

## **Humane Leadership Progress Report 2000**

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This document consists of five parts:

- I. Our Posture Towards the Project
- II. The Senior Independent Advisory Panel
- III. Framing the Dimensions of the Mandela-Milosevic Continuum
- IV. The Span Model: Interdisciplinary Structure
- V. Eight Representative Major Research Projects

### **I. Posture**

We begin with caveats: Scientific inquiry into the biopsychology of humane leadership is an uncertain endeavor that cuts across virtually every level of analysis in the social and life sciences. It breaks new ground: in topic, in method, and in its interdisciplinary nature. As such, much of what we suggest below is tentative and speculative. There will be no overnight breakthroughs: no sensational discovery, such as identifying future Mandela's from the genome, or inventing a globally applicable formula for conflict resolution. Some of our proposals do not explicitly address the Mandela-Milosevic continuum, aiming instead at the establishment of essential prerequisites for addressing the biological, psychological and social components of the problem. We hope that by gathering together some of the most rigorous minds in the social and biological sciences to research the topic in a well-supported way, we will construct a solid foundation for scientific progress.

Over the summer, as investigators in different disciplines have met, it has become clear that a major roadblock in the biological and social sciences concerns the difficulty of dealing with context. Study of a phenomenon like leadership is incomplete without understanding the context in which the phenomenon is embedded. This is true from the level of genes to the level of history. Gene action can be fully understood only in context, not only of the full constellation of other genes in the individual's makeup, but also the enormous range of physical and social circumstances to which the individual is exposed. At a higher level of complexity - although psychologists usually conduct experiments as if all the important variables are to be found in the individual psyche and the local laboratory situation - it is clear that psychological phenomena cannot be understood without considering factors at social and cultural levels. Social phenomena, involving joint action of numbers of individuals, make sense only in the context of political, economic and historical factors. And, to make the circle complete, societal actions are constrained by the preferences of individuals and the limitation of the genome. At the heart of understanding humane leadership is the fact that leaders rise to the occasion or fail to rise to the occasion in a given context.

As a concrete example of context dependence, we may think of the career of Adolf Hitler. He

was an unusual individual, perhaps even unique in history. Yet his ascent and political domination could have occurred only in a context such as that of German economic and political turmoil and against the historical background, extending well back into the 19th century, of a German sense of inferiority and grievance. An implication of this example is that no amount of understanding of individual psychology or biology on the one hand, or of social and historical factors on the other, would allow for understanding, let alone predicting, the success of an Adolf Hitler.

Context is an issue that receives a great deal of lip service in the sciences but little serious consideration. ("Everyone talks about the weather...") It confounds virtually all attempts to assign major effects to any single factor-biological or psychological-that one analyzes. We propose to make the issue of context, and of rising to the occasion in a given context, a theme that runs through this endeavor, incorporating it into the research projects where possible and looking for new ways to define it, analyze it and understand its patterns. We are aware that this is ambitious, but if it were easy, it would have already been done. We see it as the most promising antidote to the excessive simplification and dangerous over-interpretation that often occurs in attempts to reduce human activities to scientific laws. We cannot guarantee the success of this endeavor, but if a complex issue such as humane leadership is ever to yield to scientific analysis, it will come only after we successfully grapple with this theme.

Any exploration of the biological underpinnings, particularly involving the genetics, of a complex phenomenon like humane leadership, is fraught with controversy. It raises the possibility of simple-minded generalizations about personality as inherited, of the awkwardness of a good fit between tough-minded science and soft science, and even of the specter of eugenics. Such controversy has caused many investigators to shy away from the topic. We believe, however, that controversy does not justify ignoring a topic so important to the human future. Rather the controversial nature of this topic calls for open inquiry, for rigorous peer-review that encourages nuanced analysis to limit the risks of over-simplification, and for a disinterested, highly qualified advisory body.

## **II. The Senior Independent Advisory Panel (SIAP)**

Faced with an ambitious, interdisciplinary project of this nature, I sought and recruited six senior scholars to form the governance group. As a group, their expertise spans the relevant domains from history to genetics. As individuals, each has a distinguished scholarly record within his or her field, each has done notable interdisciplinary work, and each brings a healthy and educated skepticism to the project. They are a world-class group with whom I feel privileged to be working. We will eventually appoint one more member, as executive director, to SIAP. This is the body that will ultimately suggest, refine, review, choose, and shepherd the research projects. The six are:

- a) Martha Farah, Professor of Psychology at the University of Pennsylvania (Cognitive Neuroscience)
- b) Ralph Greenspan, Senior Fellow In Experimental Neurobiology of the Neurosciences Institute, San Diego (Genetics)

- c) Richard Nisbett, Professor of Psychology at the University of Michigan (Cultural Psychology)
- d) Steven Pinker, Professor of Brain and Cognitive Science at the Massachusetts Institute of Technology, (Evolution, Brain, and Language)
- e) Gérard Prunier, Professor of History at the Sorbonne - University of Paris (Modern African Politics)
- f) Steven Hyman (tentative), Director, National Institute of Mental Health (Brain and Behavior)

To help insure their disinterestedness, members of this group will not be eligible to receive research support from the project.

Over the period from June 10, 2000 to July 26, 2000, we organized five meetings in Philadelphia made up of SIAP members and about 30 of the leading scholars in leadership. We began with the question, "Could the Mandela-Milosevic continuum be bio-psychological?" and the task of these meetings was to reframe this metaphor into potentially workable dimensions, to create a plausible structure for interdisciplinary work, and to formulate a sampling of research projects that show promise.

### **III. Framing the Question**

Our task began with a metaphorical question: "Could the Mandela-Milosevic continuum be bio-psychological?" The contemporary examples of Nelson Mandela and Slobodan Milosevic anchor the ends of a striking contrast in leadership styles. The contrast is not captured by a simple "good guy" versus "bad guy" stereotype, although it is tempting to render it in such terms. Rather, the contrast seems to entail a family of distinctions with respect to how a leader obtains, sustains, and uses power, especially with respect to the resolution of conflicts with other social groups, such as foreign nations, rival political parties, or internal dissidents. A leader can approach conflict in a way that allows opponents to survive and even thrive, or a leader can approach conflicts in a way that all but guarantees the destruction of his or her own followers along with enemies.

We arrived at a working list of twelve dimensions along which leaders vary and which help to distinguish contextual factors predisposing toward humane or inhumane leadership. We regard these dimensions as tentative and as mere predispositions, not as determinants of behavior. Several of the proposed projects detailed below will refine them. It was encouraging that we could think of numerous leaders from around the world and across history who exemplified the ends of these dimensions and that the extremes of these dimensions seemed to reflect aspects of Mandela and Milosevic.

These dimensions can characterize not only leaders, but also persons generally, and even whole societies. Most of the distinctions we generated seem psychological in nature, in the sense that they are manifest in the thoughts, feelings, and actions of an individual. It is important to stress, however, that each dimension is best examined in the context of a bio-psycho-social framework. Said more plainly, leaders and their styles are the products of biologically-based factors like temperament, of psychologically-based characteristics such as cognitive style, and of socially-based influences such as the history of their cultural or religious group. We consider that where a

leader falls will be subject to particular contexts and may thus change with circumstances. We see these dimensions as measures that can be keyed to various others (e.g., genotype, social conditions, political opportunity) as part of our effort to construct a lawful picture of humane leadership that preserves as much of the richness of the context as possible.

Our working list of individual-difference dimensions and social-context dimensions is simply that. What we have generated should not be taken as exhaustive, exclusive, or necessarily bipolar. Rather, it is a work in progress that allows refinement, the addition of new contrasts as well as the consolidation of existing ones. The important feature of these dimensions is their research potential: to be applied across levels of analysis, to individuals as well as to groups, or even to entire cultures. This is not to say that human history reduces to the personalities of world leaders, nor is it to say that leaders bring nothing of their own to their roles. The individual-group-context dynamic will pervade all projects we sponsor, and these dimensions, if nothing else, provide a vocabulary, which will allow us to move back and forth between the individual and the cultural context.

