</i> the opponent is destroyed	It is <i>impossible</i> for a human conflict <i>not</i> to be resolvable, owing to the <i>Unity</i> of mankind

Let us remark that the dominant Western view of science requires the belief in its *Unity*. This belief never will be verified, since it refers to all times to come; it is an absolute belief. In comparison, the belief in the *Unity* of mankind, which should be applied to conflict resolution, is more suited to

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<sup>46</sup> Juridical statements similar to the main sentences of *Agenda for Peace* have been approved by the Italian Parliament: Laws 230/1998 and 64/2001.

the life of humanity; in short, it is a more valid value for mankind.

The same conclusion is reached when we compare the costs of the two beliefs. With the former the citizen is simply required to delegate to scientific experts, allowing them bring about the scientific destruction of an indeterminate number of human beings; while with the latter, the citizen, doubting the absolute value of mankind's intellectual constructions, involves his/her personal life in finding the best solutions to collective conflicts.

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# Nonkilling Psychology





# Psychology of Nonkilling

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The broken sleepes, the dreadfull dreames, the woe  
Which wonne with warre and cannot from him goe.

(George Gascoigne, combat veteran in the 1500s, *Dulce Bellem Inexpertis*, verse 40)

## Killing as Trauma

While the ill effects to those who are killed are obvious, what is the impact of *doing* the act of killing on the human mind? In the early years, there were psychologists who proposed that it was a natural aggression instinct. However, unlike eating and sleeping, the vast majority of people never actually engage in killing other human beings, so this does not make much sense. The idea was more a part of the times out of which it came, when wars and executions and the stray riot were being justified as being something that could not be helped. In recent decades, psychologists have been very clear that killing is not something the human mind naturally tends toward.

But can we go further than that? What about the idea that killing has a negative impact on the mind? That it tends to make us sick?

I was making this kind of assumption when considering the idea of “battle fatigue,” or in current technical psychology terms, “Posttraumatic Stress Disorder.” Yet when I dug into the literature on the subject, I found that this assumption was not widespread. The idea of PTSD had been spread to many different kinds of traumas, but even for the original group of soldiers, the idea that killing could be a cause of the disorder was considered only now and then; I was able to pull together a fairly comprehensive list (MacNair, 2002).

Around the beginning of the twentieth century, Jane Addams noted aftereffects of having killed. Known for her innovations in social work, she reported what she saw with visits to WW I soldiers. After documentation of men who refused to shoot to kill even in the trenches, she talked of insanity among the soldiers in various places, and of their being dazed after participating in attacks. She talks of hearing “from hospital nurses who said that delirious soldiers are again and again possessed by the same hallucination—that they are in the act

of pulling their bayonets out of the bodies of men they have killed” (Johnson, 1960: 273). This is clearly symptom B(3), which will be covered below.

One book, *On Killing*, written by an army psychology professor, deals with the subject in the sense Addams had in mind. Lt. Col. David Grossman (1995) comes to the question of PTSD as the result of killing in combat from a perspective different from peace activist Jane Addams. The purpose of his book was to study “the psychological and sociological processes and prices exacted when men kill each other in combat” (Grossman, 1995: xxi).

He looks at the various conditions under which the immediate “psychiatric casualties” resulting from combat will be high or low, and debunks the original assumption that “battle fatigue” results from fear of injury or death. For example, the expectation of high civilian psychiatric casualties was behind the Nazi bombing of London, and the British and American bombing of Germany, but these turned out to be counterproductive. Psychiatric casualties were quite low, and the population strengthened its resolve. On the other hand, psychiatric casualties were high in the Nazi concentration camps. Grossman attributes the difference to the “Wind of Hate.” Impersonal threats are not as unnerving as face-to-face hatred.

Most importantly, he goes over evidence that the human being has a high resistance to killing. S. L. A. Marshall was an official army historian who did a study by interviewing soldiers after combat to ascertain exactly what they did. He found only 15-20% of them ever shot their weapons. Even under situations of self-preservation, the resistance to killing is strong. While some have questioned Marshall’s methodology, there are other pieces of evidence from history that during several wars, the rates were similarly low.

Fear does not account for the nonfirers, for they did other combat duties that were amply dangerous. Of those that do shoot, evidence shows that the majority intentionally aim high to avoid killing anyone. Grossman concludes: “Looking another human being in the eye, making an independent decision to kill him, and watching as he dies due to your action combine to form the single most basic, important, primal, and potentially traumatic occurrence of war” (Grossman, 1995: 31).

As a result of changes in U.S. Army training techniques, those that did shoot during the war in Vietnam were up to 90 to 95% of the combatants. The military instituted training that was more realistic and therefore closer to operant conditioning. This worked, but at a price: “this program of desensitization, conditioning, and denial defense mechanisms, combined with subsequent participation in a war, may make it possible to share the guilt of killing without ever having killed” (Grossman, 1995: 260).



## Definitions of Posttraumatic Stress Disorder

One of the definitions of PTSD comes from the American Psychiatric Association (1994) and its *Diagnostic and Statistical Manual*, currently in its fourth edition and usually referred to as *DSM-IV*. Another comes from the World Health Organization (1992) in its *International Statistical Classification of Diseases and Related Health Problems*, currently in its tenth revision and normally referred to as *ICD-10*.

These are a shortened version of the symptoms of PTSD from *DSM-IV*:

- A. The person has been exposed to a traumatic event
- B. The traumatic event is persistently reexperienced in one (or more) of the following ways:
  - (1) recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions
  - (2) recurrent distressing dreams of the event
  - (3) acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated)
  - (4) intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
  - (5) physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
- C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:
  - (1) efforts to avoid thoughts, feelings, or conversation associated with the trauma
  - (2) efforts to avoid activities, places, or people that arouse recollections of the trauma
  - (3) inability to recall an important aspect of the trauma
  - (4) markedly diminished interest or participation in significant activities
  - (5) feeling of detachment or estrangement from others
  - (6) restricted range of emotion; inability to have loving feelings
  - (7) sense of a foreshortened future
- D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:
  - (1) difficulty falling or staying asleep
  - (2) irritability or outbursts of anger
  - (3) difficulty concentrating
  - (4) hypervigilance
  - (5) exaggerated startle response

The nature of the nightmares can be unusual. They can be like a videotape in the head, replays of the actual events. They can also involve thrashing around in bed. The definition in ICD-10 is in more of a narrative form:

Arises as a delayed or protracted response to a stressful event or situation (of either brief or long duration) of an exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost anyone. Predisposing factors, such as personality traits (e.g., compulsive, asthenic) or previous history of neurotic illness, may lower the threshold for the development of the syndrome or aggravate its course, but they are neither necessary nor sufficient to explain its occurrence. Typical features include episodes of repeated reliving of the trauma in intrusive memories ('flashbacks'), dreams or nightmares, occurring against the persisting background of a sense of 'numbness' and emotional blunting, detachment from other people, unresponsiveness to surroundings, anhedonia, and avoidance of activities and situations reminiscent of the trauma. There is usually a state of autonomic hyperarousal with hypervigilance, and enhanced startle reaction, and insomnia. Anxiety and depression are commonly associated with the above symptoms and signs, and suicidal ideation is not infrequent. The onset follows the trauma with a latency period that may range from a few weeks to months. The course is fluctuating but recovery can be expected in the majority of cases. In a small proportion of cases the condition may follow a chronic course over many years, with eventual transition to an enduring personality change.

Anxiety and depression are actually separate phenomena, and as such they are not listed in the *DSM-IV* definition, but they are commonly recognized as associated, as the *ICD-10* says. Those diagnosing must differentiate between PTSD and closely related disorders related to panic or anxiety, and these can be concurrent conditions. Alcohol and drug abuse are also clearly distinguished but very commonly associated with PTSD. All of these things—*anxiety, panic, depression, substance abuse*—can be also included in the psychological consequences of killing, along with such things as increased paranoia or a sense of disintegration, or dissociation or amnesia at the time of the trauma itself.

I have coined the term "Perpetration-Induced Traumatic Stress" (PITS) to describe this as a sub-category of PTSD. The term "perpetration-induced" was inspired from the following quotation, in which authors are discussing PTSD as a legal defense in criminal trials: "It must be able to be established... that PTSD existed at the time of the violent crime and did not stem from it, as in some perpetrator-induced trauma" (Hall, Hall, 1987: 49). I drop the word "disorder" because the symptoms are of interest even if it does not rise to the level of a disorder.

## How Does PTSD from Killing Differ from Other PTSD?

Hendin and Haas (1984: 31) note that aggression—often explosive—is a common feature with combat veterans. Unlike concentration camp survivors, for example, for whom such outbursts would be maladaptive, those who used aggression in combat continue to use it in peacetime. The authors observed that “comparably, veterans who had traumatic combat experiences but never fired a weapon are a minority whose posttraumatic stress disorders do not include explosive expressions of anger” (1984: 27-28).

Unlike the other groups, veterans are the one group on which sufficient quantitative data is available to allow for some generalizability at least to similar veterans. The largest study of any at-risk population for PITS was a United States government-commissioned survey of veterans of the American war in Vietnam, done in the 1980s (Kulka et al., 1990). The National Vietnam Veterans Readjustment Study (NVVRS) used a stratified random sample of Vietnam-era veterans and a comparison group of veterans. I have done a large secondary analysis of this data, using the 1,638 theater veterans (MacNair, 2002, ch. 2 and appendix).

PTSD scores were indeed more severe among the perpetration groups compared to the control group, consistent with the consensus of previous literature (see MacNair, 2002 for a review). The size of the difference as measured by Cohen's *d* is very high in the main group, at .97 being close to an entire standard deviation of difference. The effect sizes were moderate in the sub-sets which were select for having people more likely to have PTSD.

Could killing simply be a marker for having been in heavier combat, which would naturally be more stressing? No, the greater severity was not merely due to the level of battle intensity, as remembered and rated by the veterans. Those who had killed in light combat had a higher mean score than those who had not killed in heavy combat. Multiple regression also showed that the variable of killing still added explanation once battle intensity was controlled,

In checking the patterns with discriminant function analyses, the hypothesis of greater explosive outbursts as compared with other symptoms was confirmed. This point has important therapy implications. It also relates to the question of prevention. Violent outbursts can lead to violent activity.

Other points also loaded on the side of those who said they had killed. Not surprisingly, the item of never telling anyone about something that was done in the military always loaded on the side of the perpetration group in whatever way that was measured. Inability to express can complicate heal-

ing from the trauma, and may be connected to the fact that intrusive imagery, the unwanted thoughts and nightmares, also always loaded high.

Also commonly loading on the perpetration groups, but not as strongly, were hypervigilance, alienation, and survivor guilt. The issue of justified guilt was not covered.

Avoidance items were less consistent, sometimes appearing for perpetration, sometimes nonperpetration, and not often entering at all. In this study, the same veterans were asked about how they coped in Vietnam, and an analysis of their answers showed that avoidance was a coping mechanism more for those who said they did not kill than for those who said they did. There is some intuitive sense to this, that avoidance behavior would be more characteristic of those who avoided killing. Therefore, those who kill may already be at a lower threshold of avoidant behavior as a personality disposition, and this helps to account for the inconsistency. Perhaps they require a greater level of avoidant symptomatology to surpass a group which started off with more than they had.

A surprising finding was that concentration and memory problems consistently loaded on the side of the nonperpetration groups. Perhaps the more active are less inclined to have such problems than the passive are. Perhaps it goes the other way, that preceding concentration and memory problems interfere with getting into situations in which one kills. Perhaps the greater tendency toward hypervigilance in those who kill counteracts concentration problems by requiring more concentration. For an excellent example of killing-induced hypervigilance, see Steven Spielberg's movie *Munich*, about Israeli assassins of individuals believed to be involved in the killing of Israeli athletes at the Olympics.

Only one scale used in a sub-set had the component labeled disintegration. This included items of a sense of unreality, experience of depersonalization, unrealistic distortion of meanings, restlessness or agitation, self-hatred, hostility toward a part of the body, perception of high pressure, panic, and disintegration. This set of symptoms is not normally included in PTSD scales and is not in the official definition. However, when included in a discriminant function analysis, this factor was second only to the intrusion factor. This suggests that this construct may be very important in the population of those who killed.

What about killing in a context where the results are never seen? Bombing from an airplane might have different psychological consequences. There are many anecdotes from Vietnam of airplane bombers who were comfortable with their work until they were shot down and on the ground were faced with the actual results. The quantitative studies have not included this ques-

tion, so research is still needed, but one history professor noted from her interviews that “technology still failed to render the dead completely faceless. Combatants used their imagination to ‘see’ the impact of their weapons on other men, to construct elaborate, precise, and self-conscious fantasies about the effects of their destructive weapons, especially when the impact of their actions was beyond their immediate vision... So while technology was used to facilitate mass human destruction, it did very little to reduce the awareness that dead human beings were the end product” (Bourke, 1999: xviii-xix ). She cites a poem written by William J. Simon in which an airplane pilot named ‘Chopper Jockey’ says that in the jungle below, “with blood of men I have killed, I see the faces of men I have never seen” (Simon, 1972: 42).

### Executioners

Is there evidence that carrying out executions constitutes a traumatic event to those who participate? There are not studies using the PTSD concept, but the description of people’s experiences in participating in executions shows a definite possibility.

As for the first requirement, a sense of anxiety or horror accompanying executions, there are many sources suggesting this. When *Corrections Today*, a popular style magazine for prison professionals, ran a series of articles on “Managing Death Row” in 1993, the view that executions are much more anxiety-provoking than other prison work was presented without opposition. In a highlighted quotation, one warden said, “For most of the members of the execution team, the procedure is a gut-wrenching, highly emotional experience” (Thigpen, 1993: 56). Another warden put it this way: “The next four weeks were among the most difficult of my life. Like many of you, I have seen riots, grisly murder scenes and other prison crises. Yet the impending execution weighed on my mind constantly... [it would] nearly consume me with personal anxiety and concern for our people” (Martin, 1993: 62, 64). In his own book, another warden said simply, “Try as I might, I could not separate myself from the horribleness of it all” (Cabana, 1996:17).

