The Philosophical Society of Texas

PROCEEDINGS

2000

The PHILOSOPHICAL SOCIETY of TEXAS

PROCEEDINGS

of the Annual Meeting
at San Antonio
December 1–3, 2000

LXIV

AUSTIN
THE PHILOSOPHICAL SOCIETY OF TEXAS
2002

THE PHILOSOPHICAL SOCIETY OF TEXAS FOR THE COLLECTION AND DIFFUSION OF KNOWLEDGE *was founded December 5, 1837, in the Capitol of the Republic of Texas at Houston by* MIRABEAU B. LAMAR, ASHBEL SMITH, THOMAS J. RUSK, WILLIAM H. WHARTON, JOSEPH ROWE, ANGUS MCNEILL, AUGUSTUS C. ALLEN, GEORGE W. BONNELL, JOSEPH BAKER, PATRICK C. JACK, W. FAIRFAX GRAY, JOHN A. WHARTON, DAVID S. KAUFMAN, JAMES COLLINSWORTH, ANSON JONES, LITTLETON FOWLER, A. C. HORTON, I. W. BURTON, EDWARD T. BRANCH, HENRY SMITH, HUGH MCLEOD, THOMAS JEFFERSON CHAMBERS, SAM HOUSTON, R. A. IRION, DAVID G. BURNET, and JOHN BIRDSALL.

The Society was incorporated as a non-profit, educational institution on January 18, 1936, by George Waverly Briggs, James Quayle Dealey, Herbert Pickens Gambrell, Samuel Wood Geiser, Lucius Mirabeau Lamar III, Umphrey Lee, Charles Shirley Potts, William Alexander Rhea, Ira Kendrick Stephens, and William Embrey Wrather. On December 5, 1936, formal reorganization was completed.

The office of the Society is located at 2.306 Sid Richardson Hall, University of Texas, Austin, 78712.

Edited by Tess Roach and Evelyn Stehling

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THE PHILOSOPHICAL SOCIETY OF TEXAS

Three hundred twenty-four members, spouses, and guests of the Philosophical Society of Texas gathered at the Westin Riverwalk Hotel in San Antonio, December 1–3, 2000, for the Society's 163rd anniversary meeting. President A. Baker Duncan organized an exciting meeting on "Population," with J. Dudley Fishburn serving as moderator for the program.

On Friday evening, members and guests enjoyed a reception at the home of Charles Butt and dinner at the San Antonio Country Club. The new members of the Society were announced by President Duncan and were presented their certificates of membership. The new members are: Randolph B. Campbell, D. Jack Davis, Sheldon Ekland-Olson, Larry R. Faulkner Jr., W. Royal Furgeson Jr., Lyndon L. Olson Jr., Roger James George Jr., William H. Goetzmann, Frances Ann Hamilton, Domingo Alter Holand, Sally Searcy Kleberg, Richard W. Lariviere, Al Lowman, Jane Macon, M. Colleen McHugh, A. W. "Dub" Riter Jr., Jake B. Schrum, Broadus A. Spivey, Diane Stanley, F. L. "Steve" Stephens, and Barney T. Young.

Gregg Cantrell, a professor of history at the University of North Texas, was awarded the first Philosophical Society of Texas Book Award for *Stephen F. Austin, Empresario of Texas*. The award was for the best book on Texas, fiction or non-fiction, published in 1999.

Noted author, educator, and historian Jacques Barzun was recognized as an honored guest of the Society during the Saturday luncheon. The Saturday activities concluded with a reception at the home of Mrs. Marshall Steves and dinner at the McNay Art Museum. Valeri Grokhovski provided a special musical presentation for the evening.

At the annual business meeting, Vice President Ellen Temple read the names of the members of the Society who had died during the previous year: Gerry Doyle, Joe Fisher, Walter G. Hall, Jake Hershey, Joseph M. Hill, Jack Maguire, Dan Moody Jr., Gloria Hill Pape, Marshall Steves, Virgil Topazio, and Charles Alan Wright.

Secretary Tyler announced that our membership stood at 198 active members, 75 associate members, and 27 emeritus members.

The following officers were elected for the coming year: Ellen Temple, president; George C. Wright, first vice-president; J. Sam Moore, second vice-president; J. Chrys Dougherty III, treasurer; and Ron Tyler, secretary.

On Sunday J. Dudley Fishburn again moderated a lively discussion with participation from members and guests. President Duncan declared the annual meeting adjourned, to be reconvened on November 30, 2001, in Austin.

Welcome and Introduction

A. Baker Duncan

Welcome to the 163rd year of the Texas Philosophical Society. As you know, we fudge a bit. We were inactive for a hundred years, but then we do like our ancestors.

This is the eighth time you've met in San Antonio, the first being in 1940. I have a few things I'd like to say about planning. We had a very strong local committee. One of the most vibrant in the group was my friend, Marshall Steves. We're very sad about his death, but we celebrate in so many ways his contributions to this Society and this city.

Amy Freeman Lee, John Howell, Charles Butt, Everett Fly, Boone Powell—all made significant contributions to our group. Then we've had lots of help from Evelyn Stehling, Ron Tyler, and Evelyn's assistant, Diane Haber. Nothing that I do can ever be done without my secretary, Maryann Vaaler. She's here today just to listen, but I want to be sure and thank her for her tremendous help.

All of us were so pleased with Charles Butt's reception last night. Charles, we're grateful. Charles knows how to do things, and I love to have him as my friend. We'll be at Patsy Steves's tonight.

We've taken in 21 new members. Sixteen were there last night—a very distinguished group—and we are a much stronger Society with our new members present. Thank you for being here.

We have a difficult time coming up with the topic for discussion. The new president begins his thinking a year in advance, and I was busily talking with anybody that would talk to me last year about what we ought to be discussing, and I recommend to any new president that you talk to Elspeth. Elspeth Rostow gives the best advice anybody could ever get anywhere, and she certainly was helpful.

Then I read Walter Rostow's book, *The Great Population Spike and After: Reflections on the Twenty-First Century*, and I think, if anything, it was this book that propelled us into talking about population today. He had several things to say that I just want to bring up in an introductory fashion: the world population today is approximately six billion. It will be ten billion by the middle of this century, 2050.

There was little growth before 1750. Some anticipate little growth after 2050. India and China probably will be about 1.5 billion each by the middle of the century—30 percent of the world's population—and as

industrialization takes place in those two areas, a great deal of change will occur.

We in the United States have abundant resources, but we'll have to be changing our attitude about the world, and I'm sure this will come up during our discussions today. If in fact we have stagnant population growth by the middle of the century, we'll have to make changes.

Today 14 percent of our population is aged, 65 and over. By 2030, not even 2050, 25 percent will be aged. There are severe urban problems, and Walt discusses this very effectively in his book and suggests that the United States needs to be at the critical margin. We should be the ones dealing with the problems because we have the ability and the resources to do so.

The *Population Bulletin*, March 1998, made this statement that I'd like to leave with you as you think about the question of population throughout the weekend. We should not underestimate our ability to find new ways to manage our problems. The real issue is whether perception and politics can keep pace with a rapidly changing world. What it says is that population is tied in and intertwined with so much of what we do and think.

It pleases me to no end to have these five men here to talk about the problem. I've done everything that my mental capacity can handle in just introducing the topic, so I'm going to retire to the end of the bench.

Our moderator—and we've had moderators now for a couple of years, maybe three—they really do tie it all together. Our moderator today is Dudley Fishburn from London, our renaissance man. Dudley is an associate editor of *The Economist*. He's really one of the senior editors. That *associate* word is a little misleading—*The Economist* is England's premier weekly news magazine.

He was a conservative member of Parliament for Kensington in Margaret Thatcher's and John Major's governments. He's now treasurer of the National Trust, the only non-American to have been on the board of overseers at Harvard and now chairs their library system committee. He was educated at Eton and Harvard, and we welcome him to this podium to moderate our session.

Dudley, we're very pleased to have you.

World Population

J. Dudley Fishburn[1]
Moderator

Thank you very much, indeed. Thank you, Baker.

My job today is really very simple. I am principally to be timekeeper. I'm to act in the same role as the Speaker of the House of Commons, shout, "Order, Order," if people go on too long, and if any of you turn out to be too rowdy to make you sit down. I am here to encourage sense and discourage pomposity to keep things moving.

My interest in population is entirely amateur compared to those I shall be introducing later. One cannot be from a small island somewhere north of France and not look back over the past thousand years and see how enormous variations in population have altered the society in which we live. How when the Romans came to civilize us in A.D. 50, we were some 300,000 strong. When the French came to civilize us in 1066, we were some three million strong. When the Doomsday Book was written, the three million people of Britain had created more named communities, more villages and places than there are in Britain today.

Why? Because of 300 years of long war—the Hundred Years War was really a 300-year war—of the Black Death, of diminishing population. We lost people and eradicated many of those villages and towns that were there in the Doomsday Book.

Then came the great bubble of Queen Elizabeth I. The population, of course, was growing like nobody's business, throwing out Shakespeare's and Milton's and Books of Common Prayer, and John Dunne, and all that genius as the population burgeoned. But it wasn't until the end of the eighteenth century that my small island finally caught up with France and our populations equaled each other.

After the Battle of Waterloo, they fully equaled each other, and of course it was that period that started a century of Empire.

Today my small island has 1 percent of the world's population, and in my children's time it is almost certain to go down to something like half a percent of the world's population, although we remain the fourth biggest economy in the world.

So these changes as one looks back only show how, first of all, popu-

[1] J. Dudley Fishburn is associate editor of *The Economist*.

lation changes colossally, and secondly, its effect on all of us and our culture and our life gets to the very heart of the human condition.

This morning we're going to hear first from Wolfgang Lutz. I should say that Mr. Lutz is really Mr. Population. He is the great world expert on population, and just for this conference, at least, he's produced a new book—put out by Cambridge University, I see—which I'm sure we'll be hearing about.

Mr. Lutz comes from Austria. He is a very distinguished member of the Austrian Academy of Sciences, received his degree in statistics there and in demography at the University of Pennsylvania. Mr. Lutz left behind his watch, so he's asked me to call him to order when he has spoken for 25 minutes, which I shall do, and then we will set the hounds upon him.

And I'd like to introduce those hounds. First, of course, is Walt Rostow, who it would be cheeky of me to introduce in this community, one of Texas's most famous sons on both sides of the Atlantic, and a member, of course, of this Society for many years.

Next to him is Steve Murdock, who's head of rural sociology at Texas A&M and has written really the great book on Texas population change called *The Texas Challenge*. And next to him is John Haaga, who has had enormous experience internationally in Malaysia and Bangladesh. This is experience that his bosses have told him is just right for a new job as head of domestic programs in the United States for the Population Reference Bureau.

OVERVIEW

WOLFGANG LUTZ[2]

Good morning. I am indeed very happy and honored to be with you here today. As was said, I arrived late last night. Before that I was in Ethiopia working on African issues of population, AIDS, and sustainable development. When you travel from one part of the world to another, there are indeed very significant differences that you all are aware of, but once you have gone through different stages within one week, you become aware of them again and again.

We have heard already about the historical dimension of population growth, so I will speak briefly on this historical dimension. Next, I will give a description of where we stand today—what are the reasons for some of the trends that we see. Then I will move on to the future: what can we assume about the future trends of the components of population change, birth rates, death rates, and migration. Finally, I will discuss one of the dimensions of population change that I increasingly believe has possibly the largest impact on the world of tomorrow: namely, the educational composition of the population. Here we do not just look at the numbers of people but the skills, the training that people have—so to say, the human capital.

For millennia, world population has been growing at a very slow rate. It was not until 1800 that the population reached its first billion (one billion is roughly the current population of Europe and North America together). It took more than a century, until 1930, to add the second billion, but it took only 30 years, until 1960, to reach the third billion. That is the figure I still remember from school. I think everybody remembers a certain number about world population from the time he or she went to school, and since then, we have had a further increase in the speed of growth. The fourth billion was added between 1960 and 1975, taking only 15 years. The five billion mark was reached in 1987, and the six billion mark late last year—a 12-year period for adding one billion.

There are, of course, different estimates. Some people claim that six billion was reached in the summer of 2000; others claim it was reached in October. I think you can appreciate that counting people is more difficult than counting votes. This is because people move around all the time. Just

[2] Wolfgang Lutz is the leader of the Population Project at the International Institute for Applied Systems Analysis in Laxenburg, Austria.

imagine trying to catch all of the butterfly ballots flying around in a big room—you have no idea whether you have already counted one of them. For instance, if you think of street children in Calcutta, how are you going to make sure you counted all of them once and none twice?

There is a certain margin of uncertainty in population figures. Fortunately, it is not too big—a few percentages up and down. There is also a difference among countries. I believe that in the more developed countries with accurate registration systems, the count is more reliable. But take, for instance, South Africa, where there was a recent census. Some people estimated 37 million people; others came up with 44 million. That is quite a difference in the estimates about the current population.

On a global level, despite the apparent acceleration in the time needed to add an additional billion, both the annual growth rate of world population and the number of persons added each year have passed their peaks and are expected to continue to fall. The growth rate peaked at 2.1 percent per year in the late 1960s and has since fallen to about 1.5 percent. The annual absolute increment of population peaked at about 87 million per year in the late 1980s. It is now around 80 million people per year.

This does not mean, however, that little additional population growth is to be expected. We will talk about this seemingly contradictory trend next. On the one hand, we are experiencing the most rapid population growth in history; yet on the other, we expect this growth to slow down and eventually stabilize or even turn negative. It may well be that we will experience a global population decline toward the end of this century.

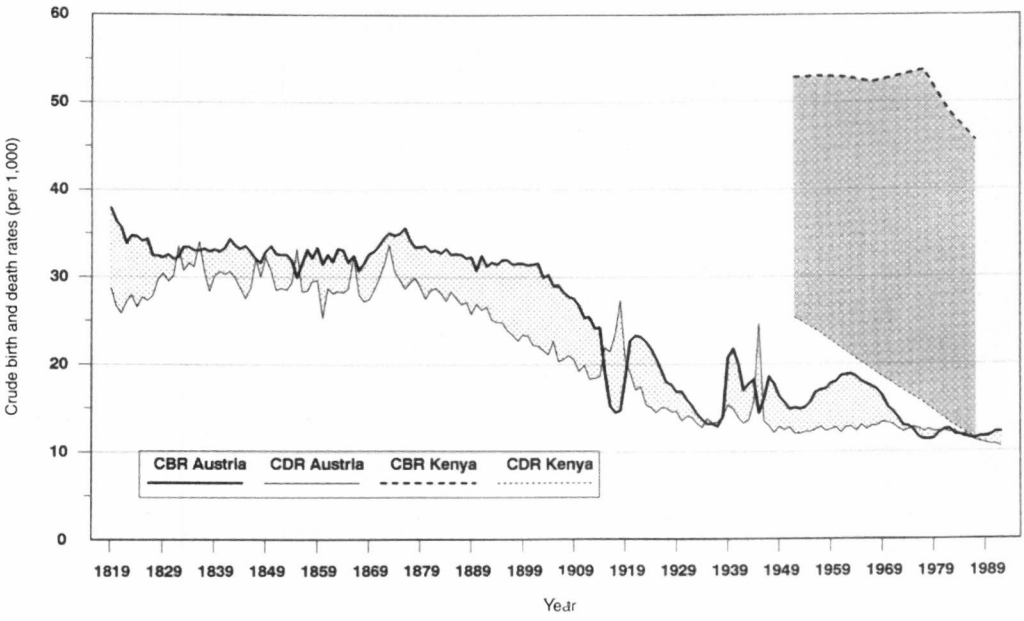
When we compare maps of the world that plot population densities of countries in 1960 (a world of three billion) and 2000 (a world of six billion), we see stunning differences. In 2000, one can still see the low density of Canada and Russia, but Latin America has a significantly higher population density, between 20 and 50 people per square kilometer. Note the very high-density areas of China, India, and Southeast Asia. The density has also increased in Europe and Africa. Only the Sahara and other desert areas continue to show very low population densities. Comparing such maps shows that the doubling of the population has largely been concentrated in what we call the developing countries, or the south, although there was some growth in the north.

What is behind this trend? Is there something we can simply extrapolate? That is what many people would do when there is such a strong increase and the belief that this condition will continue. Indeed, we have good reasons to assume it will not continue.

There has been much talk about carrying capacity—that it cannot continue indefinitely because there simply is not enough food, enough living space for everyone to have a decent life for an ever-increasing number. But there are also internal reasons, social reasons, why we believe that world population is going to stabilize.

There is something we call the theory or the paradigm of demographic

Figure 1. Crude birth and crude death rates, Austria and Kenya (1819 to 1989).



transition. Figure 1 shows these two curves for my home country, Austria, for a long time series. We start in 1820. The thick line shows the birth rate—the number of births to 1,000 of the population. The ups and downs are typical for what we call pre-modern societies before World War I, as is the case in this example.

Below that thick line is the death rate—deaths per 1,000 of the population. It shows some peaks, some epidemics and wars. On average, the death rate was a little below the birth rate, which means that the population grew, but it was a very moderate growth. Around 1870 there is a remarkable beginning of a downward trend in the death rate in all of Europe as well as in the United States. This was not due to modern medicine—1870 was well before antibiotics or efficient vaccinations were discovered—but rather to improved sanitary conditions. In many of the big European cities, sewage systems were built. People started to use soap, which is probably the single most important factor in bringing down the death rates, infectious diseases, and the relative changes in lifestyle together with a better nutritional status of the population, which also contributed to a better health status.

As seen in Figure 1, the birth rate even increased a little. This can be attributed to the improving health of women who now could have more children if they wanted, and indeed, they still had a high desire for large families. Fertility did not follow the downward trend until early in the

twentieth century. Figure 1 shows a widening gap between the death rate and the birth rate, resulting in population growth.

But this growth was never more than, say, 1 percent or 10 per 1,000; that is the difference between the birth and death rates. As we know from European and American history, many of these surplus births moved to the New World. They could not find living space in Europe. This was a time of very strong immigration from the Old World to the New.

Continuing with Figure 1, World War I shows a peak in mortality and, of course, a very low level of fertility, followed by some recovery. We see what the German-speaking countries call "the Nazi baby boom." During the Nazi time, some pronatalist policies caused the birth rate to jump. Next comes World War II and the postwar baby boom. This is not different in most countries of the industrialized world.

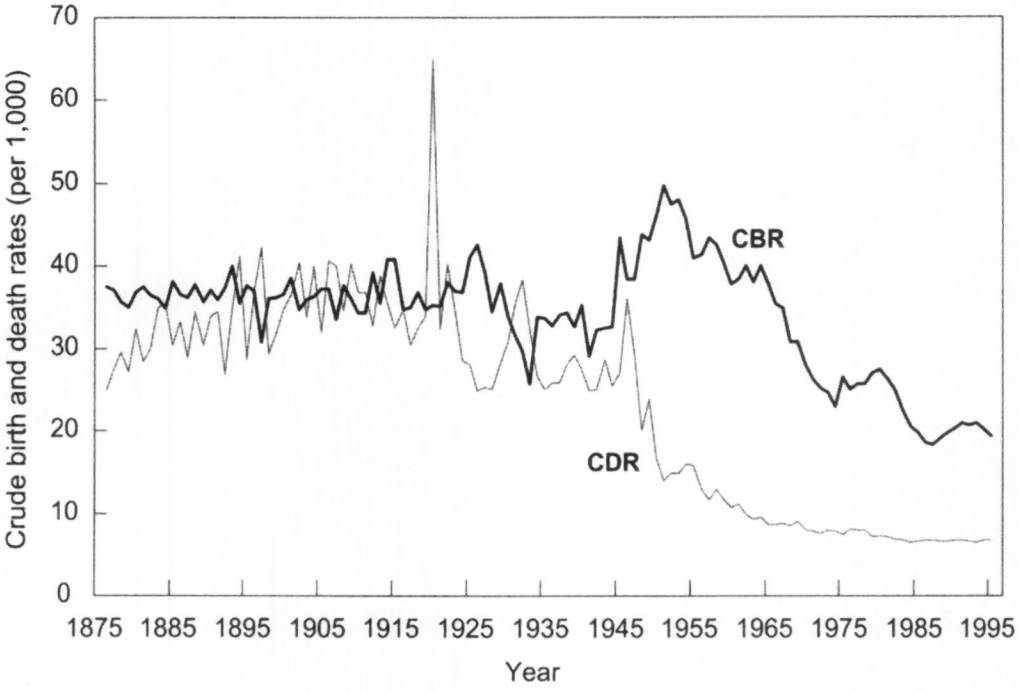
Figure 1 also shows an example of a rather typical developing country, Kenya. When the data starts in 1950, we see a very high birth rate of more than 50 per 1,000 people, which is much higher than what we have ever seen in Europe due to universal and early marriage. The death rate had already declined, owing to the introduction of modern medicine, antibiotics, malaria eradication, and so on to the developing countries after World War II.

For Kenya, Figure 1 shows a 3 to 4 percent increase of the total population per year. This means a doubling of the population in something like 20 years, which is a level that we have never seen in European history. As mentioned above, Europe had at most a 1 percent increase along with the possibility for out-migration that Kenya does not have.

One developing country, for which we have good data and where I have done some fieldwork, is the island of Mauritius. Here we see essentially the same phenomenon. Figure 2 shows the death rate from 1875 to be even more erratic than in Europe. There were some epidemics, malaria, Spanish Flu, and some ups and downs. As seen in Figure 2, the birth rate in Mauritius remained at roughly the same level. There was no population growth in the early part of the twentieth century. But then, within a few years after World War II, the death rate almost halved due to malaria eradication and antibiotics. At the same time, the birth rate jumped due to better health of women. During the time when Mauritius had an annual increase of 3 to 4 percent, Richard Titmuss and J. E. Meade, the famous British economist, went to the island to study what they thought was a textbook example of a country trapped in a vicious circle of poverty and rapid population growth. At the time, they were very pessimistic that Mauritius would not have a good future. But indeed, during the 1960s, Mauritius had a very steep decline in fertility, almost halving the number of children per woman within seven or eight years, to a level that today is as low as that of North America.

Before we move to the reasons for this remarkable trend that we can see in similar form in all countries of the world, let me quickly mention the global trends since 1950. Table 1 shows life expectancy at birth for

Figure 2. Birth and death rates in Mauritius, 1871–1991.



Source: Mauritius Central Statistical Office.

Table 1. Regional population sizes, mean number of children (TFR) and life expectancies at birth (both sexes), 1950–2000.

	Population Size		TFR			Life Expectancy at Birth		
Continent	**1950**	**2000**	**1950–1955**	**1975–1980**	**1995–2000**	**1950–1955**	**1975–1980**	**1995–2000**
Northern Africa	53,302	173,265	6.82	6.00	3.58	41.8	53.9	64.8
Sub-Saharan Africa	176,821	640,670	6.52	6.68	5.48	36.7	46.4	48.6
Eastern Asia	671,156	1,485,217	5.71	3.13	1.77	42.9	66.4	71.0
South Central Asia	489,583	1,490,778	6.08	5.24	3.36	39.3	52.7	62.3
South Eastern Asia	182,035	518,540	6.03	4.18	2.69	40.5	54.7	65.7
Western Asia	50,247	188,015	6.38	5.19	3.77	45.2	60.5	68.0
Latin America & Caribbean	166,994	519,143	5.89	4.49	2.70	51.4	63.1	69.2
Northern America	171,617	309,631	3.47	1.79	1.94	69.0	73.3	76.9

Source of data: *World Population Prospects. The 1998 Revision. Volume I: Comprehensive Tables.* New York: United Nations, 1999.

the different continents. All parts of the world show an increase, with the strongest increase in Asia. At the beginning, Asia was close to Africa, but now Asia is closer to the developed countries.

Table 1 also shows a decline in fertility rates (the number of children per woman) for all parts of the world. Even in Africa, where fertility had been at a very high level—between six and seven on average—we see a recent significant decline. In Latin America and Asia, this remarkable decrease began in the 1970s.

What are the reasons behind this process called the demographic transition? It would take too long to describe all of the theories and empirical data behind this remarkable fertility decline. Instead, I would like to use the words of one of the most famous American demographers, Ansley Coale, who was the head of Princeton University's Office of Population Studies. After a very extensive review of fertility declines, mostly in historical Europe but also in developing countries, he came to the conclusion that there are three preconditions for a sustainable fertility decline.

The first is a mental precondition. Coale says that fertility must be within the realm of conscious choice. You must be able to think rationally with intention about the number of children that you have, not just take them as God-given, as has been the case in many of the traditional societies. If you interpret this in terms of policies, it implies emphasis on education, toward more rational behavior. But one must be cautious. You cannot say that previous behavior was irrational; it was embedded in a social rationality. But here we talk about individual rationality; you actively think about the number of children that you want to have and do not take it as something naturally given to you or as suggested by traditional societal norms.

The second precondition that Ansley Coale mentioned is that smaller family size must be advantageous to you; there must be a reason why you want to have fewer children. On the policy side, this brings in the issue of costs and benefits. What benefits do children bring in terms of helping on the farm, etc., versus the cost? As we all know, in a modern society in an urbanized environment, children are much more of an economic cost than an economic benefit. There are, of course, noneconomic benefits, such as emotional benefits, which are the main reasons people still have children at all. It is unlikely that anyone would have children for purely economic reasons, so there needs to be some differentiation other than purely economic reasons. But these noneconomic, emotional benefits can usually be met by just one or two children. When someone has eight, nine, or ten children and begins to think about having fewer, these economic benefits play a role. If you want good schooling for your children, for example, you can afford to have only a smaller number. The size of the family has to be advantageous to you.

The third important precondition is that there must be an acceptable means for limiting your family size—reproductive health considerations,

family planning services. What is considered an acceptable means depends on the culture.

It is important to acknowledge that these three preconditions go hand in hand. This is why in some cases—for example, in Kenya in the 1960s—there were strong family planning efforts that showed no effect whatsoever, simply because the other two preconditions were not met. Another example is Mauritius where, up to 1965, there was a rather high female literacy rate, so the first precondition was met. The second was also there: it was advantageous to have fewer children, but the people in Mauritius in the early 1960s did not yet have acceptable means to limit family size. A family planning program was implemented by the government, and even the Catholic Church in Mauritius was heavily involved in spreading the idea of voluntary family planning by so-called natural methods. Because the two other preconditions had been met, there was a very strong response to these family planning efforts.

This was a very brief attempt to give a concise picture of the preconditions for a lasting fertility decline. Despite tremendous variations in different parts of the world, the bottom line remains that these three preconditions must be met.

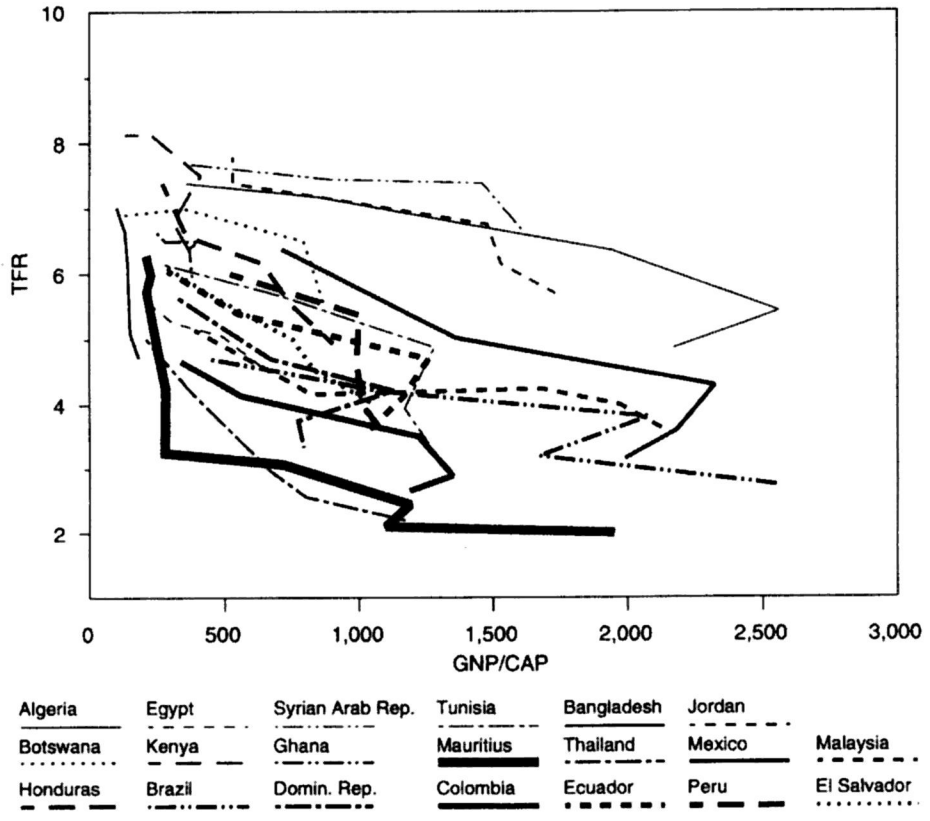
I would like to say a word on Africa because it has recently been in the headlines because of the AIDS epidemic—perhaps *pandemic* is the better word. There are indications that AIDS is not only killing many people but that it may also have a significant fertility-reducing effect. At this point, we cannot anticipate the longer term impacts of AIDS on the entire infrastructure and society of the countries affected. There are devastating consequences at all levels, but one of the consequences may be to enhance the decline of fertility in Africa.

Let's move on. In 1974, there was a world population conference in Bucharest where the developing countries came up against the industrialized countries, who were pushing family planning. The tenor of the developing countries was, "We don't need your family planning. We need development." "Development is the best contraceptive," was their rallying cry.

Figure 3 shows that economic development alone does not mean lower fertility. Here are time series for 21 countries, with the number of children (TFR) on the one axis and per capita income on the other. This is a nonrelationship. There are all kinds of patterns. Some countries, like Mauritius, have a strong fertility decline at a very low income. Others have very high increases in income without any change in fertility. The simplistic statement that an increase in a country's income will automatically bring down fertility does not seem to hold.

Is there a better predictor of fertility? I would say yes; my favorite candidate is the female literacy rate. Look at Figure 4, at the same time series of the same 21 countries. It is amazing. One can see that up to a female literacy of about 50 percent, nothing changes. Fertility stays at a high

Figure 3. Relationship between per capita income and fertility (TFR) in a sample of developing countries (1970–1990) and in Mauritius (1950–1990).

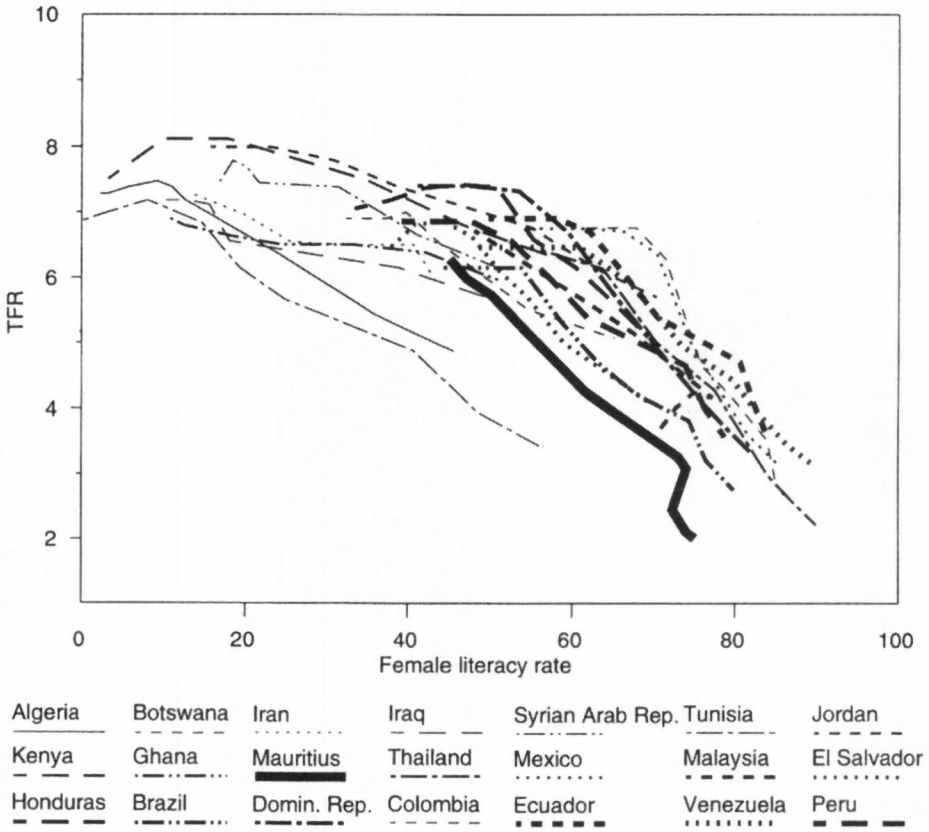


Source: *Population-Development-Environment. Understanding Their Interactions in Mauritius*, W. Lutz (ed.). Berlin, Springer-Verlag, 1994, p. 369.

level. After that, most of the countries seem to show a fertility decline. I should add here that a female literacy rate of 50 percent essentially means that most of the younger girls are educated while elderly women are still illiterate, because education tends to happen at a younger age. Once the more educated women come into reproductive age, fertility rates start to decline. At the end of this presentation, we will come back to the issue of education.