Here are the dimensions and brief characterizations of each:

1. Forgiveness vs. Vengeance. Following conflict, some leaders seek reconciliation with their enemies; they forgive them and make them part of the new order. Other leaders exact terrible revenge. As an example of the former, think of how the North treated the South following the United States Civil War. Northern leaders did not persecute Confederate leaders and soldiers. They did not slaughter their families. They did not deny them equal treatment under the law.

2. Freedom from the Weight of History vs. Driven by the Weight of History. Are a leader's actions channeled by his or her personal or cultural history? Or can a traditional enemy now be regarded as a potential friend or ally? This category particularly refers to real and mythologized trauma and injustice. Mandela's attitude toward white South Africans following the demise of apartheid is the paradigmatic case of a leader freeing himself and his people from a terrible history. In contrast, Milosevic is still fighting the battle of Kosovo from the Fourteenth Century. The United States seems to be a nation not especially weighed down by the existence of past conflicts. For example, it has long been one of the staunchest allies of Great Britain, despite the Revolutionary War and the War of 1812. Germany and Japan are considered friends of the United States, despite World War II. France and Germany are friends, and even Japan and China. In contrast, think of the long-simmering antipathy between Turks and Armenians, between Iran and Iraq, and between Ethiopia and Eritrea.

3. Broad vs. Narrow Moral Circle. In comparing attitudes of societies at different periods in history, one is struck by differences in who gets counted as a rights-bearing entity and target of empathy. For example, two hundred and fifty years ago, most decent people thought nothing of keeping Africans as slaves. In earlier periods, people outside the city-state, village, or clan were treated as subhuman and could be killed in good conscience when it was convenient to do so. The philosopher Peter Singer has noted that moral progress over the millennia can be characterized as an "expanding circle" of individuals that are treated as having interests equivalent to one's own: from the family to the village, clan, nation, continent, and eventually all of humanity. Today's

most divisive moral debates concern further expansions of the circle: to fetuses, animals, species, and the planet.

Most members of most democracies today grant the humanity of (if not the attractiveness of) every human group on the planet. This would seem to be unprecedented in history, and undoubtedly underlies in part the fact that none of the two hundred armed conflicts between states in the 20th century involved the pitting of one democracy against another. All the compassion and forgiveness in the world may be less relevant to humane leadership than the bloodless belief that these are people-"they is us" - and therefore killing them is not an option.

4. Acknowledgment of Responsibility vs. Impunity. Does a leader acknowledge past mistakes or excessive acts of aggression? Consider the Pope's apologizing on behalf of the Catholic Church for its inaction during the Holocaust. Consider Bill Clinton's apology for slavery, or the acknowledgment by the United States government that it was wrong to relocate Japanese-Americans to internment camps during World War II. The skeptic might dismiss these acknowledgments of responsibility as empty gestures, but consider their opposite: leaders or nations that deny responsibility for any and all past sins. We suppose that a culture of impunity precludes the sorts of humane leadership in which we are interested.

5. Broad vs. Youth-focused Power Base. One of the apparent constants throughout history is that leaders often rely on groups of aggressive young males to carry out their political initiatives. From the rise of Nazism to contemporary conflicts in the Middle East, Africa, Eastern Europe, and Northern Ireland, the "dirty work" is done by rootless young men with little to lose. A leader must have at his or her disposal sufficient numbers of such young men who lack other options. We assume that throughout history, there has been little variation in a society's age distribution (an exception is the aging population of the contemporary United States), but the availability of alternatives to fighting varies greatly. This highlights the importance of widespread education and economic development. If prevailing social conditions provide young men with the potential for long and varied futures, they may not so readily attach themselves to a violent political cause.

6. Cosmopolitanism vs. Xenophobia. Many psychological discussions of conflict between nations emphasize misunderstanding between the parties. To be sure, cognitive accounts of conflict add to the explanation, but not if the role of unadulterated hatred is ignored. The actions of some leaders and some nations are clearly fueled by feelings that strike the onlooker as irrational. No purely cognitive explanation can accommodate these feelings, and so we suggest a dimension that is explicitly emotional. Does a leader hate and fear enemies? How much of that leader's emotions are shared by the general populace? Is the mere existence of enemies repulsive? Are enemies painted in the language of contamination and pollution? In contrast to such xenophobia is an emotional stance we dub "cosmopolitanism." Are all people-friends and enemies alike-allowed under the same umbrella of humanity? Are we all God's children? Do some cultures encourage a broader human context?

7. Integrative Complexity vs. Integrative Simplicity. Aiding and abetting many of the contrasts so far discussed is a well-studied psychological characteristic that reflects the complexity of perspectives that a leader can bring to bear on an important issue. Cognitive complexity ranges

from the most simplistic belief ("Bomb them back to the Stone Age.") to views that are not only multi-faceted but also coherently integrated. Research suggests that cognitively complex leaders are more likely to compromise. We presume that cognitive complexity is a prerequisite to forgiveness ("They have harmed us, but we must look to the future."), acknowledgment of responsibility ("In the course of our well-intended actions, some mistakes were made."), and cosmopolitanism ("They differ from us in some ways but not in those that most matter.") Each of these stances has an individual component and a cultural component. "Placement" in turn depends on factors ranging from the biological to the historical.

8. Peaceableness vs. Bellicosity. A dimension that is especially complicated is the degree to which a leader or nation is peaceable versus aggressive. Is the leader an inflamer or a dampener of hostile emotion? Is the first response to an affront an attempt at reconciliation or an all-out attack? The complexity is introduced by the obvious fact that given leaders or cultures may vary in peaceableness, sometimes in rather rapid fashion. Nelson Mandela, for example, was imprisoned in South Africa because he would not renounce violence. But when he was freed, that is exactly what he did. Or consider Menachim Begin, one-time terrorist turned peacemaker. Despite the temporal instability of this dimension, we think that a leader's placement along it at any given point in time may shape his or her actions.

9. Instrumental Aggression vs. Unbounded Aggression. Related to the peaceableness dimension is the use a leader makes of aggression. There are probably few world leaders who are pacifists, but leaders do vary in the degree to which they endorse "scorched earth" approaches versus strategic strikes. In other words, does a leader act aggressively in order to achieve specified instrumental objectives and then cease hostilities once these objectives are obtained, or does a leader put no limits on aggression? An example might be the decision of the United States to drop nuclear bombs on Nagasaki and Hiroshima: The bombing did not escalate to include Tokyo; rather, the horrific violence was curtailed once Japan surrendered.

10. Empathy vs. Intellectualization. Conventional thinking tends to place the intellect on the moral high ground and blame evil on primitive emotions. In some contexts this is undoubtedly correct, as when egalitarian ideals override visceral enmity toward a neighboring group. But in other contexts the intellect may oppose a different emotion - empathy-to the detriment of decency. Many concentration camp guards felt revulsion at their jobs but were persuaded to suppress the emotion by arguing that Jews and gypsies were a virulent pathogen that had to be wiped out for the greater good. Some of the twentieth century's worst tyrants were intellectuals who embraced ideologies (Nazism, Marxism-Leninism) that led them to order atrocities that might have repelled ordinary people when stripped of the toxic logic that seemed to make them inevitable. It is possible that a tendency toward intellectualization can lead either toward humane or cruel leadership, depending on whether the ideological content is such as to oppose the emotion of enmity or to oppose the emotion of empathy.

11. Collegiality vs. Autocracy. Also seemingly important is how a leader shares his or her power and makes decisions to use it. Is the leader an autocrat who makes unilateral decisions, or does the leader consult with others in his or her group, solicit criticism, build consensus, and follow the sentiments of the leadership group even if they conflict with his or her own wishes? What emerges is a dimension anchored on the one end by collegiality and, on the other, by autocracy.

Several well-studied psychological contrasts may be subsumed here. Is the leader oriented to the completion of tasks or to the creation of harmonious relations among the group? Does the leader define him- or herself independently of others or interdependently? Of related relevance is the diversity of the leadership group. Are people drawn from various walks of life, or are they, for example, all soldiers - or all lawyers, or all industrialists? Assuming the leader does consult with others, we presume that the diversity of the group serves humane action, especially if the leader is people-oriented and interdependent.