Sleep problems would be expected, and wardens have also reported this: “In the weeks since the most recent execution, I had slept with troubled dreams, fitfully trying to make sense of the whole thing. Looking at the man in front of me, I wondered if I would ever sleep peacefully again” (Cabana, 1996: 16). Another warden said: “I didn’t sleep well that night. I didn’t sleep well the night before either. I’d sleep a bit, then wake up. When I

think about this, it washes over you, it comes in a jumbled up mess of things” (Johnson, 1998: 179).

Peritraumatic dissociation (dissociation at the time of the event) is a major predictor for PTSD. Dissociative symptoms include time distortion, a sense of unreality, and detachment from the event and from other people. In a study of retrospective reports of such dissociation among Vietnam veterans, researchers concluded that “the tendency to dissociate during a traumatic event, although affording the victim some degree of detachment, distancing, and unreality, does not confer long-term protection against, but rather constitutes a risk factor for, subsequent PTSD” (Marmar, et al. 1994: 906).

Warden Cabana (1996) especially has several illustrative passages noting the time distortion and unreality: “How long the final minutes would be for both of us! ... The telephone was still ringing, but somehow it sounded far away” (pp. 12-13). “In a quivering, staccato voice, I read for what seemed an eternity” (p. 14). “The ‘last mile’ seemed an eternity, every step a painful reminder of what waited at the end of the walk” (p. 187). “Although the struggle seemed to go on forever, it was, in reality, over quickly... It had taken barely a minute for Connie Ray Evans to lapse into unconsciousness” (p. 189).

Physiological reactivity to the event would primarily be manifested in increased heart rate. There are other kinds of reactivity (skin conductance, blood pressure, even brain wave patterns), but measuring them requires equipment. However, when people can hear their hearts pounding, this can be a sign of psychophysiological reactivity. Trombley, for example, reports one officer as saying: “I could hear my own heart beating more than anything else that I’m conscious of in that last three, four, five minutes after the execution warrant has been read” (Trombley, 1992: 213). Warden Cabana gives a more detailed illustration of physiological reactivity at the time of the event, right before the execution as he approaches the cell of the condemned: “The heavy old steel-framed windows made a loud noise as they were slammed shut one by one. Each time I heard the noise echo up and down the tier, my skin crawled and I jumped just a little. The electric lock released the door at the end of the tier with a crack. Everything seemed magnified—every sound, every whisper... My feet were heavy, I felt as though I had to force my legs to move, and I could feel my heart pounding in my chest” (Cabana, 1996: 185). The jumpiness at loud noises is especially noteworthy, and common to reactions to trauma.

Numbing is another expected reaction. In lay terms, this can be expressed as being “blank,” as the chaplain of Potosi prison explains how he finds executions: “Exhausting. You’re running on adrenaline. You’re stressed out. And

when it's all said and done, because you're running on the adrenaline of stress, it's anticlimactic... I've talked to Mr. Roper... I said, 'How do you feel?' And he said, 'Blank.' I said, 'Blank? That's it?' And he said, '*That's all I'm feeling. Blank.*' There's nothing there. You keep thinking there's going to be some emotion. You're searching for something... It's just a blank" (Trombley, 1994: 274-275; emphasis in original). Johnson found a similar reaction, quoting an officer: "I just cannot feel anything. And that was what bothered me. I thought I would feel something, but I didn't feel anything" (Johnson, 1998: 181).

What about chronic reactions? One of the most extensive historical sources comes from the extensive diary kept by James Berry, who served as primary hangman in Great Britain from 1884 to 1892 (Atholl, 1956). Berry's thoughts ran the gamut of post-trauma reactions. The aversion of James Berry to his work was mentioned throughout his diaries. In keeping with the language of the time, it was frequently referred to as a case of nerves: "Berry... never lost an opportunity of praising his wife for... the way she sustained him, especially at times when he was deeply depressed and near a nervous breakdown as a result of some experience at a hanging. Indeed, he recorded that on occasions when he should be setting out for an execution and the whole idea nauseated him, it was only his wife's reminder of his duty that enabled him to go through with it" (Atholl, 1956: 60).

The symptom of persistently reexperiencing the event is shown in Berry's experience with one of his hanging victims: "For the rest of his life, Berry was haunted by Lee. Haunted not merely by that terrible half hour in Exeter Prison which he re-lived a hundred times..." (Atholl, 1956: 131) Warden Thigpen put it this way: "I witnessed eight human beings move from life to death... Those experiences remain indelibly imprinted in my mind" (Thigpen, 1993: 58).

The following testimony comes from Larry Myers on June 28, 1991, before the State of Nebraska Pardons Board. He reports that in 1959, John Greenholtz was the Assistant Warden at the Nebraska Penal Complex, the official in charge of the last previous execution in Nebraska. In 1971, "John and I were chatting about various subjects when out of the blue he asked me if I had ever witnessed an execution... He said that he was physically sick for two days afterwards, he was vomiting and had fits of depression. He said he had nightmares for years after, and that the gruesome images still haunted him, even 12 years later!" (pp. 35-37).

Those nightmares are also part of that cluster of intrusive symptoms, and another example comes from former Canadian execution John Robert Radclive: "I used to say to condemned persons as I beckoned with my hand, 'Come with me.' Now at night when I lie down, I start up with a roar as vic-

tim after victim comes up before me. I can see them on the trap, waiting a second before they face their Maker. They haunt me and taunt me until I am nearly crazy with an unearthly fear” (Johnson, 1998: 190).

Another symptom, acting or feeling as if the traumatic event were recurring, can involve hallucinations or flashbacks. People who have these are disinclined to mention them, but James Berry did refer to the “victims I sometimes see in my waking dreams” (Atholl, 1956: 140). The term “waking dreams” may indicate this kind of experience.

Intrusion and avoidance are not mutually exclusive. They can go together, because avoidance can be strongest when intrusion is strongest. Warden Cabana shows how this works: “Following Connie’s execution, I plunged back into my work with a sense of urgency. For a time, it must have seemed that I was pursuing my duties with a vitality and determination not seen before. In a very real sense, I was. Each new day’s crises kept me from having to think or remember. But nothing could dispel the feelings I harbored inside. Try as I did, I could not remove the lingering doubt or bewilderment” (Cabana, 1996: 191).

Note the workaholic nature of coping with the trauma. This helps to account for why many of our politicians who are combat veterans seem to be over-functional rather than dis-functional. Being workaholic has advantages over being alcoholic, after all, and both serve as “self-medication” for people who do not understand how to heal from a trauma—or even that they need to. One study of men at Harvard who had fought in World War II showed that those with more PTSD symptoms were actually more likely to be listed in *Who’s Who in America* (Lee, Vaillant, Torrey, Elder, 1995). Veterans of World War II can often push post-trauma symptoms away with work until the time they retire, and then the symptoms hit them (Sleek, 1998).

### Other Groups

Police who shoot in the line of duty become an exception that proves the rule: while killing is normally ignored or minimized as a cause of trauma, this is one group where it is regularly admitted in studies that shooting is more traumatizing than being shot at (MacNair, 2002, ch. 5). The incident is seen as something an officer is naturally trying to avoid and is compelled into by the criminal being shot at. Nevertheless, there are instances where the bureaucracy does not understand that shooting can lead to PTSD; in one tragic case detailed by the American television newsmagazine *Dateline* (2000), their failure to do so despite ample evidence led to the officer’s suicide.



Defenders of abortion believe that it is a form of medicine. Opponents believe it to be killing. If abortion is the taking of a human life, then the psychological consequences of PITS could be expected among those who perform abortions. If we find no such aftermath, the case that abortion is not violence at all is strengthened. In this way, psychological research can add insight to the debate. Such research is yet to be done in a way that could be considered conclusive, but quantitative evidence does suggest post-trauma symptoms among staff from sources that regard this as a problem to be solved so that access can continue (Such-Baer, 1974; Roe, 1989). and case studies and anecdotal evidence also comes from such sources. Additionally, evidence comes from staff members who have left and joined the anti-abortion movement and would therefore be more expected to offer a negative view (MacNair, 2002, ch. 6).

What about killing not of other humans but of animals? Euthanizing animals is hard on staff, but this is not surprising since that staff is select for loving animals (White, 1998). Studies of slaughterhouses have not been done enough to really say. Blood sports, such as hunting, bullfights, cock-fights and dogfights provide another possible avenue of study. The exhilaration that often goes with the kill may have a place in the understanding of "addiction to trauma," which will be covered below.

In a report of the American television newsmagazine *60 Minutes* (air date January 11, 1998) a Spanish bullfighter is reported as saying that he dreams of bullfighting every night—a possible post-trauma symptom. He identifies it as such by pointing out that tennis players do not have the same problem, because the tennis player is not in danger of losing his or her life. This does complicate perpetration with risk to one's own life, but the risk is chosen. This bullfighter raises bulls himself, and when asked if it made him sad to think of those bulls dying in the ring he said, "You know every—each bull that I—that I fight and kill him, he's a—he's a part of you for the rest of your life. You understand that?" This suggests other intrusive symptoms to go along with the dreams.

Finally, with human beings, there is the case where killing is requested: assisted suicide, active euthanasia by which an action takes a life, and passive euthanasia where it is inaction that causes the premature death by withdrawal of life-saving treatment. When this killing is involuntary or pressured, of course, it is not much different than ordinary killing, with medical context to make it seem less repulsive. What about those cases in which the person being killed truly asks for and desires to be killed? Setting aside questions of bigotry against those with disabilities, possible pressures from family members with financial motivations, and traditional discriminations

based on gender, race, or economic status, the case of someone asking to be killed may entail different psychological consequences than the majority of people who are clearly unwilling to die.

What kind of consequences accrue to the doctor or other person who assists? In the United States, Jack Kevorkian has been a famous example, and his obsession with death in art and otherwise could easily be a form of the intrusive imagery and the re-enactment symptom. Still, Dr. Kevorkian is not the most typical case, and no diagnosis has been asked for or made.

Holland is the current source of the greatest numbers of doctors not only participating in euthanasia, but willing to admit so to researchers, as shown in its governmental R Emmelink Report. One book on Dutch euthanasia (clearly opposed to the practice) does find evidence of aftermath for the doctors. One doctor, when asked if he paid a price for his involvement, answered "The price of any dubious act is doubt... I don't sleep for the week after." (Hendin, 1997: 52). Hendin remarks on this case: "That he felt his life had been changed by participating in the death of the woman tormented by memories of the concentration camp suggested that he might now be afflicted by disturbing memories of her and others whose lives he had ended... he seemed pleased if not relieved to be talking about euthanasia or consulting about it rather than still performing it" (p. 53). Of course, all this one example shows is that an opponent who is searching for anguish can find it. The evidence is only sufficient to suggest that the effort required for further research is warranted.

History provides many other groups that might have suffered this form of trauma, and from which we might gain insight if we know more about this. For example, the Aztecs had massive human sacrifices on public display going on at the time the Spaniards arrived. If results of this included massive perpetration-induced traumatic stress, might this help in any explanation of subsequent events? What about other instances of human sacrifice, which were common in the ancient world?

The application to wars throughout history is obvious, but practices from cruel maintenance of slavery to those carrying out massacres to bloody purges in protection of dictatorships or monarchies would also apply. Kings and rulers who commonly engage in ordering and carrying out killing may have incidents in their histories which become more understandable when the concept of PITS is applied. The historians studying those particular problems may wish to take the concept into account, and search for mention of symptoms. No diagnosis could be made, of course, but historians commonly conjecture that certain diseases were present at some level based on evidence of mention of symptoms.

Of course, the terminology in historical documents will be much different than modern psychological clinical terms. Terms to look for include nightmares, haunting, nerves and nervous breakdown, and sleep troubles.

### **Addiction to Trauma: The Thrill of the Kill**

Here is a paradox in the study of stress symptoms from perpetration that has been noted in several studies: there is often a sense of thrill, of exhilaration, that accompanies the act. The opposite of horror is the actual reaction. Furthermore, this thrill can be addictive.

Grossman (1995: 234-237) characterizes exhilaration as a common stage in the killing process. He quotes a Rhodesian veteran: "Combat addiction... is caused when... the body releases a large amount of adrenaline into your system and you get what is referred to as a 'combat high.' This combat high is like getting an injection of morphine—you float around, laughing, joking, having a great time, totally oblivious to the dangers around you... Problems arise when you begin to want another fix of combat, and another, and another, and, before you know it, you're hooked. As with heroin or cocaine addiction, combat addiction will surely get you killed. And like any addict, you get desperate and will do anything to get your fix." Many of the examples Grossman offers involve fighter pilots. He does not know whether they actually experience this thrill sensation more frequently, but they may be more willing to talk about it since descriptions of downed aircraft may be more tolerable in polite company than more graphic descriptions of face-to-face killing.

Solursh (1988) reports on interviews with 22 combat veterans that showed that prominent in 19 of them was a "clear history of combat, killing and flashback or nightmare recall as excitatory, similar to an adrenergic 'rush.'" He quotes a case study, a combat veteran who says: "It's hard to duplicate this high with drugs, except the only drug I know is cocaine, that would reproduce this high for you, the same type of high of killing."

As these were selected to be men with chronic PTSD, it is clear that this "rush" is not protective against PTSD and may well aggravate it. Solursh suggests the possibility that the intrusive imagery symptoms of nightmares and flashback may be accompanied by this "rush," thereby contributing to maintaining that symptom. He reports the symptoms to be especially strong when respondents were responding to demands of the workplace or authorities under whom they felt powerless. The re-enactment is a mental assertion of power. Thus, the exciting nature of the original event gets repeated in the

benefit of excitement in the recall. However, as is common with “highs,” there is a let-down period afterward, when powerlessness and frustration returns.