There are also significant impacts of fertility and mortality on the age structure of the population. Figure 5a gives us the example of sub-Saharan Africa—a steep population pyramid with exponentially increasing

Figure 4. Relationship between female literacy rates and total fertility rates in a sample of developing countries with a total fertility rate above 6.0 in 1950 (1950–1990).

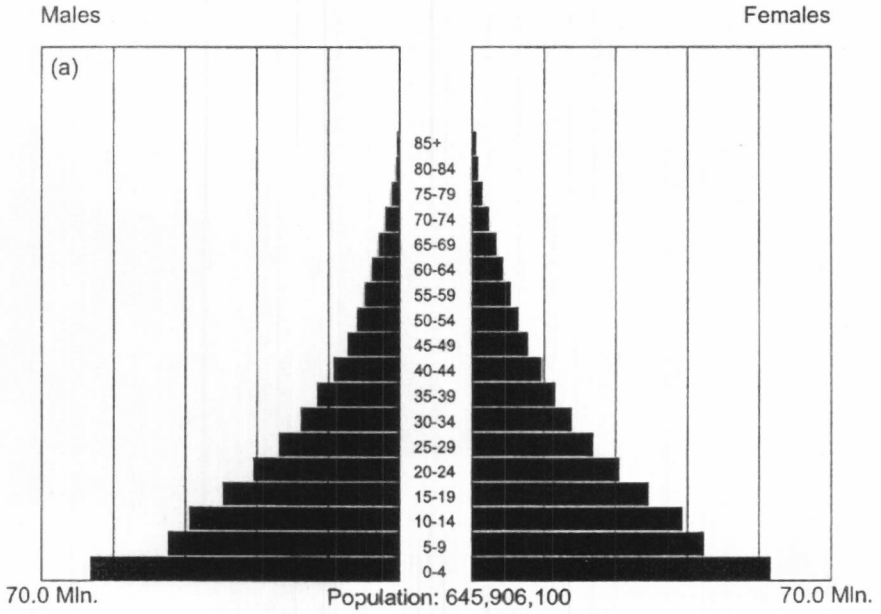


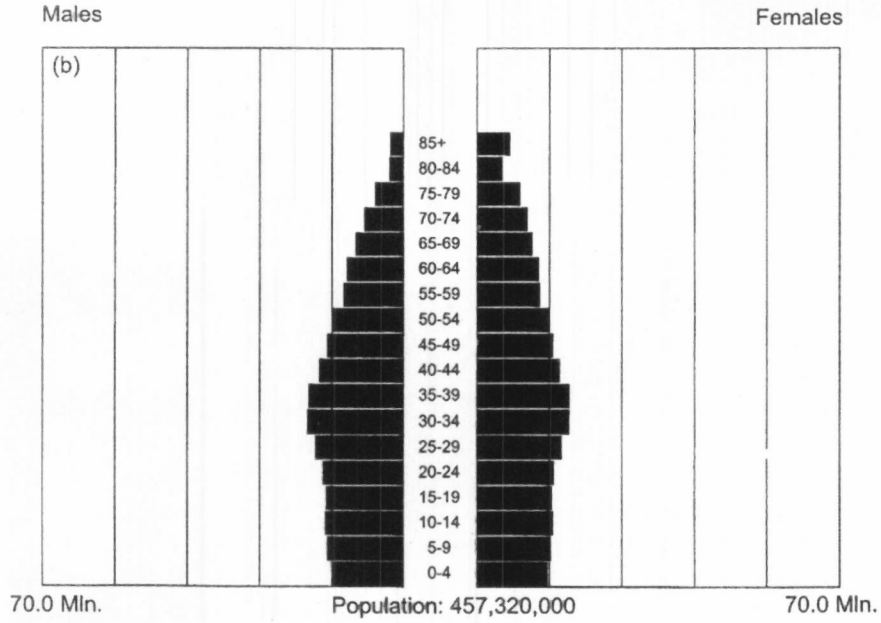
Source: *Population-Development-Environment. Understanding Their Interactions in Mauritius*, W. Lutz (ed.). Berlin, Springer-Verlag, 1994, p. 370.

young age groups. Figure 5b shows the opposite in the example of Western Europe, which does not resemble the form of a pyramid at all.

To briefly explain the pyramid, age is on one axis, with women and men on both sides of the pyramid. These figures show how the world is divided today. There are very young populations in which more and more young people will enter the school system and later will enter the labor force looking for jobs. This is one of the reasons for the huge unemployment problems in developing countries, whereas in the north and in Western Europe, the sizes of the younger age groups are shrinking, causing unemployment to improve. There are, of course, many other conse-

Figure 5A and 5B. Age pyramids of (a) sub-Saharan Africa (top) and (b) Western Europe (bottom) in 2000.





quences on the economy and on society resulting from the process of population aging, and we will hear more about this later.

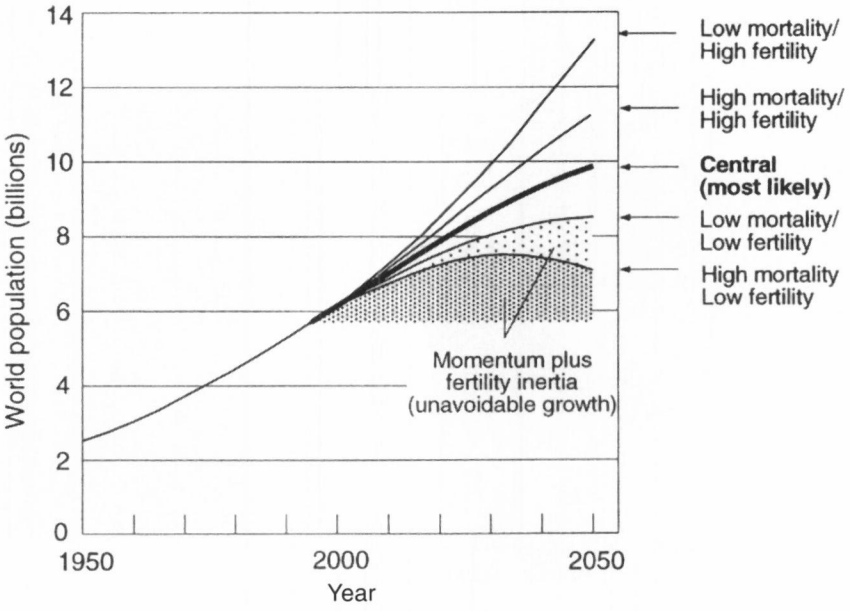
Let's quickly move on to the future. Demographers have an easier task than economists or meteorologists to project the future because we have to worry about only three factors that determine the future size and structure of the population: fertility or the birth rate, mortality or the death rate, and migration. Fertility, mortality, and migration are influenced by the physical, economic, social, cultural, and political contexts, and each of these is hard to forecast. Through the process of population dynamics, inputs in terms of fertility, mortality, and migration are then translated into certain population characteristics at a subsequent point in time: population size, population density, growth rate, age distribution, sex ratio, and regional distribution. All of these characteristics feed back to the social, economic, and natural environment. In population projections, we have to make assumptions about these three main determinants of population change.

How do we make assumptions? The best way to start is by making alternative assumptions—see what would happen to world population if we had a low path of fertility as compared to a high path. But this sort of sensitivity analysis is only of limited usefulness. It does not tell us what is likely to happen and what is unlikely. For assessing the likelihood of certain trends we need substantive arguments and their evaluation by experts. At the International Institute for Applied Systems Analysis (IIASA) in Austria in 1996, we produced a 500-page documentation of alternative views about the future paths in fertility, mortality, and migration for different parts of the world. We tried to ascertain what can be assumed today based on empirical evidence, knowledge about fertility intentions, likely improvements in life expectancy, and other possible future trends.

Figure 6 shows the population path from 1950 until about 1996, when we made the projections. For the future, it combines the most likely fertility and mortality paths. Fortunately, on a global level we don't have to consider migration. As long as we don't have any immigration from outer space, we can leave it out. However, this is not entirely true, because if a lot of people move from a high fertility continent to a low fertility continent and adopt the new low fertility level, it affects the world population size as well.

At the bottom of Figure 6 we find something that we might call the momentum of population growth plus the inertia of fertility—fertility cannot change too rapidly. Alternatively, we might call this the unavoidable population growth because it would be unrealistic to assume that tomorrow in every country of the world, the number of children per woman would drop, let's say, to 2.1, which is approximately the level of fertility it takes to replace one generation. Hence, there will be some unavoidable population growth over the coming decades.

Figure 6. Unavoidable and possibly avoidable world population growth to 2050, based on 1996 IIASA projections.



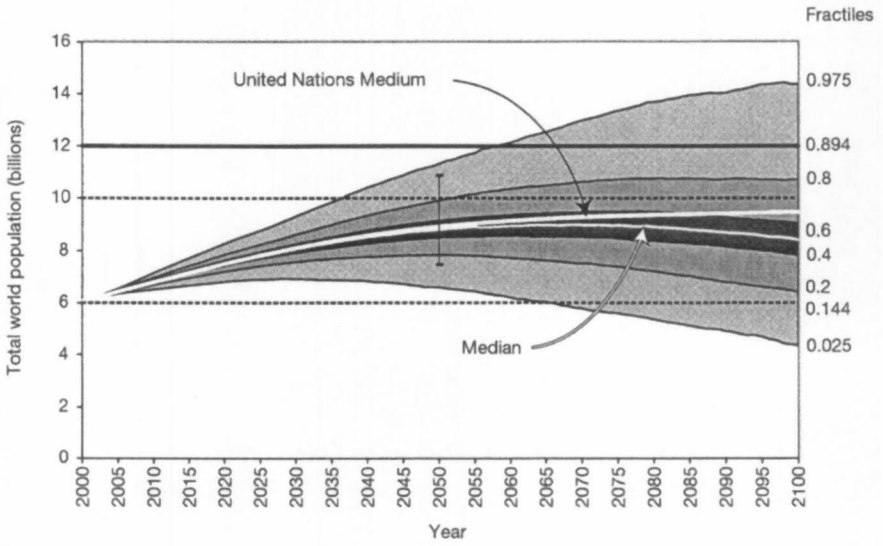
Source: *The Future Population of the World. What Can We Assume Today?* W. Lutz (ed.). London, Earthscan, 1996, p. 432.

You will see that if one varies only the fertility rates, thus accounting for uncertainty in future trends as is done, for instance, in the United Nations' forecasts or in some of the projections of the other agencies, it does not capture the whole picture, because mortality uncertainty is quite significant. For instance, if you compare the two bottom lines in Figure 6, they combine identical low fertility paths, in one case combined with low mortality, i.e., improvement in life expectancy (which means fewer people dying), and in the other case with high mortality. When more people survive, the population is larger. If you have a higher mortality rate, which can be due to AIDS or other reasons, then population size peaks and declines thereafter.

The possibilities are many, and one cannot really say which path the world population will take. For this reason, we developed a model that we call probabilistic population projections, where we try to attach probabilities to alternative trends. Our findings—that a doubling of world population is unlikely—were published in *Nature* magazine in 1997.[3]

[3] Lutz, Wolfgang, Warren Sanderson, and Sergei Scherbov. 1997. Doubling of world population unlikely. *Nature* 387: 803–805.

Figure 7. Forecasted distributions of world population sizes (fractiles).



For comparison, the United Nations medium scenario (white line) and 95 percent interval as given by the NRC[5] on the basis of an ex post error analysis (vertical line in 2050) are also given. Reprinted by permission from *Nature* 412 (2 August 2001): 544, copyright 2001 Macmillan Publishers Ltd.

Using an improved method of probabilistic forecasting in a new projection recently published in *Nature*[4], we showed that there is around an 85 percent chance that the world's population will stop growing before the end of the century. There is a 60 percent probability that the world's population will not exceed 10 billion people before 2100, and around a 15 percent probability that the world's population at the end of the century will be lower than it is today. For different regions, the date and size of the peak population will vary considerably.

The inner area in Figure 7 gives the 95 percent uncertainty interval in 1996. We assume that about 95 out of 100 cases fall into this range. About 60 percent of all future trends fall in the lighter shaded area and 20 percent in the inner dark area.

[4] Lutz, Wolfgang, Warren Sanderson, and Sergei Scherbov. 2001. The end of world population growth. *Nature* 412: 543–546.

[5] National Research Council. 2000. *Beyond Six Billion: Forecasting the World's Population.* Panel on Population Projections. John Bongaarts and Rodolfo A. Bulatao (eds.). Committee on Population, Commission on Behavioral and Social Sciences and Education. Washington, D.C.: National Academy Press.

Figure 7 shows the distribution of simulated world population sizes over time. The median value of our projections reaches a peak around 2070 at 9.0 billion people and then slowly decreases. In 2100, the median value of our projections is 8.4 billion people with the 80 percent prediction interval bounded by 5.6 and 12.1 billion. The medium scenario of the most recent UN long-range projection[6] is inserted in Figure 7 as a white line. It is almost identical to our median until the middle of the century but is higher thereafter due to the UN assumption of universal replace-level fertility, i.e., two surviving children per woman.

A stabilized or shrinking population will be a much older population. At the global level, the proportion above age 60 is likely to increase from its current level of 10 percent to around 22 percent in 2050. This is higher than it is in Western Europe today. By the end of the century, it will increase to around 35 percent, and extensive population aging will be experienced by all world regions. The most extreme levels will be reached in the Pacific OECD (mostly Japan), where half of the population is likely to be age 60 and above by the end of the century, with the 80 percent uncertainty interval reaching from 35 to 61 percent. Even sub-Saharan Africa in 100 years is likely to be more aged than Europe today. Compared to the medium scenario of the UN long-range projections of the proportion 60 and above, the trend of our median is almost identical up to 2050 but shows significantly stronger aging thereafter. This confirms recent criticism that conventional projections tend to underestimate aging.[7, 8] The extent and regional differences in the speed of population aging—the inevitable consequence of population stabilization and decline—will pose major social and economic challenges.

It needs to be recognized that population numbers are only one aspect of human impact and that in some of the world's most vulnerable regions, significant population growth is still to be expected. Nevertheless, the prospect of an end to world population growth is welcome news for efforts toward sustainable development.

In conclusion, I would like to say a few words about the educational composition of the population. I believe that when we consider the impacts of the population on the environment and the controversy associated therein, education really is what some people call a win-win strategy—something that is good for the future population as well as good for the environment. It really may be the best solution out of some of the vicious circles that we see in the world today.

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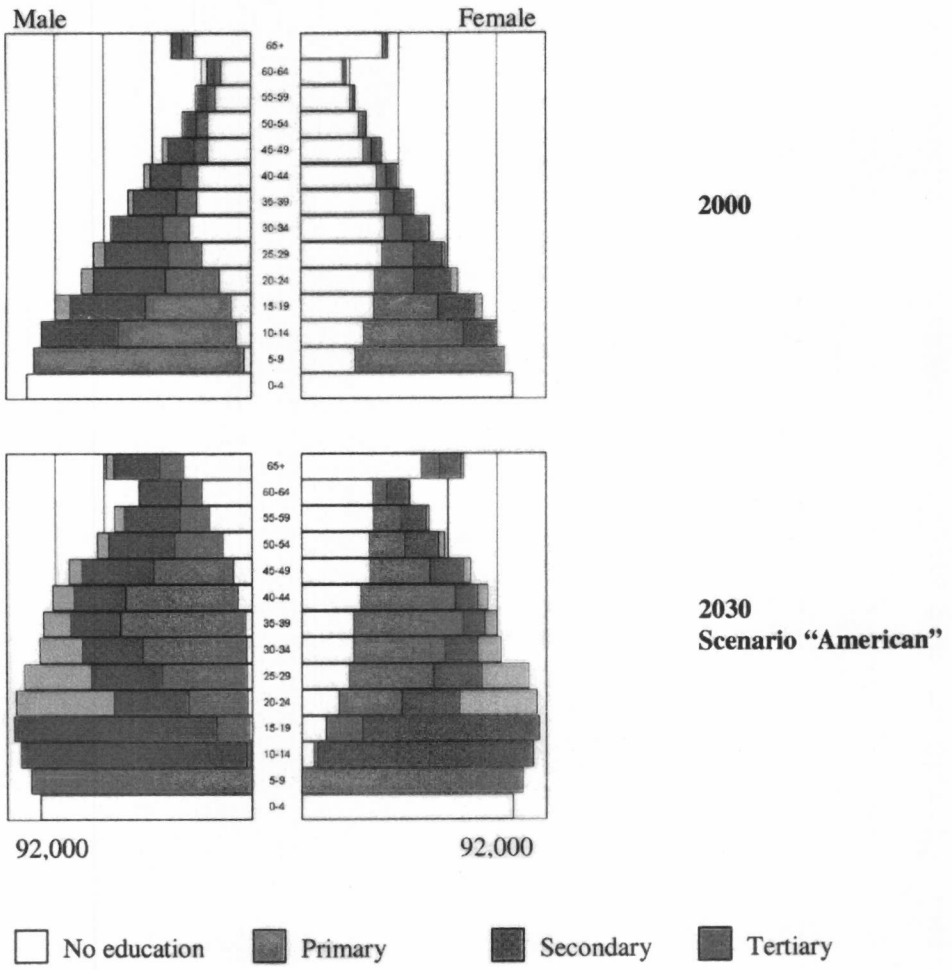
[6] United Nations. 1999. *Long-Range World Population Projections: Based on the 1998 Revision*. New York: United Nations, ESA/P/WP. 153.

[7] Tuljapurkar, S., N. Li, and C. Boe. 2000. A universal pattern of mortality decline in the G7 countries. *Nature* 405: 789–792.

[8] Vaupel, J.W. and H. Lundström. 1996. The future of mortality at older ages in developed countries. Pages 278–295 in W. Lutz (ed.), *The Future Population of the World. What Can We Assume Today?* Revised Edition. London: Earthscan.

Figure 8. Age and education pyramids for South Asia in 2000 and in 2030 according to "American" scenario.



At IIASA we have developed a demographic method that we call multistate population projection with which we not only project the population of one country and see how it will develop in the future, but we break it down into different subcategories, which are the educational categories in Figure 8. We see South Asia, essentially India, where the illiterate population without any education is shown in white; the population with at least one year of primary schooling is ■; those with some secondary education are darker ■; and those with some tertiary education are ■. We also see that India has a large gender gap; females have a very high proportion—let's say, 25 to 29 percent. Half of the females in their 30s have

never had a single year of schooling, whereas schooling for males is a little better. This is a very poorly educated society, even today.

Now we calculate several scenarios. In one that we call the "American scenario," we assume that South Asia will slowly move toward North American school enrollment rates, which means very high secondary and even tertiary education (see Figure 8).

At the younger ages, this makes a great difference. In a constant scenario, the gender gap remains large, and the higher proportion of people with very low education is perpetuated in India to the year 2030. But even if one makes a tremendous effort to increase the Indian school system to American enrollment ratios, it affects only the younger generation. In this case the gender gap narrows, and there is much higher secondary and tertiary education at the younger age groups.

Because you are educating only children and possibly young adults, and not the older people above age 30 or 40, it makes no difference for the skills of the working population in the short run. Education of the labor force is something that is very inert. If you invest in education today, it takes 20 or 30 years to translate into a better education of the labor force that will have an impact on productivity and all the other beneficial economic consequences, but the cost of education needs to be spent now. This is why one needs to have a long-time horizon for societal investments.

An educated society is likely to be more productive and better off. It can also more easily cope with and adapt to climate change conditions and all kinds of environmental challenges that will come up in the future.

Thank you.

COMMENTS

WALT W. ROSTOW[9]

I have written three books about economic growth: *The Stages of Economic Growth* (1960); *The World Economy* (1976); and *Theorists of Economic Growth* (1990). In each case I looked forward as well as backward. But I focused mainly on how the underdeveloped countries might achieve levels of output that the industrialized countries had already achieved, what we all confronted along the way, and how we should face these problems. I put aside the long-term prospect, but I recognized and commented on it.

The long-term prospect is, simply, that the earth is finite, and trees do not grow to the sky. At some stage physical output and population (which are not the same thing) will cease to expand.

There are three possibilities. First, economic growth could stop because people said, in effect, that enough is enough. They could say that levels of real income had reached the point that all they required was that existing capital and output be maintained for an existing way of life. They would work as hard as necessary to provide for that static way of life, including the maintenance of the capital stock—which incidentally requires considerable production—and leisure would have to be limited.

There is no reason to believe we are within sight of that point; even in our richest societies, people have little trouble spending extra money.[10] Maybe someday but not now. Individuals may peel off for a life in the spirit of Walden Pond, but this will not be the course chosen by most of us.

Second is the possibility of a shortage of raw materials, food, energy, air, water, etc. A vast literature starting with Rachel Carson's *Silent Spring* and the best seller *The Limits to Growth* has explored this theme in the past 40 years. I devoted some 87 pages of *The World Economy* to this subject, emerging with the view that we could probably surmount these problems of physical shortage if we conducted wise but possible policies, which I attempted to outline.[11]

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[9] Walt W. Rostow is Rex G. Baker Jr. Professor Emeritus of Political Economy in the departments of economics and history at The University of Texas at Austin.

[10] For an effort to establish this point for the U.S. see W.W. Rostow, *The World Economy* (New York: Macmillan, 1978), p. 798.

[11] Ibid, pp. 571–658.

The third possibility is that human fertility will decline below the 2.1 replacement level, and population will shortly decline—not level off—but continue relentlessly to decline. This is happening. The long run is upon us in this form. The decline of population will begin in Japan in 2007; the decline in the working force will begin as early as 2001—that is, next year. The future of the human race is now in the hands of people, not of anonymous automatic forces.

The following tables tell the story for the whole world economy.

Table 1. Total Fertility Rate by Level of Income: 1970, 1992, 2000 (estimated).

	Total Fertility Rate		
	1970	1992	2000 (est.)
Low Income Economies	6.0	3.4	3.1
Lower Middle Income Economies	4.5	3.1	2.9
Upper Middle Income Economies	4.8	2.9	2.5
High Income Economies	2.4	1.7	1.4
World	-	-	2.9

Source: Reprinted by permission from *World Development Report 1989*, (New York: Oxford University Press, 1989), p. 216, Table 27.

Not only does fertility decline as a nation becomes richer but (a) there has been a decline in fertility of almost 50 percent between 1970 and 2000 in most countries except Africa south of the Sahara, and (b) the richest countries in the world and the most precocious developing countries have fallen below the replacement rate—which is 2.1 fertility.

Table 2. Sample Transitional Countries, 1970, 1992, 2000 (estimated).

	1970	1992	2000 (est.)
Thailand	5.5	2.2	2.0
Turkey	4.9	3.4	2.6
Brazil	4.9	2.8	2.0
Mexico	6.3	3.2	3.1
S. Korea	4.3	1.8	1.5
Indonesia	5.9	2.9	2.7
India	5.8	3.7	3.4
China	5.8	2.0	1.8

Sources: The figures for 1970 and 1992 are from *The World Bank: The Development Report, 1998–1999*, Table 26. The figures for 2000 are from the *1998 World Population Data Sheet*, cited in Note 6.

The latter point is underlined in this chart. Not only mainland China but South Korea, Thailand—and I would add Taiwan—have fallen below the replacement rate.

Another way to portray the human condition is that the death rate has leveled off due to the epidemic of cancer and circulatory diseases, but fertility has continued to fall.

Table 3. Death Rate, Excluding India and China, 1970 and 1992 (per 1,000)

Countries by Income	1970	1992
Low income	19	12
Lower middle income	12	9
Upper middle income	10	7
High income	10	9

Source: Reprinted by permission from *World Development Report 1989*, (New York: Oxford University Press, 1989), p. 216, Table 27.

This process has been accompanied by an aging of populations and a disproportionate decline in the working force. As time moves forward inexorably, there will be fewer and fewer in the working force to look after more and more old folks.

A population policy to deal with this turn in our fortunes is needed at once. It should include three elements.[12]

One, a time-buying program that will expand the workforce during the period from the beginning of the fall in fertility to the reattainment of a stable replacement rate, which is 2.1 children per woman. The major sources for this time-buying program are immigration, a rise in the retirement age, and the training of disadvantaged young people in workplace skills. The latter is not a social luxury, nor a moral duty, but a practical necessity giving the need to maintain the workforce as population ages.

Two, a policy consensus achieved by each particular country—including the men and women of that country—that will permit it to reach and maintain the fertility rate of 2.1.

Three, acceptance, as a goal, of a constant population with continued R&D and innovation, and, therefore, a continued increase in real wages and the quality of life.

Some General Principles

From the beginning, the full resources of the media and the political process need to be mobilized, backed by the major political parties, and

[12] W. W. Rostow, "Modern Japan's Fourth Challenge: The Political Economy of a Stagnant Population," *The Japanese Economic Review*, Vol. 51, No. 3, September 2000, pp. 297–307.

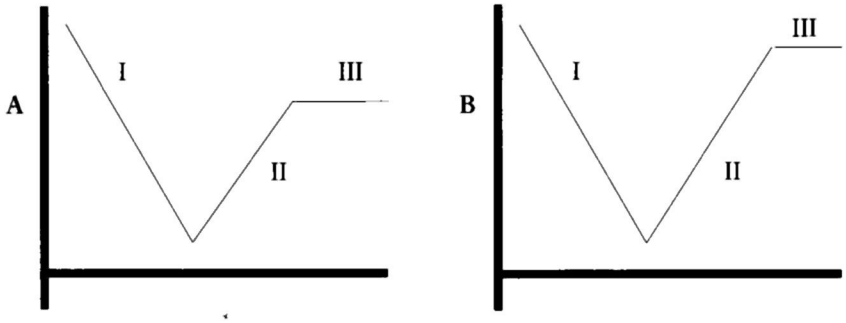
supported by widely respected private leaders. The two necessary themes are (1) the fall (or expected fall) of fertility below 2.1 is potentially an urgent and mortal problem for modern societies, and it must be countered as promptly as possible by a universal effort; and (2) if successful, the policy offers a long-term solution to population, environmental, and welfare concerns. This means we must go back to a 2.1 replacement rate plus continued R&D and innovation to replace investment dependent on an expanding population and thereby to permit increased real income and improved quality of life.

The citizens in advanced industrial societies have been accustomed to small movements in the right direction, e.g., increasing the retirement age by 2 years from 65 to 67, small increases in elite immigration, a few additional nurseries, a modest increase in subsidies for having additional children, etc. Such small measures have not reversed the falling fertility rate. They have the feel of "too little, too late," and in any case, it is felt we have plenty of time to deal with the problem of population. But we don't have plenty of time. There must be a program that matches the size of the problem, that conveys a sense of urgency, not business as usual.

The simple diagrams below indicate very roughly the three periods envisaged in this transition:

THREE PHASES: ALTERNATE OBJECTIVES

I. The time-buying program that expands the workforce temporarily and limits the fall in output
II. Getting back to 2.1 through measures taken by the whole society that permit women to play their part in the workforce and increase the motivation to increase fertility
III. The long-run reconciliation of a stagnant population and rising real wages



There are two diagrams presented because each country may ultimately seek a population level below the level at the start of the transition, or at the previous level, or, less likely, above the previous level.

PHASE I.

Maximizing the Workforce During the Period of Its Decline (and the Population's)

Hamish McRae has listed a set of measures to enlarge the workforce to compensate for the decline it will otherwise suffer.[13]

- Retirement ages will rise.
- Female participation in the workforce will climb.
- Part-time working (including working at home) will continue to increase.
- University students will be expected to work part-time while studying, a process already begun.
- Greater efforts will be made to reduce unemployment.
- Retraining for different jobs several times in a career will become more normal.
- Volunteer labor will be used to a greater extent.
- There will be more pressure on children to learn marketable skills.

It is worth making some additional comments on this list.

The heightening of existing efforts to move men and women from the welfare rolls, or, indeed, some of those in prisons, into the workforce—this is not a matter of morality or budgets but a way of enlarging the workforce while reducing public expenditures.

Immigration is obviously a way of increasing the workforce in the short run in compensation for the decline in the indigenous existing workforce, but it should be regarded as a time-buying method rather than a long-term solution as compared to bringing the population of a given country back to a replacement fertility rate. Immigration will dry up from a given source—say, Mexico—as that country experiences a rise in income per capita and goes through the demographic transition. The possible playback effects in the politics of a receiving country of an "excessive" immigration level will also affect the possibilities. The method used by some of the Japanese firms when confronted with a local labor shortage—of sending some plants abroad—may have a wider application. And the limits and possibilities of extending the retirement age radically will justify exploration.

In short, there are some considerable possibilities for enlarging the workforce in the face of its attenuation by demographic forces. They are extremely important in this phase given the decline of the existing workforce in relation to the expansion of welfare demands for the dependent population. But they are not a substitute for bringing the fertility rate back to 2.1.

[13] Hamish McRae, *The World in 2020*, (London: HarperCollins, 1994), p. 101.

Phase II.

Period of Expanding Fertility Back to 2.1.

There is one thing to be said, in general, about the second stage of this transition. The quicker we get to Phase II, the better. Starting now means we are already dealing with a degenerating situation.

The longer we permit this degenerative condition to continue—symbolized by the falling proportion between the working force and the dependent population—the harder and more expensive it will be to achieve the turnaround symbolized by Phase II.

The specific tasks of Phase II follow:

First, the men and women of society must achieve a treaty—or a deep understanding—that men, and the society as a whole, will have to make arrangements to permit women to reconcile having two children with advanced education and a maximum career in the workforce, of which she is capable.

Second, countries will have to decide after domestic political debate what target population they will seek—above, at, or below the initial population level.

Third, the envisaged increase in fertility will add, of course, to the flow of dependents, although children are less expensive for the public budget than dependents beyond the retirement age.

Fourth, for a time the fertility rate will have to go higher than 2.1 for those countries that have fallen below that level, assuming they wish to attain a level of population above the nadir represented in the charts. For those now above 2.1, with the fertility rate falling, the task will be to halt the fall in fertility at 2.1 and thus achieve the chosen population.

Fourth, in general, Phase II continues measures of Phase I and lasts, say, 16 to 22 years depending on the years of schooling absorbed. These will be years of maximum strain, depending on the swiftness and extent of the time-buying measures set in place in Phase I, but the beginnings of the rise in the fertility rate will indicate that the job can be done and will be an important optimistic turning point in the transition.

Finally, the homegrown expansion of the workforce should supersede, in part, the desired (or imposed) limits of workforce expansion, e.g., the increase in fertility will gradually match the decreased flow from the hitherto disadvantaged people as the limits of transfer to the workforce are reached. Similarly, we will learn the limits on immigration and of the flow from the increased retirement age to the workforce, which may exhibit diminishing returns as time passes.

Phase III

The Political Economy of a Static Population at Chosen Level

As fertility rises to 2.1 and population continues to fall at a diminished rate, the long-term problem will become increasingly clear: to main-

tain full employment in a world lacking the stimulus to investment of a rising population.

Hopefully there would be agreement on the gap to be filled, and there will be rough agreement on how much of the gap-filling can be done by the private sector, although there will be some political debate on that score.

We might also have some debate on the priorities. On the side of the public infrastructure, new bridges, improved roads, new school buildings, smaller classes, possibly increased expenditure for the exploration of space are among the possible lines of investment. On the private side, increased investment in a post-petroleum generation of automobiles and the rapid exploitation of the possibilities of science are possible. But some part of the gap may be filled (as envisaged by various economists of the Great Depression of the 1930s) by a fall in taxes and a consequent increase in private consumption.

Conclusion

The greatest lesson that emerges from examining this scenario of three phases in the transition is the importance of Phase I: setting time-buying targets high and holding out from the highest and most effective political level of a positive image of the outcome.