12. High vs. Low Power Motivation. The degree to which a leader is motivated by power is a dimension investigated by political scientists and psychologists. By "power motivation" we mean the need to have an impact on others and to be in charge of people and situations. Those high in power motivation are more likely to seek elective office, but even among leaders, power motivation varies.

#### **IV. The Span Model: Interdisciplinary Structure**

Humane leadership arises from a complex interaction of forces at many levels. Thus, the study of humane leadership involves a number of academic disciplines. A leader is a biological organism with a repertoire of beliefs and desires made available by a complex brain, which is organized in part by genes selected over the course of evolution. But the events in his or her life that gave rise to those beliefs and desires, the way they motivate behavior, and the effects of that behavior, depend on interactions with millions of other brains, whose contents are shaped by personal values, economic prospects, and historical patterns acting over decades or centuries. Thus, several academic disciplines dealing with humans have contributed theories and discoveries to this nexus. These disciplines range from genetics and evolution through social psychology, history, and economics. Our understanding will be intolerably incomplete without combining them creatively. It is unfortunate that university departments and traditional funding sources, which respect disciplinary boundaries established more than a century ago, are ill-equipped for this sort of task. The necessary research will only come from teams of collaborators, networks of communication, and mechanisms for solicitation, evaluation, and communication of research that cut across these divisions.

**Figure 1**

#### **CONCEPTUAL ORGANIZATION**

<b><u>Participants</u></b>	<b><u>Research Groups/ Levels of Analysis</u></b>	<b><u>Representative Research Projects</u></b>
Historians		
Political Scientists	Society	Study 1: Ethnic Conflict-Conciliation Database
Anthropologists		Study 2: Leaders Database
Sociologists		Study 3: Hunter-Gatherer & Great Ape Societies

Evolutionary Psychologists		Study 4: Psychobiology of Humane Leadership Dimensions
Social Psychologists	Individual	Study 5: Who Rises to the Occasion?
Personality & Cognitive Psychologists		Study 6: Testosterone, Gender, and Leadership
Cognitive Neuroscientists		Study 7: Are There Identifiable Genetic Components to the Dimensions?
Hormonal Researchers		Study 8: Genes In Context
Genetic Epidemiologists	Biology (Genes and Molecules)	
Geneticists		

How does one create a research consortium among scholars who range from Drosophilists to Rwandists? This is the problem facing a group investigating the bio-psychology of humane leadership. The interdisciplinary sweep of the project presents several challenges. Primary among them is the need to facilitate productive relationships among the brightest minds from a wide array of scientific disciplines - disciplines that operate largely in isolation from one another and speak in disparate professional languages. We will capitalize on the fact that adjacent disciplines speak more similar scientific languages than do widely separated disciplines.

We conceive of the intellectual organization of this project as building "spans" that couple adjacent disciplines. By constructing several adjacent spans, we hope to create the long structure that will be the foundation for understanding of the Mandela-Milosevic dimension. Figure 1, above, displays the range of disciplines involved. We intend to create the spans using a two-fold approach: 1) by sponsoring senior research projects that will bring adjacent groups together, and 2) by creating "seminars" (based on the Huntington-Akumal model described below) that will also bring adjacent groups together. The Senior Independent Advisory Panel will be the general contractor for the bridge, and the adjacent, specialized groups of scholars will construct each span.

The choice of order and neighborhood for the disciplines shown in Figure 1 is somewhat arbitrary and not meant to be rigid. We recognize that there are other pairings and groupings that will be important to encourage, such as those between evolutionary psychologists and the other disciplines concerned with the "individual." Moreover, we foresee an ongoing process of feedback from the research projects sponsored in this initiative. This will take the form of inviting investigators to report their findings to and participate in the discussion groups where relevant.

We envision two levels of work. The first includes the major research projects, a sample of which make up the final section of this progress report. The second, structured like a "seminar," will generate new research. Because this is a new field, a seminar structure is ideal for generating new ideas and research. Next, we lay out a structure for the intellectual venue of such seminars. Finally, we describe schematically eight representative research projects. The Span Model applies both to the potential research projects and to the seminar structure.



## The Huntington-Akumal "Seminar" Model

Over the past summer, we have brought together leading figures from related fields in the social, behavioral, and biological sciences to begin framing the dimensions of the project and to suggest the major research projects most likely to illuminate the issues. These research projects, eight of which are described in the final section, would likely be led by very senior scientists. But experience shows that younger researchers are often in the best position to conceive and explore creative new lines of research. We take our lessons from two projects that have proven successful in advancing ambitious research into new terrain: The Huntington's project and the Positive Psychology Akumal meetings.

The Huntington's project is one of the genuine success stories in coordinated, groundbreaking, interdisciplinary research. The project, overseen by the Hereditary Disease Foundation, achieved the first successful mapping of a human disease gene for which no molecular or biochemical identity had been known a priori. The project recruited the best and the brightest of all ages from the relevant disciplines, and its meetings served as an incubator for many of the concepts and approaches that went into the mapping and sequencing of the human genome.

Similarly, the Akumal meetings have, in only three years' time, transformed an embryonic idea concerning the value of focusing on positive attributes and contexts into one of the most thriving research programs in clinical and social psychology. By bringing together dozens of the brightest young researchers in positive psychology in a week-long setting, the meetings have galvanized several major collaborations. Among these is a multi-million dollar project to create a taxonomy and measurement instruments for the human strengths.

Both the Huntington's project and the Akumal meetings have succeeded through the same general model. First, they identify the brightest young researchers in the relevant fields and bring them together with a small number of leading figures. Second, they provide environments that emphasize open, creative discussion. And third, they foster coordinated research that exceeds the capacities of individual scientists. In addition, both projects have allowed membership to evolve from meeting to meeting as past participants' contributions are evaluated and promising additional participants are identified.

While both the Huntington's project and the Akumal meetings have been interdisciplinary projects, neither has involved a range of disciplines as wide as what we are now in the process of assembling. Thus, after the initial conceptual meetings of this summer and September are concluded, we propose that further operational meetings be organized as follows:

- The leading figures assembled at the September meeting will be asked to nominate promising young researchers from their various fields.
- Three overlapping Research Groups will be organized under the direction of one or two leading figures from each group. The Research Groups will encompass, respectively:
  - History, Political Science, Anthropology, Political and Social Psychology;
  - Political Psychology, Personality and Cognitive Psychology, Cognitive Neuroscience, and

Evolutionary Psychology; and

- Cognitive Neuroscience, Evolutionary Psychology, Human Behavioral Genetics, and Genetics.
- Each Group's organizer(s) will assemble meetings involving six to eight of the promising junior and senior researchers nominated by the September participants. The senior advisory committee members will attend as many meetings as possible to help connect and coordinate the discussions of the three Groups, and turn the most promising research ideas into empirical studies.

This structure follows time-tested precedents, and should provide the framework and flexibility to allow the Project to advance not only quickly but also in a coordinated fashion that unites the most promising younger scholars with leading senior scientists.

## **V. Eight Representative Research Projects**

In parallel, we will sponsor roughly five to seven major research projects, along with a larger number of smaller projects that emerge from the span seminar structure. Some of the proposals fall into the category of prerequisites for providing some understanding of the following:

- The genetic influences (if any) on behaviors relevant to leadership
- The neurobiology (i.e., the neurochemistry & physiology) of behaviors relevant to leadership
- The psychology of different leadership dimensions
- The evolutionary origins of conciliation
- The role of context at different levels of analysis

Each major project will span adjacent disciplines. Below, we present the schema of eight representative projects. We emphasize the tentative nature of these. Before making any final recommendations, we wish to emphasize that, as of this writing, one more meeting of ten scientists is still to be held, followed by the large September meeting. It is likely, therefore, that additional - and perhaps better - candidate projects may emerge, and we may find one or more of the projects below quite lacking. Also, we do not spell out procedural details, cost, or references below, but rather just basic rationales and schemata. Details, feasibility, and references could be made available on request.