Nadelson (1991) reports on five case studies of combat veterans who had an “attachment to killing.” He similarly finds analogies to a high from drugs made among these men. Wikler (1980) is another who through interviews with veterans was told that there were soldiers who were referred to as the “killer types,” those who “seemed to enjoy their work, getting ‘kicks’ or ‘highs’ from killing” (p. 98).

There is a possible biological explanation for this “rush.” Stress situations, especially highly traumatic ones, can lead to endogenous opioid analgesia (van der Kolk et al., 1985; Southwick; Yehuda; Morgan, 1995) and related complicated biochemical reactions. That is to say, during high stress the brain naturally releases opioids, which in the world of artificial drugs is related to morphine, heroin, and cocaine. The veterans’ use of those specific drugs as analogies to the high they feel is not coincidental. There is a hypothesis of an actual biochemical connection. This leads to the irony that a reaction of a sense of thrill can still be seen as a reaction to trauma. Those brain-produced opioids are an adaptation for those in danger, because they relieve extreme pain. It is becoming addicted which is not adaptive. In historical terms, it may offer some insight into the term “bloodthirsty.”

It also sheds new light on the thrill associated with blood sports such as cockfights and bullfights and hunting. As Grossman (1995) says in this context, “What hunter or marksman has not felt a thrill of pleasure and satisfaction upon dropping his target?” (p. 234). Hunting and similar activities can even be a continual socially-accepted means of re-experiencing the trauma of killing as a substitute for flashbacks, nightmares, and other intrusive thoughts, serving a similar function.

The Spanish bullfighter interviewed by *60 Minutes* (air date January 11, 1998) persists in plying his trade in spite of the danger involved (his father was killed) and objections of his family. This suggests the possibility of addiction. From the same report, an American bullfighter in Spain is quoted as saying, “When you come out of this experience and—you appreciate everything you have around you; the skies look bluer, the birds sound better, the food tastes better... I mean, if I could tell you what it was, maybe we could bottle it and sell it and save a lot of people—you know, if we could bottle the adrenaline, if we could bottle that feeling a matador has after a fight and sell—and it’ll be wonderful—manic—manic depressants and people. Be a wonderful thing.” Is there a resemblance between this statement and others made about those times when the feeling is in fact put in a bottle, a syringe, or a powder?

## Violence Begets Violence: Theories of Causes of Violence

In addition to this possible direct method of having acts of violence perpetuate themselves into more acts of violence, there are many theories in psychology that deal with the psychological underpinnings of violence which is planned by groups. These are already helpful in understanding how killing events occur, but there is also a role for PITS to cause or exacerbate them.

One category of psychological causes of violence is the attitude and thoughts held about the targets of the violence. Bandura et al. (1996) pull together a set of such reasoning. The first mechanism is mentally transforming reprehensible conduct into good conduct, through moral justifications, comparisons to worse conduct to make the conduct in question seem less consequential, and euphemism. The second mechanism is displacing or diffusing the responsibility for the conduct or for its detrimental effects. This is otherwise known as “scapegoating.” The third mechanism is to minimize, ignore or distort those detrimental effects. The fourth is to dehumanize or blame the victim; an excellent documentation of the similarities in the language used to dehumanize various groups by characterizing them as garbage, parasites, non-persons, diseases, and so forth can be found in the book *Dehumanizing the Vulnerable: When Word Games Take Lives* (Brennan, 1995).

All of these can help facilitate violence in a variety of situations, but the symptoms of PITS when present in leaders and/or a large portion of the population can also contribute to their use. The symptom C(5), a feeling of detachment or estrangement from others, and symptom C(6) of an inability to have loving feelings, can clearly exacerbate or cause the practice of using dehumanizing language about the targets of violence. These could do the same for euphemisms about the actions carried out against them. They certainly support minimizing or ignoring the effects of the actions. Those two symptoms along with symptom D(2), irritability or outbursts of anger, render the occurrence of scapegoating more likely.

Another common phenomenon in the action of violence is to use thought processes not about the target of violence but about the action itself. One can separate one’s self from the violence one is doing by a process called distancing. Physically, this can involve having the violence happen in a separate place where the person causing it does not see the results, as with Nazi doctors selecting who lives and who gets sent to the gas chamber, or as with soldiers pushing a button to bomb a location by airplane. Even when the violence is in close proximity, however, and the results are clearly visible, the human mind can do mental distancing. Distancing can take the form

of denying that the event is happening, even if it is in front of one's eyes and one is causing it, or it can take the form of assertively not noticing the event by studiously looking the other way.

Any mental strategy that puts a mental distance between the doer and the deed must include avoidance strategies. Most particularly, such strategies can be facilitated by the availability of the numbing that helps define symptoms cluster C. When PITS precedes the violent action, and includes this numbing, then the existence of PITS can help facilitate violent action, and therefore contribute to the causation of such action. Other aspects of the environment will also be necessary, but when those circumstances do in fact exist, the existence of PITS can mean that more violence then occurs than would otherwise take place. PITS could also interfere with efforts at conflict resolution.

One of the oldest theories for psychological causes of violence is the Frustration-Aggression Hypothesis. This has turned out to be limited, in that much aggression is caused without any frustration, and frustration can exist in great amounts without any aggression ever taking place. The hypothesis is better at accounting for riots and lynch mobs than public policy. Still, riots and lynch mobs are group violence, and if members of the mob have PITS by virtue of having been combat veterans or similar jobs, then the symptom D(2) of outbursts of anger can help spark group violence in the same way as it sparks individual crime.

One of the major sources of violence which has nothing to do with frustration or anger is the common habit of obedience to authority, even when that authority is destructive. This was famously illustrated through the much-replicated Milgram electric shock experiments (Milgram, 1976; Blass, 2000). The original idea in the 60s was to first test Americans and find that they would generally not comply when an experimenter instructed them to continue giving higher levels of electric shocks to a "learner" (actually, a confederate of the experimenter). They would then run the same experiments in Germany and find greater compliance, as could be seen by the then fairly recent experience of the Nazis. They were looking for what the difference was. However, they found solid majorities of compliance among Americans, and already had their answer as to how the destructive obedience to authority could occur.

This launched one of the major findings of social psychology: that even among people who had no animosity to the "learner," who expressed that they were suffering great tension, and who were clear that they preferred not to do this, compliance with demands of authority is quite high. No threats or promise of rewards were necessary.

This does help to account for how people can get into PITS-causing situations without having suffered prior traumas or having any form of hatred or anger. Though it may be stressful, it is not necessary for there to be emotions against the target of the violence.

However, those people who already have PITS may to a certain extent be even more susceptible to destructive demands of authority. The estrangement from others, blocked emotions and numbing take away one of the major resources available to cause noncompliance. Those who did not comply with the experiment most commonly cited the effect on the learner, which required a sensitivity to the learner which could be absent from someone in a state of numbness or detachment from others.

Noncompliance with the experimenter was also increased when a parallel experiment was run in the same vicinity and the participant in it refused to comply. This role model of noncompliance increased noncompliance. It would also require a level of social coherence that could be absent in someone suffering from a sense of detachment or estrangement from others.

The question of why the person in authority expects violent behavior and gives the demands for compliance can also be influenced by suffering from PITS symptoms. The same symptoms that make compliance more likely also make the issuance of the orders in the first place more likely.

Finally, the psychological theory involving the connection of oversimplification of thinking to violence can have application here. This affects the ability to ascertain what is or is not a real threat. The same problems for individual crime can cause problems in large groups. Content analysis studies of the rhetoric of leaders as international crises occur and they move toward war have shown a marked lowering in scores for a construct called "integrative complexity" (Conway; Suedfeld; Tetlock, 2001). This construct has two features. One is differentiation, which is the degree to which people see differences among aspects of or perspectives on a particular problem. The other is integration, which is the degree to which people then relate those perspectives to each other within some coherent framework. The basic idea is that leaders who take an over-simplified, inflexible approach to any conflict which could lead to war are more likely to end up in war. Leaders who are more flexible, willing to compromise, able to understand the other side's perspectives, are less likely to get into a war.

Studies which have done content analysis of public speeches and similar documents before various wars have shown that a drop in the integrative complexity scores is a good predictor of an outcome of war. In two-sided wars, the scores drop on both sides as both sides move to war. In one-

sided wars in which one nation attacks another, the scores drop on the attacking side but go up for the defending nation—defenders are hoping for a negotiated solution that avoids war. In revolutions within a country, analyzed as far back as that of Cromwell in England, the scores drop as the revolution is successfully taking over.

There are some laboratory studies in which people do simulations of international conflict which suggest mechanisms whereby low complexity may be a cause rather than just a symptom. Those who came into the situation with low scores did tend to move to more violent solutions within the same situations as compared to those who came in with high scores. They got frustrated more quickly and they lacked the kind of negotiating skills that require complex thinking.

The process of integration and of dissociation go in the opposite directions. Inasmuch as the mental process of integration of different perspectives is necessary to avoiding moves toward war or other violence, any sense of dissociation can interfere with this ability. Additionally, detachment or estrangement from others would reduce motivation to even try to integrate differing perspectives.

Reasons that the authors suggest for why there is a change in the scores of content analysis of rhetoric leading up to wars include that high levels of stress deplete the cognitive resources needed for complex thinking, group dynamics, and the characteristics of individual leaders (Conway; Suedfeld; Tetlock, 2001). The arousal states, hypervigilance, sleep disturbances and so on constitute a continuing level of stress for those who already suffer PITS. The associated dissociation states along with intrusive imagery can add further confusion as to what is or is not a threat or what is a threat that can be dealt with in a negotiated way.

Group dynamics includes the groupthink model, whereby pressures for consensus within a group escalate and individuals therefore go along with group decisions they would regard as foolish if they were making the decision as individuals. Part of this process is that those individuals must lower the complexity of their thinking. Studies of those in historical situations classified as groupthink scenarios back this up. They also find that groups of individuals who are lower in complexity to begin with seem to be more likely to get into groupthink situations. This could be expected of many of those with PITS symptoms.

Remember, leaders with post-trauma symptoms can be super-functional—that is, workaholic as a way of coping. Even though if PTSD were in the form of something to be diagnosed it would be a disorder that would keep



people from being good leaders, the symptoms themselves are often present in gung-ho officeholders. Such people can be found in government leadership positions throughout history. Former United States Senator Robert Kerrey, for example, publicized his emotional aftermath to killing in Vietnam in a way that would remind anyone that was familiar with PTSD and of its symptoms (Vistica, 2001). Kings, dictators, prime ministers and presidents along with cabinet ministers, legislators and judges can similarly be drawn from combat veterans and police who have engaged in killing or torture. Political circumstances, past and present, have allowed the traumatic aftermath of killing to have a psychological effect on decision-making for more killing.

### Nonkilling

For those that already suffer from the aftermath of killing, therapy and healing may be necessary for national reconciliation efforts and for prevention of further problems. If post-trauma symptoms make them more likely to perpetrate again, in the form of domestic abuse, street crime, or further participation in the original combat or massacre or torture activity, then therapy of those individuals may not merely be good for those individuals, but for prevention efforts for society as well.

Public policy can take PITS into account and not treat those that are expected to carry out killing as unfeeling automata or as people simply doing unpleasant jobs. Part of the ideology of genocide, torture, or massacres is that those who carry them out benefit from the activity. Efforts at arranging punishment through political means have been used to counter this idea. It may help to add education on how perpetrators do not escape with impunity even if political arrangements are inadequate.

In addition to this practical point, we need to remember the positive point of what this says about humanity. The idea of Perpetration-Induced Traumatic Stress suggests that the human mind, contrary to certain political ideologies, is not only not well suited for killing, but that the mind tends to find it repulsive and does so for a long stretch of time. Nonkilling is not merely a good ethical idea. It is necessary for mental health.

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# The Psychology of Nonkilling

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The issues concerning nonkilling have not been deeply explored and reported in the domain of psychology, especially in American psychology, in view of which Jeffrey Arnett (2008) wrote that American psychology needs to become less American as Americans constitute only five percent of the world's population but generalize for the behavior of people in the entire world. The mere fact that the leading body of psychologists in the world, the American Psychological Association, had a division of military psychology but none for peace studies until 1990, is enough to report the state of affairs. If nonkilling is behavior—and indeed it is—then such behavior needs thorough examination in psychological research. In his recent book, Kool (2008) showed that a number of brilliant ideas and inspirations in the domain of peace and nonviolence came from other social sciences; for example, through the work of Kenneth Boulding, Elise Boulding, Gene Sharp, Galtung and others. In the field of nonkilling, Glenn Paige (2002) has inspired many scholars, including us, when he advocated that we need not focus on huge changes in our lives but take only a small step at a time to make the world a better place. Taking lead from Jainism's *Anuvrat* (*anu* meaning small and *vrat* meaning vow), Paige advocated that such small steps begin with respecting other fellow human beings, animals and nature. Earlier, he had passionately presented an outline for a Center for Global Nonviolence (Paige, 1990).

Basically this chapter focuses on the following issues regarding the psychology of nonkilling. First and foremost, a cognitive representation of a word may not generate a proportionately dissimilar meaning when a prefix (nonkilling for our purposes here in this chapter) or a suffix is added to the word. Second, the norms of a culture may alter our view of nonkilling and contribute to its ambiguity. For example, even among the Buddhists, who are passionately nonviolent, killing is permitted for the consumption of food and rituals. Therefore, it is contended that based on a clear conception of nonkilling or its ambiguity that permits, and at the same time restricts, killing, all cultures

are known to differentiate killing from nonkilling; that is, nonkilling as an ideology as opposed to nonkilling as a practical way of life. Killing in the latter case is an optional strategy only to the extent that it maximizes survival and adaptation and does not in any way tarnish the belief regarding nonkilling.