JOHN HAAGA[14]

Dudley said earlier he was going to set the hounds on Wolfgang, but that's hardly what's happening. I think I have to agree with what both Wolfgang and Professor Rostow have said.

There is one thing, though, I think we need to remember, which is that there's a tendency to focus on the falling fertility rates and the lowering of projections of world population as being the good news and the important news for the future. I would like to remind everybody there are parts of the world where the old fashioned population explosion that we all read about and heard so much about around the time of 1970, around the time of the first Earth Day, when Paul Ehrlich's book *The Population Bomb* really called this to everyone's attention, is happening.

For the first half of the 1990s, my family and I lived in Bangladesh. If you remember the map that Wolfgang showed of population densities in 2000, there was one little dark maroon patch around the left armpit of the Indian subcontinent, and that was Bangladesh.

The densities there are unimaginable for Americans. I used to explain this to neighbors and to students by asking them to think—just a thought experiment— think of everyone in the world— the Pope, Deng Xiao-ping, everyone in the world—moving to the U.S. tomorrow. The average densities in the U.S. would then be a little over half what they are today in Bangladesh.

The population is still growing. They have far more people entering the labor force each year than can find jobs in the modern sector. They've had great success with exporting clothing and textiles, but they really need a new industry like that practically every two years in order to keep up with population growth.

So we have to hold two ideas in our heads at the same time. There are the old fashioned population bomb ideas that are relevant for many parts of the world, important parts of the world, and there are the more recent concerns about population aging and declining fertility relevant for still other parts of the world.

There's one other thing I'd like to do, which is to personalize this a little bit. I think in the U.S. we often feel we're a nation apart, and in a lot of ways we are. We look at what's going on in the developing countries today and think that this is part of our remote history or something, but it's really not. The demographic transition is part of our family history for Americans.

We've talked mostly about fertility rates. I'd like to talk about mortality rates.

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[14] John Haaga is director of Domestic Programs for the Population Reference Bureau.

This graph shows death rates by age for males. I apologize for making it males. Males for demographers are the weaker sex, but there's a reason and I'll tell you in a moment.

The top line shows death rates by age for males in the U.S. in 1918. The middle line is Kenya for the late 1980s, fairly typical as Wolfgang said for a developing country in Africa now. The bottom line is for the U.S. in 1997, which is the most recent available. What you see is the tremendous progress that has been made in the U.S. in one lifetime. Mortality rates have fallen at every age, especially in infancy and childhood.

Now, I chose these dates because I think about these numbers in relation to my family. My father was born in 1917 in Tennessee, so the rates in the top line are those that were prevailing nationally in his first year of life. Tennessee at that time was almost certainly worse than the national statistics, if they had kept good statistics, which they didn't. It was developing country statistics then, exactly as Wolfgang said for Africa.

The infant mortality rate was around 125 per 1,000 babies, and life expectancy at birth for men was about 53 years. That's less than the life expectancy now for men in Ghana or Togo. Now, for African Americans at that time it was certainly worse. Life expectancy for them was a little under 40 years then, which is as bad as the African countries where AIDS is the worst problem today.

My father, like most members of his cohort, lived right through the Depression and World War II, well past what we would have calculated as their life expectancy in 1917, because mortality rates were falling at every age during most of his lifetime. By the time I was born in 1953, infant mortality in the U.S. was 35 per 1,000 and life expectancy was about what it is in Egypt today.

In 1980, when my oldest son was born, infant mortality was down to 14 per 1,000 and life expectancy for males was 70 years, which is the equivalent of Jamaica today.

So my father was Togo, I was born into Egypt, and my son, Jamaica. That's a big portion of the variability in the world today in mortality rates. It's a lot of progress, all in my father's lifetime—three generations of an American family.

Comparable changes have been even quicker for the people in Asia, Latin America, and now even in many parts of Africa. I began in this business working on demographic surveys in Malaysia. There, all of this decline that I talked about for the twentieth century in the U.S. was packed into a much shorter period, a few decades, in Malaysia. What was wonderful about traveling around the country and interviewing people and talking to them was that the older women in our sample were remembering a time when Malaysian rates were like those in the poorest parts of Africa.

The youngest people in the sample were telling me about a time that was very much different. In fact, mortality rates in Kuala Lumpur were better than the mortality rates in the District of Columbia, where I live. So

you could get basically this massive change in human history just by interviewing either 40- or 50-year-old women or 20- or 30-year-old women in the same country.

So it's been a remarkable experience, this demographic transition. We've lived through it in our country, and it's much more recent than people think. It's part of all of our family history.

These child deaths are nearly all preventable now throughout the world. We have very good and very cheap technology for saving children.

Again personalizing: In my father's family, Germans in Tennessee, right about that time when mortality rates were comparable to those in West Africa now, there were three little boys all younger than ten, all coincidentally named Otto, and they all died the same year. This was a devastating tragedy for the family. It was something that I heard about, and it's the kind of thing one hears about in family histories.

Death was a common experience. I think everyone here, in all of our families, there would be something similar if we went back into nineteenth century history or even the early twentieth century. Maybe they're not all named Otto, but there would be a story about devastating child deaths. Even though it was so common, it was still a human tragedy for the families involved. So when we look at these declining mortality rates, it's interesting for us statisticians, but it's an amazing change in the possibilities of life for the families that are part of the populations that we're studying.

Thank you.

Steven H. Murdock[15]

Thank you. It's a pleasure to be here and an honor to be considered among these very distinguished scholars here today.

My job is to bring the discussion down to a more local level, to a Texas level, but before I do that, I want to put out a warning that when you have this many demographers together you need to be very careful about believing us too much.

That is, I remember that my very first book on population projections had a very important footnote at the bottom of the first page that said that a wise demographer once said that no demographer should ever make a projection for a period that he or she did not expect to exceed his or her own lifetime, meaning he or she did not have to be around to answer for the accuracy of the projections that had been made.

The second thing I think you should be aware of is that when you look at projections, they are generally less accurate for smaller areas, which means literally that you should probably believe Dr. Lutz and Professor Rostow a great deal, John somewhat, and me hardly at all, because I want to talk about a single state, Texas.

I believe that the world population patterns have both direct and exemplary, if you will, implications for Texas. Whatever the projections are, and they vary somewhat from one source to another, but if you look at somewhere between a 2.5 to 4.0 billion increase in the world's population between now and the middle of this century, I think there is no doubt that this has implications for areas such as Texas because of several key characteristics of the Texas population.

Texas is growing about 2 percent per year. In Texas and the United States as a whole, immigration plays a major role in population growth, and as you probably know, the United States is the largest recipient of immigrants in the world. Texas is one of the major players when it comes to immigrants to the United States. We received the third largest number of immigrants in the 1990s, and if you look at undocumented immigration, the most recent estimates from the INS are that we are the second largest recipient. This suggests to me that Texas is likely to continue to have significant growth as a result of world population growth.

So I think it is important to realize that this suggests to some of us that the population of Texas may essentially double in the next 35 to 40 years.

Well, there are other implications beyond enhancing the state's level of

[15] Steven H. Murdock is professor and head of the department of Rural Sociology at Texas A&M University and chief demographer of the Texas State Data Center.

growth, and that is if you look at the characteristics of immigrants to the United States, they accentuate yet another major demographic pattern for Texas, and they maintain yet a third pattern for Texas. They accentuate the very rapid diversification of our population, which I will talk about this afternoon, because a majority of immigrants are from Latin America or Asia.

And if you look at Texas, Texas has the second largest Hispanic population and the fourth largest Asian population, which are the major immigrant groups immigrating to the United States. I think all the major patterns that we see in terms of the world will have implications for continued population growth and diversity in Texas.

The other factor that they bear on is that we are a relatively young state with a relatively young population, and immigrants tend to be young adults. They tend to be young adults with children, and this will likely maintain a somewhat younger profile for Texas population.

Another example of the effect of world demographic change is that if you look at the world in terms of developing and developed countries—a term that I don't like very much but that we continue to use in the demographic literature—what you see is one set of countries, developed countries that are primarily of European heritage in one form or another, whose problems are increasingly going to be those of the aged.

You see another set of countries, the developing countries, whose racial and ethnic profiles are different from the first set. It includes Asian countries, Latin American countries, African countries, and for these countries the challenge is one of education, of creating educational and employment opportunities as they go forward in trying to develop their societies.

What do the world's demographic developments suggest for Texas? I will argue in my presentation this afternoon that those two components are similar to the two segments of the Texas population—one of which is an aging Anglo population, another of which is a young minority population—and the needs and the resources of the two are very, very different.

So in a kind of final sense, what these national or international patterns suggest to me for Texas is that the challenges for Texas are likely to continue to be very intense as we go forward in time. And I have a friend who—thinking about e-economies and this sort of thing— talks about the e-needs of Texas, the four e-needs of Texas. He says those are education, the need to ensure accessibility and attainment in the education of our youth. He talks about economic competitiveness and ensuring through that education and training that all Texans are competitive in this the twenty-first century.

Third, he talks about the *e* of equity and the issue of increasing the equity among Texans as we go forward in time. And fourth, he talks about something that our next session is going to talk a great deal about, and that is environmental quality and the need to ensure environmental quality in Texas.

Well, we could talk a lot more than this. I will just sum up with one other factor. It's interesting as we look at world patterns that are taking place to note that in many ways, as we look at the demographic patterns that we will spend more time looking at this afternoon, that what is happening to Texas's population is that we are internationalizing our population in the same way that our economy is being internationalized.

I think it's important to recognize that you can take that analogy a little bit farther. I'm often asked, "Aren't we going to have an unusual population in 2030 or 2050?" It is not the population of Texas in 2030 or 2050—that will be much more diverse and have many different characteristics than the population of today—that is really going to be the unusual or different population. It is the population that we have had that has been out of sync with the characteristics of the world's population and the characteristics even of the national population. The population of Texas in the future will be much more like the world's population, reflecting our economic and demographic involvement in the world's economy.

Thank you.

Effects of Population Growth on the Environment and on Us

J. Dudley Fishburn, Moderator

The Global Picture

Maurice F. Strong[16]

Well, thank you very much, distinguished moderator. I appreciate that, and of course I do agree that Texas has all the distinctive qualities that many individual countries have but has elected to be part of and to lead this great country. And I also take it as a mark of immense compliment to this great state that you have here a galaxy of its most distinguished leadership.

When the rest of the country and much of the rest of the world is focused on television for court proceedings and the recounts or hoped-for recounts that are going to determine the leadership of this nation, I congratulate Texans for assembling in the name of philosophy when these great events are unfolding.

I regard it as a very special compliment that you have invited me to participate in this distinguished forum and am particularly pleased and encouraged that you are focusing your attention on issues that I believe will largely shape the future of the human community in this new millennium. I really enjoyed and appreciated this morning's proceedings.

I will not add very much new information; indeed, I will leave out some of the information I might have otherwise included because it has been so ably presented this morning, but I will try to build on and complement the very, very impressive messages coming out of this morning's session.

These issues have been at the core of my own life interest and work, but the views and perspectives I will share with you today are those of a practitioner, not of an expert. The more experience I have in addressing these issues, the less expertise I would claim.

[16] Maurice F. Strong is under-secretary general and special advisor to the secretary-general of the United Nations and president and rector of the United Nations University for Peace.

Surely the events of the past decade have made abundantly clear the hazards of prediction that were referred to this morning and the dangers and the costs of relying on the prognostications of experts, especially when they become conventional wisdom. That is not to say that we must be resigned to being carried along by the cross-currents of history as it unfolds, accepting that there is little we can do to influence the direction in which they are carrying us.

Recognizing that the pathway to the future will indeed be turbulent, complex, and fraught with uncertainty, there is much we can do, indeed must do, I would contend, to prepare for a future that we cannot reliably predict.

But paradoxically, the human future is in our hands and I contend will be largely determined by what we do or fail to do in the first two or three decades of this new millennium. That doesn't mean it will all come to an end suddenly, but the direction we take and where that's going to take us I believe will be largely determined in this next two to three decades.

For as we enter the beginning of the twenty-first century and the new millennium, the unprecedented increases in the human population and in the scale and intensity of human activities have reached a level at which we have now become the principal architects of our own future. The system of cause and effect through which human policies and activities have their impacts on the processes by which we are shaping that future is global in scale and complex in nature.

And as cause and effect are often separated by dimensions of space and time, their real consequences are not always readily discernible. We must learn to understand the system of cause and effect and how our interventions in it can make the differences we want to make.

The overall magnitude of human activities that have an impact on the natural ecological and life support systems of the earth is often relatively small in relation to natural forces, as for example in the case of the build-up of greenhouse gases in the atmosphere. But they can nevertheless have a profound and perhaps decisive impact on the complex set of natural balances on which human life and well-being depend, which could move us beyond the margins of safety and sustainability.

We often think that life has gone on forever in our terms and that it's bound to go on. We must remind ourselves that the conditions that support life on earth have existed on this planet for only a very minute portion of our geological history. They rest on a set of balances that was achieved over many millennia of geological adaptation, and we cannot take their continuation for granted when we are now affecting the very margins that make the life as we know it sustainable on the planet.

In my view, management of our impacts on this system is the principal challenge we face, and it is in that sense that I address the remainder of my remarks.

I am concerned with the numbers of the Earth's growing population, the increase in numbers we heard about this morning. But I am also

impressed by the fact that highly dense societies can maintain high levels of life—dependent, yes, on external resources environment. But the issue really is how to manage them, how to manage the trade-offs between population growth in countries that have limited resources and capacities to service their people and that must decide how to balance the levels of their population against the standards and quality of life to which they aspire.

These are not global decisions. They are influenced by global considerations, but they are basically national decisions, and to help people make those decisions by understanding the options and the consequences of what they decide is one of the areas where we can support them most, not just exhorting them to reduce their population, as the presumption behind that is that it will enable us to continue to enjoy the way of life that we prefer.

Now, to do this effectively cannot simply be a matter of placing our bets on the prediction of experts, as I've said, however plausible they may be. Rather it involves understanding the processes through which human activities interact with each other and with natural phenomena to produce their ultimate consequences, and at what points and in what ways our interventions in the system can have the effects we desire.

Of course, this also means we must know what we desire, what risks we want to avoid, what opportunities we want to expand, and what limits or boundary conditions we must accept to ensure a secure and sustainable future.

This does not require homogeneity in our lifestyles or in our aspirations. But it does require at the global level that we agree on those certain measures that are essential to all of us to enable us to avoid major risks to the survival and well-being of the entire human community and to ensure the broadest range of opportunities for individual self expression and fulfillment.

It is instructive to remind ourselves that the most healthy and sustainable natural ecological systems are those that maintain the highest degree of diversity and variety. Monocultures are vulnerable cultures. But to ensure their sustainability requires that they remain within certain basic boundary conditions on which the healthy and effective functioning of the system depends.

The same, I would contend, is true of human systems. The essence of human freedom surely lies in the extent to which individuals have the largest range of choices as to how they want to live their lives. They do not have to make homogenous choices, but they do need to agree on the basic framework in which those choices can be made.

The processes through which human activities produce their ultimate consequences transcend the traditional boundaries of nations, of sectors, and of disciplines. Emissions of greenhouse gases, whatever their source, contribute to changes in climate that affect everyone, and decisions made

to deal with economic and financial issues are the principal determinants of environmental and social conditions as well as ones that affect peace and security.

Recent experience, now partly transcended, in which the collapse of some of the most dynamic economies of Asia rapidly developed into an emerging global crisis threatening the entire global economy, dramatically brought home that the benefits of globalization are accompanied by a new generation of risks. It made clear that no individual nation, however powerful, can insulate its people against these perils or manage them alone.

Neither can any of the main issues that affect the quality of life and sustainability of the human community: access to food and water, managing the pressures for migration, protecting the environment, meeting social needs, ensuring employment and livelihoods, and of course maintaining peace and security cannot be managed in isolation, even by the most powerful nation on earth.

To ensure a sustainable future for humankind will require a degree of cooperative management beyond anything we have yet experienced or are now prepared for. Let me make it clear it does not require world government. That's the last thing we need. But a world system through which these issues that no country or no sector of society can manage alone is absolutely indispensable if we are going to manage our way sustainably and peacefully into the future.

I am a great believer in the principle of subsidiarity in which every issue should be managed at the level closest to the people concerned at which it can be managed effectively. But even by that standard, more and more issues have to be managed in a global context—not necessarily managed globally but managed within a global context of cooperation and framework of internationally agreed measures.

Now, I won't comment to any great extent on the institutions that do this, but it is a great paradox that while the world needs an institutional framework for dealing with issues that the United Nations was designed to produce when it emerged from World War II. It is ironic that we need that system more today than we did then, and yet support for it and understanding of its imperative mission for all of us is at a lower ebb than ever.

And I have to say as—I am a Canadian, I regard myself as a North American, one who loves this country. I spend more of my life in this country I think than I do at home. Nevertheless, I don't vote though I do feel that I pay enough taxes here to have a voice. It's a friendly voice, but it's a voice that says that when this great nation applies the rule of law selectively, honors its treaty obligations only selectively, this is not the kind of leadership that is credible for the world's greatest power. We need the consistent moral as well as political and military leadership of the United States.

We all lose when that leadership lapses from the highest values and

traditions that all of us have come to expect of the United States. The United States is always at its best when it lives up to the best of its own traditions and its own constitution.

So all I say is that the United States that leads this world system needs in doing so to apply the best of its own values and traditions. We all want you to do that. You do it more often than you don't do it, but it is a message that I hope that groups like this, which have such influence in your country, will champion.

Now, the UN needs reforming. I was given the privilege by Kofi Annan, the Secretary General, to help lead the reform process, but there's a limit. He's the chief executive; he's not the shareholder. It is interesting that all the reforms that were under his control he has done. Not perfectly, but they're all done. Not a single one of the fundamental changes he recommended to governments has in fact been carried out, even by the governments that are always asking for reform. That reform is overdue, it's necessary, but it can be done only by governments and only by governments who have behind them a body of public opinion that understands the importance of and the need for it.

An indispensable prerequisite to a secure and sustainable future is of course the maintenance of peace in the world. With the demise of the Cold War and the emergence of the United States as the only world superpower, the risks of global war have receded. But despite some progress toward nuclear disarmament and even cooperation amongst the main nuclear powers, they continue to maintain and deploy weapons sufficient to destroy life as we know it many times over.

Now other nations, most recently India and Pakistan, have developed nuclear weapons, and others, including terrorist groups, have or will soon have access to them. As long as nuclear weapons exist and particularly as they proliferate, we must live with and learn to deal with the prospect that they may be used.

Eventually threatening and in other ways more difficult to contain are the risks of biological warfare or terrorism. We're talking about the things that can constrain population growth. Of course, warfare has always done that, and risks of war today have receded but they have not disappeared.

But while these weapons of mass destruction continue to threaten that global peace and security, millions of people, particularly in the developing world, are suffering from and dying from local and regional conflicts driven by ethnic, religious, ideological, and economic differences, and conflicts over land and resources. The potential for more such conflicts is escalating as the conditions that produce them continue to deteriorate.

In these conflicts, which mainly take place within nations and often spill over into neighboring countries, civilians are the main victims, and in some cases they are also participants as members of guerrilla forces or militia. In many cases the safest place for a person to be in such a conflict

is in the conventional military. It is the civilian populations, especially women, children, the elderly, the young, and the infirm, that are most at risk and experience the greatest losses of life and suffering.

The conditions that give rise to such conflicts are usually deeply embedded in the history structure, the culture, and the prejudices of these societies and cannot be resolved quickly or easily. We need to develop the skills and the attitudes that permit us to do this. Growing population and economic pressures can only increase these vulnerabilities while at the same time constraining the capacities of developing countries to deal with them.

There is now evidence that, as we've heard this morning, population growth in many developing countries is beginning to decline, but this is very uneven and it is not likely that the world's population will stabilize much more before the midpoint of the twenty-first century at a level which—well, guess as you may, but will likely be at least significantly greater than current levels of population.

Today the borders of the world are closing, and new barriers are being erected to the movement of people, particularly the poor and the dispossessed, while the same countries—and here I commend the United States for its continued openness—that deny people the right to immigrate actually try to attract the rich and the privileged and the skilled while keeping the poor and those without skills out.

The more mature industrialized countries are facing the prospect of aging and declining populations; thus a demographic dilemma of monumental proportions is in the making.

Now, it is paradoxical that the same forces that are driving the need for more cooperation between industrialized and developing countries also contain the seeds of deepening conflict and division that could threaten the prospects for cooperative governance.

A countryman of mine, Professor Thomas Homer Dixon, has cited the growing potential for eco-conflicts as a result of competition for land and other resources. At the University for Peace, which I have the honor now to head, we've developed an Ombudsman Center to help anticipate, mitigate, and resolve resource-related conflicts.

The explosion of urban growth in developing countries is giving rise to more and more environmental degradation, and the former antipathy of developing countries toward environmental issues has given way to mounting public awareness and political attention. This isn't because they've been listening to the rhetoric of the north; it's because they are now experiencing these problems themselves and realizing more and more how vitally important they are to their own interests and their own development.

As their development accelerates, developing countries are contributing more and more to the larger global risks such as those of climate change, ozone depletion, degradation of biological resources, and loss or

deterioration of arable lands. China—although China has done a better job, despite its economic growth, of reducing its emissions than has the United States or Canada—is nevertheless still likely to precede the United States to the dubious honor of becoming number one in terms of greenhouse gas emissions.

But developing countries cannot be denied the right to grow. Neither can they be expected to respond to exhortations to reduce their population growth or adopt stringent environmental controls from those whose patterns of production and consumption have largely given rise to such global risks. Our exhortations do not mean much. In fact, they can often be counterproductive.

Our example is what they follow. They look at what we do today far more than what we say to them.

Indeed—I see my time running out here—I will make one major point that arises from my own experience. Stockholm in 1972, at the world's first global environmental conference, we lost our innocence, in the sense that we finally recognized that some of the same processes of economic growth and urban development that had produced such unprecedented levels of wealth for industrialized societies had also produced inadvertently some negative by-products that threatened everyone.

We, in the years since then, have learned a lot about how to deal with these products. We of course need to know more. We've developed technologies that help us to do it. So we've lost our innocence. We can no longer pretend that we don't really know what we're doing or how to fix it. We largely do.

We also know that solutions work. Solutions have worked in many places. Why is it then that overall, despite progress, the environmental condition of this planet continues to deteriorate? Doing a total balance sheet on Earth, Incorporated, we see that much of what we call growth today is really liquidation of our natural assets, depletion of our natural capital.

Why is it? It's no longer a problem of implementation; it's a problem of motivation. What are our motivations? They are economic, of course. Yet a study that the Earth Council recently did made it very clear that governments both north and south today in just four sectors alone—water, energy, transport, and agriculture—are spending over $700 billion subsidizing activities that are wasteful economically and at the same time provide disincentives to environmental and socially responsible behavior.

They weren't intended that way. This is the unintended consequence. But it's happening, and just examining that system, revealing how we are wasting our resources and how that waste is also contributing to undermining our future is one of the best things that we can throw some light on, because if we focus light on things, the chances are that people will do something about them. And I hope that will happen.

Finally, I think ultimately the fate of civilization as we know it will be

determined by what happens in the developing world, and this in turn will depend very much on the example we set and the cooperation we extend to it. We in the privileged industrial world must get used to the fact that we are a minority, a powerful and privileged minority to be sure, but one in which the processes of globalization inextricably link us to the interests and to the fate of the majority in the developing world.

Going it alone is simply not an option. We all know historically that minorities do not maintain their privileged positions and power forever, and particularly in a world in which everybody is involved in the same framework of processes that we call globalization.

Here, the U.S. role is absolutely central. Your footprint, your contribution to the good things of the world has not been exceeded by any country. Your contribution today to the risks that I'm talking about is also as you well know the greatest, including that of CO_2 emissions. I say that in Texas, an oil-producing state. I come out of the energy industry myself, including a history in the oil and gas business. So I share that with you.

Finally, I am persuaded that the twenty-first century will be decisive for the human species. For all the evidences of environmental degradation, social tension, and intercommunal conflict have occurred at levels of population and human activity that are a great deal less than they will be in the period ahead. The risks we face in common from mounting dangers to the environment, the resource base, and life support systems on which all life on Earth depends are far greater today as we move into the twenty-first century than the risks we face or have ever faced in our conflicts with each other.

A new paradigm of cooperative global governance is the only feasible basis on which we can manage these risks and realize the immense potential for progress and fulfillment for the entire human family that is within our reach. I am an optimist in the sense that I believe a golden era is within our reach. I'm a pessimist in the sense that I still don't see the signs that we understand what we must do to achieve it.

All people and nations have in the past been willing to accord highest priority to the measures required for their own security. We must now give the same kind of priority to civilizational security. This will take a major shift in the current political mindset. Necessity will compel such a shift eventually. The question is, Can we really afford the costs and risks of waiting?

And I commend to you all the Earth Charter initiative that started in Rio but didn't get completed there but to which millions of people are now looking at for the fundamental ethical and moral basis, our common motivation to provide some guidelines for the future, through the Earth Charter—in Anglo-Saxon terms, a Magna Carta for the Earth.

Thank you for the opportunity of joining you. I'm looking forward now to hearing from my distinguished colleagues and do hope there will be some time also to dialogue with you.

Communications

James R. Adams[17]

Thanks, Dudley. My charge today is to talk about the effects of population growth on communications. That's rather easy to do. People want to stay connected, and population growth has driven the demand for more advanced and effective ways to do that. Without better communications, individuals would be lost like ants. So, that's the effect of population growth on communications, and I see I've got about 20 minutes left!

What I'd like to do, then, is flip the topic now and talk about the effect of communications on our growing population. I fear that my task is akin to people in the late 1800s who tried to predict the impact of telephones in the twentieth century.

As was reported in the *Wall Street Journal*, some people back then believed the telephone would, and I quote, "Bring peace on earth ... eliminate Southern accents ... stamp out 'heathenism' abroad ... and save the farm by making farmers less lonely." While telephones had a huge and positive impact on people in the last century, we didn't achieve world peace.

And a short discussion with any good Texas philosopher, for example our own Baker Duncan, will quickly prove that the Southern accent has survived intact! We did, however, achieve some remarkable advancements in technology, particularly the development of digital electronics.

Let me provide some brief technical background before we move on to the impact of all this. *Digital* simply means the use of binary code—those strings of ones and zeroes—to represent information. In digital communications, analog signals—such as the sound waves of your voice—are transformed into digital code at one end and decoded back into analog signals at the receiving end. This yields two major benefits.

First, digital signals can be reproduced with great accuracy. As analog signals travel, they progressively lose strength and pick up distortions, much as a radio station fades out into static as you drive away from the radio tower. But in digital transmissions, the network periodically reads all the ones and zeros and precisely duplicates the original signal. That's why digital communications are so much "cleaner" than analog.

The second major benefit is that digital electronic circuitry is getting cheaper and more powerful all the time. A given digital electronic circuit will decrease in cost 25 to 30 percent each year. So, digital means higher-quality communications that are more powerful, yet cheaper.

[17] James R. (Jim) Adams is retired chairman of the board of Texas Instruments Incorporated.

Digital technology also allows ubiquitous networking. Whereas we all grew up with separate networks for separate mediums—voice networks, data networks, and broadcast networks—digital technology allows any type of signal to travel on any type of network to anybody or virtually anything, to anywhere.

There are three simple truths that illustrate how this is playing out in the world around us.

First, bandwidth—or a network's capacity to transmit simultaneous voice, video, and data—is exploding.

Truth number two: Broadband subscribers—people who can access high-speed, high-capacity bandwidth—are using this bandwidth in increasingly personal ways.

And truth number three: The Internet is changing everything. And yet, the more things change, the more they stay the same.

Let's look at these truths a little more closely.

Number one: There's a boom in bandwidth at all levels—internationally, nationally and locally. On a global basis, at least 52 major undersea communications cables are in operation or under construction. That's in addition to an expanding global network of satellite communications. Between 1999 and 2001, transoceanic network capacity will increase more than 500 percent.

At the national level, companies in many countries are building nationwide fiber-optic networks with tremendous capacity. For example, at the end of 1996, the total bandwidth of all wireline networks in the United States was 1 trillion bits per second—or one terabit. By 2003, that is expected to rise to 100 terabits.

Considering that the entire Library of Congress contains an estimated 10 terabits of information, within two years our national networks could transmit the entire Library of Congress 10 times every second. Locally, phone and cable companies are extending broadband directly to our homes and offices.

One of my former employers, SBC, is investing roughly $6 billion to make broadband DSL—or Digital Subscriber Line—available to the vast majority of its customers. DSL takes the existing telephone wiring and turns it into high-speed multimedia pipelines. In similar fashion, cable TV companies are upgrading their networks to handle high-speed data. The huge increase in network capacity is driven by customer demand. In the U.S., 70 percent of all adults now use a computer, and 80 percent of those people go on-line. Worldwide, an estimated 375 million people have Internet access today, growing to 500 million over the next two years. Most of these people still use low-speed dial-up connections, but as broadband becomes available, people are signing up. Broadband subscribers [cable and DSL] in the U.S. will jump from around one million at the end of 1999 to 20 million or more by 2004.

Truth number two is that people are personalizing their use of all this bandwidth. A primary reason people go on-line is to communicate with

friends, family, and business associates. A recent study showed that the number of e-mail boxes worldwide increased 80 percent last year, to nearly 570 million. For years, my wife resisted getting a PC. But she recently made me buy her one so she could do e-mail. Turns out, our kids were talking with *me* by e-mail more than their *mom*. She had to get a PC at the kitchen desk just to stay in the loop!

Beyond e-mail, people also want to connect to information. The fastest-growing segments of on-line users are baby boomers and senior citizens who are drawn by Web sites about health, lifestyle, and business.

Truth number three is that the Internet is changing everything. Yet, as the old saying goes, the more things change, the more they stay the same. People are using the Internet to do things differently, but our basic desires as human beings are the same as they've always been. By and large, people want health, wealth, and happiness. I think internetworking is a lasting phenomenon because it helps with these fundamental desires.

On the health horizon, we'll see widespread use of smart medical devices, such as insulin pumps and pacemakers that are remotely monitored and activated by medical offices. We'll also see things such as vehicles that automatically call an ambulance when an airbag is deployed.

Aside from obvious lifestyle benefits, health applications also mean more people will be able to work, thus adding to economic productivity. Which leads us to the topic of wealth. The world economy already has reaped tremendous benefits from information technology. The efficiencies of e-commerce are changing the economy's cost structure by expanding customer bases and by driving down the cost of delivering goods and services.

Just three years ago, there were serious questions about whether people would do business on the Internet, mostly because of concerns about the security of financial information. But last week—on the day after Thanksgiving—1.3 million people used the Internet to shop at Amazon.com *alone*.

PriceWaterhouse estimates that in total, fourth quarter e-commerce sales will exceed $10 billion this year, up almost 100 percent from 1999. Of course, business alone does not lead to happiness—basic desire number three.

These are hectic times. In response, people are using the Internet to stay in touch with loved ones. And they're beginning to use the Internet as a prime source for entertainment. This will increase as new generations of Internet appliances come to market. These new devices will include game consoles, Internet music players, smart wireless phones, and portable Internet gadgets in all shapes and varieties. These new devices will build upon the success that cellular phones achieved in the last decade. This year alone, the world will add 200 million new wireless phone subscribers.

It's widely predicted that we'll see more than 1 billion wireless subscribers by 2003—an incremental gain of roughly 600 million subscribers

in just two years. As wireless penetrates worldwide, the coming new generations of services will offer global roaming, lower total costs, higher voice quality, multimedia, high-speed Internet access and longer battery life. If you think about it, wireless service already has come a long way.

The first cellular handsets were very expensive. They weighed as much as a brick and were as big as a cinder block when you added the batteries. Today, you get more functionality, better sound quality, and a quantum increase in talk time. And, it can fit in your pocket.

It's amazing what this allows. Two years ago, I was standing on top of the Great Wall of China, and I direct-dialed my cell phone to speak with my wife in the United States. In the near future, the wireless handsets of the year 2000 will appear as antiquated as those clumsy early cell phones appear to us today. Using one of these new generations of phones, I could have *seen* my wife and *showed* her the Great Wall using video transmission.

A basic consequence of all of these truths is that power in our world is shifting. In business, consumers are establishing direct connections to content providers and manufacturers, threatening the middlemen as a result. As we speak, the music industry is wrestling with the Internet because it lets artists distribute their own music and lets consumers compile their own music catalogs.