The eight sample projects are:

1. Ethnic Conflict-Conciliation Database
2. Leaders Database
3. Conciliation and Conflict in Apes and Hunter-Gatherers
4. Psychobiology of the Dimensions of Humane leadership
5. Who Rises to the Occasion?: Laboratory Studies of Leaders in Context
6. Testosterone, Gender, and Leadership
7. Gene Scan of the Humane Leadership dimensions
8. Genes in Context

1. Ethnic Conflict-Conciliation Database

With the end of the Cold War in 1989, global violence changed its manifestations to become increasingly a product of unresolved ethnic and religious differences within not-yet solidified nation-states. Such ethnic struggles are as old as history and hundreds of major ethnic conflicts have been documented. This project will be an effort at understanding the changing parameters of violence, near misses, and conciliation in ethnic conflicts. This project is foundational, focusing on reconciliation of ethnic conflict, and it is broadly modeled after the University of Michigan "correlates of war" project, which has done so much to systematize and organize our knowledge about wars across the centuries and their statistical relationship to economic, cultural, legal, historical, and technological factors. Our purpose will be to construct an analogous, but currently non-existing, database, including a conceptually organized and publicly accessible index. Such an index will facilitate aggregate data investigations of the correlates of success for various techniques suggested as suitable for the management, containment, or elimination of conflict and the achievement of reconciliation. A system of cross-tabulations will assist researchers interested in studying the preconditions, causes, and consequences of different approaches to the management and elimination of ethnic conflict. The database will also serve the important scientific function of allowing replication of research and testing of research claims since the data used by the community of ethnic conflict scholars from the variety of relevant disciplines--anthropology, psychology, sociology, political science, etc.--would be open to all. This project will be linked to the Leaders Database (Study 2) for purposes of analysis.

McGarry and O'Leary (1993) have created an eightfold categorization of the outcomes of ethnic conflict:

Methods for eliminating differences:

1. Genocide
2. Expulsion
3. Partition
4. Integration and/or assimilation

Methods for managing differences:

5. Federation/cantonization
6. Hegemonic Control
7. Arbitration (third party intervention)
8. Consociation and power sharing

Database Methodology. There are several significant problems to be dealt with at the onset of the project. First, there is the question of inclusion and exclusion criteria for the heterogeneous nature of ethnic and religious conflicts. There are many parameters to be considered:

- Extent (from a massive genocide to localized skirmishes),
- Nature of contenders (from whole nations to extremely limited groups),
- Duration (from a few weeks to centuries),
- Motivation (from looting to empire-building or religious proselytizing),

- Degree of social control (from state mobilization to spontaneous mob rioting),
- Systems of conflict resolution (from complete annihilation of enemies to fairly negotiated settlement).

The first aspect of the project would be to enumerate criteria for entry into the database (e.g., size and duration), being sure to include ethnic conflicts that were near misses, and that resolved into the more peaceable categories. Next reliable categorization into the eightfold outcomes would be done. One central frame would be the distinction among conflicts that end in massive violence, conflicts that are near misses, and conflicts that end in conciliation-and ultimately conflicts that should have occurred but did not.

This being done, it would then be necessary to gather a very broad array of concrete conflict data within all the conceptualized categories previously defined. This might actually create a feedback process that would lead to a certain amount of revision/extension/nuancing of the conceptual framework.

The third step would be a causal path analysis, both within similar conceptual categories and across categories. This would require another level of conceptual creation, conflicts that should have happened but did not (e.g., South Africa, 2000, or Prussia versus Bavaria) since the non-occurrence of a conflict is in itself a revealing aspect of its causative process. Cross database analyses would occur, asking for example, what kind of leadership interacts with what contexts to eventuate in what outcomes of ethnic conflicts.

The fourth step for all conflicts entered in the database and systematized would be an ethnic conflict outcome analysis where long-range consequences of the outcomes of conflicts would be analyzed and not simply those that are obvious shortly after the conflict is over.

A particular focus within this database will be cases of transition from one policy to another in dealing with ethnic conflict. Such transitions are key issues for political leadership. Indeed the humane leadership project begins from an interest in the importance of two opposite transitions: control to expulsion (Milosevic) versus control to integration/assimilation (Mandela).

The eightfold typology defines 56 possible transitions, e.g., from genocide to expulsion, from expulsion to genocide, from genocide to partition, and so on. Historical examples of transition will be sought-including transitions attempted but not successful-and some interest will attach to the pattern of transitions that are difficult or impossible to find. So, a well-constructed database documenting historical context, cultural variables, psychological variables, and economic variables would allow the testing of hypotheses about what circumstances most likely lead to what outcomes. It has not escaped our notice that such information might illuminate paths toward ethnic peace in the future.

## 2. The Leaders Database

Understanding why political leaders act as they do and sorting out the weight of their decision-making from the weight of circumstances in the resulting outcomes are questions as old as

history itself. These questions have acquired a new and burning relevance since a number of charismatic leaders massively affected events in the first half of the 20th century. In contrast, scientific and technological changes appeared to be the driving forces behind historical transformations in the second half. It would be foundational to create an extensive database of leaders, including information on personality, context, and the ten dimensions of humane leadership, to allow the empirical investigation of the causes and consequences of humane versus inhumane leadership.

Surprisingly, despite a great wealth of available data on the lives of historical leaders and on the forces which shaped their approach to their times, no scientific study has ever been undertaken to understand either the structure of their personalities or the nature of their relationship to their surroundings. Amateurish attempts at psycho-history have been made, such as the biography of Martin Luther by Erik Erikson or the Freud/Bullitt biography of Woodrow Wilson. Further, no attempts at all have been made at systematically analyzing leadership exercise patterns using the wealth of empirical data available. This project would represent the first systematic effort at filling a considerable oversight both in historical studies and in the attempt to connect history with other scientific approaches such as psychology or biology.

Database Construction Methodology. The project would be inclusive. The aim is to file in the database practically all the political, cultural and religious leaders who have strongly influenced history and whose reign is usefully documented. This means not only the obvious choices, from Julius Caesar to Mahatma Gandhi, but also less well-known figures such as the sixteenth-century reformers of medieval Japan or the great Zulu conqueror, Shaka. A first look at the probable size of the database would probably put it at around 2,000 men and women. A second step, which would be laborious, would be to systematically file the data (family history, upbringing, social circumstances, religious influences) contributing to the personality of our sample, with particular emphasis on the dimensions of humane leadership above. Then in the third step, the results of this extensive search would be coded according to a codification system, which should not be pre-determined, but rather, derived from the empirical experience provided by the database itself as it gets built up. This would achieve a double purpose: first, to create the means of intra-database comparisons; and second, to build bridges for using this database outside the historical field, thereby enabling data cross-fertilization with the psychological and biological fields.

Contextualizing the database results. The database construction and its eventual coding would represent the first half of the project. The second half would then explore the leaders-and-context conundrum. This would use the incorporation of a second cultural database, a much easier endeavor since there have already been a number of projects along these lines. The various cultures listed in the second database would also have to be coded along parameters allowing both an experimental fit with the data of the leaders database and a compatibility with the extension criteria aiming at connections outside the social sciences, i.e., with psychology or biology. Once this is achieved, the coded results of the two databases could be experimentally crossed to check on already known historical situations, the way an engineer has a trial flight for a newly designed plane. The historical situations used for trial runs should be of at least three types:

(i) Single culture, single-factor comparisons: how did Chinese leaders deal with their country's

fissiparous tendencies from Ts'in She Huang Ti to Deng Xiao P'ing ?

(ii) Cross-cultural, single-factor comparisons: what was the weight of the military culture when, at about the same moment, Kemal Attatürk and Sun Yat Sen had to deal with the decline of traditional empires?

(iii) Cross-cultural, multi-factors comparisons: what were the respective roles of circumstances and of leaders in multi-factor historical transformations such as dealing with foreign-driven modernization processes from Peter the Great to Mutsu Hito ?

The database would be a living archive into which contemporaneous leaders will be entered. This would allow for the ultimate test: predictability of future historical processes.

### 3. Leaders of Conciliation and Conflict in Hunter-Gatherers and Apes

There is urgency to this kind of research. Hunter-gatherer groups and Ape groups are vanishing. Yet the close examination of conciliation and conflict and leadership in these two groups may be the best link to our own evolutionary history. It would be a tragedy for our species' understanding of itself if this crucial source of data were lost forever without being properly studied for its potential insights into human nature and to human cultural diversity.