Related to the above two issues is the third psychological analysis that is concerned beyond the survival and adaptation issues offered in the classic Darwinian analysis. For example, a hungry tiger indulges in killing to the extent of finding food to mitigate its hunger; otherwise, it would let animals stroll in the vicinity. Why do human beings enjoy killing? According to Ardrey (1966), we have a fascination for violence that exceeds our understanding or evaluation of our need to be violent. Waging a war and its consequences give human beings an enormous thrill and results in consequences that are way beyond their imagination. The post-Darwinian analysis will be highlighted in this chapter to show how our adaptation efforts expanded and we began to engage in behaviors that have served us beyond our need for survival. Further, there is a section on adopting vegetarianism—a pattern of behavior that brings ideology and practice of nonkilling salient and is likely to bring nonkilling close to our heart and mind. We will focus on the work of Melanie Joy (2008) and Carol Adams (2003) whose ideas reflect on the behavior of people who strongly stand for the sanctity of life not only for their own sake but also for all forms of life and for protecting our environment. The last section of this chapter will focus on the neurological correlates of nonkilling.

Let us begin with the issue of the prefix “non” in nonkilling.

### The Implications of Prefix “Non” in Nonkilling

An important issue concerning “nonkilling” is the prefix “non” which, in our opinion, is potentially similar to the problem of understanding most concepts that tend to generate a negative or positive value: hazardous versus nonhazardous, threatening versus nonthreatening, aggression versus nonaggression, etc. Elsewhere, one of the authors, Kool (2008), pointed out that violence and nonviolence cannot be considered to be mirror images. Thus if oppression by a military regime enforces peace, such an absence of violence does not constitute “nonviolence,” for nonviolence has a broader and richer connotation that involves each of the following (with implications for nonkilling in the present context):

- a) *Peacekeeping* that is often enforced by a third party in a conflict. For nonkilling: legal bodies restraining believers and nonbelievers

in capital punishment—a controversy that erupts when a criminal is set for death.

- b) *Peacemaking* that is aimed at removing tension between the two parties. For nonkilling: taking steps to understand divergent viewpoints regarding (non)killing.
- c) *Peacebuilding* that involves constituting new efforts to eliminate or minimize a conflict. For nonkilling: demonstrating how a killer could be transformed into a normal, good human being.

When Gandhi used the word “ahimsa” meaning nonviolence, it was considered by many scholars to be the mere opposite of “himsa” which means violence. The prefix “a” in himsa reversed the features, that is, from violence to nonviolence. However, according to Bondurant (1965), understanding the Sanskrit word, ahimsa, has deeper implications because it naturally involves understanding and love.

Research studies show that semantic differences associated with the use of a prefix or a suffix may fail to generate cognitions of equal and opposite magnitude in the same individual; that is, they may lead to a misperception, misjudgment or misunderstanding (Kool, 1993). With change in usage of language or with translation from one language to another, the cognitive representation of such concepts would become highly vulnerable and be prone to elicit divergence in conceptualization.

Further, the use of a prefix or suffix is likely to generate intra- and inter-individual differences in the conceptualization of a concept. Intra-individual differences refer to the capacity of an individual to perceive and evaluate the original word. For example, compare hazardous material with that of nonhazardous material and you will find that nonhazardous does not necessarily mean something good for health much the same way as peacekeeping means establishment of peace that could be very fragile. Remember the difference between peacekeeping and peacebuilding that we had cited earlier in this chapter. Inter-individual differences focus on how members of two communities differ in their assessment of nonkilling. Both President Reagan and Pope Paul received bullets, but for the former, the course of law was the reasonable solution as compared to the Pope who had forgiven—and even embraced—the adversary. There are vast differences in the ways in which communities view either killing or nonkilling.

In terms of the above, killing and nonkilling are not simply opposite in meaning. Nonkilling would involve not merely sparing a life that could have been taken away even in such justified cases as war, but also to build condi-

tions that could promote respect for life, love and coexistence. When Charles Roberts killed Amish children and himself on October 2, 2006 in Pennsylvania, instead of asking for police protection and showing revenge, the Amish community raised a substantially large amount of money to help the family of the killer. They showed exemplary compassion and forgiveness. From the scene of the Oscar award movie, *Gandhi*, I recall that when a Hindu complained to Gandhi that all the members of his family had been killed by Muslim militants during the India-Pakistan partition and wanted to know how he should treat a Muslim boy in his custody, Gandhi suggested very calmly to raise this boy as a good Muslim in his family, so that the boy could get a chance to grow up as a decent Muslim. Killing this boy might worsen the situation and would in no way be helpful. Just as killing could be expressed in its ugly form, Gandhi was stretching nonkilling to the highest levels of morality. From the point of view of stages of morality, Kohlberg (1976) would classify Gandhi's behavior as "post-conventional" morality, the highest level of moral order, that leads to the creation of a new socio-moral environment and an exemplary ethical behavior that is over and above the existing norms of a community.

In short, killing and nonkilling have different cognitive representations in the minds of people. Whom to kill and whom not to kill? Hindus consider cows as sacred as they believe that just like a mother, a cow provides milk and nutrition. A dog or cat owner believes that her pet is like a family member and therefore she refrains from eating cat or dogs meat, but the members of South Asian communities view it differently. Consider the dialogue reported in Box I. Even highly educated people have trouble understanding the seriousness with which a prefix can change the intensity of meaning of a concept.

#### **Box I.** (Non)violence

At an interview for a faculty position, I was asked about my favorite area of research work. The following dialogue will give you an idea of what happens with the use of a prefix or a suffix.

Interviewer: Will you please tell me your favorite field of research?

Candidate: Psychology of nonviolence.

Interviewer: I have never heard of this field. Is there something called non-industrial psychology or nonhealth psychology?

Candidate: Are you a vegetarian?

Interviewer: No, I am a nonvegetarian.

Candidate: Does it mean that you can eat the meat of pets like dogs and cats?



Interviewer: No. I can't. They are pets—like family members.

Candidate: But in some Asian countries, they do eat such meat. By the same token, violence and nonviolence are two ways of coping in a conflict, and understanding one form may not necessarily be a reverse image to (mechanically) comprehend the opposite behavior in a mechanical fashion.

Adopted from Kool (2008)

### The Psychology of Vegetarianism

Any discussion of the psychology of nonkilling would be incomplete without a section on vegetarianism, an ideology focusing on the nonkilling of animals for food. As one looks around, is it not surprising that people who would not even dream of hitting someone, leave alone killing, are able to eat, in fact, relish eating dead animals? In cultures and countries that abound in societies for the prevention of cruelty to animals, where it is considered a crime to kill an animal for its tusk, skin or fur, where national parks are created for the protection of animal life, where poaching is normally considered a punishable offence—little thought is given to the killing of animals for food. Is it not paradoxical that while, on the one hand, governments create laws for the protection of all types of animal species, these very same governments also encourage poultry farming? Is it not an anomaly that the same people who are members of societies for the prevention of cruelty to animals fail to refrain from eating dead animals? How do they explain it? Are there certain psychological processes that underlie such paradoxical thinking? This section will attempt to unravel the psychological explanations for animal eating and its opposite, namely vegetarianism.

Melanie Joy (2003, 2008), a University of Massachusetts professor, has offered a psychological analysis of how people who are not vegetarians reconcile the ethical dilemma of professing to love animals on the one hand and eating dead animals on the other. She has used the term “carnism” to refer to that in cultures and societies where animal consumption is the normal lifestyle. According to her, carnism may be likened to an ideology; that is, a set of ideas that can be used to explain behavior and thinking. Joy concludes that in cultures and societies where animal consumption is the normal lifestyle, carnism becomes the dominant ideology. Like all other dominant ideologies, it becomes deeply embedded in not only the culture but also in the cognitive structure of its members so much so that it be-

comes the unquestioned norm. Joy also draws our attention to the fact that since children in such societies get exposed to animal eating, long before they even learn how to talk, it is not surprising that they do not even think of loving animals on the one hand and killing them for consumption on the other, as paradoxical. That it takes the form of a dominant ideology is also clear from the fact that such behavior does not have a name (remember that carnism is a word coined by Joy simply because there was no word in such cultures to denote the ideology of animal eating). In contrast, people who fail to follow this dominant ideology are considered deviant or “odd” and are therefore identified by being given a name: vegetarians. (Both of the present authors have gone through experiences, especially in western cultures, of how we vegetarians survive! We are even asked, “So you don’t even eat fish” as if fish were different from meat.) Compare this to the many cultures where meat eating is not the norm, for example, among Hindus, Buddhists and Jains. Such cultures have vegetarianism as the dominant culture, and unlike their meat eating counterparts from other religions, do give a name to those who eat animals, namely, nonvegetarians; clearly corroborating Joy’s idea that culturally embedded norms do not require a name, although ideologies that deviate from the norm are named. However, no matter how deeply culture-bound the tradition of eating animals may be, it is clear that such food habits do create ethical dilemmas in the minds of the eaters.

### **The Role of Cognitive Dissonance**

Noted social psychologist Leon Festinger has clarified how each of us attempt to reconcile conflicting thoughts, values and beliefs. According to Festinger (1957), whenever we have two conflicting thoughts, tension is created. In order to reduce this unpleasant tension, we try to make adjustments, or attempt to find excuses for the anomaly. For example, it has been found that after making a purchase, say of a car, the degree to which people will defend the purchase is seen to increase; there is an escalation of commitment to the purchase. This enhanced commitment is merely one way of overcoming the conflicting thoughts or cognitive dissonance, as Festinger calls it. So, we start ignoring the deficiencies and simultaneously overly focus on the advantages. This principle is cogently demonstrated among car-nists. A person who professes loving animals and caring for them on the one hand and eating them without any guilt on the other would often face this type of unpleasant arousal. Research such as those by Melanie Joy (2001) and Carol Adams (2003) have time and again confronted people with this

paradox. Each incident made the person offer excuses, the end result of which would be to reduce the cognitive dissonance created.

We can see a similar escalation of commitment toward the rationalization of animal eating. So pervasive is the ignoring of deficiencies, that Carol Adams has called it the absent referent. People will discuss the taste of animal food, its health advantages and nutritive value, but will avoid the stark reality of killing—as if their dinner had nothing to do with the killing of animals or cruelty toward animals. Maybe this is why people in cultures in which it is normal to slaughter animals for food, dare not discuss the terrible conditions prevailing at factory farms. It is, in fact, considered a social taboo (Iacobbo, Iacobbo, 2006).

### The Role of Defense Mechanisms

A very common way to overcome cognitive dissonance is through the use of defense mechanisms, so called because they offer a method to defend oneself against unpleasant stress-causing thoughts. According to Joy (2001), carnists take recourse to at least five such mechanisms. They are described below.

1. Denial: some people defend their food habit by denying the fact that carnism reflects cruelty to animals, and argue that animals that are raised for food, and then killed, do not “really” suffer.
2. Justification: others justify carnism by saying that these animals are being raised for the sole purpose of being used for food. If they are not consumed, why would they be raised?
3. Avoidance: many a time researchers have noted that people will not be ready to discuss the issue at all and will say: “don’t discuss these issues, you are ruining my dinner.”
4. Dichotomization: every once in a while we come across people who seem to have categorized animals into two categories--those that are raised for companionship and those that are raised for food. Having made such a distinction, they are no longer torn by ethical dilemmas.
5. Disassociation: people who use this defense mechanism reduce their unpleasant thoughts by saying that when they look at meat they do not think of it as an animal or even an animal part, because if they did so they would be disgusted and would be unable to eat it.

The question that perturbs many a vegetarian is that if meat eating causes so much cognitive dissonance, why don't they stop eating animals and become vegetarians? Of the many factors posited by meat eaters, fear of becoming frail in health and loss of strength seems to be the major deterrent. Thus when the noted novelist George Bernard Shaw first wanted to become a vegetarian at the young age of 18, he was warned by his doctors that he would not be able to survive. Ironically, when Shaw lived to a ripe old age and remained in good health throughout, despite being a vegetarian, he was once asked why he did not go back to those doctors who had so adamantly attempted to dissuade him from turning vegetarian. His reply was, "I would, but they had passed away years ago!" These doctors were not only justifying the eating of animals but were also propagating the myth that survival is possible only through eating of animals.

The myth that animals provide sources of nutrition not found in any other forms of nonanimal food is so strong that even confirmed vegetarians have reverted to carnism. Yet, the ethical dilemma in their minds persists as shown by the continuous use of defense mechanisms. A good example is that of actress and model Muriel Hemingway. After years of being a vegan, she reverted because she felt "super-weak." She loved animals but when she ate meat, she felt more "grounded."

### **The Concept of Vegetarianism**

Who are vegetarians? You may be surprised to learn that vegetarianism is not a fad of the current century, nor is it an ideology solely of Eastern origin. Until the middle of the 19<sup>th</sup> century, nonanimal eaters in the western world were called Pythagoreans. History stands testimony to the fact that while the dominant culture of the Greeks and Romans was that of meat eating, there were many scholars and philosophers who were vegetarians. The most notable among these was Pythagoras. Others include Socrates, Seneca, Plutarch and Plato.

On the basis of their food habits, nonanimal eating people can be divided into categories, the number varying with culture and religion. For purposes of research, however, they have been divided into three categories:

1. Vegetarians: people who do not eat meat, fish, fowl or eggs.
2. Nonmeat eaters: people who do not eat meat but will eat fish, fowl or eggs.
3. Vegans: people who refrain from eating not only meat, fish and fowl, but also all dairy products, including milk and eggs.

## Surveys on Vegetarians

Though the progress is slow, it clearly seems that vegetarianism is here to stay. A recent poll in the US (Stahler, 2006) reveals that as many as 12 million people are vegetarians and 19,000 more switch to vegetarianism each week. The figures for Europe are comparable. A 2002 Data Monitor report estimated that there are about 12 million vegetarians across Europe. In terms of percentages, however, the figures amount to a mere 2.3 % of the population of the US (Stahler, 2006), while for the UK it would be near 5.6% (Gelfand, 2003).