In another example, Stephen King released a short story over the Internet last March. Consumers downloaded 500,000 copies within the first few hours. Time magazine said King typically would have earned $10,000 from a magazine. By releasing the story over the Internet, King estimated he'd make $450,000.

In the bigger picture for business, the Internet is changing some time-honored principles of the Industrial Age. Customization is replacing standardization, flat organizational charts are replacing hierarchy, and decentralization is replacing centralization. Businesses who ignore this do so at their own peril. Just as Western Union fell into decline after it dismissed telephone technology, today's businesses must adapt to the new reality of the Internet.

Many major corporations *have* embraced the Internet to facilitate their multinational operations. At the same time, many small businesses and individual sellers are using the Internet to operate multinationally.

One of my hobbies is collecting antique pocket watches. This year, I've used the Internet to buy watches from Bulgaria, Australia, Taiwan, Hong Kong, Alaska, and the continental U.S. For me and the sellers, this kind of multinational interaction would have been impossible just a few years ago. The implications for politicians are perhaps even more dramatic.

The global nature of the Internet frees constituents from the bonds of geography by opening up channels of information that previously were not available to the masses. In the Information Age, governments can no longer control information. The embattled Philippines' president Joseph Estrada has learned this fact, much to his chagrin. An estimated three mil-

lion Filipinos use their cell phones to send 30 million text messages every day, and it's expanding daily.

This phenomenon has greatly reduced the president's power to influence public opinion as people share their thoughts and feelings with one another on a massive scale. But there is a downside, as well. A recent Filipino bank run was induced by false rumors spread through text messaging.

Even as the Internet expands communications within classrooms and national borders, it also has exploded these boundaries themselves. The Internet is, in fact, creating new international communities of interest.

I believe that people will still maintain their national loyalties, but many futurists predict that people will steadily expand their horizons to become global "netizens." A netizen is someone who grew up—or has grown into—using computers and networks as their principal means of exchanging information and communicating with people. Netizens are actively connected, and 92 percent of adults who use Web browsers are registered to vote. *American Demographics* reports that netizens tend to be deeply dissatisfied with their political choices, yet are optimistic about the future. Netizens are attached to ideas rather than political parties, and they are deeply committed to free speech.

As a result, politicians are under more pressure from more places than ever before. Whereas the Internet removes physical barriers, our political and legal systems are based on such boundaries. Governments now must resolve differences on a broad range of international issues, ranging from copyrights to privacy.

Taxation is just one area that shows how vexing the Internet will be for governments. Today, governments levy sales taxes based on location. In the U.S. alone, there are more than 30,000 separate taxing jurisdictions—all defined by geography. Almost all are ignored by most Internet commerce.

As you can see, there are problems that government and business must address. And there are fantastic possibilities for the people. But in the midst of this change and euphoria, let's take a reality check. Even if we reach 500 million Internet users worldwide in the next two years as predicted, that's still less than 10 percent of the world's population. To fully capture the promise of the Internet and broadly extend the benefits of the Information Age, we need to extend advanced and more affordable communications to as many people as possible.

The challenge for governments is to balance societal goals and serve the public, while at the same time protecting commerce, free speech, and values. If governments can succeed at that challenging task, communications technology in the future might indeed help lead to unmatched peace and prosperity for the world's growing population.

I do hope the Southern accent survives (!), but in the end, communications is simply a tool. What humanity does with this powerful tool is up to humans.

Reversing the Tower of Babel

MARILYN WILHELM[18]

James Henry Breasted wrote, in his unforgettable book *The Dawn of Conscience*, "The course of sound progress is a wisely balanced mean between the lessons of experience and new vision."

The supreme questions: Where do we find the lessons of our common human experience? The velocity of change is so fast—what are the realities that do not change in this world of constant change? If there are universal principles that hold true through time, how do we apprehend them? How do we go about transmitting them?

These questions are timeless and relevant now because the answers to these questions are relevant to the fashioning of a humane Global Curriculum that will nurture our growth into a unified diversity.

My path as an educator has been paved with these timeless questions. My pursuit of answers began through the door of etymology, the study of the full and original meaning of words, in five ancient languages: ancient Chinese, Egyptian, Sanskrit, Homeric Greek, and Biblical Hebrew. This fascinating study uncovers the world of common human experience and the wisdom gleaned from it, in words. Moreover, it reveals that these ancient languages were founded on a simplicity so basic that it consists of only one concept: the philosophy of Oneness, animated by the value of love and the value of family.

The result of this continuing study is the creation, development, and implementation of an interdisciplinary, intercultural, interlingual Curriculum rooted in the classical cultural traditions and standards of thought. The goal of this approach is to develop global, Renaissance human beings who are awake to our common world.

The Wilhelm Curriculum is humankind studied as a whole. The program demonstrates the universality of fundamental ideas. To illustrate impartially the mental, technical, and aesthetic achievements of the past and the present, each discipline is studied across the board, with the concept words—that is, the principal ideas—given in several languages. Each culture, in its own inimitable way, defines these terms differently yet never contradicts one another in principle. This confirms the fact that the human mind and spirit are the same at all times and in all places; it forms the basis of all translations, from ancient hieroglyphs to modern-day languages.

Further, fundamental principles of all the disciplines are explained, clarified, and emphasized by a correlation of parallel texts of other cul-

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tures. In this manner ideas are stretched, expanded, and appreciated until the pupils have a bone-deep understanding of what these principles are. In the process they firmly grasp the fundamental concepts that are indispensable to higher learning. As they learn to see the world th7rough language, they not only gain a keen awareness that we speak a common vocabulary, but they absorb with understanding the illuminating remark by Ananda K. Coomaraswamy, the great Orientalist and transmitter of traditional thought, "There is no private property in ideas." In this manner the pupils become united with the world, begin to receive and appreciate the rich inheritance bequeathed to them by their ancestors, the family of humankind.

Studies begin in Africa and Asia, our oldest cultures, move on to the Greek and Roman eras, and then move to the Arabic period, which made way for the opening of the New World and to the many cultures of great antiquity of the Americas setting the stage for the modern era.

In the process of finding one's roots, finding one's family in a universal sense, pupils grasp the fact that our ancestors include all those who have gone before, and that we ourselves are in the process of becoming ancestors to all those who are to come. As they learn to think of the various cultures as different branches of one tree, a sense of respect for all the members of the family emerges. Best of all they perceive that we owe grateful homage to all those who have contributed to our common heritage.

The Wilhelm interdisciplinary, intercultural, interlingual approach weaves the arts, the sciences, and the humanities together and relates them to traditional values. Thus, art is science and science is art and both are philosophy.

We enter into the soul of a culture through language because the values of a culture are transmitted through language. Language embodies perspective, that is, a theory or philosophic way of living and perceiving. Einstein's stimulating remark reminds us, "It is the theory that determines what will be observed." Or, as the American linguist Benjamin Lee Whorf would say, "Language determines our logic and vision of reality."

Basically, language embodies only two philosophies: one sees unity in diversity, and the other is a vision divorced from the concept of unity. It must be remembered that all traditional values—that is, the invariants of civilized life—hinge on the ability to see unity in diversity, the integrity of things. Etymology stands as witness to this perspective, for all words originally had an implicit or explicit reference to unity.

Integrity was the "masterpiece standard" for all traditional cultures. For all of our ancestors, integrity was essential to any form of creation, from business agreements, to art, architecture, music, politics, science—in short, to every aspect of life, because integrity has to do with conscience, with unifying the parts into a grand wholeness where every part supports and sustains every other part and the small is equally significant as the great. Einstein articulated the traditional, indivisible view of science,

ethics, and aesthetics when he said, "The first test is beauty," meaning integrity. Because science, ethics, and aesthetics are in principle the same, science affirms our spiritual heritage, giving our pupils roots and purpose.

Language with a reference to unity activates the imagination, breeds conceptual and rational thinking, for it guides one to see relations between things and nurtures our ability to see "the big picture." Oneness becomes Truth no one can ignore because language will not permit it.

Brain research and etymology are allies in confirming the fact that we are programmed to seek unity because the brain is innately programmed to hold opposites in equilibrium, to simultaneously keep a vision of the whole in mind while analyzing the parts.

Therefore, the constant reference to unity in traditional languages in no way lessens the ability to analyze the parts; it simply increases the ability to see relations, to make connections, to see the interdependence of the parts and the completeness and integrity of the whole.

For example: *Geology.* Current dictionaries define *geology* as "study of the earth." This definition is misleading because it is a half-truth. *Geo* means "earth"; *logy* is from *logos*, meaning "unity." Thus the full meaning of the word *geology* is "the study of the unity of the earth," which returns the significance and beauty to the word's original implicit meaning.

"Cracking the code" of language leads to the discovery that all concept words embody love or non-love, that the conception of a single living principle is embodied in all words and in all languages, and in itself corresponds to all choices of right and wrong in their invariant state.

This establishes a universal moral reference point, a supreme standard that is binding on all alike because it expresses the unalterable character of integrity. Sincerity, compassion, gratitude, cooperation, courtesy, responsibility are all forms of selfless love. Irresponsibility, ingratitude, insincerity, lack of compassion, discourtesy, are all forms of selfishness or non-love. In the process of learning to think and to speak the language of integrity, the pupil grasps with full comprehension Ashley Montague's profound remark: "The meaning of a word is the action it produces."

Further, "cracking the code" of language leads to the discovery that "Human culture is a unified whole," as the German historian Alfred Jeremias tells us, "and in the various cultures one finds the dialects of one spiritual language."

The great fourteenth-century statesman, jurist, historian, and scholar Ibn Khaldun, in his masterpiece *The Maqaddimah,* gave the definitive explanation of *logic* when he wrote, "Logic concerns the norms enabling a person to distinguish between right and wrong, both in definitions that give information about the essence of things and in arguments that assure apperception."

Once the pupil has learned to read, to see "in depth" the essence of all events, actions, images, and concepts, words pass on what they possess—the life-sustaining values of civilization. For the pupil sees that it follows

that anything done out of context is without love, is unhealthful both for the individual and society.

These health-enhancing ideas are further confirmed for the pupils by brain research and medicine. Medicine tells us that health means not only the absence of pain and disease but also a sense of well-being and the ability to give and to receive love.

This unalterable law was understood by our ancestors, for they defined *abnormal, paranoein,* as apart from the mind of Reason, unable to perceive the unity; *normal, metanoein,* as with the mind of Reason, able to perceive the unity.

Brain research and medicine verify that language, moral imagination, and health are inextricably one, for brain research tells us that every thought is a biological change affecting us from the tops of our heads to the bottoms of our toes. Thoughts are clothed in words.

With the remaining time allotted to me I would like to share in summary fashion how these principles were substantiated by being put into practice in public and religious inner-city schools in San Antonio when I was called in to help assuage gang wars. I presented our Curriculum and approach as a cost effective health program. The following is the story of one approach and one model. It is no brief of the only way to work, it is simply one way that does work.

Now come with me into some of the classes and see how students begin to make human connections, recognize their oneness with those who are seemingly other than themselves in their beliefs, their ethnicity, their gender, their age. See how they learn to discern without separating and begin to move from *me* to *we,* begin to recognize and acknowledge that we are, *All Under Heaven One Family.*

After we have been introduced to the class and each individual student has been introduced, I explain that we will be in engaged in the classic traditional approach to education which begins with the premise that life has a purpose, that each one of us is significant, and that each one of us has a Destiny to fulfill. Our Destiny is tied to our gifts, and we are all born gifted.

The pupils learn that, from the traditional point of view, our gifts, our innate abilities, are our vocation, our calling, and that to be gifted is to be in the presence of something given. "Work," wrote Khalil Gibran, "is love made visible." Our gifts are that form of love which we have been chosen to give to the world.

Thus the primary reason for going to school is to find one's gifts, to develop them to the fullest so that one has something to give to the world. Peter F. Drucker, acclaimed economist and management philosopher, sums it up with this advice: "Forget about career planning. Find something you are good at and try to make a contribution."

Next the pupils learn that the Curriculum will be the story of civilization. Our starting point will be the history of words because words

embody "the high story," the common life experience and accumulated wisdom of the family of humankind.

The pupils learn that language is the life-blood of a culture because the values of culture are transmitted through language. They learn that the inner origin of language is deep. The roots were formulated in times when the universe was conceived as Pure Being, Pure Unity, outside of which nothing exists. They learn that words were an expression of our ancestors' profound sense of kinship with their fellow beings and the world. Oneness, the value system at the *core* of all traditional languages, expressed a philosophy of family and the indivisible unity of humankind and nature. Thus the integrity of language was held together by a common principle, what the Chinese call TAO, Egyptians: ATUM, Indians: BRAHMAN, Hebrews: ELOHIM, and the Greeks: LOGOS—the principle of harmony between opposites, the highest form of Unity, the First Principle of the Universe.

In the beginning words had real meaning because words were whole entities, spiritual and physical not being separate but simply different aspects of a single meaning. Through language one was guided to distinguish without separating and to live one's life in context, that is, to never lose sight of one's individuality or the individuality of others, while at the same time never losing the vision that we are all one family, all parts of the whole.

The pupils learn that in the beginning words were created through direct experience. Realization, the sudden moment of seeing the real, was an emotional experience followed by a struggle to clothe what had been seen and felt in words. They learn that all traditional cultures believed that the meaning of a word is in the sound; when the sound changes, so does the meaning. Further, if two words are spelled the same, sound the same, but have different definitions, they come from the same philosophic center. Or, if two words are spelled differently but sound the same, yet have different definitions, they too come from the same philosophic center because originally language had to do with making sounds come together meaningfully.

Our first example is *pupil.* The word *pupil* refers to the pupil of the eye, and *pupil* also means "student." The pupils will later learn that the ancients called students pupils for a good reason; for the truly educated human being, a sage, was called a Seer. After the definitions have been recorded in their vocabulary notebooks, the pupils are invited to turn to the person sitting next to them and look them in the eye.

Ahhhs, mingled with laughter, are heard all around the classroom as the vision of the eye and a tiny image of oneself are reflected in the pupil of the eye. This lucid and powerful vision of Oneness has a profound psychological impact because the tiny image reflected in the pupil of the eye is authentic, it is real—it is not digitally or otherwise technologically produced. "One is peering into the face of Truth," as Quincy Jones would say.

Another "ahhh experience" follows as this visual logic is clothed in two words conveyed by one sound: *eye* and *I*. Octavio Paz would say the pupils are discovering something we have forgotten, "the correspondence between what words say, what eyes see."

In the process words become sound-images; sound-images that support intuition and sustain memory because word and meaning, sound and image, are mutually interlocked. Oneness has become an idea one sees, hears, and feels.

These experiences crystallize The Golden Rule, the essence of wisdom of every age and every culture, the standard of conduct unanimously agreed upon by every branch of the family of humankind. In this manner, language lifts the pupils up ethically for, by the help of the Mirror in the Eye, they have the power of seeing and knowing who they are and how they are to live in an almost miraculous way.

The following poem, written by two of the pupils, records those moments of spiritual transformation when the familiar became illumination.

The Pupil of the Eye
The eye is like a mirror
Look closely
My neighbor is myself
Samuel Oren-Palmer 7 yrs.; Aaron Barr 6 yrs.

This poem was committed to memory in several languages. Homework includes sharing their new knowledge with their parents and a research project: look your pet in the eye (if you don't have a pet, borrow a friend's pet) and share what you see with your classmates and teacher in the morning. More "ahhh experiences" in the making!

The adventure comes full round with the words *think, perceive, reason, Seer. Think* means "to reflect; to conceive." *Reason* means "to test by reflection and deliberation." *Perceive* means "to apprehend with the mind of Reason," the faculty that thinks but does not also will. As St. Thomas Aquinas said, "The will is free insofar as it obeys reason." A Seer, a wise person, is one who perceives the paradox: I am myself and my neighbor—All is One and One is All. Or, as the Chinese would say, "Everyone is Chinese whether they know it or not."

Moral judgment grows ever stronger as the pupil comprehends that to think correctly means to see oneself in others, to remember we are each other, and that *think* also means "to marry facts and feelings and give birth to conscience." As Aldous Huxley brilliantly pointed out, "To think correctly is, in itself, a moral act."

As the pupils come to the realization that every word, even seemingly trivial words, have profound philosophical, mystical, and social connotations, they are given the definitions of these words in several languages. These geographical variations of the same concept expand and enrich the

single definition and strengthen their sense of common understanding. Moreover, the pupils see that language reveals the origins of our inherited ideals.

For example: *think* in Egyptian means "to see with the eye of the heart"; in Chinese, "to examine with the heart"; in Sanskrit, "to conceive; to perceive with discernment and feeling"; in Hebrew, "to perceive the importance of Oneness"; in Greek, "to conceive; to intuit the unity." *Intuition* means "to see, to guard, to protect with the eye of the heart." Now the pupils have a multiplicity of trusted sources—separate cultures but closely united objectives—verified by thousands of years of human experience.

It is a widely unappreciated fact that during the Alexandrian period Western vocabulary became stripped of its spiritual base, its reference to unity. In the process, words were restricted to their surface value with no clue to their significance. Disconnected from feeling and emotion, words became destitute of spiritual essence, that is, devoid of the concept of Oneness. What remains is a bankrupt vocabulary dispossessing us of our traditional inheritance.

When language regains its spiritual strength, it nurtures the best in all of the pupils by reorienting them to the Principle of Oneness. Moreover, Balanced Thinking and The Golden Rule, two aspects of the same thing, are an integral part of common courtesy. Courtesy is the tradition that prevents violence. Thus the tradition of Reasonableness and The Golden Rule is transformed into the pattern of health and harmony.

Each day the pupils are centered and the tone of the day is set by beginning the day with the following credo—an unambiguous step-by-step way of becoming a cultured human being. The Credo is committed to memory in many languages.

Wilhelm Credo
Where There Is Love
There is Concern
Where There Is Concern
There Is Kindness
Where There Is Kindness
There Is Harmony
Where There Is Harmony
There Is Helpfulness
Where There Is Helpfulness
There Is Cooperation
Where There Is Cooperation
There Is Civilization

The Wilhelm Credo could be described as an ecumenical prayer because all religions converge at a common point: God is Love. *E agape inne Theos*. Selfless Love is God.

What we have here is old wine in new bottles. The shape of the bottles are different for the public schools and the religious schools, but the wine is the same for both.

The public schools' "unity consciousness" is referred to as moral consciousness in the religious schools. In the public schools, the students are learning the pattern and process of reason, balanced thinking; in the religious schools this is called the pattern and process of virtue —for there is no virtue without reasonableness. In the public schools, the Curriculum strengthens the student's concept of health and rationality. In the religious schools the Curriculum strengthens the pupil's identity with God, for God is Love. Whether one calls the result health or *holiness* does not matter—the pattern and process are exactly the same.

Love, Reasonableness, and The Golden Rule—these are the seeds planted by all cultures and all religions. These are the familiar sounds the pupils long to hear again and again. These are the familiar sounds that nurture the seeds into flowering. In this manner education unifies the diversity of cultures, unifies the diversity of religions. By so doing, education transmits the precious legacy that is our common moral and ethical inheritance and our only protection against a relapse into barbarism.

Jacques Barzun, in his illuminating book *From Dawn to Decadence,* defines *decadence* as "a technical description of historical cycles when a culture forgets the original meaning of its motivating ideas." In my opinion, this crisis in meaning has its roots in language because we think in language.

Language controls perspective, controls the way we see, think, feel, and respond. Words without a reference to unity are out of context, are abstractions, are words devoid of meaning.

What I am suggesting is the revitalization of language that will reverse the Tower of Babel and provide the change of consciousness demanded by our global civilization and the new millennium. For the journey into the new millennium consists "not in seeing new lands, but in seeing with new eyes," as Marcel Proust would say. It is time to outgrow self-centeredness and awaken to the fact that one is infinitely more than oneself.

It is a historical fact that the attainment and maintenance of civilization and culture have been achieved only through education. Now marks the critical time, the historical moments when we are shaping the civilization form of our universal civilization. "Here is a challenge which we cannot evade," as Arnold Toynbee would say, "and our Destiny depends on our response."

By taking the prudent and daring step of returning the principle of integrity to words, the civilizing, unifying power of language is restored. Language once again becomes family-oriented, engenders a sense of belonging and well-being by guiding one to discern without separating. By returning words to their original meaning, one is reminded of the problem-solving principle, love, embodied in words and in all of its

manifestations. Thus, one is intellectually prepared to make choices of integrity.

Idealism makes a great people and a great culture. The integrity of our universal civilization requires that people everywhere have a good understanding of these universal values that transcend change.

When words are once again rooted in the reality of Oneness, things will once again be seen in context, facts will no longer be "value-free" and without significance but will be reference points to the "big picture," where everything matters because everyone and everything are interrelated, interdependent, and indivisibly one. Language will no longer be an obstacle but a vehicle whereby we, in the twenty-first century, will have the opportunity to return to Paradise, "the Land of No-Forgetting," where everyone remembers we are each other.

Growth and Change in the American Population:
How Separate Are We?

J. Dudley Fishburn, Moderator

Life for Baby Boomers and Their Children

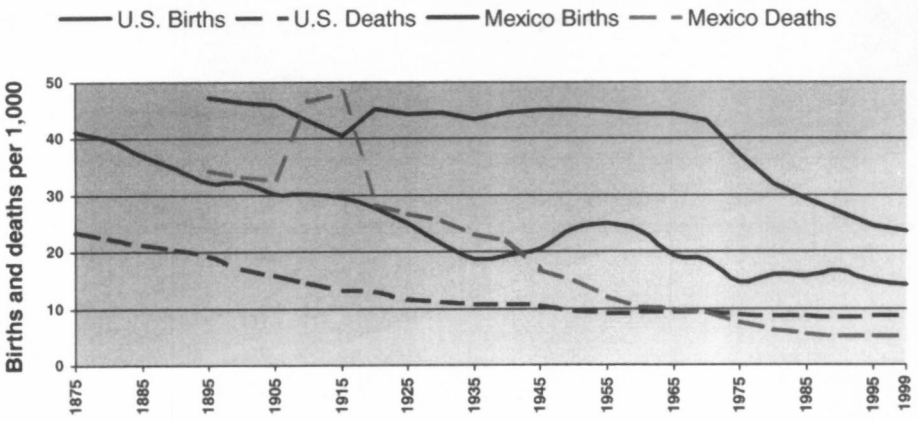
John G. Haaga

I thought of my role in today's program as the humble but necessary one that they call in radio the "continuity person"—the person who links what we just heard with what we're about to hear. This morning we've talked about the growth of world population, which is mainly the continuing saga of the demographic transition in developing countries. This afternoon we'll be talking about "The World of our Grandchildren." I'd like to focus on two themes that lead us from one to the other:

1) Our own population dynamics in the U.S. are part of this global picture. In part this is because we also went through the demographic transition, and it's often surprising how recent the changes were. The demographic transition is for most of us part of family history. It's also because we are a nation of immigrants, and since 1965, most of our immigrants are from developing countries where the demographic transition is an even more recent memory or a current phenomenon. In school textbooks, in academic research, in conferences, we typically keep the discussion of developing countries and of U.S. population completely separate. I'm delighted that this Society decided to deal with them together because that makes intellectual sense.

2) Our society and economy and culture, and our policy agenda, are all much affected by recent demographic past. Demographic history isn't "history." Demography also isn't destiny. We have to adapt to some profound changes in the age and racial/ethnic composition of our population, and we can do that smartly or dumbly.

FIGURE 1: DEMOGRAPHIC TRANSITION IN U.S. AND MEXICO, 1875 TO 1999.



Sources: (U.S.) U.S. Bureau of the Census; Haines, Michael R. *The Population of the United States, 1790–1920,* National Bureau of Economic Research (1994); and National Center for Health Statistics. (Mexico) CELADE Boletin demografico no. 59 (January 1997); Francisco Alba-Hernandez, *La poblacion de Mexico* (1976); and U.S. Bureau of the Census.

THE DEMOGRAPHIC TRANSITION IN THE UNITED STATES AND IN MEXICO

Why was there all this growth, and why concentrated in the developing countries this century? It is mostly due to good news—not due to increased fertility followed by increased mortality, as Thomas Malthus expected two centuries ago, but to lower mortality followed by lower fertility.

In this figure, the top line for each country is the "crude birth rate," the number of births per year per 1,000 residents; the bottom line is the "crude death rate." Along the horizontal axis are years, running from 1875 to the present. The gap between these two lines measures the "natural rate of increase of the population," net of international migration.

The United States and the other countries that began the transition in the nineteenth century had a longer, gentler decline in these rates, and they were never too far apart. Mexico, along with a few other parts of Latin America and Asia, began to see a decline in mortality rates before World War II, but the big improvement has come since the war.

In Mexico, as in most of the world, fertility rates did not decline until well after the mortality decline. In Mexico in this century, as in most other developing countries, the declines that took a century or so for us are all

happening in a couple of decades. They are on "fast forward." Rates of natural increase in Mexico in the late 1950s and 1960s were above 3 percent. At that rate, a population would double in a couple of decades.

The rates have come down from their high point, but still, Mexico has had to cope with very high rates of growth in the meantime.

There's one respect in which the United States was unusual even among rich countries. We share with France the distinction of having one of the earliest sustained fertility declines in the world, beginning about 1800, and of having our fertility decline precede the mortality decline.

The improvement in individual health has been even more dramatic than the crude mortality rates shown in Figure 1 suggest. The proportion of older people in the U.S. population has been growing (as we'll discuss later), so to have the number of deaths per 1000 people still going down is a real achievement. It is easier to see this if we consider an age-independent measure, like life expectancy at birth—how long a typical American newborn would live, if mortality rates at every age stay at their current level. This has improved through most of the last century, from under 50 years in 1900 to 77 years today.

Back in the 1950s and early 1960s, there were signs of a leveling off of the rate of improvement. A writer in the *Population Bulletin* for August 1952 put it this way: "Curiously enough, none of these modern miracles has increased the life prospect of middle-aged people. During the half-century that 20 years were added to the life expectancy of the average U.S. baby, less than a week was being added for people of 50." Shortly after that was written, mortality improvement at the oldest ages resumed, and in fact, improvement has been faster in percentage terms at the oldest ages. If there's a limit to the improvement, as many argue, then we're probably not near it yet.

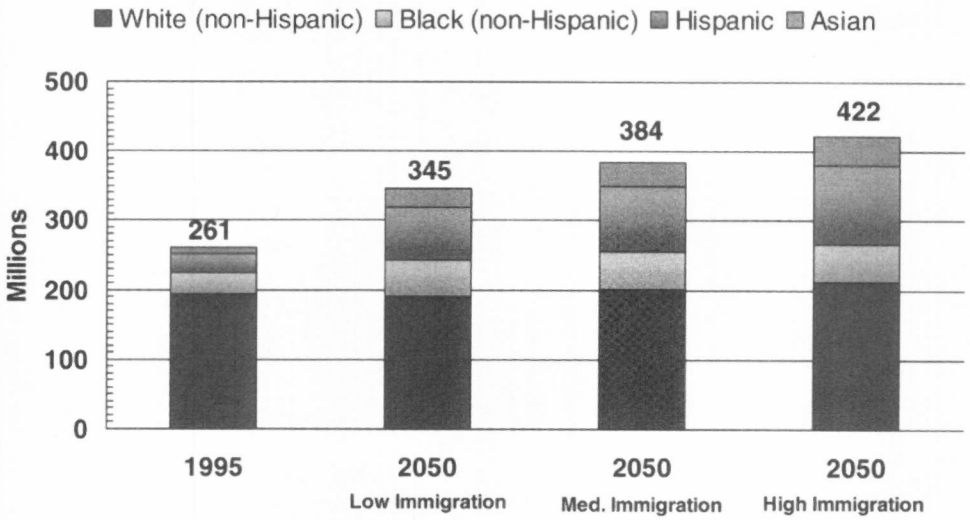
The Role of Immigration

Besides the speed of change, there's another respect in which our population growth has differed from that of the countries going through the transition in this century. During much of our transition, the U.S. was a major receiving country for international migration.

From Independence till about 1920, the growth of the U.S. population was due about half to new immigration and about half to natural increase of the population already here in 1790.

Beginning in 1924, when a very restrictive Immigration Act was passed, we had four decades of very low immigration. During the Baby Boom years (1946–64), U.S. population growth was mainly due to natural increase, the excess of births over deaths. Since 1965, we're back to the historic half-and-half: About half of our population growth is due to immigration and half to natural increase. But because we're now at the tail end of the demographic transition, natural increase is down to about half a percent a year. Immigration is high in absolute numbers but low as a percentage of the resident population. So population is growing at just

FIGURE 2: IMMIGRATION POLICY AFFECTS FUTURE SIZE AND COMPOSITION OF THE U.S. POPULATION.



Source: Edmonston, National Research Council, 1997.

under 1 percent a year, compared with 3 percent during much of the nineteenth century.

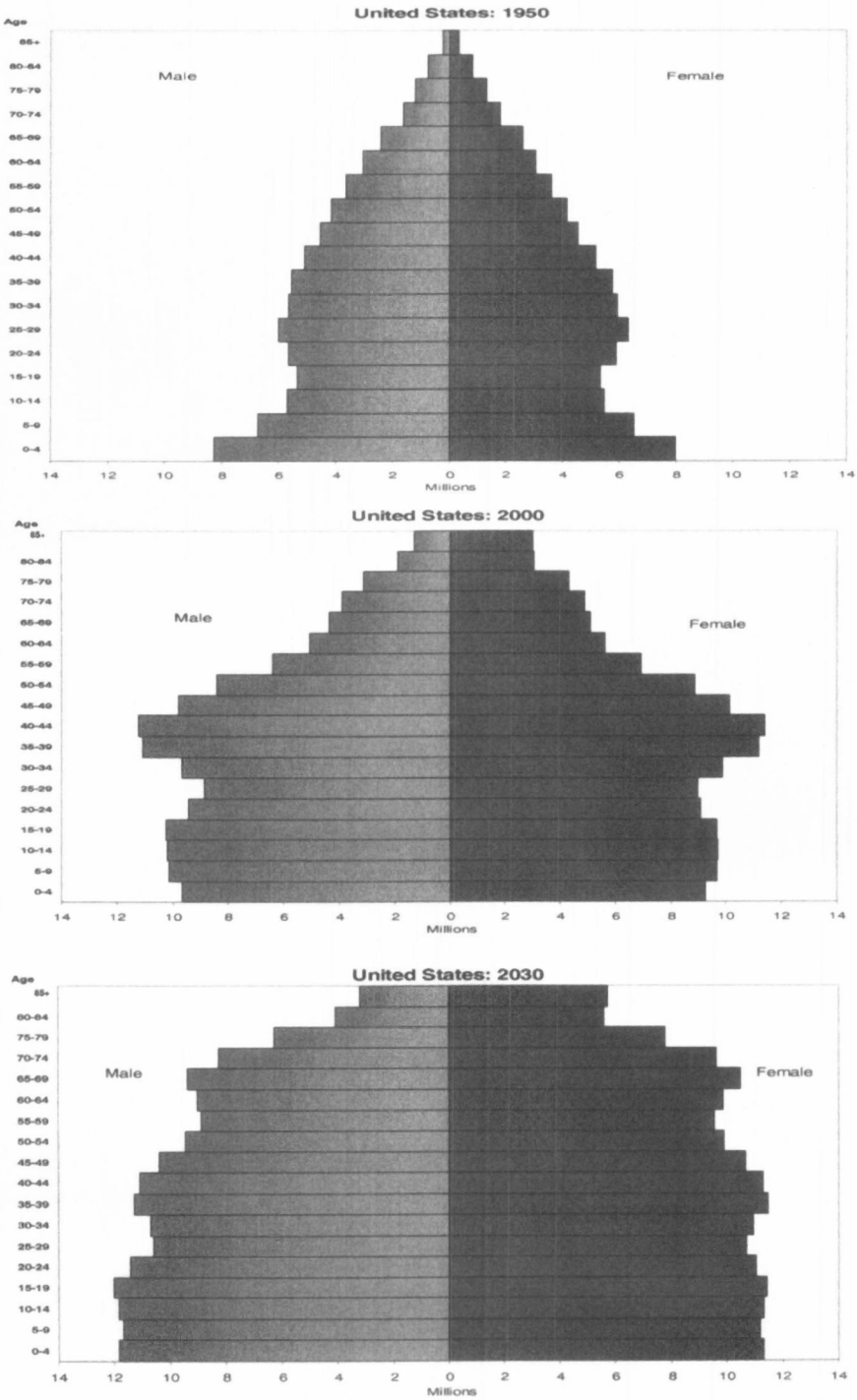
HOW DO OUR CHOICES ABOUT IMMIGRATION AFFECT THE FUTURE POPULATION OF THE U.S.?