The dynamics of conflict, coalitions, and conciliation spring in part from emotions and ways of thinking that are deeply embedded in the human psyche. Many of these psychological mechanisms appear to be complex, easily elicited, similar across human cultures, and not completely predictable from the cost-benefit structure of the current environment. This suggests that they may owe part of their organization to the process of evolution and that we will be missing crucial pieces in the puzzle of conflict and conciliation without an understanding of the possible evolutionary forces that shaped the human mind. Obtaining definitive evidence on human evolution is certainly a daunting task. It is difficult enough with laboratory organisms. The study of leadership in hunter-gather-horticultural societies and among higher primates offers some possibility of advancing this area of inquiry. We remain cautious, however, in our expectations. Homo sapiens evolved as a social forager (a harvester of wild plant and animal foods), and our bodies and brains had assumed their modern forms long before the invention of agriculture, or centralized government, or major divisions of roles (e.g. full-time military professionals) and status. The complex adaptations of the human psyche that are relevant to leadership skills and ambitions, and to how people respond socially to those who aspire to lead them, undoubtedly evolved in the social context of relatively small and stable communities with lifelong, universal acquaintanceship and without dramatic hierarchies. Such societies still exist, but they are rapidly disappearing or being assimilated into larger nation states. They include both the few remaining foraging ("hunter-gatherer") societies, such as the Hadza of Tanzania and a few Ache in Paraguay, and a larger number of relatively egalitarian horticulturalists/foragers, such as the famous Yanomamo of Venezuela, who have not yet come under the control of the national governments within whose jurisdictions they reside.

The time machine does not exist that can enable us to know precisely how our ancestors lived millennia ago, but these contemporary foraging and horticultural societies provide an opportunity to understand leadership in societies which are similar to what we may reasonably suppose

ancestral societies to have been like in many ways. They are fairly egalitarian, lack central authority, permit polygamy, and have no written laws or written history. They are strongly kin-based and use marital transactions to establish more extensive alliances. Political efficacy is largely a matter of helping to mediate disputes that could degenerate into violent feuding and thereby orchestrating the co-operation of larger coalitions, often in the face of external threat. Influence is attained more on the basis of merit than of birth. Although there may be religious and other specialists, most people are expected to be expert in most of the important subsistence activities performed by members of their sex, and most or all men are expected to be proficient with weapons. These societies differ from one another in many particulars, to be sure, and for that reason, some anthropologists have criticized those who have relied on a single foraging society, such as the Kung San of Botswana, as a "model" of ancestral human kind. However, these face-to-face, non-state societies share all the attributes listed above, as well as others, and these attributes seem clearly to be of relevance to understanding the functional organization of our evolved social psychology with respect to political machinations, prestige, honor, and so forth.

In addition to the insights about social dynamics and ecological challenges that knowledge of these "models" of ancestral living conditions provide, the very fact of their diversity affords an opportunity for quasi-experimental tests of hypothesized predictors of conciliation and conflict. We must of necessity rely on correlational studies of the effects of social, demographic and economic variables on variation in political and other social and cultural institutions and events, as well as on the range of individual differences, but systematic comparative analyses elevate the power of correlational methods. This sort of correlational comparative approach provides the rationale for creating the proposed Ethnic Conflict database and Leaders database, as well as the for use of the existing Human Relations Area Files. What none of these comparative archives can do, however, is to provide data systematically collected with the same procedures and measures to test specific hypotheses.

If we want to test hypotheses about the relationships among particular variables, using experimental methods and ecologically valid measures, then we need to present the test stimuli and measures relevant to our predictor variables in formats and contexts that we imagine the psyche was designed to respond to. People living in kin-based, face-to-face societies of the sort described above, such as the Hadza, Yanomamo, Kung San, Ache, Machiguenga, Efe, Meriam, Ifalukese, Dogon, etc., are still exposed to environmental and social challenges that correspond to those that were important in shaping the functional design of the psyche during human evolution. Such populations do not enjoy the benefits and protection of many features that characterize modern nation states, including medical, scientific and technological expertise, arms-length mediation and protection of human rights and conflicts, reliable income, vast insurance schemes to reduce personal costs of catastrophic events and other welfare schemes, and professional military protection of sovereignty. These considerations must greatly affect the emergence, behavior, legitimacy and success of leaders.

Napoleon Chagnon's study of conflict and cooperation among the Yanomamo is an outstanding research model for a specific culture group. His findings include the following:

1. Small-scale warfare or its potential is chronic;

2. There is a range of leadership styles, extending from those who are eminent by virtue of calm, wisdom and bravery to those who attain and hold power by terror and coercion;
3. Men who have killed (primarily in the context of intergroup war) have more wives and children than other men;
4. The main impetus to initiating raids on other groups of Yanomamo is the possibility of acquiring women, but desire for revenge and establishing balances of power also contribute to war;
5. Kinship is a major determinant of alliance and loyalty, and that when villages fission and old allies become enemies, they do so largely along kinship lines;
6. People manipulate perceptions of kinship to serve their reproductive interests (for example, by strategic use of kin labels to expand or contract the pool of potential wives in light of the rules governing marriageability); and
7. Violent conflict apparently varies in relation to ecology, with Yanomamo who live in marginal mountainous terrain where the productivity does not support large groups being less warlike than lowland Yanomamo communities.

Regrettably, Chagnon's empirical research program is almost unique in its long-term, intensive data collection and quantification and in its focus on these issues, with the result that we simply do not know to what extent these findings apply to other groups, even though there is much scattered evidence that they may apply widely to comparable societies throughout Amazonia and New Guinea, as well as to foragers around the world.

How could a systematic, cross-cultural, comparative research program concerning political processes and leadership in such societies be undertaken? A recent model of the sort of comparative research that we envision is provided by ongoing research by a consortium of field anthropologists, organized by Rob Boyd, Anthropology, UCLA and Herb Gintis, Economics, U. Massachusetts, investigating how people in a variety of culture groups (many of which are populations in circumstances like those described above) play economic "games". The dozen or so peoples studied by this group vary in their economic base, their exposure to markets, and their social structure, and this diversity was deliberately sought in order to investigate how hypothesized predictor variables affect norms of fairness and reciprocity as revealed by how certain games, especially the "ultimatum game", are played. In the ultimatum game, players are assigned randomly to the role of either "proposer" or "respondent" and are paired with an elaborate "blinding" procedure that ensures that neither will be able to identify the other. The proposer must then offer some share of a sum of money, provided by the experimenter, to the respondent, who may either accept the proposal, in which case both parties get the proposed shares, or refuse it, in which case neither gets anything. In many studies of undergraduates and others in the United States and other developed countries, a typical offer is 40% or 50% of the stakes (e.g., \$4 or \$5 of a \$10 pool), and lower offers are likely to be rejected. This result has challenged economists' traditional model of "Homo economicus." who would be expected to offer the minimum and to accept all non-zero offers, since even one dollar places the respondent in a better financial position than he/she was in before the game began, and has engendered great interest in the logic underlying human "tastes" for fairness and seemingly spiteful retaliation. But are these "tastes" culture-bound, and are there intelligible predictors of play in a society's social and economic practices? With these questions in mind, the Boyd-Gintis research group has taken the ultimatum game to about a dozen societies, and the unpublished findings (but see Ruth



Mace's report in Nature, July 24, 2000) are remarkable. Offers of 50% are indeed common, but there are societies in which people look more like Homo economicus, offering and accepting low sums, and even cases in which offers in excess of 50% are made and are rejected, as if the offer were a display and challenge as might be seen in "big man" and potlatch societies. In general, typical offers do seem to be scaled to local rejection thresholds, such that they come close to maximizing the proposer's expected income. These projects are in the process of refinement and replication with additional assessment of hypothesized moderating variables. We believe that the results of this project will revolutionize how economists think about fairness, reciprocity, and bargaining, forcing an appreciation of ecological and cultural diversity and its logic.