## Rise in Vegetarianism

When Gelfand (2003) attempted to understand why vegetarianism is on the rise, she found that while 78% people became vegetarians because of health benefits, 69% chose vegetarianism for ethical reasons, saying that it felt good not to participate in violence and killing. They also believed that they were promoting kindness and compassion, but most of all they were not being hypocritical. Another 35% chose vegetarianism on ecological grounds, reasoning that we have only one earth on which to live. Other reasons for the switch included religious, philosophical and economical reasons (vegetarian food is much cheaper).

Another reason often cited by newly converted vegetarians is the growing awareness that animals bred for food are often reared in extremely inhumane conditions. For the US alone, the figures are astounding. Every year 41.8 million beef cattle, 115 million pigs, 8.8 billion chickens and 26.8 million turkeys are slaughtered for human consumption. However, the conditions at these so-called factory farms are so atrocious, that the well known singer, Sir Paul McCartney, once remarked, "If slaughter houses had glass walls, everyone would be a vegetarian."

The myths surrounding animal consumption and the fear of deviating from the cultural norm has led to the concept of "ethical ranching," where animals have wide open grassland for grazing and are not cramped in small congested indoor spaces; where the animals are not administered hormones and other drugs to enhance production of milk, etc. But the end is the same, whether it be in a factory farm or an ethical ranch, the animals are being bred only to be killed. The question is—can killing of any kind be considered ethical? As Pythagoras put it: "As long as man continues to be the ruthless destroyer of lower living beings, he will never know health or

peace. For as long as men massacre animals, they will kill each other. Indeed, who sows the seeds of murder and pain cannot reap joy and love.”

### The Concept of Moral Exclusion and Nonkilling

The concept of moral exclusion refers to the viewing of people outside their moral boundary and attached to it is the implication that there is no problem in harming them, if necessary, because it is not forbidden (Deutsch, 1990). Moral exclusion has been widely linked to the decline in prosocial behavior. It occurs most commonly with those we consider existing outside our group, but it may also take place with the members of our own group. Whereas we promptly take some remedial action in case of moral exclusion of a member of our own group, such action is delayed or not taken at all for a member outside our group (Kool, 2008). Historically, Hitler’s treatment of Jews and the internment of people of Japanese origin during WW II in the USA are large scale examples of moral exclusion (Nagata, 1993).

Respecting human life is a virtue that has been taught in cultures for centuries. Growing up as a young boy in India, one of the authors (Kool) was instructed by his parents to worship the sun and then feed five animals and birds every morning before he could get his own breakfast. It was a very strict family ritual. A rat or snake was not killed, but scared away or caught and then left in a jungle. There was enormous emphasis on treating life and the environment as sacred and such behavior promoted moral inclusion.

Nonkilling is morally inclusive, not exclusive. Research in psychology shows that moral exclusion is a motivational process leading to the formation of an “us-them” dichotomy. On the other hand, being morally inclusive involves mitigating the “us-them” dichotomy generating oneness and unification. A psychology of nonkilling is built with fine ingredients of inclusiveness that signal merging of all kinds of life and it continues to grow in human beings with their ability to minimize the gap between our attitudes and behavior and devoutly express our pledge to knock out the boundaries between us and them. Buddhists have long been fostering *kenso*, a state that involves not merely focusing on oneself but to seek a state of interdependence in which we remain with others to seek enlightenment. In Jainism, followers learn about the sin of separateness (*attavada*) and how to avoid this tendency. Those who cannot conquer this evil are considered frail.

## Moral Responsiveness and Nonkilling

If we are taught nonkilling through our cultural norms or religion, why do we acquiesce on killing or remain silent about it? When scores of people watch murder in our cities or nations and even remain indifferent to genocide in a country, it constitutes a failure of our moral response. It is like “I see an evil and I do not see an evil.” Ruth Linn (2001), of Haifa University in Israel, contended that mere moral competence is no virtue if it does not get translated into a moral response. What is good about morality if we do not respond to a blatant evil? Animal rights activists do not simply care for animals but also fight for the welfare of these animals in their community. To be morally responsive, an individual has to be more concerned with her moral conduct than with her moral beliefs. In this state, an individual looks beyond one’s own interest, much the same way a cleric, when acting like a saint, offers an interpretation much broader and richer than the contents of a holy book. Moral responsiveness aims at transcending universalism and gears toward inclusiveness.

Moral principles are not the enterprise of a single individual but “they exist outside of us” (Shermer, 2004). In a broader sense, nonkilling is the highest embodiment of coexistence and in its normative form, serves as a motivational force to keep us morally inclusive.

## Lessons from Darwin and the Post Darwinian Analysis of Nonkilling

The Darwinian theory of natural selection is conventionally assumed to favor the strong and the selfish: those who are able to maximize their own resources, often at the cost of their weaker counterparts, who as a result die, taking along with them their genetic pool. History proves that the strong overpower the weak and nature provides evidence that it is the fittest that survive. Thus all animals, including humans, seem pre-wired for killing. Yet what is the percentage of those who oppress, those who aggress and even those who murder, as a proportion of the world’s total population? It is an extremely small, in fact, negligible proportion though the wrath of those few could be the cause of suffering to thousands (Paige, 2002). Even more important is the fact that the propensity for peace, for nonaggression and for nonkilling is far more widespread and cuts across educational, cultural, economic and religious barriers. Does this not suggest that there could be some biological basis for nonkilling? We will address this issue next.

As mainstream psychologists moved from providing psychoanalytical explanations to more biological ones (for example, Storr, 1968) on the one hand, and the impact of Darwinian theory on the other, we saw the development of

a new field of psychology, namely *evolutionary psychology*. It attempts to apply the principles of evolutionary theory to the realm of human behavior. While the early work of ethologists, for example, Lorenz (1974), on animal behavior in natural settings considered aggression to be instinctive, later research showed that this might not always be so (see Kool, 2008 for greater details). Further, there certainly seems to be an evolutionary basis for nonkilling.

Another emerging area of research is what has been named *social cognitive neuroscience*. This area of research attempts to apply the research tools of neuroscience, such as those of neuroimaging and neuropsychology to the understanding of social behavior. Recent findings in the area of social cognitive neuroscience have provided insights into the neurological substrates of four important areas of social cognition. These are, understanding others, understanding oneself, controlling oneself, and processes that occur at the interface between the self and others (Lieberman, 2007), all of which have important bearings for the understanding of the psychology of nonkilling.

Some important findings emerging from this field have been discussed below to show that nonkilling is indeed adaptive.

### The Genetic Basis of Nonkilling

It is a known fact that animals, including humans, show a propensity for killing whenever their survival is threatened. In other words, whenever a stimulus is perceived as threatening, the emotion of fear is elicited, with fight or flight as the end result (see Agrawal, 2001 for a more detailed explanation). A natural corollary to this would be that if the same stimulus is perceived to be nonthreatening, fear would not be induced and the response could be a very cordial one. Moreover, there seem to be brain structures and processes that are responsible for such perceptions, which go a long way in identifying the adaptive nature of nonkilling.

Many a time abnormalities have provided insight into the functioning of normal processes. Similar is the case of social behavior including some of the correlates of nonkilling. There appears to be a genetic basis for perceptions of nonthreat as evidenced by MRI scans of patients with Williams's Syndrome (WS). This is a condition with a known genetic basis, that is, 21 genes are missing from chromosome #7. A recent report of the NIMH (2005) showed that people with this syndrome are highly social and empathetic even for situations which would normally elicit the fear emotion. At the same time, this lack of fear is seen only for social stimuli, as is clear from MRI scans during the viewing of threatening but nonsocial stimuli (such as the burning of an air-



plane). While in the latter case, the amygdala (or the “fear hub,” as it is commonly known) showed heightened excitation; this was not so when asked to view threatening social stimuli, as is normally the case. There were other differences, too, between the MRI scans of these WS patients and those who were non-WS. The WS individuals showed heightened excitation in other prefrontal areas of the cortex such as the dorso lateral region, the medial region and the orbitofrontal regions—all known to be related to the perception and responses to social stimulation (Mah, Arnold & Grafman, 2004).

The role of genetic factors in social cognition has also been brought to light by studies on monozygotic (MZ) and dizygotic (DZ) twins using the now famous Ultimatum Game. The *Science Daily* (2007) reports such a twin study in which as much as 40% of the total variation in responses to unfair choices was based on genetic factors, while Phelps (2006) has clarified that MZ twins showed greater similarity in amygdala excitation than DZ twins. Genetic factors are even involved in religiousness, with MZ twins showing greater similarity than their DZ counterparts (Koenig et al., 2005).

In short, neurological and behavioral studies show that violence reduces with high empathetic reactions. In contrast antisocial individuals have a diminished sense of remorse and lack the ability to empathize (Blair, Charney, 2003).

### **Animal Studies on the Correlates of Nonkilling**

The role of Darwinian evolution and the laws of natural selection are also clarified by the similarities between humans and their ancestors of yore on some correlates of nonkilling. The Ngamba Island Chimpanzee Sanctuary in Uganda has been the base for many such studies, since it is a well established fact that our most recent nonhuman ancestor is the chimpanzee. An ingenious experiment on one important correlate of nonkilling, namely, cooperation among chimps, clarified that these chimps behaved much like their human counterparts. They not only understood when they required help (that is, cooperation from others), their role and their partner’s role, but they also knew with whom to choose to work. They chose to cooperate with those chimps that were more effective. The level of complexity of the cooperative behavior of these chimps matched those of humans and it was hypothesized that cooperation could therefore have been inherited from their common ancestor some six million years ago (Melis et al., 2006). If a trait can survive over a period much longer than six million years, do we need to question its adaptive value?

The findings, however, are different regarding another correlate of nonkilling, namely altruism. When humans are pitted against each other such that they can work for either vested interests, mutual interests or altruistic interests, responses vary with the situation and the person they are pitted against. When Jensen and his colleagues (2006) studied chimps in the same type of situations, the chimps showed neither altruism nor spite, providing evidence that both altruism and spite could be characteristics specific to humans alone, or developed in the six million years since we shared a common ancestry with apes. In a situation much like the Ultimatum Game used with humans, chimps do not reject unfair offers. They behave like rational selfish economists, rather than as social beings (Jensen, 2005). Similar studies on the neurobiology of punishment show that animals do punish others, but again for personal reasons such as the survival of the self or of members of their kin. Humans, on the other hand, can even punish altruistically; that is, in which the act of punishment, though personally costly, is mandated by cultural norms (Seymour, Singer & Dolan, 2007). Humans are seen to go a step further from such direct reciprocity. There is evidence from evolutionary psychology that they even engage in "I help you and somebody helps me" type of behavior, or what has been called indirect reciprocity (Nowak; Sigmund, 2005). All these provide evidence that while cooperation for personal interest is present in chimps, altruism and social reciprocity could be human traits.

### Adaptation versus Exaptation

A core concept in Darwinian theory was that of adaptation, that is, the changing architecture of organisms as a result of environmental demands. Humans today appear vastly different from their ancestors who dwelt in caves. The loss of body hair, the decrease in the size of teeth, and in fact, the stature of man is because those members of the *Homo Sapien* species that had these characteristics survived to pass on the genes for these characteristics to their offspring. However, evolution is not intentional and it does not foresee future needs (Buss, 2004). Rather, adaptive problems lead the search for new solutions which in turn interact with neural structures and processes to modify them accordingly. Structures and processes that survive through the ages are those that have proved to be adaptive, while those that become smaller or even extinct are ones that fail to serve any adaptational purpose.

Evolutionary psychologists are of the view that adaptation fails to explain all the changes that have occurred among humans. Another process, *exaptation* (Buss et al., 1998) is necessary. While the preservation of certain struc-

tures and loss of others is explained through the process of adaptation, it fails to explain additional functions undertaken by the same structures. The idea of exaptation can be better understood if one thinks of spandrels in bridges. Though they are constructed with the simple aim of supporting the structure of the bridge, they soon take over an additional function: that of providing shelter to the homeless. In much the same way, our brain was designed with some specific purposes but the increase in not only the size of the brain but also its complexity is an example of exaptation (Gould, 1991), with the spandrels so created through evolution to house activities such as religion, fine arts and war. When one type of aggression, emotional aggression, became restrictive for creating friendships also necessary for survival, another type of aggression, proactive aggression, was evolved to enhance friendships and pro-social behavior. Even animals restrict their aggressive behavior if it is found to be nonadaptive and can become cooperative (Lore; Schultz, 1993), as also seen in the studies on chimps cited above. Space has even been created to house romantic love. Bartels and Zeki (2000) obtained evidence that MRI scans of people in love with each other show marked activation in some areas coupled with deactivation in other areas (including the amygdala) of the cortex suggesting a unique network behind this very complex phenomenon.

Another example of exaptation is the neurohormone called oxytocin. Once known for its clearly defined role of aiding birth and especially lactation, it is now being seen to be important for nonkilling too. If its function is simply to aid birth and lactation, it should be secreted only in females. Physiological findings however clarify that it is secreted in males as well, and helps not only to transport sperm but also aids sexual behavior (Bowen, 2007).

Recent research in neurobiology and neuropsychology has provided further interesting insights regarding the role of oxytocin. Earlier studies on animals had linked oxytocin to complex social and emotional behavior ranging from social attachment to aggression. More recent work has proved the same for humans as well. It has recently been found to quell the brain's fear centre, the amygdala's reactions to fearful stimuli (Asher, 2005). However, its release is affected by acute stress (Bowen, 2007) and therefore appears to be a natural means of treating Post Traumatic Stress Syndrome (PTSD) (Legros, 2002). This role of oxytocin as a stress reducer is also validated by findings showing that the stress hormone vasopressin and oxytocin work as antagonists and may even be called "ying-yang" hormones (Legros, 2001).