The next figure shows three possible futures for 50 years from now, differing only in what they assume about average immigration rates over that period. These are based on projections done by Barry Edmonston for a panel on immigration appointed by the National Academy of Sciences. His medium projection assumes 820,000 immigrants per year, about what it has been recently. The low projection assumes about half that, and the high projection assumes 50 percent higher (about 1.2 million). If we dropped suddenly to zero immigration, then our population would peak at about 312 million in 2035 and decline slowly after that.

One point to note is that under any reasonable scenario, the proportion of Americans with Asian and with Hispanic ancestry is going to rise. These two groups have grown rapidly, especially since the profound changes in our immigration laws in 1965. Exactly how fast they grow will depend somewhat on immigration in coming decades, but they will continue to grow more rapidly than the White and the Black non-Hispanic populations.

To produce these projections, Barry Edmonston had to make reasonable assumptions about the future course of birth, death, and immigration

FIGURE 3: THE POPULATION IS AGING.



Source: U.S. Bureau of the Census.

rates for these groups. He also had to make some assumptions about intermarriage and racial/ethnic identification. In our statistical system in the recent past, "you are what you say you are," and what people say is affected by the often complicated reality of their ancestral origins. The projections shown here are based on an assumption that people would continue to intermarry with the other groups at about the same rates as in the recent past and that children would identify with parental race/ethnic groups at about the same rates. But these things change over time, as indeed do our racial and ethnic categories.

I hope to have grandchildren in the U.S. population in 2050, but I can't be sure which of these boxes they will check on the census form that year. I can't even be sure the boxes will still have these labels. There have been several major changes in the way we collect and display data on subdivisions of the U.S. population in my lifetime. Beginning with the 2000 census, we no longer require people to check just one box. I hope to survive through at least a few more changes in our racial and ethnic classification system. Changing them is a nuisance for statisticians, but it does help remind us all that these are artificial labels and not something handed down on Mount Sinai or discovered in a lab.

The Aging of the U.S. Population

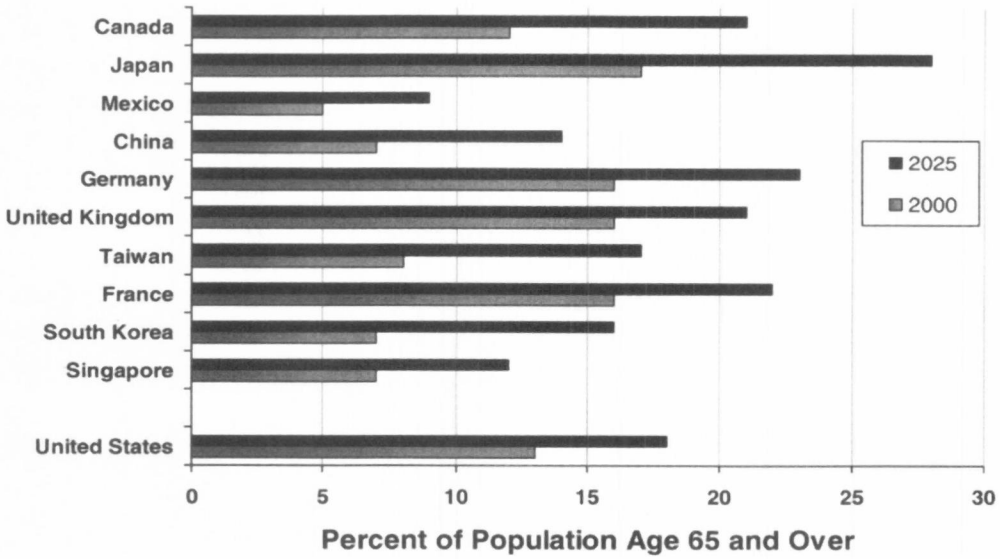
Figure 3 illustrates another way in which recent demographic history leads to some profound changes in the near future. These are two sets of estimates and one of projections for the U.S. resident population in the years 1950, 2000, and 2030. These are so-called age pyramids. They're just like lining up two vertical bar graphs and tipping them over on their side. Each horizontal bar corresponds to a five-year age group, with older stacked on top of younger, and with males on the left and females on the right. The size of each bar reflects the number of people in that age and sex group in that year.

For most countries with high fertility rates, these figures do in fact look like pyramids. The U.S. in 1950 had a peculiar shape like the nib of a fountain pen—the big gang of pre-schoolers is the first of four Baby Boom cohorts. In the year 2000, we can see that same group, minus some who died and plus some immigrants, in the 50–54 year age range.

If you look at the population above the line denoting age 65, just eyeball it, you can see it is growing in absolute size and also as a proportion. This is only partly due to the unusually large Baby Boom cohorts about to move across that line. It is also due to the steady size of the cohorts coming along behind them. Each one is now about the same size as the one above it. This is characteristic of countries that have reached "replacement-level fertility." And each succeeding cohort keeps more of its members further into old age, which is the result of the improvements in life expectancy.

Note the unusual position of the early Baby Boomers. Above them all their lives have been smaller cohorts, the pyramidal situation characteris-

FIGURE 4: ALL OF OUR TRADING PARTNERS ARE AGING, TOO.



Source: Population Reference Bureau, World Population Data Sheet, 2000; U.S. Census Bureau, International Data Base.

tic of growing populations. Below them is the shape of the future, characteristic of stable populations.

There has been a lot of discussion of what this aging population means for the future of social security, Medicare, long-term care, and politics. But the changing age structure will also mean a very different experience of youth and middle age.

Life is different in any kind of organization or labor market, public or private, depending on the age structure of the population. Prospects are different, if looking up from your place in one of these cohorts, you see above you a whole bunch of elders. On average, promotions come slower. Some hotshots are going to shoot to the top in any kind of population. But it was easier to respect seniority and wait your turn when the population as a whole, and the labor force, was "young." We in the early Baby Boomer cohorts may be living through the last of the good times for middle-aged persons of middling talents and energy. We spent our early careers in a time of rapid growth of the labor force, where the number of new entrants coming along behind us was always larger than the number ahead of us holding fast to jobs we wanted. Our younger brothers and sisters, and our children, are having very different experience of the labor force.

Population aging is hardly unique to the United States. Many of the rich countries of the world have higher proportions of their populations

age 65 and over. In fact, in Japan, the proportion of the population over age 80 is the same as our proportion over age 65. Many countries have more lavish public pension plans, and most already have higher rates of taxation, especially payroll taxation, than does the United States. They thus face more difficult and imminent problems adjusting to population aging.

This table shows the percentage of the population aged 65 and over for the United States and its ten major trading partners. The European countries and Japan have older populations than the U.S., mainly because of persistently lower fertility rates. China and the other Asian trading partners still have a younger age distribution than does the U.S. now, but their populations are aging as well, because of recent rapid fertility declines and gains in life expectancy. This 18 percent for the U.S. in the year 2025 is often considered a kind of threshold—it's the proportion of over-65-year-olds in Florida now.

Is the Early Baby Boom Cohort Ready for Retirement?

I mentioned the odd position of the early Baby Boom cohorts. So far we've only talked about the changes wrought by fertility and mortality decline, but there have been other profound social changes that leave us entering older years in a very different position from our parents at the similar ages.

First, our families. Early Baby Boomers are less likely to be currently

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Figure 5: Early Baby Boomers Ready for Retirement?

		Early Boomers (Born 1946-54)	Their Parents (Born 1916-25)
College Graduates at Age 45-54	Men	33%	13%
	Women	27%	7%
Divorced or Never Married at Age 45-54	Men	23%	11%
	Women	25%	10%
Average Number of Children Per Woman at Age 40-44*		1.9	3.1
Labor Force Participation of Women at Age 45-54		77%	54%
Life Expectancy at age 50	Men	28 years	23 years
	Women	32 years	29 years

*Cumulative Fertility Rate Age 40-44 in 1970 and 1998

Sources: U.S. Bureau of the Census; National Center for Health Statistics; Bureau of Labor Statistics.

married, more likely to be single or divorced, than our parents were at this age. This has all sorts of implications for the quality of life, for all. Just to take one example, the strongest predictor of entry into a nursing home for older men is marital status.

We can expect to live longer than our parents did. When he turned 50 a few years ago, President Clinton gave a nice talk using the phrase "more yesterdays than tomorrows"—this table has data on exactly how many.

Notice that the gap in life expectancy between men and women at age 50 has narrowed a bit since 1970. This is mainly because of convergence in smoking rates. Men are less likely to make it to age 50 than women are, so the gap in life expectancy at birth is still 6 years.

The average number of children we have has dropped. This is an especially rapid drop, over one child per woman in 30 years. The drop was less precipitous before and since. We are the first and probably only generation of Americans to have more siblings on average than children.

Finally, education—we are much more highly educated than our parents were, on average. This matters for all sorts of things, health as well as wealth. The percentage with college degrees has increased for both men and women, and though I don't show it here, of all the racial and ethnic groups.

If you look at more recent cohorts, though, this isn't true any more. For people in their late twenties, all the increase in college graduation rates since the 1970s has come about for women and minorities. White non-Hispanic men and Hispanic men have made no progress, and Black men's increases have recently leveled off. During this same period, all growth in real income has been for college graduates, who are still a minority of the population.

We've become used to things getting better, generation to generation. For most of us in the Largest (not necessarily the Greatest) Generation, that's been our experience. But such progress is by no means guaranteed. We keep coming back in our discussions to education, and this obsession is justified. My retirement will be more comfortable and more affordable for the country if the small cohorts coming along after me are well educated, productive—and eager to pay taxes.

Implications for Texas

STEVEN H. MURDOCK

Thank you. It's a pleasure to be here and have a chance to talk to you about something that's a very dear topic to me. I call it the Texas challenge, looking at population change and what the implications of those changes are for Texas.

Now, like some of my colleagues—not really this group, this group is pretty restrained—but like some of my other demographic colleagues I may get just a little bit preachy during this discussion. Now, if I do, I will do so because some of you probably know that demography is a divine calling. We know it is because there's a Book of Numbers in the Bible, and it's all about censuses.

What I want to do is talk about some major demographic trends that I argue are so important that if we do not understand them for Texas, we cannot effectively plan for the future of Texas. Normally I look at four, but because of time I will examine just three of these changes. I am going to discuss rates and sources of population growth in Texas. I'm going to look at the aging of the population (although John's done a very good job of looking at that nationally), and I'm going to look at the increase in the minority population.

What I want to do relative to each of these is to give you a little history and then talk about why they are important—why should you care about these demographic trends anyway? You are not, after all, a bunch of pointed-head, ivory-tower academic demographers. You people do things in the real world, so why should you care about these factors? And then we will discuss the future and some of the work we have done examining some of the implications of these particular factors.

Let us start off by looking at population growth. Here is a chart that shows that in every decade since Texas allowed the U.S. to join it, it has grown more rapidly than the country as a whole. If you look at the most recent decades, you see we grew by 27 percent from 1970 to 1980, compared to 11 percent in the country as a whole; in the 1980s by 19 percent, although we often think of that period as a relatively slow growth period; and in the 1990s—and the most recent data we have is for July 1, 1999—we have increased our population about 18 percent, again, not quite twice as fast as the country as a whole.

When you look at trends in Texas population—and you'll have to excuse this chart. I have a colleague at Texas A&M who says, "Do you know what I like about you, Murdock? You take a chart, put 800 numbers on it, put it in front of a group of people, and then you say, 'As you can plainly see.'" Well, this is one of my as-you-can-plainly-see charts.

FIGURE 1: TOTAL POPULATION AND PERCENT POPULATION CHANGE IN TEXAS AND THE UNITED STATES, 1850–1999.

	Total Population		Percent Change	
Year	Texas	U.S.	Texas	U.S.
1850	212,592	23,191,8 76	---	---
1860	604,215	31,443,321	184.2	35.6
1870	818,579	39,818,449	35.5	26.6
1880	1,591,749	50,155,783	94.5	26.0
1890	2,235,527	62,947,714	40.4	25.5
1900	3,048,710	75,994,575	36.4	20.7
1910	3,896,542	91,972,266	27.8	21.0
1920	4,663,228	105,710,620	19.7	14.9
1930	5,824,715	122,775,046	24.9	16.1
1940	6,414,824	131,669,275	10.1	7.2
1950	7,711,194	150,697,361	20.2	14.5
1960	9,579,677	179,323,175	24.2	19.0
1970	11,196,730	203,302,031	16.9	13.4
1980	14,229,191	226,545,805	27.1	11.4
1990	16,986,510	248,709,873	19.4	9.8
1999*	20,044,141	272,690,813	18.0	9.6

Source: July 1, 1999 estimate from the U.S. Bureau of the Census. All other values are for April of the indicated census year.

Really the part that is important in this chart is this very bottom line. Populations grow by one of two mechanisms: natural increase, which is the excess of births over deaths, and through migration. And migration can be immigration from other countries or it can be domestic migration, migration from other states. One important thing in this bottom line is that 58 percent of all Texas population growth in the 1990s—and this is not atypical for Texas—has been as a result of natural increase, the excess of births over deaths.

So to put it in another way, if nothing happens to cause immigration or migration to Texas, we increase our population almost 200,000 persons a year just as a result of natural increase.

FIGURE 2: TEXAS POPULATION GROWTH 1990–1999 BY COMPONENT OF CHANGE

Year	Population	Total Change 1990-99	Natural Increase	Percent of Total Change	International Immigration	Percent of Total Change	Net Domestic Migration	Percent of Total Change
1990*	16,986,335	–	–	–	–	–	–	–
1991**	17,339,904	353,569	238,977	67.6	73,203	20.7	41,389	11.7
1992	17,650,479	310,575	192,839	62.1	71,738	23.1	45,998	14.8
1993	17,996,764	346,285	189,635	54.8	77,691	22.4	78,959	22.8
1994	18,338,319	341,555	185,657	54.4	74,492	21.8	81,406	23.8
1995	18,679,706	341,387	186,527	54.6	73,274	21.5	81,586	23.9
1996	19,006,240	326,534	185,328	56.7	88,366	27.1	52,840	16.2
1997	19,355,427	349,187	193,855	55.5	91,543	26.2	63,789	18.3
1998	19,712,389	356,962	199,127	55.8	83,179	23.3	74,656	20.9
1999	20,044,141	331,752	199,617	60.2	81,943	24.7	50,201	15.1
Total, 1990-1999	–	3,057,806	1,771,562	57.9	715,420	23.4	570,824	18.7

*Population value for 1990 is for April 1, 1990; all other values are for July 1 of the year indicated.

**1990–1991 change is for a 15 month period from April 1, 1990, to July 1, 1991; all other change values are for 12 month periods.

Source: Estimated from U.S. Census Bureau Population Estimates by personnel from the Texas State Data Center, Department of Rural Sociology, Texas A&M University.

Well, how phenomenal is that rate of natural increase? Well, if Texas had no other population growth for the last several years except natural increase, we would have still been the third fastest-growing state in the entire country just because of our level of natural increase.

The second thing that's important here is to note that we had about 715,000 immigrants. That is a relatively large number of immigrants. But often I am asked whether we are a lot like California or like New York. If the reason for asking this is to ask whether we are a large state—yes, we are the second largest state, having surpassed New York in the early part of the 1990s—then it is an appropriate question, or if it is to ask if we are a diverse state, then it is an appropriate question. But if it is to suggest that we had the same level of immigration as those two states, it is incorrect in this sense. The number of immigrants for California for the same period of time was 2.3 million immigrants, and for New York it was 1.2 million immigrants.

The other factor that is different is this third factor. We had 571,000 persons who came to Texas from other states. Both California and New York lost more people to other states than they gained from other states during this particular period of time.

If you look at our growth, it has been such that from 1990 to 1999 we

increased our population by three million persons. To put that in perspective, that is roughly equivalent to having added another city of Houston plus another city of San Antonio to our population in just nine years. We are the eighth fastest-growing in percentage terms, and you can see the states that are growing faster in percentage terms are relatively smaller. And if you look at us in terms of the largest states, only Florida and Georgia are growing anywhere nearly as rapidly as we are.

New York, for example, has increased its population by only 1.1 percent. I like to say that that is proof positive that you cannot have extensive population growth if you have bad picante sauce.

Our growth is not everywhere, however. If you look at Texas, there are really three parts of Texas that are growing quite rapidly. One area is along the Texas and Mexico border, so Laredo, McAllen, and Brownsville are three of the four fastest-growing metropolitan areas in Texas, and Laredo and McAllen were the second and third fastest-growing metropolitan areas in the entire country from 1990 to 1998.

The second area is down through what I refer to as the central corridor of Texas, taking I-35 from Dallas–Ft. Worth, going all the way down to San Antonio. You can see rapid growth there. And the third area is in the Houston area, which you can see has increased by over 600,000 persons. But there are areas that are growing slowly as well: parts of West Texas, parts of the Panhandle, parts of East Texas and Southeast Texas are growing much more slowly.

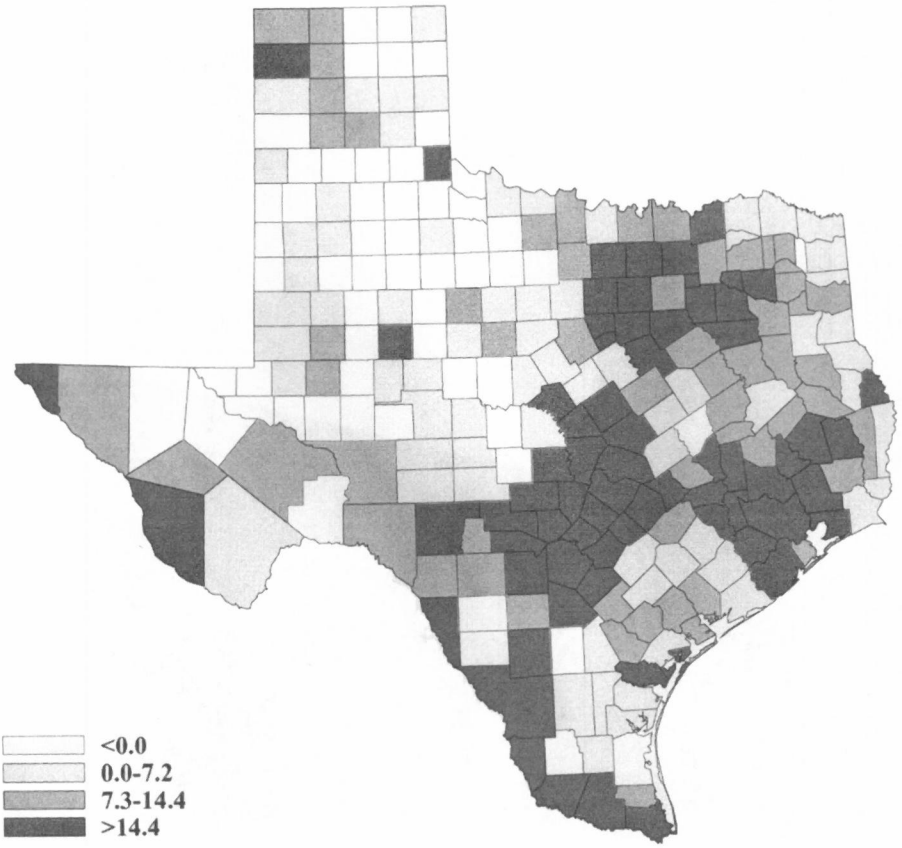
Our growth in fact is such that one of the things we need to recognize in Texas is that we have become a very large, a very urban, a very complex state. After all, as you know, we have three of the ten largest cities in the United States. We have more metropolitan areas than any other state in the country. We are the fourteenth most urban in percentage terms.

This chart shows population change, with the darker shading showing faster growth, you see a crescent of rapid population growth in East and Central Texas. We did a little article that was picked up by the *Wall Street Journal* about a year ago, and we pointed out that if you start over at Longview–Marshall, go all the way over to Denton, go on down I-35 down to San Antonio, and go down I-10 to Houston and Beaumont, what you will find is that we are now three counties away from having a contiguous metropolitan area of 13.1 million persons that would be larger in geographical size than L.A. and would be third behind New York and L.A. in terms of population size, and two of these three counties are metropolitanizing relatively rapidly.

One of the things to recognize is although most parts of Texas have increased—about 190 of Texas's 254 counties increased in the 1990s—that growth is yet quite concentrated. For example, if you take natural increase, basically one of every three people born in Texas is born in either Harris County or Dallas County.

If you look at domestic migration—now, this is that high-tech migra-

FIGURE 3: PERCENT POPULATION CHANGE IN TEXAS COUNTIES, 1990–1999.

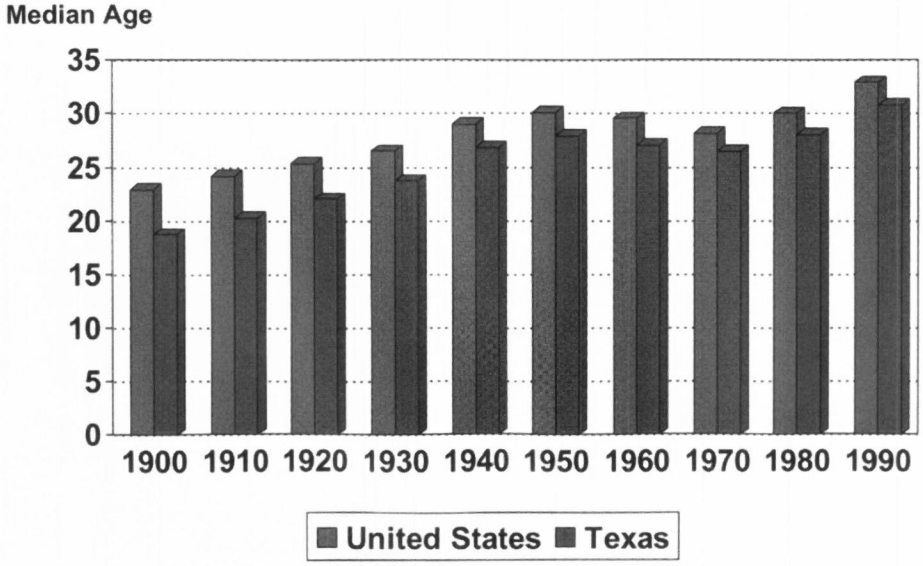


tion that we often hear a lot about—80 percent of all the people who came to Texas from other states went to just five counties: Collin County and Denton County in the Dallas area, Ft. Bend and Montgomery in the Houston area, and Williamson County in the Austin area. And if you look at immigration in terms of destinations, 50 percent of all of our immigrants go to just three counties: Harris County, Dallas County, and El Paso County.

Let us turn to aging. One of the things that John pointed out is the fact that we are aging as a population, and this is true in Texas as well. When you look at this chart you might think this is a chart that only a demographer could love, because what it shows is the median age in Texas in 1990 was 30.8 years. Now, if I look at this group correctly, many of us would like to be that age again indeed.

But what's important about our aging both in the country and in Texas is the relative rapidity with which we are now aging. Let me give you an example for Texas.

FIGURE 4: MEDIAN AGE IN THE UNITED STATES AND TEXAS, 1900–1990.



In 1950 the median age in Texas was 27.9 years. In 1980, 30 years later, it was 28 years. We increased median age by one-tenth of one year in 30 years. Then from 1980 to 1990 we got three years older in median age terms, and when the 2000 census comes out it will show that we will have become older again.

Why are we aging? John pointed this out very well. We are aging because of an infamous group of people called the baby boomers, those people born between 1946 and 1964. They are about 30 percent of the U.S. population. They are about 30 percent of the Texas population. As they go, so goes the country in many ways.

If you look at the 1980s, this group in this chart was the baby boomers, and they have been the fastest-growing group again this decade. And if you do not believe they are an important group of people, if you travel quite a bit, like many of you do, one of the things you will probably find, like I have found, is that every major media market in America that I have been to has an oldies radio station. Now, what do they play? Fifties, '60s, '70s music.

Now, personally I refer to those as classics, but why are they playing that music—because they love us? No, because they love our money, and the important thing about this group of people is to know that yes, in the long run their aging leads to the kind of issues we have talked about on social security and other factors. But it is also important to remember that their immediate effect is to make us a middle-aged society.

It is probably more appropriate to refer to us between now and about 2020 or 2030 as a middle-aged society than it is an elderly society, and when you begin to look at that group of people, that means that many of

the factors we are talking about between now and then are going to involve middle-age issues.

The second factor is that there is a clear relationship in Texas and in the United States between minority status and youth status. This is our estimate for 1998, but our 1995 estimate showed the same thing, and that is that for the population under 25 years of age, already half of that population was non-Anglo. It was composed of African American, Hispanic, Asian, or members of other racial and ethnic groups. On the other hand, if you took the population 65-plus, it was about 74 percent Anglo.

Another factor that may be important for Texas is the increase in its minority population. I think it is the most important factor for Texas because Texas was already by 1990 a very large minority state. By 1990 four of every ten Texans were minority population members. About the same percentage of our population is African American as in the country as a whole—about 12 percent—but whereas about 9 percent of the U.S. population in 1990 was Hispanic, about 26 percent of Texas population was Hispanic and basically one of every five Hispanics in the country lives in Texas.

About 2 or 3 percent are in the "Other" category, which, as we define it, consists primarily of Asians, although it also includes American Indians and others.

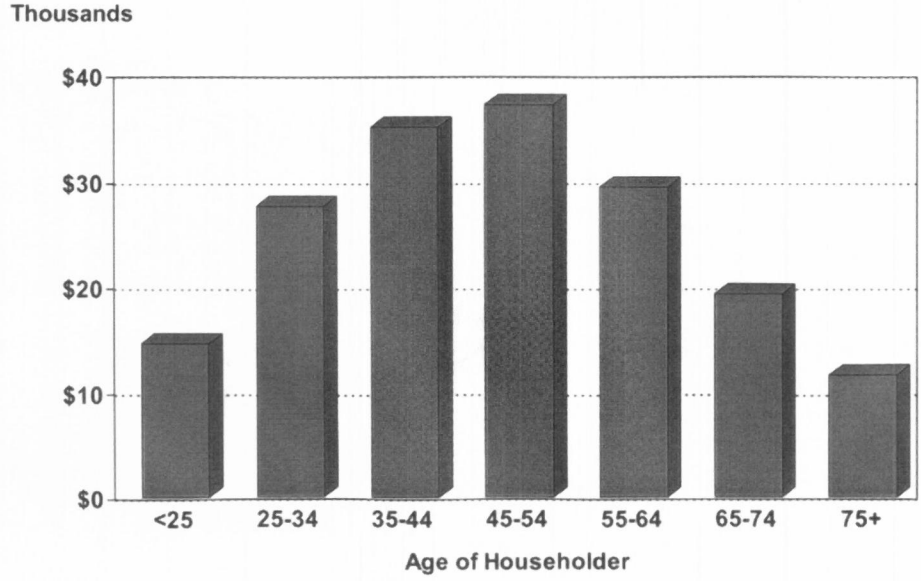
If you want to get an idea of why ethnic and minority issues are so important to Texans, let me just show you where Texas ranks in terms of other states. We have the second largest Hispanic population, the third largest African American population, the fourth largest Asian or Pacific Islander population. And yes, we have the eighth largest American Indian population of any state in the country.

Why are these differences so important demographically? If you look at the Anglo or non-Hispanic White population, in the '80s it increased by 10 percent; the Black population increased 17 percent; the Hispanic population, 45 percent; the "Other" population, 78 percent. Now, notice that that 78 percent is on a relatively small base, but if you look at net population change, what is interesting here is that one out of every two net additions to Texas population in the 1980s was Hispanic and two of every three were non-Anglo.

If you think the 1980s was a long time ago, let me show you the 1990s. The 1990s followed a similar pattern. Although these numbers are smaller because they are for eight years and not for ten years, you can see that the relative magnitude of growth is the same. And in fact when you look at net change, what is interesting is whereas 49 percent of the net population increase in Texas in the '80s was Hispanic, the census bureau estimates that 58 percent of the growth in the 1990s was due to the Hispanic population.

If you add all non-Anglo populations together, non-Anglos accounted for 66 percent of the net population growth in Texas in the 1980s but for 75 percent of net population growth in the 1990s.

FIGURE 5: MEDIAN HOUSEHOLD INCOME IN TEXAS BY AGE OF HOUSEHOLDER, 1990.



But what are some of the implications of these demographic changes? Why should you care about these dull old demographic factors anyway? I argue that for a variety of historical, discriminatory, and other reasons, these demographic characteristics are tied to socioeconomic characteristics, so knowing these linkages and understanding how they may affect our population becomes not only a demographic issue but a social and economic issue.

Here is a chart that I find very, very depressing, because it is a chart that shows that all other things being the same, we make as much money as we are going to make when we are middle-aged, and we make less money when we are younger and when we are older. This means I am making as much money as I am ever going to make, and that is indeed depressing.

The same thing is true for societies. If they are concentrated in younger or older ages, all other things being the same, they are poorer than if they are concentrated in middle ages.

Unfortunately what you find, depending upon the time and the place, is that African American and Hispanic incomes are between 55 and 75 percent of the incomes of Anglos. I also want to point out that in 1990, 55 percent of adult Hispanics in Texas had less than a high school level of education.

This has had a great deal of personal meaning to me. I have been at

FIGURE 6: AVERAGE (MEAN) SAT SCORES FOR COLLEGE BOUND SENIORS IN TEXAS IN 1987 BY SELECTED CHARACTERISTICS.

Characteristic	SAT Score Mean Verbal	SAT Score Mean Math
All Students (N = 89,365)	**494**	**501**
Race/Ethnicity:		
American Indian	481	485
Black	426	422
Hispanic: Mexican American	448	457
Puerto Rican	483	478
Other Hispanic	461	463
White	521	525
Asian American	502	566
Household Income:		
≤ $10,000	417	433
$10,000 - 20,000	444	453
$20,000 - 30,000	471	476
$30,000 - 40,000	485	489
$40,000 - 50,000	498	502
$50,000 - 60,000	507	513
$60,000 - 70,000	513	520
$70,000 - 80,000	522	526
$80,000 - 100,000	530	539
> $100,000	548	562

Texas A&M—well, almost forever. I am in my twenty-fourth year—and that does not seem like so long to me, but I can tell you when you go in front of a group of 18-year-olds and they say, "How long have you been here?" and you say, "Twenty-four years," you look at those faces and you know they are thinking, "My God, this man has been here longer than I've been alive. How old must he be?"

Well, one of the things that has bothered me all the time I have been there is that every president we have had has been smarter than I am, and I could never figure out why. I asked my colleagues; I didn't like their answers. I asked my family; I really didn't like their answers. But then I found this chart. It shows SAT scores, and I can tell you it would not matter whether we had such a chart for Texas or California or any other state. It would not matter whether we had 1997 or 1999 or 1989 or some other year.

What you would see is that as your income goes up, whether we are talking about the verbal or the math score, so your score goes up. This means that all of those presidents have been smarter than I am because

they have made more money than I have. It also means that all we need to do if we want to make Texans smarter is make them richer.

Well, where was Texas as we entered the 1990s? And I want to take just a minute to note that we have some new data that came out about a month ago, and I will tell you where we rank now. In terms of median household income, we ranked 32nd as we entered the '90s and as we entered 2000 we ranked number 31 among all the states. We stayed at our 31st ranking on per capita income.

In terms of the percentage of our population made up of high school graduates, we ranked 39th in the 1980s—and if these estimates are correct—we now rank 45th in the country. We continue to rank 23rd among all the states in terms of the percentage of our adult population made up of college graduates.

So where are we going? We project Texas will have about 34 million people by 2030. That is a lot of growth from about the 20 million that we have today, but it is slower growth than we have had for the last couple of years. If the growth rates of the last couple of years were to continue, we would have more like 38 million people rather than 34 million people.

What may be most critical relative to some of the factors we talk about is that we project by 2008—and I now believe it will be before 2005—Texas will be less than half Anglo in terms of its total population and that by 2030 it will be about 36 percent Anglo, about 10 percent African American, about 46 percent Hispanic, and about 8 percent will be members of other racial and ethnic groups.

We will also get older. By 2030 about 18 percent, about one in every six Texans, will be 65 years of age or older. But there is something else here that is important to know. Note that in that period of time, about 25 percent of Anglos will be 65-plus, but less than 12 percent of Hispanics will be 65-plus.