Another lodestone for understanding the roots of conflict and conciliation is in danger of vanishing forever: societies of great apes in their natural habitat. Chimpanzees and bonobos (pygmy chimps) are separated from us by less than 1% of their DNA and 5 million years of evolution (200,000 generations). They must be quite close to the ancestral organism from which our species evolved. Our understanding of their behavior in a natural environment is grossly incomplete. Just in the last two decades, several undreamed-of sets of discoveries have emerged: that groups of related male chimps form coalitions and hunt down and kill other chimps from neighboring groups; that bonobos have a dramatically different social life than their close cousins the chimps, with far greater female dominance and far less male-male and male-female aggression and that both species have an extensive repertoire of conciliate and peacemaking behaviors. Such findings have profound implications for our understanding of human nature, refuting the hypothesis that coalition aggression and genocide are unique products of human cultural circumstance, and also refuting the hypothesis that we are "killer apes" with an ineluctable thirst for violence. Related hypotheses about sex, age, individual personality, kinship, hormonal status, and other biological variables are also testable.

As with the study of hunter-gatherers, quantitative data on these hypotheses has been painstakingly gathered by a few dedicated researchers (such as Richard Wrangham), but still falls short of the amount necessary to provide the level of confidence we enjoy in other sciences. And as before, it is clear which kinds of data should be gathered and what their impact could be, but we are facing the potential tragedy that this source of knowledge about our nature may disappear untapped because the traditional funding sources do not recognize its importance In time.

#### 4. Psychobiology of the Dimensions of Humane Leadership

How do the dimensions of humane leadership relate to one another? Are there consequences for the conduct of conflict and for the future of the groups that find themselves led by individuals at the humane or inhumane end of these dimensions? What are their origins in the lives of an individual or the history of a culture? The criterial standard of these projects would be one that relies on archival material to study actual world leaders, such as the Leaders Database Project above, but parallel findings can be explored by looking at the biopsychology of ordinary people who are at the extremes of these dimension, both in cross section and over time.

One such project would look for the counterparts of these dimensions among ordinary people.

Once we devise ways to measure these dimensions, we would pose the same questions about structure, function, and origin. The benefits of this project are several:

- (i) It should make the overall endeavor part of general social science; we would not need to invent new principles for world leaders;
- (ii) Indeed, although we have framed the dimensions in terms of world leaders, there is reason to believe that our ideas might travel to other domains like business, science, and the arts; perhaps the leaders of street gangs or computer hackers could be understood in these terms;
- (iii) It would produce reliability and validity evidence that would inform our more challenging goal to measure these dimensions among world leaders;
- (iv) It would allow a large number of studies because the "subject pool" could not be exhausted - as it would be in a study of world leaders, even if good data could be gathered from them-an unlikely prospect;
- (v) It would allow nuanced study of the processes by which these dimensions operate, especially biological ones; it is straight-forward to investigate testosterone and near-images among ordinary people and essentially impossible to do so among world leaders, especially those who are deceased, remote, sequestered, or unfriendly; and
- (vi) It would allow experimental studies of the consequences of different leadership styles by putting individuals with known characteristics into already-developed simulations of businesses or societies. The project could be done in the context of twin methodology. This would allow a host of nature-nurture questions to be assessed at the same time as the basic questions above were asked.

Most of the dimensions can be measured with self-report questionnaires among ordinary people, starting with already existing scales - e.g., forgiveness, ethnocentrism, dogmatism, interdependence - and strategies for the content analysis of written or spoken material (e.g., cognitive complexity, power motivation). (There is no individual-level counterpart for power base.) We would want to see if these dimensions are indeed coherent ones and if so, how they relate to one another. Once the assessment battery is refined, we would begin the business of investigating the causes and consequences of these individual differences. At the end we suggest four kinds of methods, including self-report, but extended to more objective measurements.

What sorts of results might we anticipate from this project?

First, factor analyses would suggest the underlying structure to these dimensions: which traits tend to coincide with which others, and which are independent? In all likelihood, the number of discrete factors will be fewer than the number of dimensions, and earnest theory can start to make sense of these factors. Perhaps separate emotional and cognitive factors will emerge. Perhaps attitudes toward compatriots will be independent of attitudes toward enemies. In any event, characterizing the structure of these dimensions should be a useful first step toward understanding them. The presumably simpler structure that will emerge will lead to a simpler assessment battery, which in turn will suggest a more efficient way to describe actual world leaders that still does justice to the contrasts in which we are interested.

Second, in the lives of ordinary individuals, what are the consequences and correlates of these dimensions/factors? There is no shortage of candidates worthy of examination: e.g., optimism,

religiosity, future-mindedness, tolerance of ambiguity, coping styles, resilience, quality of life, and social networks. The ultimate payoff would be concrete ideas about how to cultivate humane stances among everyday people.

Third, perhaps we can discern mundane analogues of the humane and inhumane actions of world leaders that have originally drawn our attention. Here we would need to go back-and-forth between studies of world leaders and everyday people to determine possible parallels. Are the risk factors for genocidal attacks akin to those for petty neighborhood gossip and office politics? Conversely, are the factors associated with humane leadership the same as those which predict benign treatment of stray pets and lost children? It may well be that there are no ready parallels to be found; that they would exist at all requires heroic assumptions about the continuity and stability of personality styles. But even "no results" would still be useful information because they would tell us what we should not study further.

Fourth, a study of everyday individuals at the extremes of the dimensions could begin to illuminate the biological underpinnings, if any, of the styles with which people approach conflict. Suppose family studies suggest that some of these dimensions are heritable? Suppose testosterone levels correlate with one or more of the dimensions, e.g., vengeful and xenophobic? Suppose MRI studies suggest that certain styles are associated with the activation of certain brain regions? Again, theory would be served. Perhaps we can begin to articulate an evolutionary psychology of leadership: Has our species been served by the development of evolved mechanisms that produce different leadership styles, or are these styles the interpersonal equivalent of the third molar - i.e., no longer adaptive in the current human niche? We hasten to say that these sorts of biological findings would not be an end point of investigation but rather an intriguing place to start.

We would suggest a multi-strategy approach to the measurement of these key potential dimensions that would involve at least 4 distinct strategies. The first is the "tried and true" workhorse of personality psychology-the self-report questionnaire. Many of these measures have been well validated and shown to have good stability. However, there are limits to this approach.

The second approach is to use informants-often with very similar items (e.g. with a change of pronouns)-that are used for self-report. Such informants could include family members (e.g., twins reporting on each other) and well as friends, teachers or co- workers. Some traits may be more accurately observed by others.

The third approach to measurement we call "low-tech" measurement-usually of a neuropsychological or electrophysiological nature-of processes that are thought to "underlie" the observed trait assessed by self-report. Such techniques include videotaping facial emotional response and/or autonomic reaction to standardized emotional stimuli, assessing perceptual bias by reaction time paradigms and augmentation of acoustic startle reflex through conditioning.

The fourth approach is "high-tech" and includes such expensive and non-portable technologies as PET and fMRI. These technologies have the potentially great advantage of clarifying the underlying brain pathways that may influence key components of humane leadership.

## 5. Who Rises to the Occasion? Laboratory Studies of Context in Leadership

The successful humane leader, like Nelson Mandela, rises to the occasion—adapting to a new set of circumstances and changing one's style. Is the psychological characteristic of "rising to the occasion" predictable? Perhaps a start can be made on this question within the psychological laboratory. This study begins with a pool of potential local leaders, who have been given a battery of biological and psychological assessments, and then exposes them to a course on wise, humane leadership. It asks if effective leadership can be predicted by how much learning occurs in such a setting, the amount of change in style when faced with new contexts.

The goals of these studies are:

- a. To understand predictors (biological, cognitive, affective) of humane leadership.
- b. To understand the extent to which humane leadership can be developed in potential leaders through an intervention.
- c. To determine whether the best predictors of leadership are the pre-intervention scores, the post-intervention scores, or the amount of change.