Oxytocin is also found to increase trust (Kirock et al., 2005). That oxytocin is important for trust and showing nonfear is further corroborated in an interesting study by Meyer-Lindenberg et al., (as cited by Asher, 2005), in

which 15 men were asked to sniff either oxytocin or a placebo, prior to viewing stimuli known to stimulate the fear centre, amygdala. As they viewed threatening pictures they also underwent MRI scans which revealed, as expected, greater excitation in the amygdala in the placebo condition than in the oxytocin condition. Even more importantly, the differences between the two conditions was maximal for the viewing of threatening human faces corroborating the finding that oxytocin plays a pivotal role in the regulation of social fear and the readiness to bear social risks. The cognitive mechanism behind this reduced fear could be the fact that oxytocin has been seen to enhance mind reading when subjects are administered the Reading the Mind in the Eyes Test (Domes et al., 2007) and could therefore also be important for the development of empathy, not only another important correlate of nonkilling but also an activity for which there is considerable neurobiological evidence. It is because of findings such as the above that oxytocin is often called the “trust hormone” and there have even been efforts to market it in some form.

Thus, the findings from evolutionary psychology and from social cognitive neuroscience provide substantial evidence that nonkilling is adaptive in not only humans but even animals such as chimpanzees.

**Box 2.** The Tiger Temple of Thailand

In a Buddhist temple in Thailand, called Wat Pa Luangta Bua Yanasam-panno Forest Monastery (Tiger Temple), the tigers live with other inmates and roam freely. They rest and sleep wherever they like. When they see a herd of cattle, they often get excited, but following instructions from their monk trainers, they resist the temptation to attack other animals to hunt for a meal outside the temple. Like any other pet, they live nonaggressively in the temple, and if there is any instinct of aggression that exists, it is not in operation even among the ferocious animal like the tiger. This 12-acre facility is a new home for raising and protecting the tigers from extinction.

For more information, visit [http:// www.tigertemple.org](http://www.tigertemple.org)

Adopted from Kool (2008)

**Concluding Remarks**

A psychological analysis of nonkilling consisting of behavioral features that go along with the studies on human cognition, neurosciences and evolution was presented in this chapter. While mentioning nonkilling without a hyphen

may sound holistic, as Paige (2002) had contended, it is fair to conclude that the cognitive representation of killing versus nonkilling does not constitute opposite mirror images (of each other). The psychology of vegetarianism is still a very poorly explored topic as far as psychology is concerned, but from the available body of knowledge it is fair to conclude that a number of vegetarians look beyond their health, and value and even adhere to nonkilling. If the tigers in the Wat Pa Luangta Yanasampanno Forest Monastery in Thailand (see Box 2) can live with the monks and without killing any animal, it should not be difficult at all for human beings to practice nonkilling (Kool, 2008).

Taking a leaf from the developments in evolutionary psychology, it is contended here that killing for survival is an adaptive function but killing for devouring “delicious” food or for the purpose of revenge stretches us to exaptation; that is, a byproduct of behavior that has emerged in the course of evolution. It is similar to spandrels in bridges where the space so created under the bridge is used for multiple purposes, for example, car parking, shelter, etc.—uses unforeseen by the engineers. And if the architecture of the brain has been changing over a period of time, there must be some organic substrate that accompanies such behavior. In this context, the role of oxytocin in particular and other organic structures in general have been cited. It is well known that oxytocin, besides being useful during maternity, is also useful for trust and cooperation that are such significant psychological factors for nonkilling.

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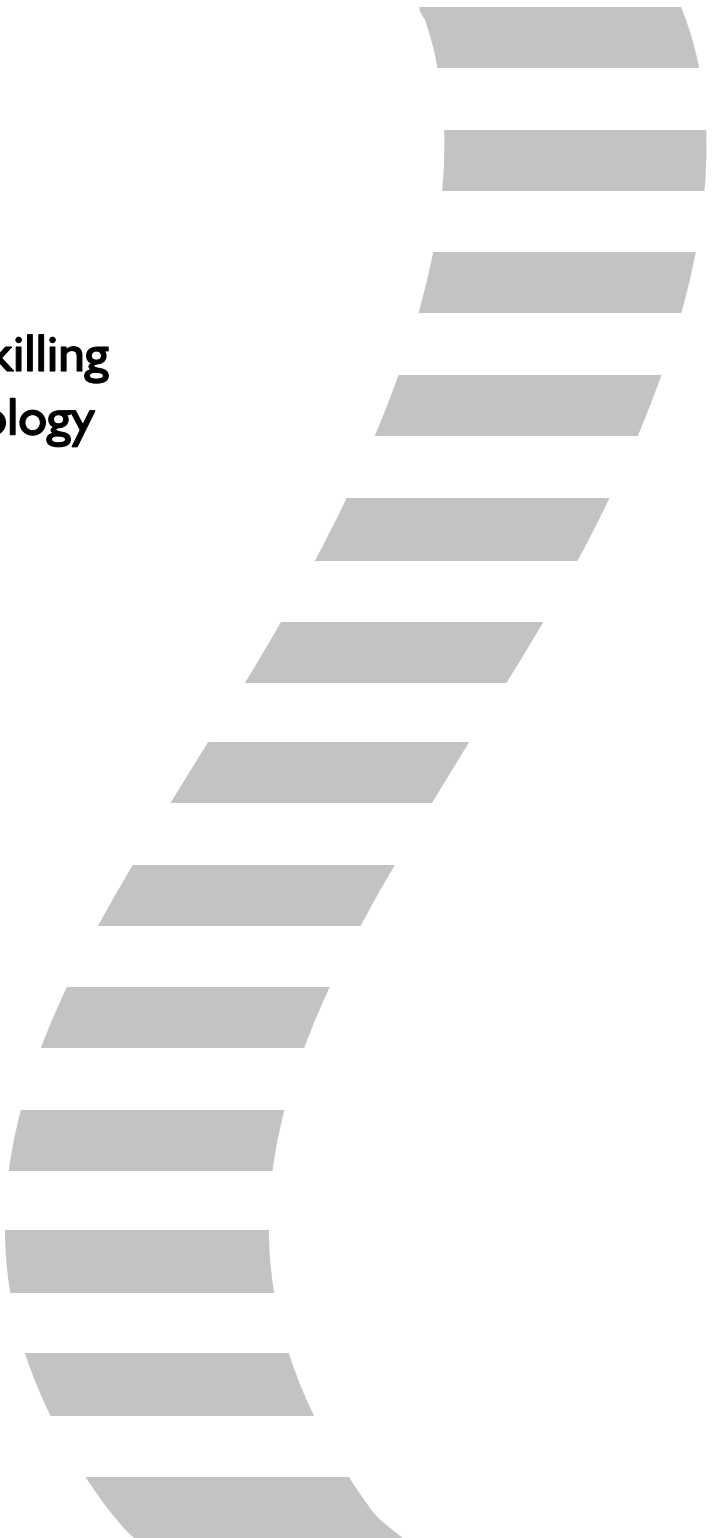
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# Nonkilling Sociology





# Nonkilling Sociology

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I believe that peace is not merely an absence of war but the nurture of human life, and that in time this nurture would do away with war as a natural process.

(Jane Addams, 1913, Progressive National Convention)

Wars are not acts of God. They are caused by man, by man-made institutions, by the way in which man has organized his society. What man has made, man can change.

(Frederick Moore Vinson, 1945 Memorial Day, Arlington National Cemetery)

The question of what society is like, what it has been, and what it might become is the subject of sociology. In this essay, I explore the possibility of a nonkilling society from the perspective of sociologists who have addressed violence in their scholarship and/or activism. I begin with the description of a nonkilling society offered by Paige (2009: 22): "...a nonkilling society is characterized by no killing of humans and no threats to kill, neither technologies nor justifications for killing, and no social conditions that depend upon threat or use of lethal force."

It is challenging to imagine a world that does not exist. As Paige (2009) demonstrates, responses to the possibility of a killing-free society are tempered by what we believe to be true about human behavior, social organization, power, and survival. How have sociologists theorized about violence in human society? What sociological tools can be used to conceptualize and enact nonkilling relationships, communities, and societies? How can sociology contribute to the development of a nonkilling research agenda?

## **Sociological Theories and Violence**

Auguste Comte, who coined the term "sociology," viewed society as an integrated system, moving through an evolutionary process toward positivism which would bring order and progress to 18<sup>th</sup> century Europe. An idealist, he thought scientific positivism would make war and violence unnecessary, a process he termed the "modifiable character of fatality" (Aron, 1998: 17). Emile Durkheim, synthesizing sociological theory and empirical methods, conducted research on the relationship between social structure

and suicide rates in the population. In this classic study, he found that the structural changes of industrialization and urbanization produced *anomie*, defined as a loosening of external constraint or regulation, putting people at higher risk of suicide (Thompson, 1982). According to Durkheim, reducing or alleviating anomie required “that we be thoughtful to our fellows and that we be just” (1964[1983]: 407).

Other early contributors to sociological thought saw force and violence as the necessary means for maintaining or challenging and changing the social order. Max Weber (1918) argued, for example, that without violence, the state/government would be eliminated, resulting in anarchy. He went on to explain that while “force is certainly not the normal or the only means of the state...the relation between the state and violence is an especially intimate one.” Karl Marx’s theory of social change was rooted in violent revolution, an armed struggle of the proletariat against the bourgeoisie. The bourgeoisie used lethal force to maintain control of the working masses. Thus, for Marx, freedom for the workers could only “be attained by the forcible overthrow of all existing social conditions” (Marx, 1988 [1848]: 86).

Broadly speaking, as the 20<sup>th</sup> century progressed, the discipline of sociology developed different trajectories—sociology as science in the positivist tradition and sociology as a vehicle for social change using applied and/or activist methods. The life work of Jane Addams is representative of the latter. Addams was excluded from academic sociology despite her numerous contributions to the scholarly literature. Instead, she applied sociology in the “real world,” establishing Hull House, the first settlement residence in the U.S. In Europe, the settlement house movement was a method of addressing problems generated by urbanization, industrialization, and immigration. The forerunner to modern-day social work, Hull House provided services (e.g., child care and employment assistance) and resources (e.g., meeting space for trade union groups) to Chicago neighborhoods of poor immigrant families. Through legal and political advocacy, the reformers of Hull House linked the local to the state and national levels with the passage of legislation and establishment of government-sponsored programs.

Addams, active in the international peace movement, won the Nobel Peace Prize in 1931. Not only was she opposed to war, but as the quote above indicates, she defined peace as the nurturance of life, an orientation that would ultimately eliminate war as social practice. In her groundbreaking work, *New Ideals of Peace* (2007 [1907]), she claimed that a new social order based on peace and justice would emerge from those at the bottom of the social hierarchy. The urban neighborhoods of poor immigrants from around the globe

would be the source of the “altruistic and egoistic impulse” (p.13) that would lead to a peace-based society that “would nurture all into a full and varied life” (p. 118). Her optimism about this possibility was bolstered by the collaborative relationships formed and sustained across national differences in Chicago neighborhoods and the labor organizations of the early 20<sup>th</sup> century.

Another early sociologist, W. E. B. DuBois, described by Martin Luther King, Jr. as “a tireless explorer and a gifted discoverer of social truths,” was the first African American to earn a Ph.D. from Harvard in 1896 (Hynes, n.d.). DuBois taught at several U.S. universities and co-founded the NAACP, serving as its director of research and founding editor of its publication, *The Crisis* until 1934. Believing that social science could provide answers to the problems of racism and inequality, his scholarship focused on the lives of Black Americans in the early 20<sup>th</sup> century.

At the same time, he felt that social activism was the way to create social change and was a leader in the international peace movement. At the controversial 1949 Cultural and Scientific Conference for World Peace in New York City, DuBois defended the presenters and participants, saying, “We know and the saner nations know that we are not traitors nor conspirators; and far from plotting force and violence it is precisely force and violence that we bitterly oppose. This conference was not called to defend communism nor socialism nor the American way of life. It was called to promote peace! It was called to say and say again that no matter how right or wrong differing systems of beliefs in religion, industry, or government may be, war is not the method by which their differences can successfully be settled for the good of mankind” (DuBois, 1968).

Pitirim Sorokin is perhaps the best example of an academic sociologist (he was the Chair of the newly formed Department of Sociology at Harvard, 1930-1942) who tackled the question of whether a peaceful world was possible. He argued that “only unselfish, creative love (as ideally formulated in the *Sermon on the Mount*)... in overt behavior, in social institutions and culture” would result in lasting peace (1998: 42). According to Sorokin, it is through love in all human relations that we become altruistic, our actions becoming more pro-social and cooperative. Amitology, the science through which humans can develop their capacity for care and cooperation, became the focus of Sorokin’s work.

In the mid-20<sup>th</sup> century, C. Wright Mills made a lasting contribution to sociology with the introduction of the “sociological imagination,” a perspective that links individual experience/agency, history, politics, and the social structure. Mills is also known for the “power-elite” model, the ruling rela-

tions of power comprised of leaders in industry, the military, and the executive branch of government. Bringing together the power elite model and the sociological imagination, Mills argued that structural changes in the world meant that politics “has to do with the willful making of history... [making it] sociologically realistic, morally fair, and politically imperative to make demands upon men of power and to hold them responsible” for events occurring at the national and international levels (1985 [1958]:100).

In a contemporary application of Mills’ work, Brewer (2003) examined the peace processes taking place in Northern Ireland and South Africa. He found that changes in the structural and social context affect individuals who realize a broader array of choices such that they are able to become agents of social change (e.g., demanding peaceful alternatives to violence and bloodshed). Key to the agency of individuals is the “emergence of local spaces in which traditional lines of social differentiation are blurred” such that former group loyalties and identities (e.g., race or religion) are rendered less meaningful as different alliances and interests shape the social order (2003: 173).