One time when I gave this presentation, a gentleman said, "Aren't you saying we are going to have a group of old Anglos being taken care of by a large group of young minorities?" That is absolutely correct as you begin to look at the population dynamics in Texas. Eighty-seven percent of the net additions to Texas population between now and 2030 are projected to be minority population members.

What are some of the implications of these patterns? A few years ago, we completed an analysis for the Texas Legislative Council (which is one of two groups that directly serve the Legislature of Texas) of the implications of these demographic trends for Texas, if they go forward with the socioeconomic relationships that we have discussed today, and if we do nothing to change these relationships.

The population changes from about 61 percent of our population being Anglo to about 37 percent; a similar proportional change is shown for households. The labor force goes from about two-thirds Anglo in 1990 to two-thirds minority by 2030.

By 2030, one of every ten kids in Texas public schools would be minority population members. Sometimes when I give that statistic people say that sounds too high. Well, already last fall it was 55 percent statewide. If you take our largest school districts, the Houston Independent School District and the Dallas Independent School District, what do you think the minority proportions were last fall? Ninety percent in both school districts.

By 2030 about 60 percent of all kids in Texas colleges and universities will be minority population members, and—very important for the private sector—by 2030 half the household income would come from a household that had a minority population head as well as about half of all the consumer expenditures. Somewhat over 50 percent, in fact, of all consumer expenditures would come from households that have a minority population head.

What are some of the other implications of this? If we do not change the socioeconomic differentials that exist in Texas society, Texas labor force in 2030 will be less well educated than it is today, and in fact, the Texas population will also be poorer.

We took our figures and looked at what it meant in terms of household change for the college age population. What we found is that if we do not change the socioeconomic differentials in Texas population, the average Texas household in 2030 would be $4,000 poorer in 1990 constant dollars than it is today, and we would be poorer indeed with about a 3 percent increase in our poverty rate.

Well, let me briefly summarize, because I must be about out of time. What do these three factors mean, and what are some of their implications? First of all in regard to population change, under almost any scenario I can see, Texas is likely to have continued population growth, and that does not mean continued population growth at the same rate that we have had in the last few years. But the reason I am relatively confident that we will continue to have at least modest growth is because of our natural increase rate.

All other things being the same, we are increasing our population about 200,000 persons a year just as a result of natural increase. That growth will not be everywhere. It will be different from area to area, and planning for long-term growth particularly as we look at environmental issues will become increasingly important.

What about the aging of the population? There are two or three things about this that I would like to comment on very quickly.

One of these is that in the long run we have some very difficult decisions to make about the elderly. Lester Thurow, in a book called *The Future of Capitalism*, frankly suggests that we will not be able to afford to support the baby boomers when they are elderly in the manner to which their parents have become accustomed. The reality of it is that the resource allocation picture is likely to have to change between the young

and the old, depending on what we want to do relative to our future.

There's a second thing about the aging that we need to recognize, however. If we look at the relationship between middle aging and income, the fact that all other things being the same we make as much money as we are going to make when we are middle-aged and we have less money when we were younger and when we were older suggests that if we are going to fix the things that need to be fixed in Texas, we had better do it now. It will not be easier when one in six Texans is 65 years of age or older and on some form of fixed income.

And there's a third factor. I bring this up with a lot of hesitation because it is controversial, but I think we must talk about it. We must discuss it openly.

I do a lot of discussions, a lot of presentations to school officials, and recently I've had things happen that have bothered me in conversations with a couple of superintendents who have come up to me and said, "You know the chart that you showed that indicated that the minority population is primarily young and the Anglo population is older?" And I say, "Yes." And one of these gentlemen said, "Let me tell you about my school bond issue that failed."

And he said, "You know, when I checked to see the areas where it failed, I found it failed in areas of my district that were primarily residence areas for Anglos, and older Anglos particularly. And in one of these areas, one superintendent said, "one of these gentlemen actually said to me, 'Look. I am not ready to raise my taxes to educate—quote—those people's kids.'" There's a danger for Texas in our demographics, and that is we cannot let the divide between old Anglos and young minorities become a dangerous chasm between different parts of our population.

If I as an aging Anglo do not understand that when I am retired, the quality of roads that I will have, the quality of police services and fire services will depend upon how well the working age population is doing—and that working age population will be primarily minority. If I forget that, it will be to my own detriment. We must recognize that our fates are interrelated.

Finally, let me comment on the most important factor, Texas's changing racial/ethnic composition. I argue that the most important factor for Texas is to increase the socioeconomic achievement of our minority populations. I could argue this from some social, humanitarian, or egalitarian perspective, which I might, but I could be the biggest bigot that ever walked the face of Texas, and I would have to say the same thing: Why?

Because I know demographically that 87 percent of the net additions to our population between now and 2030 are likely to be minority. I know that by 2030 two of every three of our workers, seven of every ten students in our elementary and secondary schools, six of every ten kids in colleges, and over half of our consumer expenditures are going to come from households that have a minority population head. And if we do not

change the socioeconomic differentials that are out there, Texas will be poorer, Texas will be less competitive in the future than it is today.

The reality of it is that the future of Texas is tied to its minority populations, and how well they do is how well Texas will do.

Thank you.

World

Wolfgang Lutz

I want to thank you for this time to comment, as it says in the program, from a global perspective.

There are, of course, trends in one part of the world that are linked to developments in other parts of the world. This is especially true for migration, which is a big demographic factor for the United States and a very big factor for Texas, as we have just heard.

I would like to pick up on two statements, one made by John about international competitiveness with a view to the strong population aging the main competitors of the United States are experiencing. The other, mentioned by the previous speaker, is the prospect of a possible decline in the average educational attainment of the labor force in Texas.

I would like to add to this second point that the educational attainment in the rest of the world, as I mentioned earlier this morning, is changing significantly. The most important player—partly because of its sheer size but also because of its strong recent investment in education—is China. According to our projections, in about 15 years, China will have more people with secondary or tertiary education than Europe and North America combined. This is partly because it has such a large population but is also because it invested so heavily in primary and secondary education and, more recently, in college and advanced education.

So far, China is not yet a serious competitor in the kind of high tech that North America, Europe, and Japan to some degree monopolize. I think this will change in the future as China becomes a key player with a very highly and well-educated population. But we should look not only at the number of people but also at their education and skills. Age structure certainly has a major impact. I do not want to play this down—we have heard a lot about it—but skills and educational attainment also make a difference.

The second point I want to make is that the people who come to Texas or to the United States are not the average people of a developing country. They are the more educated, the more mobile, the more motivated people. Their departure may create a significant problem in their home countries that we used to call "the brain drain." Take, for example, the Indian programmers who are coming by the thousands and tens of thousands to California, and most recently to Germany and other European countries. As we heard earlier, India has not invested in the general, broader educa-

tion of its population—half of its population is still illiterate—but rather has invested in elitist education. Now these elites are leaving the country to work in other parts of the world. This is not very good for India unless these people stay in contact with India, unless they return—and some of them do—unless they send money to their families in India or transfer knowledge, which is probably the most important in the long run. This issue of the brain drain should not be forgotten when we talk about immigration as a solution to many issues. It needs to be taken into account although it is a complex issue.

I would like to turn my attention to what we heard in the morning about the environment. Although the topic of this meeting is population and the environment, we have not really explicitly discussed how population growth affects the environment. I want to give you a few examples.

Population and environment relationships are very controversial. You may remember that, during the world population conference in Cairo in 1994 or the environment conference in Rio in 1992, there was a lot written about this controversy in the newspapers. Let me give you two statements. Norman Myers of Oxford University wrote, "Population growth plays a prominent and probably predominant part in environmental problems. The most productive and readily available mode of adaptation to the global warming threat would be to reduce population growth," implying developing country population growth. This statement seems to make sense because most of the population growth occurs in a developing country and, clearly, additional people are contributing to additional emissions.

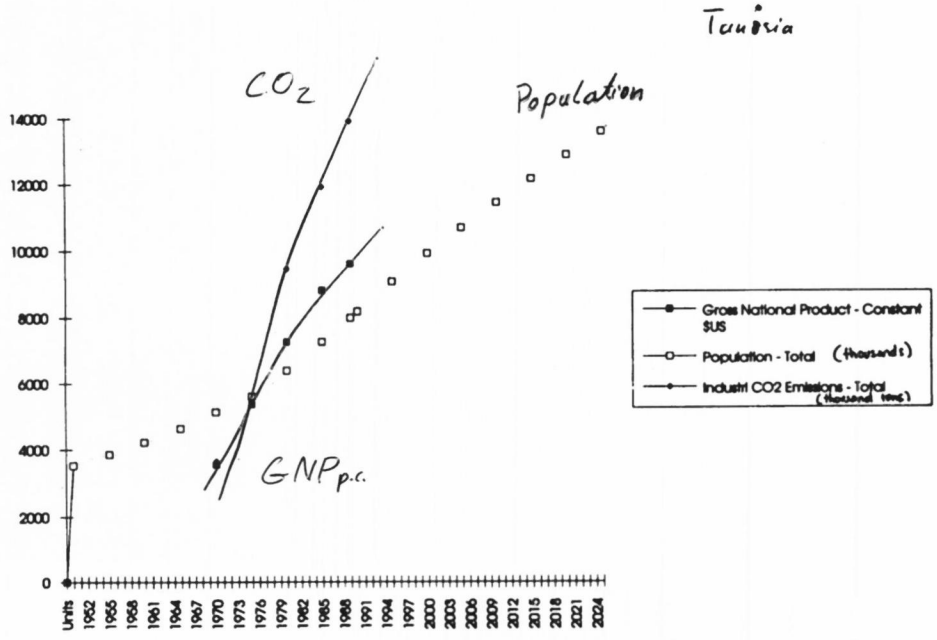
Here is another statement by a group of women mainly from developing countries, who call themselves DAWN: "Population control in the South is a new form of Northern imperialism. White men fear the fertility of our wombs and do violence to us, but the real environmental problem is Northern over consumption."

There is also some truth in this statement. You heard during last week's climate conference in the Hague that the United States, with just 5 percent of the world's population, releases more than a quarter of the total CO_2 emissions in the world and is by far the largest contributor to global warming.

But these two statements are slightly contradictory. The question is how to resolve these issues. Is there anything a scientist can say to make this ideological controversy more rational?

I'll use the trends in the country of Tunisia to illustrate part of this problem. Figure 1 shows the population of Tunisia increasing, almost doubling over the last 30 years. The per capita income increases; there are very steep CO_2 emissions. You can see that a very sharp increase in CO_2 emissions has been encompassing the fact of population increase and some increase in income.

FIGURE 1. TRENDS IN POPULATION, CO_2 EMISSIONS, AND GNP PER CAPITA IN TUNISIA.



Several people have attempted to decompose the increase in emissions into its components. Can we say what proportion of increase in CO_2 emissions is due to population growth and what proportion is due to growth in affluence or income? There is a third factor to be considered: technology. Technology can be dirty or clean, and by switching from one to the other, CO_2 emissions may be reduced without a decline in affluence.

The model or paradigm most frequently used to study this is called the $I = PAT$ equation. It was originally proposed by Paul Ehrlich and John Holdren. I, which is the impact on the environment—this can be CO_2 emissions or deforestation or any activity that is detrimental to the environment—can be decomposed into three factors: P for population, A for affluence (assuming that the richer you are, the more you pollute) and T for technology (depending on whether you are using an environmental friendly or not so friendly technology). This can be calculated in terms of numbers:

$$CO_2 = P \times \frac{GNP}{P} \times \frac{CO_2}{GNP}$$

We can see total CO_2 emissions as being equal to the population times the GNP (the national income) divided by the population (the per capita income) times the CO_2 emissions per units of national income, which is the technological efficiency of producing a certain unit of income or of a certain output.

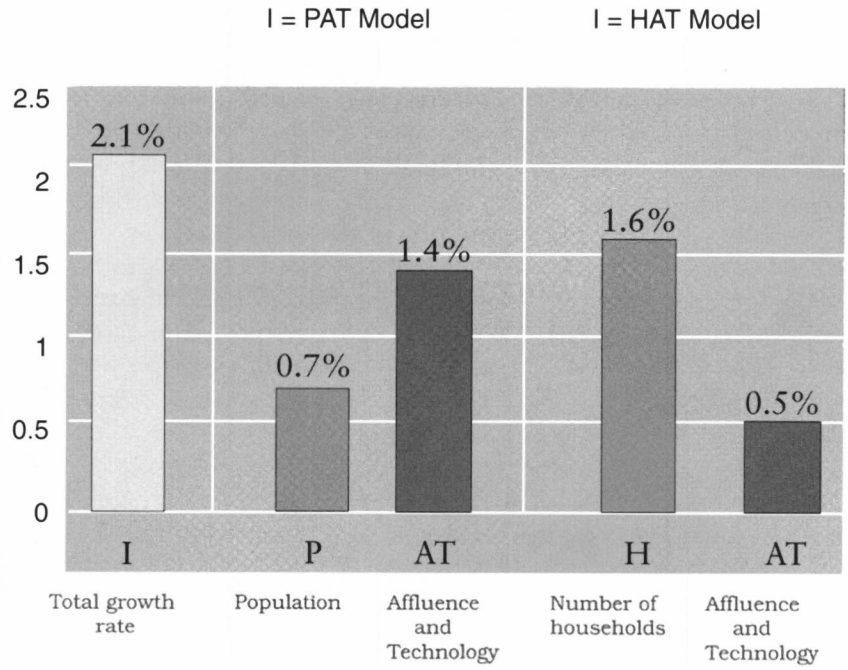
This identity can be shortened into $CO_2 = CO_2$. The main purpose of this identity is to show that it is not any single factor that is contributing to the environmental problems but that it can be split into a combination of different factors.

It is a useful first approach, but it is not a good tool for actually assigning blame. Let me explain why this simple formula is not sufficient for explaining what is going on. All efforts to decompose this numerically have been problematic and cannot readily be used, so what is wrong with the $I = PAT$ equation?

The three factors that are included in the identity are rather arbitrary. One could easily include other factors or more factors. For example, one could choose households instead of individuals as the emitting unit. An average household has a kitchen or an oven; it does not matter how many people live in the house. The number of households are the emitting units.

Let's do a simple decomposition analysis. The total growth rate in energy consumption for the period from 1970 to 1990 has been increasing by 6.7 percent. Of this, 2.2 percent is due to population growth, 3 percent to income growth per person, and 1.5 percent to changes in technology. Because this is a developing country, we used the decomposition formula shown in Figure 2. We can say that about one-third is due to population and about two-thirds is the combined effect of income, growth, and technology.

FIGURE 2. DECOMPOSITION OF ANNUAL GROWTH RATE OF ENERGY CONSUMPTION, 1970–1990, IN INDUSTRIALIZED COUNTRIES.



Source: *POPNET* 27 (Fall 1995): 1.

In the industrialized countries (see Figure 2) we had only a 2.1 percent increase, and there only one-third, 0.7 percent, was due to an increase in population size. It is interesting to note that the income per person increased by 2 percent but that technology had a negative impact. There has been a reduction in emissions due to more efficient technology. If we take 0.7 of this 1.4 percent, we still have one-third to population and two-thirds to this combined effort. If we take households rather than population as emitting units—the number of households times affluence times technology—the picture looks quite different than in the developing countries.

Suddenly in the industrialized countries, we have three-quarters due to the demographic variable number of households. While the population increased slowly in industrialized countries, the number of households increased rapidly for various reasons: People like to live alone, causing a change in lifestyle, they marry late, and they have higher divorce rates. Probably the most significant reason is population aging. The number of households has seen a very rapid growth in all industrialized countries because most elderly people have their own households. It has been even more rapid than the household growth in developing countries.

What proportion of the emissions is due to households and what is due to the number of people? We made some empirical analyses, where about half of the CO_2 emissions are household specific and the other half are due to the number of individuals.

In the real world, the interactions between population and the environment are very complex with all kinds of feedbacks and interdependencies. To address this appropriately, one must choose a "complex systems perspective." This approach assumes a nonlinear complex interaction between the ecological systems and the human systems. How can we study this?

At the International Institute for Applied Systems Analysis in Austria, we have completed in-depth studies on population-development-environment (PDE) interactions in different parts of the world: Mauritius, the Yucatan Peninsula, and most recently, Namibia, Botswana, and Mozambique. We examined the population by age, sex, and educational status, included other socioeconomic characteristics, and then related this to the natural environment. In doing so, it is important to understand that we are not independent of the environment. We are part of nature. We cannot exist, we cannot breathe, we cannot do anything without air, water, energy, land—without nature.

Between the population and the environment, there is a sphere of manmade environment that may be called development. It includes production, consumption, development, trade, policies, social infrastructure, and political institutions. They mediate between a change in the number of the people and, for example, the air—the question of biodiversity,

other species and forests, water availability, land, soil composition, topography, and energy.

We have developed some interactive computer models to describe these complex interactions for specific sites. We can study some of these interactions or several jointly. We can see how the population affects air, emissions, or water, and we can look at the mediating economic factors. Through such a rather complex and differentiated approach, we can gain a better understanding of the complex population-environment interdependencies.

In short, there is a clear relationship. Population affects the environment at many different levels. Rapid population growth certainly has a negative, stressful effect on the environment. But it remains to be determined in rather specific cases: What are the specific impacts? What are the best coping strategies for populations to deal with changing environments? Unfortunately, there is no universal formula that can explain it; it requires some in-depth scientific analysis.

Thank you.

The World of Our Grandchildren

J. Dudley Fishburn, Moderator

Good morning. This is the chance for us to be completely outrageous. We will be talking about a subject that none of us know anything about—and therefore I hope you will all join in—which is our grandchildren's future, the year 2050.

It's the kind of conversation we should really reserve for late at night after a dinner such as we had last night. The early hours of Sunday morning are harder to deal with in this capacity, but I'm sure you will all jump in and help us out.

All ideas, however outrageous, will be gratefully received, and to show you that it doesn't matter if you make a fool of yourself, I intend to make a fool of myself now by predicting the kind of world in which we might be living by 2050. It will of course be a world in which China will be the major power. China, which will by that time have merged with Taiwan, will have colonized Japan, will be pushing north into the empty regions of Russia, and will be casting more than envious glances at the open spaces of Australia.

China will have some two billion people with a wealth equal to that of the United States today on an individual basis. Taken as a whole, it will be vastly wealthier than America. It will be glowering at its main rival—the United States of Canada, America, and Mexico, that fine country in 2050 of 600 million people. It would perhaps be slightly more willing to flex its muscles if it didn't have the example in its mind of the small nuclear war in 2030 between India and Pakistan that wiped out 200 million people in the Himalayan region and that was a salutatory reminder to all people of the folly of war.

And anyhow, by 2050 America has its all-powerful Star Wars nuclear shield up and finally working to prevent any possibility of an initial strike.

In Europe, of course not many people are left. The population of Italy has fallen by 30 percent, which need not be a bad thing. It means that my grandchildren will be able to see the pictures in the Uffizi Gallery in Florence rather than just the back of someone else's head.

The European Union by that time, of course having a single currency, will stretch from the Urals in Russia to the Atlantic. It will encapsulate a mere 300 million people, who constitute at that stage only a tiny fraction of the world's population and its wealth. Europe in 2050 will be feeling

the pressure of its neighbors: those 300 million people on that narrow strip of sand between Casablanca and Istanbul, pressurizing its southern border.

But if those are the threats in 2050, what are the things that we can have our grandchildren look forward to? A world, of course, awash with energy. Fuel cell technology powering our cars, powering our houses at virtually no cost; unlimited energy from clean nuclear fuel—by this time the brains at the chemistry and physics department at The University of Texas will have gotten their minds around that. Unlimited fuel and unlimited information, the cost of information—of all kinds of information—being zero and the amount of information and one's ability to use it being infinite.

In fact, if it weren't for those glaring populations elsewhere in the world, it would be a glorious time to be alive, and boy, will you be alive for a long time. Your grandchildren by 2050 will have had any little bits of DNA that may have needed correcting already corrected in the womb. They will be looking forward to a life span of, well, 100, 150 years, and of course will be completely immune to many of today's killers. The computer chip imbedded at the time of birth will make quite sure that there's an immediate alert if anything does go wrong with the DNA programming.

So it will be a great time to be alive.

What will be the divisions? They won't be "Are you black or white or yellow or anything else?" They will be "Do you come from a family of parents who are married?" There will be a new class. There will be a division between those children who are brought up in stable homes with funny things (good parents who happen to be around for the first 15 years of their life) and those who do not know their parents, certainly do not know their fathers. All of the massive studies that have been done in the United States and in Europe show that this in the future will be the single biggest divide there will be in society. It will be a divide between those children who come from married homes and stable homes and those who do not. It will show up in the grades for exams on *Hamlet* or *Romeo and Juliet,* the grades in the physics or chemistry papers that they're getting, and in the jobs that they subsequently get.

They will be good human beings: open, liberal—and I use that in the British context. I'm always aware it's a word that doesn't travel the Atlantic necessarily well, but open minded, tolerant of everything except intolerance. That is the result of the freedom of information flow that they will receive.

They will be worried by the 400 million people who have been displaced by 2050 by the rising waters caused by global warming. These will be people who live along deltas and estuaries, whether it be in New Orleans or Bangladesh. They will know that the height of the sea will rise by another eight inches within their own lifetime, flooding yet more vast plains.

Water indeed will be on our grandchildren's minds, and not just that which is flooding in from the sea. Water will be the main worry and concern, the main subject of war in 2050, because that is the one thing that will not be plentiful. It won't be plentiful in New Mexico and it certainly won't be plentiful in the enormous cities of Central China and Africa and of Asia.

One country will cast an envious eye over another country's river supply and will be willing to go to war to make sure that it gets its water. There will be the certainty of rationing because there will not be enough, not nearly enough to go around.

But if these are the worries that our grandchildren will have, they will on balance be a happier generation than ours, and that is because, by and large, human beings progress. Our lot gets better. We are more reasonable. When we look back at the past, we look at the past as being unreasonable, and you can be quite sure that your grandchildren when they're my age will look at all of us as being completely unreasonable.

So with those few remarks and having made a complete fool of myself, I hand over to the sober Steven Murdock, who will show us how it's going to be in 2050 in Texas.

Steven H. Murdock

It's going to be awfully difficult act to follow, and I'm not going to be nearly as insightful as I think you have been.

I would say as a starting point that we should know that all the things any of us up here say about the future that our grandchildren will live in, you can be certain will be wrong in one part or another, at least to some extent or another.

I'm always reminded of my younger years when as a young demographer I was doing a lot of work on economic demographic modeling, and I was doing a presentation at a professional meeting. A very distinguished colleague of mine who I had a great deal of respect for sat in about the second row, and all the way through my presentation he shook his head. And it was one of those things that I found myself centering all my attention on him by the end of the presentation.

At the end of the presentation, I went running over to him and I said, "What did I say wrong? What was wrong with my presentation?" And he said, "There's nothing wrong with your presentation." He said, "Your presentation was very sound. It was very well thought out. It was very conceptually and empirically presented in terms of the clarity." He said, "The problem is that projections are a young man's game. When you get older like I am, you know better."

Well, I'm older but no wiser perhaps, because I continue to do projections, but I do think we need to always put those kinds of warning signs up when we talk about the future.

Well, what are some of the things that we can guess about Texas's future? One that I think we can be pretty certain of that I mentioned yesterday is that we will be in a more populous Texas. In fact, as you begin to look at Texas and some of the parts of Texas that we talked about yesterday that are linked, I think that we will see urban complexes in Texas that are very much like what we see on the East Coast and the West Coast. And I say that because to many Texans, at least when I first came to Texas, to indicate that we would be urban like either coast was something that was completely unacceptable.

But I think that's a reality. We're going to have large urban complexes, and our urban areas will increasingly become like the urban areas of the rest of the country. One of the things that has been different about Texas's urban areas is that, in a sense, we have had a lag in terms of patterns that were occurring in New York or Philadelphia or Chicago in terms of the manner, for example, of central city growth and the nature of that growth.

But our cities are beginning to follow those same patterns, and so if we look not only to those eastern and western urban complexes for an idea of what life might be like in parts of Texas, we can also get an idea of the problems and issues that are occurring in Texas.

For example, both of our two largest counties—that is, Dallas County and Harris County—now have extensive out-migration of certain population groups from those areas to the suburbs and to other areas. The urban complexes are increasingly populated by immigrants so that the kind of patterns that we've associated with other parts of the country's large urban areas are clearly becoming evident for Texas as well.

We will see a much larger Texas overall. As you know, yesterday we suggested you'd see 34 million people perhaps by 2030. By 2050 it will be larger than that, I believe. It will be an area that—despite the fact that we will be larger, I think one of the things that it is important to note for the U.S. and then for Texas as a subpart of the U.S. is that we're going to be this decreasingly important part of the world's population. The U.S. at 4.5 percent or so of the world's population will be perhaps 2.5 percent of the world's population, and Texas a subpart thereof.

So there will be a lot bigger world out there that we will be interacting with, that we will be attempting to compete with as well. A gentleman yesterday noted that perhaps we'd all be on Internet and be able to do all of our work from Internet sites at remote locations, and someone else pointed out I think very correctly that yes, that is an advantage except the whole world will now become your competitors, and you will compete for Internet kinds of items.

We will certainly be a more diverse Texas. I mentioned yesterday that we will in the first part, I think, of this decade become less than half Anglo. We will be a population that we project by 2030 will be about 36 percent Anglo, about 10 percent African American, and about 46 percent Hispanic, and about 8 percent will be members of other racial and ethnic groups, primarily Asian.

We will be an area where there will be more intermarriage, where there will be more linking of groups in one form or another. We will be a Texas where I would say, by 2050, Governor Hernandez will look at Lieutenant Governor Gonzales and perhaps the Speaker of the House by the name of Wang, and we will have a very different Texas in terms of what we have seen historically in a variety of ways.

As I mentioned yesterday, I think whether or not that is a difficult situation or an advantageous situation for Texas will depend a great deal on how we handle that diversity.

We'll obviously be an older Texas, at least in terms of some population components. I mentioned by 2030 we'd have about one in six Texans that would be 65 years of age or older, and we are going to have to handle in Texas, as well as in the country, the difficult situation of what we do in terms of benefits and so forth that are provided to the elderly.

Often, when we look at this in the U.S., we think of this as a national issue. Everyone knows about social security and the debate about social security, but it is not all in the national picture. Let me give you just one example.

Two sessions ago, we were asked by the Texas Legislature to take

these demographics and look at the implications of a property tax factor that we have in Texas sometimes called the 65-plus freeze, which is that when you turn 65 in Texas the value of your property locks in and it never appreciates again. Now, your taxes may go up because the jurisdiction may raise the rate for your taxes, but the value of your property basically locks in.

Well, if you look at that as we did and look at the aging of the population and if you take average levels of appreciation in housing values for the last 20 years, what you'll find is that by 2030 local school districts in Texas because of this provision could be forgoing—because you forgo if your property appreciates and there is money lost that would otherwise be gained—the average school district in Texas would forgo an amount equal to $1 of every $5 that they were collecting as a result of the 65-plus freeze.

We also have many agencies in Texas that we are telling to be self-supporting. Take one that's recreational related. The Texas Parks and Wildlife Department is told to become increasingly self-supporting relative to parks, relative to its programs, and what happens in Texas when you reach 65 relative to hunting or fishing? It's free, absolutely free.

Well, these are little kinds of factors, but the point of it is that we're going to have to start to consider whether we want to change some of those factors as we become an older population, and I am not at all suggesting we should do away with the 65-plus freeze. Every year I get older, the more important and the more logical that becomes to me. But certainly we're going to have to make some tough decisions, and it's not just at the national level. It's going to be at the state level, and it's going to be at the local level.

But it is, I admit, hard for me even in a very futuristic view to imagine a politician running for statewide or local office on a platform of taking benefits away from the elderly. I'm not sure of the electability of that.

I think another factor—and John yesterday did talk somewhat about this and we did this morning a little bit—is that we are going to be a much more diverse range of households than we have had in the past. When we think stereotypically about families and households, we tend to think of that ideal Texas/American household. You probably all know what that is. I know what it is from growing up in the '50s from sitcoms. It consists of a mother and father, two children—one male, one female, with the male preferably two years older than the female—and one collie dog.

Well, the reality of it is that in Texas in 1990, only 28 percent of our households were married-couple-with-children households. Basically three of every four households in Texas were some other form of household, so as you look at services and we look at planning things, we need to take into account these sorts of factors.

Over 30 percent of births in Texas are to unmarried women. Now, what's different about that than the past is those are not teenage women. These are not necessarily young adults. I mean, they are young adults, but

they're not necessarily women who did not make a choice to bear children on their own, and as was very well pointed out earlier, this is a factor that is going to be increasingly important.

We've already come to the situation where a decreasing proportion of kids live with two parents. In 1960 about 88 percent of the children in America lived with two parents. In 1998 that was down to about 68 percent—20 percent in that period of time—and all patterns suggest that the diversity of households will change. Singlehoodness will increase as well.

We're at one of the highest rates of singleness—that is, people who never marry any time in their lifetime—that we have ever had, and so the diversity of household forms, the diversity of household types that was mentioned earlier will affect Texas as well.

I say that because sometimes people think, well, we must have substantially different patterns in Texas. We do to some extent, but those patterns frankly are primarily a result of our other diversity—the fact, for example, that Hispanic households tend to be more likely to be married-couple-with-children households than Anglo households are. So our overall statistics look a little different than the country primarily because of our diversity, but the diversity of household types that we've seen and talked about is something that we are going to deal with as well.

We are going to have to face a number of environmental issues in Texas, and I don't claim to be an expert on the environment so I'm not going to espouse too much about things I know very little about. But clearly issues such as water—we are for the first time trying to plan the future of water use in Texas as a result of Senate Bill 1 a few years ago, and groups are meeting all over the state. But the fun part of that hasn't started yet, and that is the starting to make decisions about who gets water and who does not get water, and that's going to affect a great deal of development decisions in Texas and, indirectly, the allocation of growth in Texas.

Where that will occur and what the implications will be I'm not going to even guess at, but I think that water will be among those issues that will be very critical to understanding particularly what happens in particular parts of Texas.

We do have air quality and water quality issues that we are going to have to deal with as we get those urban complexes that I talked about a few minutes ago, so environmental issues, although many of you spent very little time the last couple of days talking about them, are going to be big issues I think for Texas.

The last thing I will simply say is this. What Texas will be like for our grandchildren is not carved in stone. Demography is not destiny, at least not total destiny, and that's a hard thing for a demographer to have to say, but it's a reality. We can change the futures, particularly from the ones that some of us were talking about yesterday, through our private and public actions.

Sometimes I'm asked about the Texas Challenged work that we have

done and said what would we like to be the final effect of that, and my answer's always the same: I would like for every projection that we have made in the Texas Challenged book and work to come out to be untrue. In 2030 and in 2050, I would like my grandchildren to say, "Boy, our grandfather was really a fool, wasn't he? He thought we were going to have all these problems and here we are in a very integrated, efficient, competitive Texas. Why did he ever think what he thought about our future at the turn of the century?"

To me that would be what I'd really like to have happen, and I believe it is a future we can have, but it is a future that we will have to make. It will not happen without both our private and public actions.

Memorials

Joe J. Fisher
1910–2000

United States District Judge Joe J. Fisher passed away on Monday, June 19, 2000, after a brief illness. Judge Fisher was born April 6, 1910, in the San Augustine County community of Bland Lake, the son of the late Lula Bland and Guy Brown Fisher, both pioneering families of the area. Judge Fisher attended Stephen F. Austin University and received his law degree from The University of Texas in 1936. He was an extremely loyal University of Texas graduate and always had very close ties to UT and more particularly to its Law School.

After receiving his law degree, Fisher served as a San Augustine County attorney and then as District Attorney of the First Judicial District of Texas. He had a law firm in Jasper before being elected to the First Judicial District Bench in 1957. President Dwight D. Eisenhower appointed him as U.S. District Judge for the eastern district of Texas on October 23, 1959. His fellow members of the judiciary recognized Judge Fisher as setting an example that reflected a strong sense of humanity, honesty, and integrity.

Many of Fisher's rulings have set consequential legal precedence. He made the first award to a family that held liable companies that manufactured asbestos and didn't warn handlers of the potential dangers. Fisher kept a full caseload up until the final days before his death at age 90. Fisher also authored the first desegregation plan for Beaumont's schools in 1970 after the U.S. Justice Department ordered the integration of the South Park School District in Beaumont.

His wife Kathleen, three sons Joseph, Guy, and John, a daughter, Ann, sixteen grandchildren and seventeen great-grandchildren survived him. Judge Fisher's family was of tremendous importance to him; he was known throughout the Beaumont area as a great family man, extremely proud of and supportive of children, grandchildren, and great-grandchildren. He was also an avid handball player.