The underlying theory derives from Paul Baltes' "orchestration" theory and Robert Sternberg's "balance" theory of wisdom, applied to humane leadership. The basic idea that wisdom is the application of tacit knowledge toward a common good by (1) balancing various and often conflicting (a) intrapersonal, (b) interpersonal, and (c) extrapersonal interests in order to (2) respond to the environment by means of (a) adaptation to, (b) shaping of, or (c) selection of environments. Such judgments take into account interests over the (a) long- and (b) short- terms as influenced by values. There is another aspect as well. The underlying theory of assessment is based on Vygotsky's notion of dynamic testing, whereby assessment of effective leadership is merged with instruction for effective leadership. Dynamic assessment enables one to measure a "zone of proximal development," that is, a person's modifiability.

The participants would be potential and present leaders. Ideally they would be young political leaders. Alternatively, we would use business leaders obtained through a venue such as an executive training program at a business school. We would hope to have a minimum of 200 such participants.

We would prepare two courses. The course for the "experimental group" would be on humane, wise leadership, and would incorporate the dimensional framework of Study three as well as the Baltes-Sternberg principles of wisdom and leadership. At the heart of such a course are scenarios in which the leader must adapt to new contexts. The course for the "control group" would be on something irrelevant to leadership, and might be an already existing course at an executive training institute, such as on financial management or information-processing technology. Thus our focus would be on developing the leadership course, based on principles that emerge from our discussions.

We would develop a simulation-based instrument that would measure leadership effectiveness, such as how to handle difficult subordinates, negotiate with teams having opposing interests,

deal with crises and so forth. Alternative forms of the simulation would be given before and after the intervention. The field has extensive experience in developing these kinds of measures. In addition, a large set of antecedent variables thought to predict leadership would be measured: tests of (a) intelligence (analytical--fluid and crystallized [such as Cattell Culture-Fair and Terman Concept Mastery Test]), creative, practical, personality (five-factor model [such as the NEO-PI-R]), and emotional intelligence (MSCEIT). Biologically-based measures would be chosen by the biologically oriented scientists in the M&M group.

The design would be an experimental group - control group one with pretest, interventions, and posttest. All participants would receive pretest and posttest. Interventions would differ for the two groups. The main independent variable for the manipulation would be condition. The main dependent variable for the manipulation would be pretest-posttest gain. However, other IVs and DVs would be of interest. For example, we would use demographic information on participants as possible co-variates and also would wish to obtain measures of the participants' real world success as leaders, both before and after the intervention. Such measures might be (360 degree) subordinate ratings, peer ratings, supervisory ratings; salary, number of people supervised, etc. No one DV in itself would be "perfect," but hopefully using converging DVs would give a reasonable assessment of leadership effectiveness.

The study would most likely be done over 5-10 days, which would include testing and intervention. It probably would be done in the context of an already existing training program that would be willing to collaborate with us in exchange for an excellent training program. The data analysis would seek :

- a. To understand predictors (biological, cognitive, affective) of humane leadership, as defined in the simulations: Multiple regression of measures of leadership effectiveness on the set of test variables. Hierarchical techniques would probably be used to enter in predictors by class (e.g., intelligence, personality, emotional intelligence, biological).
- b. To understand the extent to which humane leadership can be developed in potential leaders through an intervention. Posttest minus pretest scores for experimental versus control groups to assess gain from the experimental intervention relative to the control intervention, possibly corrected for demographic co-variates.
- c. To determine whether the dynamic change in scores, adaptability, predicts of humane leadership better than absolute pre and post scores, using hierarchical multiple regression for dependent variables for leadership on the simulation measure before and after the intervention.
- d. To determine whether these laboratory measures predict leadership outside the laboratory by using the real world measures applied over the next year in the leaders' home settings compared to the previous year.

## 6. Testosterone, Gender, and Humane Leadership

Testosterone is a biological aspect of temperament, and it may be one of many components that predict who will rise to power in a given cultural setting. It may also be a factor in predicting the motivation, frame of mind, and personal style in the reactions of a leader who is facing a specific problem. We propose a pair of longitudinal and experimental studies to examine the possible

relation of testosterone to the emergence of violent or conciliatory leadership.

Studies of animals and human subjects, including men, women, and children, indicate testosterone related cognition and behavior. Its basic psychological effects involve libido, boldness, focused attention, and a personal manner of dominance. These can be associated with marital discord, delinquency, and criminal violence, or with commitment, sacrifice and heroic altruism. Exactly how qualities associated with testosterone play out in the lives of individuals depends upon other forces. A model we find useful views testosterone as restrained and guided by a variety of other factors: parental control, IQ, other hormones, education, personal or socialized power motives, and other aspects of temperament and personality. For example, studies have found that testosterone plus an action orientation is a predictor of fire-fighting performance, and testosterone plus conscientiousness is a predictor of emergency medical performance. Current research is examining how testosterone might combine with or augment the power motivation of an individual in predicting power-oriented behavior.

As applied to humane leadership we suspect that testosterone interacts with action orientation, aggressiveness, Machiavellianism, and what Saul Alinsky called the ability to see where power lies (this "power vision" is an aspect of practical intelligence neglected by personality theorists). These factors along with testosterone may predict which individuals will move toward leadership positions and how they might react to opportunities and challenges when they attain these positions. Either low or high testosterone individuals can probably be violent leaders, but may use different tactics depending upon their testosterone levels. For example, a prison study reports that inmates who are low in testosterone but violent are characterized by the guards as being "treacherous." We propose two studies, a longitudinal one that tracks young potential leaders over a 5-10 year period, and an experimental one that examines ordinary citizens facing challenges similar to the challenges faced by real leaders.

A prospective longitudinal study could explore factors that predict leadership. The study would follow the development of real leaders, but leaders at a local rather than a national level. The aim would be to define factors that would help predict both who will become a leader and how that leader will behave after achieving power. The number of low-level leaders in the world is much larger than the number of national leaders, but similar factors may be involved in leadership at all levels. While the focus is very much biological, a longitudinal study could be broad in its coverage. The trick will be to find good sources of potential leaders, and we might begin by canvassing places from which many leaders come. We suggest we (a) start with about 1,000 persons identified as having leadership potential by peers and superiors in schools, businesses, clubs, community organizations, student councils as early as 4th grade, Girl Scouts, Boy Scouts, summer camps, church youth groups, "select" sports teams (sometimes called traveling teams), military academies, the Army Research Institute, Colin Powell's leadership program for children, and activities of the Fund for American Studies, the Industrial Areas Foundation, and other training groups; (b) obtain personality, family and social background, hormone, and DNA predictor measures from these individuals; (c) use the measures to discriminate among participants in initial rankings and later success as leaders; and (d) use the measures to discriminate among participants in their leadership styles, with special reference to violent and conciliatory tendencies.

Experimental and quasi-experimental studies could explore how high or low levels of testosterone correlate with the day to-day lives of leaders. The study could observe effects of testosterone in ordinary subjects facing task demands similar to those faced by real leaders. One task would involve competition against an opponent in which the outcome is rigged to produce success or failure. Another task would involve a leader trying to cope with a problem that is escalating out of control. We could use the predictor measures described above and assess affective, cognitive, behavioral, and hormonal changes (including increases in testosterone level) in response to the competitive and out-of-control situations. Dependent measures would include videotape recordings of leaders' nonverbal manner and style. Analyses would examine responses as a function of initial testosterone level and the interaction of testosterone with other personality characteristics. Initial testosterone level would be studied in two different ways: using each subject's pre-existing baseline level, and using testosterone treatments to manipulate subjects' levels prior to participation in the experiment.

These studies will indicate what aspects of leadership and dealing with crises are related with testosterone. They will also clarify the issue of whether testosterone plays the same role in men and women in these situations. Any study of testosterone, and of gender differences, should link with projects on measuring other qualities that predict leadership, other qualities that predict reactions to challenge or threat, and other psycho-biological determinants of behavior. Testosterone affects midbrain areas that are implicated in emotional behavior involving sex, aggression, threat, or challenge. Brain scan studies of these areas should examine naturally low and high testosterone individuals, and normal subjects receiving low or high testosterone treatments, to see whether activation of these areas by testosterone leads to especially strong emotional responses to challenge and threat.