The theoretical foundations of and developments in sociology can contribute to our understanding of the possibility and promise of a nonkilling society. What are these tools, and how have they been used to conceptualize peace and nonviolence? How can they be applied to further a nonkilling agenda in the world today?

### **Sociological Tools for a Nonkilling Society**

In the second opening quote, the 13<sup>th</sup> Chief Justice of the United States used what sociologists call a social constructionist perspective in observing that human beings create social institutions and organize the social order. As sociologist W. I. Thomas observed, a socially constructed definition of a situation, if defined as real, is real in its consequences (Thomas and Thomas, 1928). Thus a society organized on the basis of militaristic principles, defining war and killing as inevitable, will produce and support what is necessary for people to kill one another, including weapons and ideology. However, a constructionist perspective allows the understanding that society can be re-organized on the basis of nonkilling, anti-war principles, and that this reconstruction will produce real consequences related to the new definition of the situation.

Elise Boulding, a sociologist and futurist, cautions that “we can’t work for what we can’t imagine,” so we cannot have a peaceful future if we cannot envision what it would look like (Boulding, 1995: 204). Using a model developed by Dutch historian and sociologist Fred Polak, Boulding organized workshops

for 30 years on “Imaging a World without Weapons”. What does society look like when people are asked to imagine a future without weapons, killing, and war? Results with groups of people in countries around the globe reveals that their imagined futures share some common elements: communities are more rural than urban; life-long education is valued; there is no spectator-leisure industry; nation-states become less significant; peace-keeping brigades replace military armies; and living in harmony with the environment is a priority<sup>1</sup> (Bakker, 1993). When Boulding took the workshop into a men’s prison in 1999, the themes that emerged included:

- To be at peace with ourselves and one another and the world in which we live. To recognize, understand, communicate what is going on.
- There should be a peaceful environment for all mankind: no wars, hunger, homelessness, disease, violence, racism, no TV commercials and no pollution.
- People listen to and respect one another. There is equality, just laws and freedom from fear.
- Life is local; families are peaceful. There is strong community feeling and conflict resolution. People help each other and have fun together.

While Boulding was initially surprised by their responses, she observed that their ability to “not only visualize a positive future for the society which has in so many ways rejected them, but have the inner resources and moral integrity to consider concrete personal actions that could help bring about such a future” should give hope for the “capacities and potentials of our fellow human beings” to work together for a peaceful future.

In a similar vein, futurist sociologist Wendell Bell (2004) claims that societies across the globe are already working together to achieve common goals. At the same time modernization has disrupted traditional social structures, leaving anomic people searching for new sources of identity, community, and moral guidance. However technological advances in communication have contributed to an emerging global culture “from tens of thousands—possibly hundreds of thousands—of individual networks of communication, influence, and exchange that link people and organizations across civilizational boundaries” (2004: 31).

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<sup>1</sup> Interestingly, anthropologist Sanday found that rape is associated with environmental insecurity, and that “where men are in harmony with their environment, rape is usually absent” (1996: 194).

For Bell and other futurist scholars, there is an identifiable set of shared global values that promote the future health of all societies: individual responsibility; treating others as we wish them to treat us; respect for life; economic and social justice; nature-friendly ways of life; honesty; moderation; freedom (expressed in ways that do not harm others); and tolerance for diversity. Given that similar values have been found by researchers using different methodologies in different societies, Bell proposes three principles for a peaceful world: inclusion, skepticism, and social control. Exclusion of “others” defined as outsiders leads to aggression and violence. Global interdependence requires that people begin to see themselves as belonging to the human race rather than emphasizing nationalism and in-group/out-group sentiments. Skepticism can be practiced through “critical realism” which challenges the “delusion of certainty” (2004: 34). Without the ability and willingness to change with new information and ideas, society is unable to plan and move forward to a desired future. The principle of social control is central to international peacekeeping with the goal of preventing “killing and violence” while promoting “peaceful negotiation and compromise” (2004: 35).

The tools that can be gleaned from sociology and used toward the goal of a nonkilling society include theoretical concepts such as the *sociological imagination*, the social construction of reality, *verstehen* (empathetic understanding from Weber), and intergroup relations. Key to creating a nonkilling society is understanding the relationship between individual agency, structural realities and constraints (and how these are socially constructed and maintained), historical legacies, and politics (power), as demonstrated by Brewer (2003).

Sociology, with its roots in human behavior, and in particular the contributions of Sorokin, puts sociologists in a unique position to “study creative altruism and develop the methodologies to put it into practice” (Weinstein; Pozo, 2004: 111). Throughout the work of sociologists grappling with the possibilities for a peaceful future is the question of divisions between people on the basis of group membership (nation, ethnicity, religion, and so on). Addams saw the cooperation of different immigrant groups in early 20<sup>th</sup> century Chicago as evidence of the possibility of an international peace. Similarly, DuBois saw political divisions as fostering enmity and war between nations. Weinstein and Pozo noted that the sociological enterprise is based on the premise that humanity is one and the divisions and differences between people are the product of socialization.

A sense of shared humanity, a way to see past the (socially created) divisions separating and alienating people from one another, is central to the agenda of creating a nonkilling world. Where can sociologists address this perspective? Cer-



tainly in research that directly addresses questions of altruism and pro-social behavior, such as James Vela-McConnell's study of social affinity in the modern world (1999) and the Flame of Love Project (Lee; Poloma, forthcoming) which applies scientific methods to the study of the Godly love and altruistic, service-oriented life-choices. Also, as Addams and DuBois modeled, sociologists can contribute their expertise and knowledge to activist organizations and movements. There are sociological professional organizations focused on how sociologists can make a difference in this regard. For example, the Association for Humanist Sociology is a "community of sociologists, educators, scholars, and activists who share a commitment to using sociology to promote peace, equality, and social justice."<sup>2</sup> The international organization, Sociologists without Borders/Sociólogos Sin Fronteras (SSF), embraces its partisan position "in favor of human rights, participatory democracy, equitable economies, peace, and sustainable ecosystems."<sup>3</sup>

Perhaps the setting most conducive to passing on sociology as a way to create social change is in the classroom. As I have written elsewhere, the most important goal of teaching for me is to create a space for students to explore the ways they can apply sociology in their own lives, communities, and the larger society (Feltey 2005). In his presidential address to the American Sociological Association in 2000, Joe Feagin called for a recommitment to social justice in the ideals and practices of the discipline. To teachers of sociology, he advised that "we should make clear to the coming generations of sociologists not only that there is plenty of room for idealism and activism in the field but that these qualities might be required for humanity to survive the next century or so" (2001). Making room for idealism and activism and applying the tools of sociology in the context of organized movements for social change, can help shape an agenda for a future nonkilling world.

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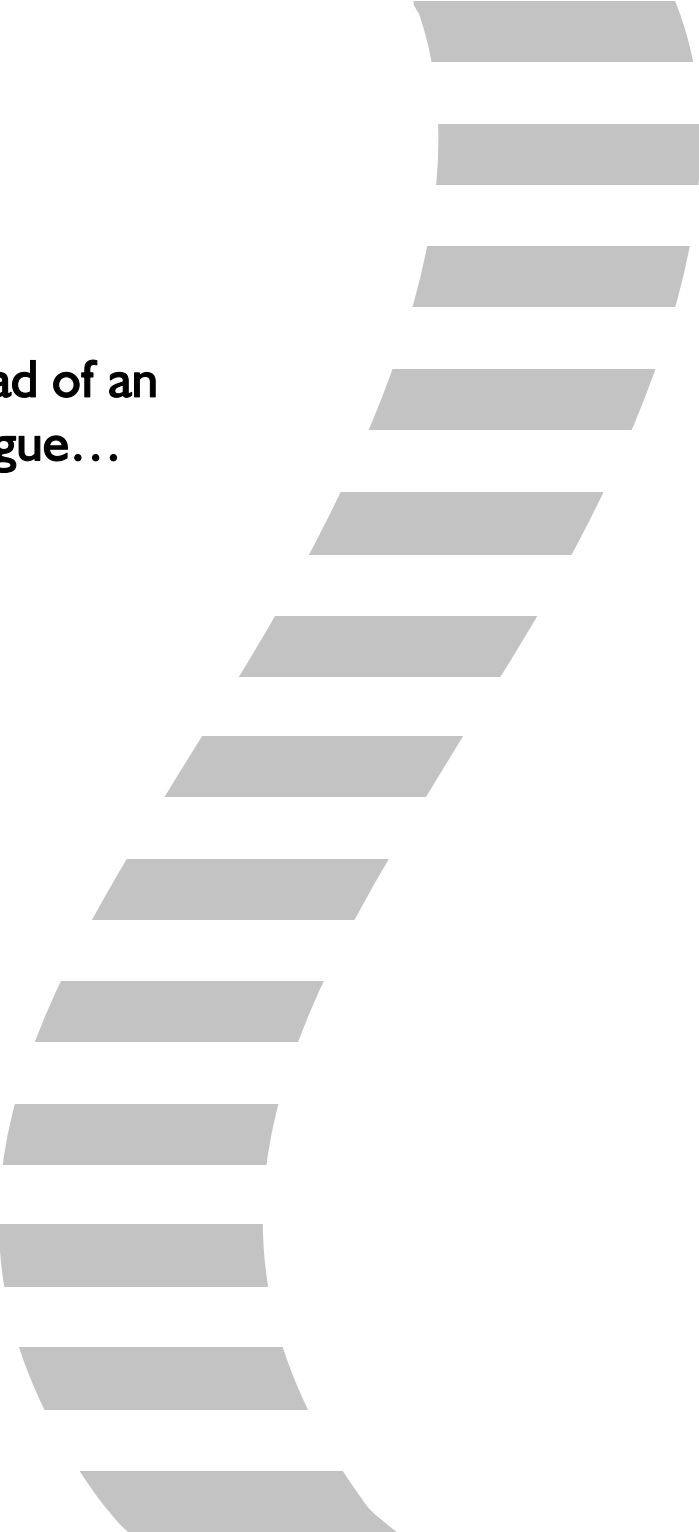
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<sup>2</sup> Visit: <<http://www.humanistsociology.org/site/humanist/>>.

<sup>3</sup> Visit: <<http://www.sociologistswithoutborders.org/>>.

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**Instead of an  
Epilogue...**



# A Utopia Worth Pursuing

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1. *Preliminaries.* This is not a scene from TV. A policeman is chasing a criminal, who holds a revolver in his right hand. He aims at the policeman. Under such clear-cut circumstances, the officer could open fire. He does not. When the case is evaluated at the precinct, the officer explains: *I looked at his face. The classes I took in physiognomy informed my action. I knew he would not shoot.*

From the vantage point of anticipation, to “read” someone’s facial expression is to assume that we know enough about how the complexity of our possible actions translates into the “story” the face “tells.” It also implies something else: Since each of our actions is the result of many deliberations in our mind, we can find those actions signaled in the brain almost 800 milliseconds before they are performed. We become aware of them at around 450 milliseconds before they are carried out. Moreover, we have only a very short time—150 milliseconds—to change our mind, and not act as originally signaled. The police officer and the criminal had only 150 milliseconds to kill or to opt for an alternative.

Obviously, the drama of a chase is not the same as dropping bombs, triggering a missile, or poisoning a field, a river, or people’s minds (intentionally, or through a lack of any sense of consequences). An extremely subtle knowledge informed the police officer’s nonkilling action; lack of knowledge (or false knowledge), in some cases, explains the great amount of killing that humans, often claiming the best intentions, still commit.

These introductory remarks are intended to put my modest contribution to this impressive volume in perspective. It is dedicated to Glenn and Glenda Paige, and therefore it has to address the sense of urgency that their work expresses. Indeed, nonkilling cannot be postponed to the time when we eventually understand it. The subject’s urgency explains why the Paiges, as well as many others dedicated to the matter, see it not as an ideal toward which we move (and might not reach), but rather as a reality of decision that translates future studies into current practices.

In January 2009, when I was asked to consider contributing to the volume, I knew I wanted to. The subject has obsessed me since my earliest traces of

awareness. On the hills of my home city, where thousands were hiding in order to avoid being bombed or killed by the gunfire from the airplanes of the Allied forces fighting the Germans, I learned what nonkilling is through an experience I've carried with me all my life. My mother, of blessed memory, covered my body with hers: the shield of love as nonkilling "technology." Many innocent people were killed or wounded on that August day. During the war, after being hit by a military ambulance, I spent many months in a hospital. I could see the airplanes attacking the town; I could see the bombs they dropped; and hours later I could see the wounded being brought in for treatment. It goes without saying that there were also many dead. Nonkilling did not exist as a subject at that time, but I experienced it as a child who would like to discover a world without pain and killing. This is one from among the reasons why I promised to write. And this is also why I asked for time.

It took me six months of work on a few pages (to follow shortly) that expressed my science of anticipatory systems as it relates to the idea of nonkilling technology, in the only form of expression I found justified: no technical terminology. That the Editor, Joám Evans Pim, whose effort I want to deliberately call to the readers' attention, bestowed upon me the honor of closing the arguments of this book, is relevant only to the extent that I became the author of an Epilogue to a book that I had not yet read. This does not excuse any shortcomings of my writing, as it does not negate the misgivings some readers of my manuscript had (in particular the copy editor and Glenn Paige himself). It says, however, that we might not share in our understanding of nonkilling, in particular in the fact that their view is fundamentally deterministic, while mine, as insignificant as it might be, is anchored in my understanding of anticipation, that is, nondeterministic.