Lamar University in the Beaumont area and lawyers in 1966 created the Joe J. Fisher Distinguished Lecture program to attract national speakers to Beaumont.

J. S. B.

Walter G. Hall
1907–2000

Picture the home in 1907 of a mechanic in League City who worked for the Interurban Line linking Galveston County to Houston. His seventh child, Walter, was born that year, was reared and schooled in League City, and later obtained a scholarship to nearby Rice University. For four years in the 1920s, Walter rose each morning at 5:00 A.M. to milk the cows so that his parents could trade butter for provisions at the local store. Then, using his free pass as a family member, he climbed aboard the Interurban Line to reach his classes at Rice by 8:30 A.M.

Some years later, picture a small-town banker who in his lifetime headed five different banks at one time, who would call President Lyndon Johnson to commend or fuss with him about his policies. Or picture a white-haired, vibrant state leader in the 1980s and 1990s regularly hosting Lady Bird Johnson and other distinguished friends seated at a long table beside an early seventeenth-century German sideboard with fine antiques at his Hill Country ranch. Picture as well a wiry, outspoken, determined, and morally outraged lover of humanity who in the early 1950s insisted that no county of which he had a part would build a new hospital with a separate wing for treating black citizens and who promised to spend every cent he had, if necessary, to defeat a hospital bond election unless the hospital accepted people of all colors equally. Picture then, too, a man who would endow a chair at Rice University and name it after the philosophy professor who had taught his classes to view all religions and peoples with tolerance. Or picture a banker who kept a small, privately owned lake near his house open to all the children of the town at all times so that they might feel free to fish there.

Put all those pictures together, and you have a partial portrait of the rich diversity and humanity that made up Walter G. Hall, who honored the Philosophical Society of Texas with his long and enthusiastic membership.

Walter continued for over 92 years following his birth in 1907. Those of us who knew him to the end, whenever we first made his acquaintance, knew an individual always charged with energy, fervent with ideas, committed to justice, and loyal to the Democratic Party. He was a deeply inspired patriot who said that America enabled not only his success but also the successful development of millions of people whose hopes would have been crushed elsewhere, but whose prosperity and potential were nurtured in a country that believed, as he did deeply, that all are created equal.

At age 27 he entered banking as a cashier of Citizens State Bank in League City; twelve years later, when it moved to Dickinson, he became its president. By the time he served as an organizer of the Texas Independent Bankers Association, he had achieved wealth and status. Yet many

who achieve only those things are forgotten. It was Walter's service to his community and to the entire Bay Area, and his personal moral courage and concern for humanity, that made him deeply loved and respected by those holding the humblest and the loftiest positions in our society. He helped bring water and sewer facilities to League City and successfully served on commissions that constructed a new courthouse and jail, extended the Galveston seawall, expanded drainage systems, and built new hospitals in Galveston County. As president of the San Jacinto River Authority, his administration made certain of a reliable water supply to the communities of Galveston County. Whether working actively to consolidate school districts, to pass bonds for new hospitals, to give land for public parks, to donate a senior citizens building, to urge his friend Vice-President Lyndon Johnson to bring NASA to the Houston-Galveston area, or to support people, openly, financially, vocally, who in his judgment could best fill elected offices, locally or nationally, Walter Hall was always in the forefront of seeking to better the society in which he lived.

But a list of titles, achievements, and honors might seem a sterile effort to convey the warmth and decency of this unusual, feisty, but convivial man. Perhaps an anecdote can illuminate at least one moment in his life.

After the 1954 *Brown* v. *Board of Education* decision that racial segregation was unacceptable at schools in America, communities were expected to conform to the reinterpreted law of the land. In Dickinson, however, as in many communities, some people sought to maintain the old "separate but equal" philosophy. Not Walter. Getting word that a group of militant segregationists planned to appear before the school with shotguns to bar black students from entering, Walter gathered a number of business leaders in his office. He then phoned the leader of the militant segregationists, who misunderstood Walter's intent and thought that the prominent banker planned to join his group. On arriving at Walter's office, the segregationist was greeted by a group of community leaders led by one irate but determined banker. Walter told him, "You and your followers can show up with your shotguns if you want to, but we'll be there with our shotguns too. Let me tell you that I'm not about to have the town of Dickinson go on national television and have people believe that we will allow a small part of our community to prevent black people from getting an equal education. There are far more of us than there are of you, and we're going to be there with our shotguns to assure that they are admitted." That meeting ended the protests. The bigots never showed up. The schools were peacefully integrated. But as was the case on many occasions, Walter Hall never hesitated to put his position, his financial resources, or if necessary his life at the forefront of challenge, if that was required to bring justice to a community.

The Renaissance painter and biographer Giorgio Vasari, in concluding his *Life of Michelangelo*, stated, "I consider myself fortunate to have lived in the same time as this great man." And then, with deep respect for

the incomparable artist, he proudly concluded his biography with the words, "He was my friend, as all the world knows."

Walter Hall was a friend to presidents and to the poor, to financial and educational leaders and to humble and aspiring people. And like Vasari, those of us who knew him are proud to claim our friendship with this exceptionally decent and lovable man.

R. C. K.

Dan Moody, Jr.
1929–2000

Dan Moody, Jr., who passed away peacefully on October 27, 2000, was as near an ideal lawyer and a man as one ever dreams. He had that most precious of all attributes, the profound respect of his peers, those who opposed him in the practice as well as those with whom he worked. Judge James Meyers was quoted as saying in substance that it was just so unfair, so terribly unfair, to go up against Dan Moody because when he stood up with that open, honest face and explained the facts to the hearing examiner or judge and jury, everyone in the room knew he was right, and anybody who stood up and said something to the contrary had to be in error. Within the law firm where he labored for more than 30 years, his sound judgment, his integrity, his mathematical accuracy in financial projections, his passion to come up with the right answer no matter what the cost in time and effort, and his preeminent ability to work effectively with every level of partner and employee were nothing short of phenomenal.

Dan was born January 6, 1929, near the start of his father's second term as Governor of Texas. Educated in the Austin public schools, he went on to The University of Texas, where he was elected to Phi Beta Kappa in the course of a Bachelor of Arts degree majoring in mathematics. Then he went to the School of Law, where he graduated first in his class in 1951 and was selected as Grand Chancellor and Order of the Coif. After working very briefly in his father's law office and with the Korean War in progress, Dan applied for and obtained a commission as second lieutenant in the Office of the Judge Advocate General in the Air Force. He was first posted to the West Coast. Then he was transferred by that office to the Air Force Command in the Pentagon, where he was subsequently promoted to the rank of first lieutenant. With the war over, Dan returned to Austin and began his legal career with Governor Moody's firm. There, asked initially by Judge Robertson to take over his oil and gas practice before the Texas Railroad Commission, Dan began the practice that occupied the major focus of his career at the Bar. He said he had no special training for this work but simply learned by observing what was being done in numerous uncontested and contested hearings and how affairs there were being conducted. The result for Dan was a practice

characterized by numerous significant cases through the years representing major oil companies and occasionally independent producers. Governor Moody had represented in the Railroad Commission and in trial and appellate practice Magnolia Petroleum Company, Royal Dutch Shell, and Gulf Oil Company, and as his health failed, Dan, Jr., picked up and continued this representation. Also one of the governor's major clients had been the Missouri, Kansas & Texas Railway Company (the "Katy"), and Dan continued that representation at the trial and appellate levels. Some of these important cases involved railroad crossing accidents, and many were filed and tried in Bastrop County.

Throughout his career, Dan had individual clients whom he represented in family matters, income and estate tax returns, and estate administration. He was regarded as the most dependable counselor and authority in these matters by numerous Old Austin families.

Dan served as Parliamentarian of the Texas Senate during the 1959 Regular Session of the 56th Texas Legislature. During his career he served as President of the Travis County Bar Association during 1967–68, and in 1999 the Travis County Bar honored him with its Distinguished Lawyer award, recognizing his distinguished service to the Bar and to the legal profession in general.

In 1963, after a period of practicing alone because of Governor Moody's incapacity, Dan employed John E. Clark to help him in the practice. When, in 1966, the firm merged with Graves, Dougherty, Gee & Hearon, the two of them moved from the Capital National Bank Building, where Governor Moody had had his offices on the twelfth floor since he began to practice, to the Austin National Bank Building, and the firm became Graves, Dougherty, Gee, Hearon, Moody and Garwood. There Dan, Jr., practiced until his retirement in 1998.

Dan was very proud of his heritage of outstanding legal competence, faultless ethics, and complete integrity in all of the details of the law practice, and he strove constantly to live up to and exemplify that heritage. In an interview with respect to the firm history, Dan characterized it this way:

> But more important to the concept of this firm is the concept that it doesn't make any difference if it's a little case that nobody else is ever going to read once it gets published in the *Southwestern Reporter*, and nobody is ever going to read it again, if it even got there, if it even got to that point, but that it is going to be done right. . . . I think that in the long run the thing that was more important to the people who went before us, and maybe even for us, was to get it right and to be sure that it was done properly. . . . I think that was more important to Judge Graves and to my father than it was that the case be important.

In this goal he surpassed all possible exceptions. Not only in the way he conducted his own affairs but in the ways he stood ready to help other lawyers in the firm in the details of client representation, he was a consummate role model for all lawyers. All of us who were privileged to know and work with him are better off for that rich experience.

J. C. D. III

Kenneth Sanborn Pitzer
1914–1997

Kenneth Sanborn Pitzer, born January 6, 1914 in Pomona, California, achieved exceptional distinction as a scientist, educator, administrator, and philanthropist. He received a Bachelor of Science degree in 1935 from the California Institute of Technology and completed his doctoral studies in 1937 at the University of California at Berkeley.

Dr. Pitzer was named the third president of Rice University in 1961. Before moving to Houston, however, he already had a distinguished career. He had served as dean of the College of Chemistry at the University of California at Berkeley. During World War II, he was technical director of the Maryland Research Laboratory of the Office of Scientific Research and Development (1943–45). After the war, he became research director of the U.S. Atomic Energy Commission (1949–51), and served as a member of the AEC's General Advisory Committee (1958–65), acting as its chairman during 1960–62. He was the recipient of a Guggenheim Fellowship in 1951 and the Clayton Prize of the Institution of Mechanical Engineering (London) in 1958. Pitzer was regarded as an innovative researcher.

At Rice University, Pitzer was responsible for successfully integrating the school and instituting tuition for the first time. He established a remarkable relationship with noted Houstonian George R. Brown, founder of Brown & Root. From this association, Mr. Brown, strongly supported by Pitzer and the board of governors, established the Brown Challenge Grant in Engineering, which turned around engineering education at Rice University and set it on a course that has brought it international recognition in both teaching and scholarship. Mr. Brown had wanted to see Rice students turned into practical engineers who would solve real problems and make life better. Ken Pitzer shared that view and budgeted his time to allow him to oversee the University administration while simultaneously running a research lab. The time he spent in a lab with his students is remembered as "very productive." It is said that his vision led to the beginning of studies in bioengineering and mathematical sciences at Rice.

During Pitzer's presidency, Rice University's faculty increased more than 50 percent, undergraduate enrollment rose by approximately 33 per-

cent, while graduate enrollment increased nearly 66 percent. The number of doctorates conferred annually grew from 20 to 76. The ties between the Houston area and the American space exploration program also grew, greatly benefiting Rice. In 1962, at Pitzer's invitation, President John F. Kennedy came to the Rice campus, where he delivered his challenge to the American people to put a man on the moon by the end of the decade. In 1965, Rice became the first university to gain approval for designing and building its own Earth satellites under the NASA Explorer program.

Pitzer left Rice University to return to California as president of Stanford University. Even after retirement from his administrative roles, he continued his research, which was centered on the structure and properties of molecules, especially their thermodynamic behavior. His research has included quantum theory and statistical mechanics as applied to chemical problems ranging from the potential restricting rotation about single bonds to the bonding in polyatomic carbon molecules, and to the effects of relativity on chemical bonds involving very heavy atoms. In later years he was noted for his advances in the study of electrolyte solutions.

He was a member of the National Academy of Sciences and was recognized with many awards, including the National Medal of Science, the Priestley Medal of the American Chemical Society, the Gold Medal of the American Institute of Chemists, and the Robert A. Welch Award.

Kenneth S. Pitzer died December 26, 1997.

C. W. D. Jr.

Charles Nelson Prothro
1918–2001

Charles Nelson Prothro was born in Wichita Falls on January 14, 1918, and resided there all of his life; he died March 5, 2001. His generosity and influence radiated far outside his hometown, to many points in Texas and beyond. The list of important institutions throughout Texas that he and his wife, Elizabeth Perkins Prothro, supported is a long one. Individually and through the Perkins-Prothro Foundation, Southern Methodist University, Baylor University Medical Center in Dallas, Southwestern University in Georgetown, Sweet Briar College in Virginia, and The University of Texas at Austin—from which he graduated in 1939—all benefited from the family's philanthropy. He was especially supportive of the university's Harry Ransom Humanities Research Center, where he and the foundation funded photography endowments and were the major donors for the construction of the center's galleries and theater.

In addition to his financial generosity, Prothro gave magnanimously of his time and provided wise leadership to those institutions where he served on boards and advisory committees.

Through the years, the Prothros sustained their support of the Perkins

School of Theology at SMU, which Elizabeth's parents, Joe and Lois Perkins, endowed in the 1940s. The family has also donated greatly to countless organizations and agencies in Charles's hometown of Wichita Falls, where he supported, among many other institutions, the First United Methodist Church and the Hospice of Wichita Falls.

Charles's illustrious business career was marked by his acuity and breadth: he served as managing partner of Perkins-Prothro Co., president and director of Perkins Timberlake department stores, president and director of Ponies Oil, and owner-operator of one of the largest cattle-ranching properties in Oklahoma. In addition, he was engaged in commercial and real estate agencies and several Texas banking institutions.

Prothro's range of interest was remarkable, and his involvement with various groups was deep and diverse. He was a member of the Texas Commission on Higher Education, the Grolier Club of New York, the Philosophical Society of Texas, and even the State Fair of Texas, among many other notable groups, too numerable to mention.

Charles Prothro's interests, both philanthropic and personal, were widely varied, his commitment to supporting people and institutions was profound, and his love of his family and pride in their accomplishments animated much of his life. He strongly believed in giving back to society in the spirit of his many blessings and achievements.

On a personal note: What I admired in Charles Prothro was his strong sense of purpose and his commitment to quality in all that he supported. If you needed help or advice, you could always count on Charles, and as long as you were doing what he thought were the very best things, you would receive his encouragement and support. This generosity, for which many knew and admired Charles, will be appreciated for years and generations to come, as the foundations and institutions he supported so ably continue to do their excellent work, spurred on by his memory.

T. F. S.

Ruel Carlile Walker
1910–1998

Judge Ruel Carlile Walker, a retired justice of the Supreme Court of Texas and a consummate and enduring model of person, lawyer, and judge for every person whose life he touched or who knew him or even knew of him, passed away on May 9, 1998. His membership in this Society began in 1958 and continued until his death. His annual attendance at our meetings was interrupted only by declining health near the end.

Ruel was born in Cleburne, Texas, the son of William R. Walker and Antoinette Baker. His father was a lawyer who had moved to Cleburne from Adair County, Kentucky, after his graduation from the University of Louisville Law School. With his brother-in-law Tyler A. Baker, also of

Kentucky, he founded the firm of Walker & Baker in 1896, and there he practiced for 67 years until his death in 1963.

William Ruel Walker's son, Ruel Carlile, attended elementary and high school at Cleburne and then went to Austin College at Sherman, Texas. In 1976, he was honored by that institution as a Distinguished Alumnus and later was awarded an honorary doctorate for his public service. After two years Ruel transferred to The University of Texas, where he was a member of Delta Kappa Epsilon fraternity, was a track manager, and was chosen as a friar. He was elected to Phi Beta Kappa in the June 1931 class and graduated summa cum laude with a B.A. degree in 1931. He then enrolled in The University of Texas School of Law. There he was chosen for the Texas Law Review and was its editor-in-chief in 1934. Elected as a Chancellor and to the Order of the Coif, he received his LL.B. degree with highest honors in 1934. His class notes and course outlines in Torts, Contracts, Property and other courses were so clearly organized and expressed that, for several years after his graduation, other students sought copies for assistance in their studies.

Upon graduation Ruel became a legal investigator for Texas Attorney General James V. Allred and then returned to Cleburne to become a member of his father and uncle's law firm, Walker & Baker. Here, too, he was later joined by his cousin Willard Baker. In addition to a widely varied law practice, Ruel served as Chair of the Cleburne School Board for 14 years, as President of the Rotary Club, and as Chair of the Board of Stewards of the First Methodist Church. He served as chairman of the Texas Commission on Higher Education. He also chaired the Johnson County Democratic Party and later became a member of the Executive Committee of the State Democratic Party. During World War II, Ruel served as a lieutenant junior grade in the Unites States Navy.

In 1954 Ruel Walker was appointed as an Associate Justice of the Texas Supreme Court by Governor Allen Shivers, and he served on our highest court for 21 years—and this, through four elections, without any opposition. His was the highest honor that any judge can attain, the profound respect of his peers. The depth of that respect is shown by some of those with the best opportunity to observe him closely.

Of him, former Chief Justice Joe Greenhill, who served with him for 18 years, said:

> He is one of the very ablest justices ever to serve on this or any other court. He has a fine, quick mind and a memory for legal principles and cases which always amazed me. His opinions are scholarly, accurate and beautifully organized; and he has given literally hundreds of hours to the editing and improving of our rules of civil procedure. In our conferences, his observation and contributions to our discussions have been of great assistance to all of us. When he speaks, all of us listen. If he disagrees with you, he is

a worthy and formidable adversary; but I need not tell you that Judge Walker had always been, and is, a person of complete intellectual honesty, and he is always a true gentleman both within and without the Court's chambers.

Former Chief Justice Jack Pope, who served with him for 10 years, recalls:

I remember that one of Justice Walker's first Supreme Court opinions concerned the meaning of a provision in a complex oil and gas lease. I read the published opinion. I learned that Judge Walker was still the master of 'The Art of Plain Talk.' In that first opinion, he used simple words to cut through thickets of legalese. He worked his way through the bramble bushes with sentences free of infinitives, gerunds, empty words, and the passive voice, but had live and kicking verbs. Like his outlines, his opinions made sense. Still later on, in 1965, it was my good fortune to join the court on which he was a respected veteran. I had the rare privilege of hearing his oral explanations and defenses of his own writings and his critiques of opinion by the rest of us. I soon learned that his opinions were seldom improved upon. One could agree or disagree, but all the work and research had already been done, and his product seldom needed any editorial improvements. . . . Judge Walker worked hard and he worked carefully. He kept himself completely detached from any personal, social, or business involvement that might cast a shadow of an influence or bias about the issues. He acted at all times with absolute independence from anything other than the facts and law. The status in life of the litigants was a matter of concern to him. He could freely render a judgment for the small as well as the great. To Justice Walker, there was no little cause. To those involved, their case was the most important of all. . . . He was not result oriented. He located the relevant law and precedents and ruled on that basis to whatever and wherever it would lead. He set no hurdles for himself or for others that had to be overcome to reach a correct result. He was always free of prejudgments and any latent bias or prejudice. . . . To be a great judge, one must not only be fair, diligent, dedicated, and possess a superior intellect, he must first be a great person. Justice Walker was a great judge, because he was first a great person.

Judge Tom Reavley, who served with Justice Walker for seven years, puts it this way:

I raise before you today the example of Ruel Walker as a judge

> whose work and talent qualifies him for every honor and bench in the land, but who concentrated always on his responsibility of the day without concern for personal consequences. . . . During those years from 1968 to 1975, . . . Judge Walker wrote 76 opinions for the court. . . and, except for 10 of those, with unanimous concurrence. He wrote five concurring opinions and eight dissenting opinions. He chaired the rules committee and led us in that demanding work. Every opinion signed by Ruel Walker was written by him, the first draft coming from his typewriter. . . . A Walker opinion always contributed to a clear understanding of the law.

Not only his fellow judges but also the Briefing Clerks who served the Court during his terms regarded him, in the words of one, John B. Holstead, as "a true 'Southern gentleman' in the finest meaning of the term." Further, Holstead recounts:

> Back then the Court had the practice of allowing its Briefing Clerks to attend all conferences of the Justices and to report to all of the justices on pending Applications for Writs of Error and the results of briefing on particular issues or cases. . . . Sometimes, during the heat of debates over cases, feelings [between the justices] would get bruised and tempers would flare. [Justice Walker] was always the peace maker, and he had a unique ability to bring the opposing factions to a strong majority opinion.

Chief Justice Thomas R. Phillips, who served as the last of his briefing clerks prior to Ruel's retirement, said of him:

> Ruel Walker was truly one of the giants of Texas law. For twenty years as a practicing lawyer and twenty-one years as a Supreme Court Justice, he approached every duty that was entrusted to him with industry, intellect, and integrity. He set a standard of excellence not only for the twenty justices with whom he served but for the thirty-one of us who have followed since on this Court he so loved. . . . Judge Walker served here more than twenty-one years, a tenure exceeded in the Court's entire history only by three persons—Joe Greenhill, Reuben Gaines, and Robert Calvert. Unlike those men, Judge Walker did not become Chief Justice, so he is the longest tenured Associate Justice. That was his choice. He declined to run to succeed Bob Calvert in 1972, preferring instead to concentrate on crafting opinions and on developing the Texas Rules of Civil Procedure in his capacity as liaison to the Supreme Court Rules Advisory Committee. . . . Judge Walker worked very hard on his opinions and took great care to polish his drafts before circulating them within the Court for comment. He strove always for clarity and brevity. . . . Judge Walker had a fail-

safe method for ensuring that his opinions reflected his commitment to careful excellence—he prepared each one from start to finish. When the court was not in conference, Judge Walker could always be found in his chambers library, pecking away on his manual typewriter while he pulled, studied and reshelved Texas reporters.

After Judge Walker's retirement from the Supreme Court, he continued to serve occasionally as a visiting judge in courts throughout the State. There his reputation for superlative performance continued. A young lawyer, Jody Helman, trying a case for his first time before Judge Walker in Hays County in 1978, came away with this impression: "He had such a wonderful demeanor on the bench and he had a mind like a steel trap and just this wonderful kind of reserved sense of humor. I mean it was just really a delight to be in front of him."

When he finally fully retired, Ruel remained active in his church, the University United Methodist Church in Austin, continued to play golf and spent his time with his children and grandchildren. Ruel passed away at the age of 88 on May 9, 1998, and is buried in the Texas State Cemetery at Austin. He is survived by Virginia Sansom Walker, his wife of 64 years; his daughters, Virginia Carmichael of Austin, Texas, and Sara Beth Peacock and her husband Dexter Peacock of Houston; and his son, Ruel Walker of San Francisco, California, and his four grandchildren—Shannon Stewart of Austin and Washington, D.C.; Laurence Sawyer of Shrewsbury, Massachusetts; Philip Peacock of Houston; and Walker Peacock of Austin. The family has created the Ruel C. Walker Endowed Presidential Scholarship in Law in his memory at the Law School of The University of Texas at Austin.

The climate of our Society is poorer because he is no longer with us.

J. C. D. III

Charles Alan Wright
1928–2000

Charles Alan Wright died at age 72 on July 7, 2000. His passing has been an enormous loss not only to his family and friends but also to the Law School of The University of Texas at Austin, the community in a large sense of the word, the legal profession, the courts of law and its judges and to the many organizations to which he belonged and contributed so much. His accomplishments were so extensive that it will be difficult to do justice to him and them in this short piece.

Charlie was born in Philadelphia, graduated from Wesleyan University in 1947 and from the Yale Law School in 1949. He clerked for United States Judge Charles E. Clark on the Second Circuit before joining the law faculty at the University of Minnesota in 1951. After four years there, Dean Page Keeton induced him to come to the Law School at Austin. He

continued there for more than 45 years, retiring officially in 1997 but continuing to teach half-time and to hold the Charles Alan Wright Chair in federal courts. In 1999 he was unanimously selected to receive the Law School's Lifetime Achievement Award, which until that time had never been presented to a graduate of another law school.

Charlie was so outstanding as a scholar and law teacher that he was often described as an ornament in the crown of the Law School at The University of Texas. The fact that he was there, and stayed there over the years, enhanced the reputation of that law school and no doubt contributed mightily to the attraction and retention of many fine teachers for its faculty.

While at the Law School in Austin he was a leader in the efforts in the late 1950s and 1960s to achieve racial integration throughout the University and at other organizations with which he was associated. His scholarship and writings were published, beginning with the Yale Law Journal in 1948 and continued over the years with notes, articles, commentaries, books, and treatises throughout his lifetime. He became the leading authority on the rules of federal procedure and practice beginning in 1952 and continuing with new publications, revisions and the extensive treatises on *The Law in Federal Courts*, *Federal Practice and Procedure* and *Cases and Materials on Federal Courts*. His works were in the chambers and libraries in every federal court of the United States, and he served for some 18 years on the Standing Committee on Rules of Practice and Procedure, a Judicial Conference Committee of the United States Courts and on its Subcommittee on Federal Jurisdiction.

The Honorable Carolyn Dineen King, Chief Judge of the Fifth Circuit, said "Charlie was a quintessential preceptor for the federal courts, but that's a big word to use when a football metaphor would do the job better. Charlie was our coach. And when it came to coaching federal judges, I can testify, as one, that Charlie was the Vince Lombardi of our coaches. Most of that coaching consisted of his prolific writing as a scholar of federal courts, a scholar who also demonstrated his skill on the field as a star in the courtroom."

Judge King closed her remarks saying, "Now that he has been taken away, there is a place at the table, indeed at the head of the table, of those working to improve the federal judicial system. He will be profoundly missed."

Judge King also said, "Finally, Charlie's coaching and mentoring of federal judges frequently took place at Judicial Conferences and court events, where he was a regular speaker. In fact, I first met Charlie when he was the principal speaker at a court ceremony many years ago and when, quite clearly but ever so gently, he reminded us that as judges, we are neither Republicans nor Democrats. Charlie's unswerving fidelity to the law and his absolute integrity always gave his words a special moral force."

Associate Justice of the Supreme Court of the United States Ruth

Bader Ginsburg once said that "Charlie stands like a Colossus at the summit of our profession. He was our Colossus." She added to this following his death: "The great man I once described as a Colossus standing at the summit of our profession was indeed to so many gathered here 'the quintessential friend.' I will miss not only his extraordinary scholarship and magnetic advocacy, but above and beyond those qualities, his caring concern for those who joined with him in striving to serve the legal system honorably."

Not all legal scholars are effective advocates. But L. A. (Scot) Powe, Jr., a fellow professor at the Law School in Austin, summarized Charlie's advocacy stating, "If you heard Charlie Wright in any setting making a point, then you know the type of advocate he was: straightforward, totally logical, without rhetorical flourishes. Any listener would realize that a very solid case had been made for his side, one that fully took account of the best arguments of the other side and left the decision-maker with a clear understanding of the issues. Charlie won because he showed so clearly why he should win."

Scot continued, "Charlie argued 13 cases before the Supreme Court, and he won 10 of them, an enviable record. ... An indication of Charlie's standing with the Supreme Court is an incident which occurred during the 1970 Term when that Court decided it would decide one more set of death penalty cases ... this time dealing with the truly ultimate question of whether the death penalty, however practiced, was consistent with the Constitution." According to Scot Powe there were about 140 death penalty cases "on hold" on the Court's docket, and the Court wanted to hear only one good oral argument and so selected a case where two notable advocates who were the premier death penalty lawyers in the country were arguing for the condemned men. The Court wished these lawyers to be balanced by an outstanding advocate for the States and then, "Operating under the mistaken impression that Texas always was represented at the Court in important cases by Charlie, the Court granted certiorari in *Branch* v. *Texas*." When Texas Attorney General Crawford Martin learned the Court wanted Charlie and not a staff attorney, he obtained Charlie's services to argue this important issue before the United States Supreme Court.

The American Law Institute is a long standing, highly respected organization dedicated to study, improvement and restatement of our American laws. At age 30 Charlie Wright, then already an outstanding teacher and scholar, was elected a member of the ALI. For more than 40 years he served this learned body, first as a Reporter for six years on a major project, then on the Institute's Council and then as a Life Member of the Institute. He served as the Institute's seventh President for seven years from 1993 to 2000, having been a Vice President for six years prior to that. Michael Traynor, current President of the ALI, stated: "As President, he also served *ex officio* on all projects and committees, and faithfully

attended practically all those meetings. I pronounce *ex officio* in Charlie's Latinate way, which he had no doubt checked for historical accuracy and which no one ever had the temerity to challenge." Charlie has been described as a tireless worker to enhance the membership of the ALI with qualified lawyers, judges and teachers who are also women, members of racial minorities or who come from nontraditional practice or foreign countries. He is reported to have been a masterful presiding officer at annual meetings and wrote often for its publications, including *The Practical Lawyer*. Michael Traynor also reported that "Charlie also had an affinity for subjects other than legal ones that offered infinite gradations of nuance, such as football, golf, crime novels, and pocket squares." Mr. Traynor concluded, saying. "To invoke a word he used when paying his highest compliments to persons he esteemed, he was a splendid man, and a splendid President of the American Law Institute."

The echoes of the accomplishments and contributions of Charlie are not all that he left. A bibliography of books, articles, general reviews and reviews of books of fiction together with his contributions on numerous occasions occupy six or seven pages of closely typed description. A mere reading of the titles of books he reviewed beginning in 1982 and extending through September 1999 is monumental in scope, volume and variety.

With all that has been said above, how could Charlie have had time or energy to devote himself to anything else. But he did. He was devoted to Custis and their family. He was a dedicated church man, serving on the vestry of the Church of Good Shepherd at Austin, Texas, a regular attendant at its services when he was in Austin and as a representative of Good Shepherd on the council of the Diocese when it met annually. He was an active founder, board member and supporter of numerous community organizations such as public radio, public television, the Austin Symphony Orchestra, Austin Lyric Opera and no doubt others. Because of the wisdom he had and his intelligence and ability, he was often asked by the administration of The University of Texas at Austin to serve on committees or to represent the University when hard and divisive questions arose. His interest in football may seem curious to some. He was the coach of a very successful touch football team called the Legal Eagles and expected fine performance and victory from its teams. He was rarely disappointed. In those few instances where the Legal Eagles lost, it would be a good idea for any member of his losing team to be well prepared the next day if he was in Charlie's class. He had a close friendship with Darrell K. Royal and was often asked to represent The University of Texas on councils dealing with intercollegiate athletics.

Charlie had been a member of The Philosophical Society of Texas since 1980. Among his numerous contributions was his service as Chairman of the Membership Committee. He recognized that it would be beneficial for the membership to be as widespread and diverse as possible and encouraged that.

Clearly, Charlie was brilliant, dedicated, highly efficient and made great contributions in whatever matter, work or institution with which he was involved. A person like this might be impatient or intolerant with others having lesser qualities. He was not, however. While he commanded respect as a towering and imposing figure, physically and mentally, he was not unkind or inconsiderate and did have a subtle humor about him, as his family, friends, associates, students and fellow faculty members were well aware.

Charlie's son, Ted, in his remarks at the memorial service for Charlie in July 2000, spoke affectionately of his father and his devotion to his family and to custom and traditions. Ted also spoke of Charlie's great faith.

Those who knew Charles Alan Wright were fortunate. The multitude of those who say how sorely he and his wise counsel will be missed in so many places by family, by members of the bench and bar and by so many friends and associates are exactly right.