## 7. Are There Identifiable Genetic Components to the Humane Leadership Dimensions?

Are leaders born or made? This question is as old as the nature-nurture debate itself and cannot possibly be addressed in a study of actual world leaders. Even if they agreed to cooperate, the available sample size would be too minute and restricted to be of any value. Recent advances in human molecular genetics have begun to make it feasible to map specific genes contributing to complex traits such as disease susceptibility. An analogous approach could be applied to personality measures such as the "humane leadership dimensions" applied to the general population. Personality measures present the same hurdles to gene mapping as disease susceptibility: major non-genetic components, complex interactions between genotype and environmental factors, complex interactions among individual genes and also among individual environmental factors, likely involvement of many genetic loci contributing small effects, and more than one combination of genes and environmental factors that can produce a given outcome. An approach of this sort would by no means be guaranteed of success, succumbing either to intrinsic factors, if such genetic components do not exist, or to technical limitations, if the individual contributions are too weak or too subject to contextual effects to be detectable. It does offer, however, a possible opening into the biological components of a human activity as complex as humane leadership.

Genome Scan. Finding specific genes that influence where an individual falls on the scale of

leadership dimensions would necessarily make use of state-of-the-art techniques in human gene mapping, a technology that is under intense development and improving in its capability month by month. The requirements for such a study would be to take a population sample in which members of the same family could be analyzed, and subject them to the sort of psychological measurements outlined in Project 4. DNA samples from subjects at the top and bottom of the scale for each dimension would then be tested with an extensive series of DNA markers (using the newly emerging set of single-nucleotide polymorphisms, "SNPs," which can be analyzed on a DNA chip). One then asks whether the "affected" relatives, those exhibiting similar scores, inherit identical copies of the given chromosome region more often than expected by chance.

The challenge in such a study is to test a large enough sample of individuals and of DNA markers to be able to detect an effect if one is present. This can be facilitated by concentrating on individuals scoring at the extreme top and bottom of the test scale. A minimum starting set might use 1,000 such individuals culled from a larger group tested for the leadership dimensions. A minimum size of the overall group would be 1,500, such that the DNA analysis would be performed on the top and bottom one-third. Genotyping 1,000 from a larger starting group would allow selection of a more extreme fraction from the ends of the personality score distribution, down to the top and bottom 5% for an overall starting group of 10,000. Any regions of the genome that give statistically significant scores for their association with one or more of the personality dimensions would then be re-analyzed with a more densely distributed set of markers for that region.

The identification of a DNA marker or set of markers that correlates with a high or low score in personality measure is still a long way from identifying the gene or genes responsible. With the emerging human genome data, however, the region to which an effect maps can be examined for the presence of candidate genes -- those whose suggested function makes them candidates for involvement in the phenotype. These would include genes for various components of the brain's machinery including neurotransmitter receptors, synthetic enzymes, or transporters; neuropeptides or hormones and their receptors; and also for genes implicated in development of the brain. With such candidate gene sequences in hand, the DNA samples would then be tested to look for the presence of a DNA polymorphism that is associated with a high or low score on one or more of the dimensions. While such a finding would still not constitute a functional demonstration that the gene was contributing to the trait, it would represent a necessary first step.

The candidate gene approach can also be taken independently of the SNP mapping outlined above. Any known gene suspected of possible involvement can be tested for the presence of a polymorphism associated with extreme test scores. As suggested by Project 6, genes involved in testosterone metabolism and signaling are possible candidates for such an analysis. Those involved in serotonin metabolism and signaling are another possible set, given the many ways that serotonin is suspected of affecting personality.

By concentrating on the identification of genetic effects that are sufficiently strong to be detectable above background, the project outlined here cannot do justice to the role of circumstance and context in the exercise of leadership characteristics. This simplification is a prerequisite to the any study aimed at initial identification of genetic loci. If any genes can be



implicated, more sophisticated analyses can then be designed to probe their complex interactions with the myriad other factors involved.

#### 8. Genes in Context: Influence of Genetic and Non-Genetic Context on Behavior in *Drosophila*

The study we now describe is a sample of an attempt to link the humane leadership project with progress in molecular genetics. We will try to address the problem of how genes act in the presence of different contexts using a model system. Until this problem is opened up, serious genetic study of complex human behavior will remain elusive. The uniqueness of each individual presents the major barrier to understanding the genetic contributions to human behavior due to the difficulty of defining the role of context on a particular gene's action. Context is both genetic, consisting of the particular constellation of variants (alleles) that an individual possesses, and non-genetic, consisting of the myriad environmental factors, both physical and social, that an individual experiences in a lifetime. The approach outlined below suggests an avenue into the otherwise bewildering morass of gene-gene and gene-environment interactions. With the ability to identify the actual genes that are involved and to make use of the genetic armamentarium of the fruit fly, *Drosophila*, to vary individual parameters singly or in combination, there is a reasonable expectation of obtaining interpretable results and, with luck, perhaps even general principles.

The problem of context is enormously difficult because contextual influences often interact with each other synergistically so that one cannot simply add up the respective contributions of each factor. Predictability of even the most general sort is thus severely compromised. Model organisms have often provided a first opening into problems that seemed otherwise intractable. The nature of the gene, the self-assembly of biological structures, the genetic basis of body plan, the mechanism of circadian rhythms, and the molecular trigger for long-term memory are all major problems in human biology that have been opened up by isolating and studying mutants in simple organisms such as the fruit fly, *Drosophila melanogaster*. The problem of contextual influences in behavior genetics can be similarly approached in *Drosophila* where it is possible to control and manipulate more of the relevant factors at once than in any other organism. Moreover, their genes and cellular mechanisms are highly homologous to ours and several of their sophisticated behaviors are phenomenologically and molecularly quite similar to ours (circadian rhythms, associative learning, long-term memory, and sleep).

To address the problem of how genes act in context to affect behavior, we propose a study of genetic and experiential effects on the ability of flies to discriminate between those from their immediate geographical area (homotypic) and those from elsewhere (heterotypic). This discriminatory ability is best illustrated in courtship behavior where males from one locale will be differentially attracted to homotypic vs. heterotypic females. An even stronger effect is seen in the inhibition of male-male courtship, which is very pronounced for homotypic but not for heterotypic males. These distinctions are a combined function of pheromonal and perceptual differences between strains. Most of these studies have been done under conditions that standardized non-genetic context as much as possible. However, there is also evidence that early exposure to other flies affects subsequent courtship performance in mature males as compared to males raised in isolation, thus indicating that social interactions also contribute to the ultimate

phenotype.

The genetic basis for these strain differences is poorly characterized, as is the case for most examples of natural behavioral variation. No single locus exerts a strong enough effect to be easily mapped and identified. Recent work using the new technology of DNA arrays (DNA chips) has allowed the first identification of genes influencing such natural variations by showing which ones are differentially expressed between two divergent strains affecting geotaxis behavior. Once this is established, laboratory strains that are mutant or genetically engineered in the identified genes have been employed to show that manipulation of these genes by totally independent means can give the same behavioral phenotypes. This functionally validates which of the genes that differ in expression are relevant to the behavior. At the same time, it also allows for the construction of a wide range of different genetic combinations to be constructed and tested, thus varying the genetic context around any given allele.

Such an approach is ripe to apply to the problem of strain recognition. DNA array analysis of strains that have already been shown to make this discrimination will open up the genetic analysis and identify the pertinent differences for further verification. Moreover, the interactions between genetic and non-genetic context can be pursued effectively in this situation, testing not only the influences on behavior, but also the feedback onto the patterns of gene expression of the different genetic and non-genetic contexts. For example, the DNA arrays will reveal any differences in gene expression induced by early exposure to other flies. These are highly interactive systems and the more widely one can assay for such interactions, the more likely that an interpretable pattern will emerge.

One should not assume that the actual discriminatory behavior exhibited by these organisms is directly analogous to human behavior. One must demonstrate more than a superficial similarity to make such a claim. However, this behavior may embody some of the rudiments of that much more complex human behavior. But even if it does not, the prospect of defining and understanding the generic role and interactions of genetic and non-genetic context in behavior is likely to be of universal relevance and is an absolute prerequisite to any realistic attempt to explore the biological aspects of a subject like humane leadership.