It needs to be said in these preliminary notes: Utopia might rub some readers the wrong way. It means to them the impossible, what cannot be reached; to me it means something that takes longer to achieve. Although the notion of Utopia itself emerged in relation to nonkilling (cf. Thomas Moore, 1516), activists are not eager to pursue a Utopian project, because it is driven by final causes. I understand that. But all we do, if it is significant, takes time, and is accomplished in ways we could not fully foresee. Anticipation is what distinguishes the living from the inanimate, the physical. It turns out that our brain, unbeknownst to us, processes information pertinent to the living in a different area than the one where it processes information on the physical. Would the act of triggering a pistol, in chasing a criminal, or in any other situation, be processed in the areas reserved for the living, or in those reserved for the physical? From all I know, Utopia, as

a realization in the infinite space of possibilities from which anticipations eventually translate into action, is connected only to the living. Machines do not anticipate; neither do they make Utopia possible. Is nonkilling technology willing to go as far as to genetically manipulate the human being in order to eliminate killing? This is one possibility. If yes, then we'd better keep in mind how genetic intervention could also become the new killing technology! Talk about nondeterminism!

2. *Killing is a matter of agency.* As the saying goes, "Guns don't kill, people do." Directly, as in targeting and triggering the deadly weapon; or indirectly, as in building machines that kill, or writing programs to drive some machine, be it a computer or a guillotine, that will perform the operation. Or in constructing killer robots to which the task can be delegated. Or dispensing poison, in so many forms, from the famous arsenic to the insidious poisons of religious, ideological, political, moral, or scientific fanaticism. Brute force, which includes messy decapitations, as well as dropping an atomic bomb. Careless driving is another way of killing. Irresponsible acts—waste disposal by production facilities and industrial farming methods—kill. So do sloppy medical interventions, and legal tricks that let killers go free (they kill the trust in justice!). Some methods of killing are slow, and some faster than predicted by the persons who calculate the costs of pollution or professional misconduct. And more often than we like to think, we can kill by not acting at all. Accepting killing as part of life, as an unavoidable by-product of existing. Albeit, nonkilling technology, which should be an answer to the ever broader forms of killing practiced in our days, would have to cover the huge territory of human actions, whether these are well intentioned—industrialization, for example, or genetic engineering—or criminal—e.g., wars of all kind. Technology, being deterministic by nature, could only attempt to reduce the complexity of human action, to simulate the nondeterministic within a deterministic model. This is a high-order goal.

Creating life is still a matter of a realization in a limited space of possibilities—from sexual encounters to artificial insemination—and the associated probabilities. As long as no anticipatory processes can be associated with the artificial, life is not the outcome, to be either celebrated or destroyed (killed). However, artificial or synthesized life can become an agency for killing. Yes, killing conjures an infinity of means, and it is always driven by *telos*, the end. The metaphors encapsulate the agency factor: the look that kills ("We look, they die," was a description used, many years ago, by some MIT researchers developing intelligent weapons for their sponsors); the

thoughts, the mindlessness, the indifference. We die so many times in our lives as we experience deceit, betrayal, injustice, humiliation, hunger, thirst, illness. No limit to these possibilities, just as there is no limit to stupidity. Nonkilling technology will have to address not only literal killing, but also metaphorical killing. Generations were killed, in the metaphorical sense mentioned, by acts stemming from intolerance, discrimination, insensitivity, or political ideology, although they continued to exist physically, to eat, to make love, to reproduce, to be miserable.

The reason for placing the issue of nonkilling technologies in the broadest possible framework of life proper, as well as metaphorical, is simple: Is it really possible to erase the act of killing of other human beings, plants, animals, insects from our existence? Can humankind invent something—whatever—that will prevent killing? The trigger is squeezed, the bullet flies, but no one is killed because this “nonkilling” something was deployed. Is this what nonkilling technology is supposed to be? Some magnificent invention that will prevent human beings from killing human beings? Is this at all conceivable?

Behind the atomic bomb, there is physics (capturing the determinism of the inanimate). None of those amazing minds that contributed to our better comprehension of matter (radioactivity, in particular) were themselves killers. Even those who ended up working on the mass-killing technology that brought an end to the murderous World War II did not do so animated by what is called “the killer instinct.” The desire to stop the barbaric extermination of civilians and to avoid having the world taken over by insane dictators, supported by fanatics converted to the agency of death, motivated those scientists to carry out their assignment. After the destruction was documented, many of those scientists dedicated their efforts to prevent the future lethal use of the energy they unleashed.

To address killing is to address its specific rationality, as irrational as the act of killing appears to us. The same applies to nonkilling science and technology. In our world of quantified economic considerations, to focus on killing means to focus on the *return* associated with the act. It can be money, diamonds, power, recognition, satisfaction. In the animal realm, killing is associated with survival. Survival is the expression of nondeterminism. Within humanity, killing followed the path from survival to affluence, and at each step reflected the motivations of life itself. The first tools made life easier; they were reductions of the nondeterminism of nature to the determinism of machines. But all of them, embodying the physics of the lever and of the wheel, also made life more susceptible to death: A hammer kills more efficiently than the fist. Let us face it, the process we call human progress is ac-

tually that of increased efficiency taking place in human *self-constitution*. We are what we do. The human quest for efficiency has resulted not only in more successful hunts and better crops, improved shelter, labor-saving devices, and self-improvement, but also in more efficient means for killing. Omitting implements for hunting and defense, the quest for efficiency drew on positive motivations. Fertilizers increase crop yields, but their ingredients can be used for making bombs. Remember Oklahoma? Nuclear reactors are efficient means of generating the energy on which human life and well-being depend. But on the same order of magnitude, they are turned into means of killing and destroying. Likewise the amazing technology that embodies our ability to automate mathematics—computers in their myriad manifestations and functions—made possible levels of prosperity that most people could not have imagined. Even the innocuous cell phone, through which lives can be saved, can be an agent of killing when used to remotely trigger explosions, or when it distracts someone driving a vehicle. In Africa and Asia, the cell phone engages many citizens in the local economy, keeping them from starvation. But it also made some conflicts bloodier than ever, as instruments of coordination and remote control of destructive explosives.

To understand the broader picture of what we call technology, including that dedicated to killing and murder, let us take a short detour. To repeat: We are what we do. We are poets when we write poetry, mothers when we give birth and nurse an infant, scientists when we pursue knowledge. And killers when murder is carried through. Or: well-intended individuals or groups when we pursue nonkilling technology. To prevent killing. This definition cuts through the whole history of humankind. The only change is in the circumstances under which we *make ourselves*. Myth and ritual—in which killing played a central role—responded to natural rhythms and incorporated them in the life cycle. Killing was part of it, as life unfolded from birth to death. Nonkilling technology would have meant not the abolition of stones or knives, but of all the reasons for killing in the first place. Once human self-constitution extended beyond nature, creating its own realm, observance of natural rhythms took new forms. These new forms were more able to support levels of efficiency appropriate to the new condition achieved in the experience of farming. It was no longer the case that survival—sometimes at the expense of someone else's life, equaled finding and appropriating means of subsistence in nature.

In our days, efficiency facilitates prosperity—beyond any previous expectation—but also misery. We are more productive, and more destructive. Should nonkilling technology reduce our productive capabilities? Killing is an



expression of who we are and how successful we want to be. The millions of people killed in previous wars—the wars of the Industrial Age—went through the glory and despair of confrontation. Airplanes hitting the Twin Towers in Manhattan, or the use of “intelligent bombs” in the wars still going on, have a direct impact. But in each situation, we are what we do; active military, scientists conceiving weapons of mass destruction, engineers perfecting killing machines. Or activists against killing, scientists working on nonkilling technology. The new condition of science, i.e., living science, moves the target of nonkilling from the deterministic (machines that kill) to the nondeterministic (life that kills some other forms of life). Genetic wars, in extension of the bacterial scripts of those killing fanatics who became heroes of books more than victorious fighters, are closer to us than we are willing to accept. And we are not prepared for them, neither mentally, nor technologically, never mind emotionally. Killing in this realm will be the result of conflicting anticipatory processes. As nondeterministic outcomes, the result can go either way.

What is new in humankind’s condition is the rapid expansion of killing on account of living processes and the slow but inescapable transition to a psychopathic condition: no self-reflection, no sense of wrong, no sense of guilt. Killing like sneezing, or making casual love, or watching some sports event. Should nonkilling technology address the progressive psychopathic condition of individuals living more and more for themselves, and less and less for society? Maybe the place to start in the attempt to conceive nonkilling technology is in making awareness of the consequences of killing possible. Even more: necessary. Among many other factors, the game obsession, not *Tetris* but *Killer* (as one game is even called), needs to be mentioned. Games, whether we want to admit it or not, are part of the technology of death; addictive playing, as it is practiced, entails the numbing of hearts and brains. Wars became television events watched during dinner, or in the context of a *hookup* (nothing consequential, not even sex). Death and games, television and killing are not in causal relation; better yet, the relation is very subtle. The targets we see on high definition screens are no longer real for the viewer. The means of annihilation are themselves driven by virtual actors—someone in Nevada controlling a drone in Waziristan—performers in a large-scale game where the distinction between life and death is suspended. Or so some think.

In view of the broad understanding of killing presented here and how people are becoming more efficient at killing, and less sensitive to it, the question to be posed is: How inevitable is killing? Because even to entertain the utopian notion of a world free of killing will not result in turning back time. The past cannot be undone. If time were reversible, there would be no vic-

tims of killing. The answer has to lie in some other place: the return on killing. In other words, why do people kill each other? The *How*, embodied in technology, is in effect a translation of the fundamental *Why*. Sure, "What is the return on nonkilling technology?" is also an unavoidable question. Is it only humanism? (Many people don't even know what this word means.) Sense of guilt? Psychopaths do not have it. A new scientific or technological challenge? A new way to get rich fast? To become famous? To feel good?

If someone justifies killing by fearing for one's life, the equation states: My life is more important to me than the life of the person I killed. The return is a sense of self, on which basis all those who kill implicitly affirm their own importance. Can we advance toward a society in which every life is equally important? Nonkilling technology would have to result in this condition of the human being.

I killed because the person wanted to rob me. The equation is: What belongs to me, of trivial or great value, is more important than the life of the would-be robber. Can we advance toward a society in which ownership is not more important than life? Nonkilling technology might have to address ownership as well.

I killed because they killed those dear to me, my friends, my fellow countrymen, my fellow-religionists, my gang pals, my fellow-travelers. In other words, some people are more valuable than others by virtue of some association or relation. Can we advance toward a society in which differences among us are less important than what we have in common? Or better yet: a context in which we can tolerate them instead of trying to make us all the same?

I killed because that was the only way to get rid of someone who deserved to be killed. Such a person could be a serial killer, a psychopath, a fanatic, in the guise of president, king, commander, political leader, or theocrat. Killing in such situations affirms that we can prevent murder, and other extremely damaging acts, through murder. In other words, some killings are better, more justified, than others. Can we advance toward a society which realizes that killing = killing (i.e., killing equals killing), no matter how we justify it? Yet again, nonkilling technology will have to effectively override any justification for murder. Even for those obsessed with power at any price.

Humans bear the burden of a long history of killing. Within this history lies the distinction between murder, a premeditated act, and killing, which can sometimes be unintentional. It carries with it understandings that made sense in different pragmatic contexts: The ones you don't kill will kill you. Or, another layer: If someone took someone else's life, and the act is fully documented, society can impose the death penalty. Or: killing someone out of

love—yes, love is called up as a motive for killing—out of desperation, or in a situation of diminished self-control. But we do not live in the past. And since each and every person is subject to change, the condition of killing is changing. Struck by lightning was sometimes interpreted as an act of divine punishment. Today it is an extreme event, brought about by actions not fully explainable in science, or inescapable for reasons other than religious. The nonkilling technology is called a lightning rod. Decapitation in virtue of being different, and standing for different values, goes back to an understanding of homogeneity associated with a sense of self-righteousness that resulted in the herd mentality. Hitler's advanced technology and methodology for killing is not fundamentally different from that of contemporary terrorism.

"Made a killing," a way of describing how huge profits are made—carries with it an experience that during a period of crisis (such as the current recession) has become very clear to those involved. Profit as the engine of capitalism explains competition in all there is good to it, but also in all that is damaging to it. Killing cannot be disassociated from profit, as death cannot be understood independently of life. Technology that serves killing is never justified by what it accomplishes, but rather by what it promises in terms of profit. Unfortunately, as we, as a society, become less concerned about the human consequences, we enter a stage of psychopathic action within which the pain of others no longer affects us. The psychopath is a machine—victory of technology over the living.

The Utopia of a nonkilling society implies, of course, many forms of human interaction. They return a better value than killing, and celebrate human creativity, not profit-making. Envy, alienation, disease, intolerance, inequity, inability to accept differences can be murderous. The inability to cope with change—our own included, i.e., the change from adulthood to senescence is probably harder to take than the change from childhood to adolescence—is also associated with the extreme act of taking someone else's life. Is mercy killing less killing? Anything and everything can kill. Technologies developed for the sole purpose of killing are only more obviously dedicated to the act, not necessarily better, and never more justified. Nonkilling technology is probably a reflection upon our own understanding of what is called (demagogically) "the sanctity of life."

In the final analysis, to kill means to consider your own life worth more than someone else's. If and when circumstances leading to this deadly inference are erased, life and death will make our expertise in killing superfluous.

3. *Infinite beginnings.* As stated in the Preliminary note, Utopia is always an anticipation, a possibility among the many others that inform our present thoughts, ideals, and acts. (Distopia would be the realm of never-ending killing, for reasons, or lack thereof, ranging from selection, maintaining order, security, etc.) For a scientist, what counts is progress in shared knowledge and understanding, not individual recognition. In this respect, the dynamics of science is always driven by *telos*. Science is not in reaction to reality, it is in anticipation of the realities it makes possible. Yes, we need to react, here and now, to any killing. But nonkilling qualifies a world that transcends the notion of an end. If life did not necessarily end, there would be no killing. The more generous understanding of infinite beginnings is what makes nonkilling worth pursuing.