L. P. L.

Officers of the Society

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*Umphrey Lee	1944
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*William Lockhart Clayton	1950
*A. Frank Smith	1951
*Ernest Lynn Kurth	1952
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*Jesse Andrews	1955
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*Robert Gerald Storey	1957
*Lewis Randolph Bryan Jr.	1958
*W. St. John Garwood	1959
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*Harry Hunt Ransom	1961
*Eugene Benjamin Germany	1962
*Rupert Norval Richardson	1963
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*Edward Randall Jr.	1965
*McGruder Ellis Sadler	1966
*William Alexander Kirkland	1967
*Richard Tudor Fleming	1968
*Herbert Pickens Gambrell	1969
*Harris Leon Kempner	1970
*Carey Croneis	1971
*Willis McDonald Tate	1972
*Dillon Anderson	1973

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*Edward Clark	1975
Thomas Hart Law	1976
*Truman G. Blocker Jr.	1977
Frank E. Vandiver	1978
*Price Daniel	1979
Durwood Fleming	1980
Charles A. LeMaistre	1981
*Abner V. McCall	1982
*Leon Jaworski	1983
Wayne H. Holtzman	1983
Jenkins Garrett	1984
Joe R. Greenhill	1985
William Pettus Hobby	1986
Elspeth Rostow	1987
John Clifton Caldwell	1988
J. Chrys Dougherty	1989
*Frank McReynolds Wozencraft	1990
William C. Levin	1991
William D. Seybold	1992
Robert Krueger	1993
Steven Weinberg	1994
*William H. Crook	1995
Charles C. Sprague	1996
Jack S. Blanton	1997
William P. Wright Jr.	1998
Patricia Hayes	1999
A. Baker Duncan	2000

*Deceased

Meetings of The Philosophical Society of Texas

1837 – Founded at Houston, December 5
1840 – Austin, January 29
1936 – Chartered, January 18
1936 – Reorganizational meeting – Dallas, December 5
1937 – Meeting and inaugural banquet – Dallas, January 29
1937 – Liendo and Houston, December 4
1938 – Dallas
1939 – Dallas
1940 – San Antonio
1941 – Austin
1942 – Dallas
1943 – Dallas
1944 – Dallas
1945 – Dallas
1946 – Dallas
1947 – San Antonio
1948 – Houston
1949 – Austin
1950 – Houston
1951 – Lufkin
1952 – College Station
1953 – Dallas
1954 – Austin
1955 – Nacogdoches
1956 – Austin
1957 – Dallas
1958 – Austin
1959 – San Antonio
1960 – Fort Clark
1961 – Salado
1962 – Salado
1963 – Nacogdoches
1964 – Austin
1965 – Salado
1966 – Salado
1967 – Arlington
1968 – San Antonio
1969 – Salado
1970 – Salado
1971 – Nacogdoches
1972 – Dallas
1973 – Austin (Lakeway Inn)
1974 – Austin
1975 – Fort Worth
1976 – San Antonio
1977 – Galveston
1978 – Houston
1979 – Austin
1980 – San Antonio
1981 – Dallas
1982 – Galveston
1983 – Fort Worth
1984 – Houston
1985 – College Station
1986 – Austin
1987 – Kerrville
1988 – Dallas
1989 – San Antonio
1990 – Houston
1991 – Galveston
1992 – Dallas
1993 – Laredo
1994 – Austin
1995 – Corpus Christi
1996 – Dallas
1997 – Houston
1998 – Abilene
1999 – Austin
2000 – San Antonio

PREAMBLE

We the undersigned form ourselves into a society for the collection and diffusion of knowledge—subscribing fully to the opinion of Lord Chancellor Bacon, that "knowledge is power"; we need not here dilate on its importance. The field of our researches is as boundless in its extent and as various in its character as the subjects of knowledge are numberless and diversified. But our object more especially at the present time is to concentrate the efforts of the enlightened and patriotic citizens of Texas, of our distinguished military commanders and travellers,—of our scholars and men of science, of our learned members of the different professions, in the collection and diffusion of correct information regarding the moral and social condition of our country; its finances, statistics and political and military history; its climate, soil and productions; the animals which roam over our broad prairies or swim in our noble streams; the customs, language and history of the aboriginal tribes who hunt or plunder on our borders; the natural curiosities of the country; our mines of untold wealth, and the thousand other topics of interest which our new and rising republic unfolds to the philosopher, the scholar and the man of the world. Texas having fought the battles of liberty, and triumphantly achieved a separate political existence, now thrown upon her internal resources for the permanence of her institutions, moral and political, calls upon all persons to use all their efforts for the increase and diffusion of useful knowledge and sound information; to take measures that she be rightly appreciated abroad, and acquire promptly and fully sustain the high standing to which she is destined among the civilized nations of the world. She calls on her intelligent and patriotic citizens to furnish to the rising generation the means of instruction within our own borders, where our children—to whose charge after all the vestal flame of Texian liberty must be committed—may be indoctrinated in sound principles and imbibe with their education respect for their country's laws, love of her soil and veneration for her institutions. We have endeavored to respond to this call by the formation of this society, with the hope that if not to us, to our sons and successors it may be given to make the star, the single star of the West, as resplendent for all the acts that adorn civilized life as it is now glorious in military renown. Texas has her captains, let her have her wise men.

Members of the Society

(As of August 2001)

(Name of spouse appears in parentheses)

Aboussie, Marilyn (John Hay), chief justice of the Texas Third Court of Appeals, *Austin and San Angelo*

Allbritton, Joe Lewis (Barbara), lawyer; board vice-chairman, Riggs Bank, N.A., *Houston*

Anderson, Thomas D. (Helen), lawyer, *Houston*

Armstrong, Anne Legendre (Tobin), former U.S. ambassador to Great Britain; regent, Texas A&M University System, 1997, *Armstrong*

Arnold, Daniel C. (Beverly), private investor, *Houston*

Ashby, Lynn Cox (Dorothy), former editor, editorial page, *Houston Post*; member, Houston Philosophical Society; author; columnist, *Houston*

Atlas, Morris (Rita), lawyer; senior managing partner, Atlas and Hall, *McAllen*

Baker, Rex G., Jr., lawyer, *Houston*

Barnes, Susan J., reverend, assistant rector, St. Matthew's Episcopal Church, *Austin*

Barnett, Lynn (Randy), director of the Abilene Cultural Affairs Council, *Abilene*

Barrow, Thomas D. (Janice), president, T-Bar-X, Ltd., *Houston*

Bash, Frank (Susan), director, McDonald Observatory, The University of Texas at Austin, *Austin*

Batiste, John Paul, executive director of the Texas Commission on the Arts, *Austin*

Bell, Paul Gervais (Sue), retired general contractor, *Houston*

Bentsen, Lloyd (Beryl Ann "B.A."), former U.S. senator and U.S. secretary of the treasury, *Houston*

Blanton, Jack S., Sr., chairman, Houston Endowment, Inc., *Houston*

BOBBITT, PHILIP C., professor of law, The University of Texas at Austin; author, *Austin*

BOLES, JOHN B. (NANCY), William Pettus Hobby Professor of History at Rice University, managing editor of the *Journal of Southern History*, *Houston*

BOLTON, FRANK C., JR. (JO ANN ETHERIDGE), lawyer; former head of legal department, Mobil Oil Company, *Houston*

BONJEAN, CHARLES M., Hogg Professor of Sociology and executive director of the Hogg Foundation for Mental Health, The University of Texas at Austin, *Austin*

BRANDT, EDWARD N., JR. (PATRICIA), physician-medical educator; Regents Professor, University of Oklahoma–Health Sciences Center, *Oklahoma City, OK*

BREUNIG, ROBERT G. (KAREN ENYEDY), executive director of the Lady Bird Johnson Wildflower Center, *Austin*

BRINKERHOFF, ANN BARBER, chair, UTMB Centennial Commission; Hogg Foundation national advisory board; vice-president, Houston Community College Foundation; chairman emeritus, Liberal Arts Foundation, The University of Texas at Austin; chair, Women's Institute, Austin, *Houston*

BROWN, MICHAEL S. (ALICE), professor of molecular genetics and director, Jonsson Center for Molecular Genetics, The University of Texas Southwestern Medical Center at Dallas; 1985 Nobel laureate in physiology or medicine, *Dallas*

BROWNELL, BLAINE A. (MARDI), president, Ball State University, *Muncie, IN*

BROYLES, WILLIAM, JR. (ANDREA), author; founding editor, *Texas Monthly*; former editor-in-chief, *Newsweek*; co-creator, *China Beach*; author, *Brothers In Arms*; co-screenwriter, *Apollo 13*; screenwriter, *Cast Away*, *Austin*

BRYAN, J. P., JR. (MARY JON), CEO, Torch Energy Advisors, Inc.; former president, Texas State Historical Association, *Houston*

BURNS, CHESTER R. (ANN), James Wade Rockwell Professor of the History of Medicine, The University of Texas Medical Branch, *Galveston*

BUSH, GEORGE W. (LAURA), president of the United States of America, *Washington, D.C.*

BUSH, LAURA WELCH (GEORGE), first lady of the United States of America, founder of the Texas Book Festival, *Washington, D.C.*

BUTT, CHARLES C., chairman, HEB, *San Antonio*

CALDWELL, JOHN CLIFTON (SHIRLEY), rancher; former chairman, Texas Historical Commission; former president, Texas State Historical Association, *Albany*

CALGAARD, RONALD KEITH (GENIE), chief operating officer, Austin, Calvert and Flavin, Inc.; former president, Trinity University, *San Antonio*

CAMPBELL, RANDOLPH "MIKE" B. (DIANA SNOW), Regents Professor of History at The University of North Texas, *Denton*

CARLETON, DON E. (SUZANNE), director, Center for American History, The University of Texas at Austin, *Austin*

CARPENTER, ELIZABETH "LIZ," former assistant secretary of education, Washington correspondent, White House press secretary; consultant, LBJ Library; author and speaker, *Austin*

CARSON, RONALD (UTE), Harris L. Kempner Distinguished Professor in the Humanities in Medicine and director of the Institute for the Medical Humanities, The University of Texas Medical Branch at Galveston, *Galveston*

CATTO, HENRY E. (JESSICA), former U.S. ambassador to Great Britain and El Salvador; vice-chairman, Aspen Institute; former vice-chairman, National Public Radio; former director, U.S. Information Agency, *San Antonio*

CAVAZOS, LAURO F. (PEGGY ANN), former U.S. secretary of education; former president, Texas Tech University and Texas Tech University Health Sciences Center, *Port Aransas*

CHRISTIAN, GEORGE (JO ANNE), writer and public affairs consultant; former press secretary to President Lyndon B. Johnson, *Austin*

CIGARROA, JOAQUIN G., JR. (BARBARA), physician, internal medicine and cardiology, *Laredo*

CLEMENTS, WILLIAM P., JR. (RITA), former governor of Texas; former chairman, SEDCO, Inc.; former U.S. deputy secretary of defense, *Dallas*

COOK, C. W. W. (FRANCES), company director, former chief executive officer, General Foods Corporation, *Austin*

CORMIER, RUFUS (YVONNE), attorney and partner in the Houston office of Baker Botts L.L.P., *Houston*

CRAVEN, JUDITH LYNN BERWICK (MORITZ), past president, United Way of The Texas Gulf Coast; regent, The University of Texas System, *Houston*

CRIM, WILLIAM ROBERT (MARGARET), investments, *Kilgore*

CROOK, MARY ELIZABETH (MARC LEWIS), author; member, Texas Institute of Letters, *Austin*

CRUTCHER, RONALD A. (BETTY), provost and executive vice president for academic affairs, Miami University; cellist, *Oxford, OH*

CUNNINGHAM, ISABELLA C. (WILLIAM), professor of communications, The University of Texas at Austin, *Austin*

CUNNINGHAM, WILLIAM H. (ISABELLA), former president, The University of Texas at Austin; former chancellor, The University of Texas System, *Austin*

CURTIS, GREGORY (TRACY), editor, *Texas Monthly*, 1981–2000; author, *Austin*

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DAVIDSON, CHANDLER (SHARON L. PLUMMER), professor of sociology and political science, Rice University, *Houston*

DAVIS, D. JACK (GAIL), Dean of the School of Visual Arts, University of North Texas, *Denton*

DEAN, DAVID A. (JEAN), lawyer; former secretary of state, Texas, *Dallas*

DEBAKEY, MICHAEL E., cardiovascular surgeon; chancellor emeritus, Baylor College of Medicine, *Houston*

DECHERD, ROBERT W. (MAUREEN), chairman, president, and chief executive officer, Belo Corp., *Dallas*

DELCO, WILHELMINA (EXALTON), former member, Texas House of Representatives; civic leader; adjunct professor, Community College Leadership Program, The University of Texas at Austin and chair, Board of Trustees of Huston-Tillotson College, *Austin*

DENIUS, FRANKLIN W. (CHARMAINE), lawyer; former president, The University of Texas Ex-Students' Association; member, Constitutional Revision Committee; Distinguished Alumnus, The University of Texas at Austin; decorated veteran of World War II, *Austin*

DENMAN, GILBERT M., JR., lawyer, partner, Denman, Franklin & Denman; chairman of the board, Southwest Texas Corporation and Ewing Halsell Foundation, *San Antonio*

DE WETTER, MARGARET BELDING, artist and poet, *El Paso*

DICK, JAMES, founder-director, International Festival–Institute at Round Top; concert pianist and teacher, *Round Top*

DOBIE, DUDLEY R., JR. (SAZA), successor trustee, Clayton Foundation for Research; shareholder, Brorby & Crozier, P.C., *Austin*

DORN, EDWIN (FRAN), dean of the LBJ School of Public Affairs at The University of Texas at Austin, *Austin*

DOUGHERTY, J. CHRYS, III, retired attorney; former Honorary French Consul in Austin; former president, State Bar of Texas; former trustee, St. Stephen's Episcopal School, Austin; former trustee, The University of Texas Law School Foundation; trustee, Texas Supreme Court Historical Society, The Austin Project; administrative vice-chair, Texas Appleseed, *Austin*

DOUGHERTY, J. CHRYS, IV (MARY ANN), director of research, Just for the Kids, *Austin*

DUGGER, RONNIE E. (PATRICIA BLAKE), author, social structure activist, *New York, NY*

DUNCAN, A. BAKER (SALLY), chairman Duncan-Smith Investments, Inc., *San Antonio*

DUNCAN, CHARLES WILLIAM, JR. (ANNE), chairman, Duncan Interests; former secretary, U.S. Energy Department; deputy secretary, U.S. Defense Department; president, The Coca-Cola Company; chairman, Rotan Mosle Financial Corporation, *Houston*

DUNCAN, JOHN HOUSE (BRENDA), businessman; chairman, board of trustees, Southwestern University, *Houston*

EKLAND-OLSON, SHELDON (CAROLYN), executive vice-president and provost, The University of Texas at Austin, *Austin*

ELKINS, JAMES A., JR., trustee, Baylor College of Medicine; trustee, Menil Foundation, *Houston*

EMANUEL, VICTOR LLOYD, naturalist and founder of Victor Emanuel Nature Tours, *Austin*

FARABEE, KENNETH RAY (MARY MARGARET), former vice-chancellor and general counsel, The University of Texas System; former member, Texas Senate, *Austin*

FAULKNER, LARRY R. (MARY ANN), president, The University of Texas at Austin, *Austin*

FEHRENBACH, T. R. (LILLIAN), author; historian; former chairman, commissioner emeritus, Texas Historical Commission; former chairman, Texas Antiquities Committee; fellow, Texas State Historical Association, *San Antonio*

FEIGIN, RALPH D. (JUDITH), president and chief executive officer of Baylor College of Medicine, *Houston*

FINCH, WILLIAM CARRINGTON (LUCY), retired dean, Vanderbilt Divinity School; former president, Southwestern University, *Nashville, TN*

FISHER, RICHARD (NANCY), ambassador and deputy U.S. trade representative; vice-chair, Overseas Private Investment Corp. (OPIC); former managing partner, Fisher Capital Management; former executive assistant to U.S. secretary of the treasury; adjunct professor, Lyndon Baines Johnson School of Public Affairs, The University of Texas at Austin; democratic nominee for U.S. Senate, 1994; founder, Dallas Committee on Foreign Relations, *Dallas*

FLATO, TED (KATY), architect, Lake/Flato, *San Antonio*

FLAWN, PETER T. (PRISCILLA), president emeritus, The University of Texas at Austin, *Austin*

FLEMING, DURWOOD (LURLYN), former president and chancellor, Southwestern University, *Dallas*

FLEMING, JON HUGH (CHERYL), educator; consultant; businessman; former president, Texas Wesleyan College; former member, Governor's Select Committee on Public Education, *North Zulch*

FLY, EVERETT L. (LINDA), landscape architect/architect, *San Antonio*

FROST, TOM C. (PAT), senior chairman of the board, Frost National Bank, *San Antonio*

FURGESON, W. ROYAL, JR. (JULI), United States district judge, Western District of Texas Midland Division, *Midland*

FURMAN, LAURA (JOEL BARNA), associate professor of English, The University of Texas at Austin, *Austin*

GALBRAITH, JAMES K. (YING TANG), professor, Lyndon Baines Johnson School of Public Affairs, The University of Texas at Austin, *Austin*

GALVIN, CHARLES O'NEILL (MARGARET), centennial professor of law, emeritus, Vanderbilt University, Nashville; of counsel, Haynes and Boone, L.L.P., Dallas; distinguished professor of law emeritus, Southern Methodist University, *Dallas*

GARCIA, JULIET VILLARREAL (OSCAR E.), president of The University of Texas at Brownsville and Texas Southmost College, *Brownsville*

GARNER, BRYAN ANDREW (PAN), author; lecturer; lawyer; president, LawProse, *Dallas*

GARRETT, JENKINS (VIRGINIA), lawyer; former member, board of regents, The University of Texas System; former chairman, board of trustees, Tarrant County Junior College; distinguished alumnus award, The University of Texas at Austin, *Fort Worth*

GARWOOD, WILLIAM L. (MERLE), judge, U.S. Court of Appeals, Fifth Circuit, *Austin*

GEORGE, ROGER JAMES, JR. (CHERYL), trial lawyer, founding partner of George & Donaldson, LLP, *Austin*

GILLIS, MALCOLM (ELIZABETH), president, Rice University, *Houston*

GOETZMANN, WILLIAM H. (MEWES), Jack S. Blanton Sr. Endowed Chair in History and American Studies, The University of Texas at Austin, Pulitizer Prize-winning author, *Austin*

GOLDSTEIN, E. ERNEST (PEGGY), formerly: professor of law, The University of Texas at Austin; special assistant to President Lyndon B. Johnson; senior partner, Coudert Fréres, Paris, France; currently: advisor to the director, Harry Ransom Humanities Research Center, The University of Texas at Austin, *Austin*

GOLDSTEIN, JOSEPH L., professor of medicine and molecular genetics, The University of Texas Southwest Medical Center; Nobel laureate in medicine or physiology, *Dallas*

GORDON, WILLIAM EDWIN (ELVA), distinguished professor emeritus, Rice University; foreign secretary (1986–1990), National Academy of Sciences, *Houston*

GRANT, JOSEPH M., chairman and CEO, Texas Capital Bancshares, Inc., *Dallas*

GRAVES, HOWARD DWAYNE (GRACIE), chancellor, Texas A&M University System, *College Station*

GREENHILL, JOE R. (MARTHA), lawyer; former chief justice, Supreme Court of Texas, *Austin*

GUEST, WILLIAM F. (AMY), attorney; chairman, American Capitol Insurance Company, *Houston*

HACKERMAN, NORMAN (GENE), former president, Rice University; former president and vice-chancellor, The University of Texas at Austin, *Austin*

HAMILTON, ANN THOMAS, grant officer, Houston Endowment, Inc.; director, Jacob and Terese Hershey Foundation, *Houston*

HAMM, GEORGE FRANCIS (JANE), president, The University of Texas at Tyler Foundation, *Tyler*

HANNAH, JOHN, JR. (JUDITH GUTHRIE), U.S. district judge, Eastern District of Texas, *Tyler*

HARDESTY, ROBERT L. (MARY), former president, Southwest Texas State University; former assistant to the president of the United States; former chairman, board of governors, United States Postal Service; former vice-chancellor, The University of Texas System, *Austin*

HARGROVE, JAMES W. (MARION), investment counselor; former U.S. ambassador to Australia, *Houston*

HARRIGAN, STEPHEN MICHAEL (SUE ELLEN), author; contributing editor, *Texas Monthly*, *Austin*

HARRISON, FRANK, physician; president emeritus, The University of Texas Health Science Center at San Antonio; former president, The University of Texas at Arlington, *Dallas*

HARTE, CHRISTOPHER M. (KATHERINE STODDARD POPE), investments, *Portland, ME*

HARTE, EDWARD HOLMEAD, former publisher, Corpus Christi *Caller-Times*, *Corpus Christi*

HARVIN, WILLIAM C. (HELEN), lawyer, *Houston*

HAY, JESS (BETTY JO), chairman, HCB Enterprises, Inc.; chairman, Texas Foundation for Higher Education; former member, board of regents, The University of Texas System, *Dallas*

HAYES, PATRICIA A., executive vice-president and chief operating officer, Seton Healthcare Network, *Austin*

HECHT, NATHAN LINCOLN, justice, Supreme Court of Texas, *Austin*

HERSHEY, TERESE TARLTON "TERRY," civic leader; Houston Parks Board; National Association of Flood Plain Managers Foundation; National Recreation and Park Association; Texas Women's Hall of Fame; former board member, National Audubon Society; Trust for Public Lands; Texas Parks and Wildlife Commission; Lady Bird Johnson Wildflower Center, *Houston*

HEYER, GEORGE STUART, JR., emeritus professor of the history of doctrine, Austin Presbyterian Theological Seminary, *Austin*

HIGGINBOTHAM, PATRICK E. (ELIZABETH), judge, U.S. Court of Appeals, Fifth Circuit, *Dallas*

HILGERS, WILLIAM B., attorney; former chairman, Supreme Court of Texas Grievance Oversight Committee, *Del Valle*

HILL, JOHN L., JR. (BITSY), attorney, former chief justice, Supreme Court of Texas; former attorney general, Texas; former secretary of state, Texas, *Houston*

HILL, LYDA, president, Hill Development Company and Seven Falls Company, *Dallas*

HINES, GERALD DOUGLAS (BARBARA), chairman, Hines Interests, *Houston*

HOBBY, DIANA (WILLIAM), *Houston*

HOBBY, WILLIAM PETTUS (DIANA), lieutenant governor of Texas, 1973–1991; Radoslav A. Tsanoff Professor, Rice University, 1989–present; Sid Richardson Professor, Lyndon Baines Johnson School of Public Affairs, The University of Texas at Austin, 1991–1997; chancellor, University of Houston system, 1995–1997, *Houston*

HOFFMAN, PHILIP GUTHRIE (MARY), president emeritus, University of Houston; former president, Texas Medical Center, Inc., *Houston*

HOLAND, DOMINGO ALTER (MARA LESSA), investor; president, Liverpool of McAllen and Holand Properties, Inc., *McAllen*

HOLLAMAN, ELIZABETH E., former head, Trinity Episcopal School; educational consultant; president, Cavalry Consulting, Inc., *Galveston*

HOLTZMAN, WAYNE H. (JOAN), professor of psychology and education emeritus; special counsel, Hogg Foundation for Mental Health, The University of Texas at Austin, *Austin*

HOOK, HAROLD SWANSON (JOANNE), retired chairman and chief executive, American General Corporation; trustee, Baylor College of Medicine; former national president of the Boy Scouts of America; Texas Business Hall of Fame, *Houston*

HORCHOW, S. ROGER (CAROLYN), founder and former CEO of the Horchow Collection, author, theatrical producer, *Dallas*

HOWE, JOHN P., III, physician; president and CEO, Project Hope, *Washington, D.C.*

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WEINBERG, STEVEN (LOUISE), Josey Regental Professor of Science, The University of Texas at Austin; Nobel Prize in physics; research and publications in physics and astronomy, *Austin*

WHEELER, JOHN ARCHIBALD (JANETTE), Ashbel Smith Professor Emeritus of Physics; former director, Center of Theoretical Physics, The University of Texas at Austin, *Hightstown, NJ*

WHITE, FRED NEWTON, JR. (ROSANNE), emeritus professor of medicine at Scripps Institution of Oceanography, University of California at San Diego, *San Antonio*

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WHITTENBURG, GEORGE (ANN), lawyer; member, Council of the American Law Institute; Life Fellow, American Bar Foundation, *Amarillo*

WILDENTHAL, C. KERN (MARGARET), president, The University of Texas Southwestern Medical Center, *Dallas*

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YOUNG, BARNEY T. (SALLY), founding partner, Rain, Harrell, Emery, Young, and Doke; of counsel, Locke, Liddell & Sapp, *Dallas*

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ROBERT RANDLE GILBERT (1971)
GIBB GILCHRIST (1972)
JOHN WILLIAM GORMLEY (1949)
MALCOLM KINTNER GRAHAM (1941)
IRELAND GRAVES (1969)
MARVIN LEE GRAVES (1953)
WILLIAM FAIRFAX GRAY
LEON A. GREEN (1979)
NEWTON GRESHAM (1996)
DAVID WENDELL GUION (1981)
CHARLES WILSON HACKETT (1951)
WALTER GARDNER HALL (2000)
RALPH HANNA
HARRY CLAY HANSZEN (1950)
FRANKLIN ISRAEL HARBACH (1998)
THORNTON HARDIE (1969)
HELEN HARGRAVE (1984)
HENRY WINSTON HARPER (1943)
MARION THOMAS HARRINGTON
GUY BRYAN HARRISON JR. (1988)
TINSLEY RANDOLPH HARRISON
JAMES PINCKNEY HART (1987)
HOUSTON HARTE (1971)
RUTH HARTGRAVES (1995)
FRANK LEE HAWKINS (1954)
WILLIAM WOMACK HEATH (1973)
ERWIN HEINEN (1997)
JACOB W. HERSHEY (2000)
J. CARL HERTZOG (1988)
JOHN EDWARD HICKMAN (1962)
GEORGE ALFRED HILL JR. (1949)
GEORGE ALFRED HILL III (1974)
GEORGE W. HILL (1985)
JOSEPH M. HILL (1999)
MARY VAN DEN BERGE HILL (1965)

ROBERT THOMAS HILL (1941)
JOHN E. HINES (1998)
OVETA CULP HOBBY (1995)
WILLIAM PETTUS HOBBY (1964)
ELA HOCKADAY (1956)
WILLIAM RANSOM HOGAN (1971)
IMA HOGG (1975)
THOMAS STEELE HOLDEN (1958)
EUGENE HOLMAN (1962)
JAMES LEMUEL HOLLOWAY JR.
PAUL HORGAN (1997)
A. C. HORTON
EDWARD MANDELL HOUSE (1939)
ANDREW JACKSON HOUSTON (1941)
SAM HOUSTON
WILLIAM VERMILLION HOUSTON (1969)
WILLIAM EAGER HOWARD (1948)
LOUIS HERMAN HUBBARD (1972)
JOHN AUGUSTUS HULEN (1957)
WILMER BRADY HUNT (1982)
FRANK GRANGER HUNTRESS (1955)
PETER HURD
HOBART HUSON
JOSEPH CHAPPELL HUTCHESON JR.
JUNE HYER (1980)
JULIA BEDFORD IDESON (1945)
FRANK N. IKARD SR. (1990)
R. A. IRION
WATROUS HENRY IRONS (1969)
PATRICK C. JACK
HERMAN GERLACH JAMES (1966)
LEON JAWORSKI (1982)
JOHN LEROY JEFFERS (1979)
JOHN HOLMES JENKINS III (1991)
HERBERT SPENCER JENNINGS (1966)
LYNDON BAINES JOHNSON (1973)
WILLIAM PARKS JOHNSON (1970)
ANSON JONES
CLIFFORD BARTLETT JONES (1973)
ERIN BAIN JONES (1974)
EVERETT HOLLAND JONES (1996)
HOWARD MUMFORD JONES
JESSE HOLMAN JONES (1956)
JOHN TILFORD JONES JR. (1993)
MARVIN JONES (1977)
MRS. PERCY JONES (1978)
JOHN ERIK JONSSON (1996)
DAVID S. KAUFMAN
PAGE KEETON (1999)
HERBERT ANTHONY KELLAR (1955)
ROBERT MARVIN KELLY (1958)
LOUIS WILTZ KEMP (1956)
HARRIS LEON KEMPNER SR. (1987)
THOMAS MARTIN KENNERLY (1966)
DANIEL E. KILGORE (1995)
WILLIAM JACKSON KILGORE (1993)
EDWARD KILMAN (1969)
FRANK HAVILAND KING
WILLIAM ALEXANDER KIRKLAND (1988)
ROBERT JUSTUS KLEBERG JR. (1974)
DOROTHY W. KNEPPER (1998)
JOHN FRANCIS KNOTT
LAURA LETTIE SMITH KREY (1985)
ERNEST LYNN KURTH (1960)
POLYKARP KUSCH (1993)
LUCIUS MIRABEAU LAMAR III (1978)
MIRABEAU B. LAMAR
FRANCIS MARION LAW (1970)
F. LEE LAWRENCE (1996)
CHAUNCEY DEPEW LEAKE (1978)
UMPHREY LEE (1958)
DAVID LEFKOWITZ (1956)
MARK LEMMON (1975)
JEWEL PRESTON LIGHTFOOT (1950)
DENTON RAY LINDLEY (1986)
EUGENE PERRY LOCKE (1946)
JOHN AVERY LOMAX (1948)
WALTER EWING LONG (1973)
JOHN TIPTON LONSDALE (1960)
EDGAR ODELL LOVETT (1957)
H. MALCOLM LOVETT
ROBERT EMMET LUCEY (1977)
WILLIAM WRIGHT LYNCH
ABNER VERNON McCALL (1995)
JOHN LAWTON McCARTY
JAMES WOOTEN McCLENDON (1972)
L. F. McCOLLUM (1996)
CHARLES TILFORD McCORMICK (1964)
IRELINE DEWITT McCORMICK
MALCOLM McCORQUODALE JR. (1990)
JOHN W. McCULLOUGH (1987)
TOM LEE McCULLOUGH (1966)
EUGENE McDERMOTT
JOHN HATHAWAY McGINNIS (1960)
ROBERT C. McGINNIS (1994)
GEORGE LESCHER MacGREGOR
STUART MALOLM McGREGOR
ALAN DUGALD McKILLOP (1974)
BUKNER ABERNATHY McKINNEY (1966)
HUGH McLEOD
LEWIS WINSLOW MAcNAUGHTON (1969)
AYLMER GREEN McNEESE JR. (1992)
ANGUS McNEILL
JOHN OLIVER McREYNOLDS (1942)
JACK R. MAGUIRE
HENRY NEIL MALLON

GERALD C. MANN (1989)
FRANK BURR MARSH (1940)
HARRIS MASTERSON III (1997)
WATT R. MATTHEWS (1997)
MAURY MAVERICK (1954)
BALLINGER MILLS JR. (1992)
BALLINGER MILLS SR. (1947)
MERTON MELROSE MINTER (1978)
PETER MOLYNEAUX
JAMES TALIAFERRO MONTGOMERY (1939)
DAN MOODY (1966)
DAN MOODY JR. (2000)
BERNICE MILBURN MOORE (1993)
FRED HOLMSLEY MOORE (1985)
MAURICE THOMPSON MOORE
TEMPLE HOUSTON MORROW
WILLIAM OWEN MURRAY (1973)
FRED MERRIAM NELSON
CHESTER WILLIAM NIMITZ (1965)
PAT IRELAND NIXON (1965)
MARY MOODY NORTHEN (1991)
JAMES RANKIN NORVELL (1969)
CHILTON O'BRIEN (1983)
DENNIS O'CONNOR (1997)
CHARLES FRANCIS O'DONNELL (1948)
JOSEPH GRUNDY O'DONOHOE (1956)
LEVI ARTHUR OLAN (1984)
TRUEMAN EDGAR O'QUINN (1989)
JOHN ELZY OWENS (1951)
WILLIAM A. OWENS (1991)
LOUIS C. PAGE (1982)
GLORIA HILL PAPE
JUBAL RICHARD PARTEN (1993)
ADLAI McMILLAN PATE JR. (1988)
ANNA J. HARDWICK PENNYBACKER (1939)
HALLY BRYAN PERRY (1966)
NELSON PHILLIPS (1966)
GEORGE WASHINGTON PIERCE (1966)
EDMUND LLOYD PINCOFFS (1991)
BENJAMIN FLOYD PITTINGER
KENNETH S. PITZER (2000)
GEORGE FRED POOL (1984)
CHARLES SHIRLEY POTTS (1963)
HERMAN PAUL PRESSLER JR. (1996)
CHARLES NELSON PROTHRO (2000)
HARRY MAYO PROVENCE (1996)
MAURICE EUGENE PURNELL
CHARLES PURYEAR (1940)
CLINTON SIMON QUIN (1956)
COOPER KIRBY RAGAN
HOMER PRICE RAINEY (1985)
CHARLES WILLIAM RAMSDELL (1942)
EDWARD RANDALL (1944)
EDWARD RANDALL JR. (1970)
KATHARINE RISHER RANDALL (1991)
LAURA BALLINGER RANDALL (1955)
HARRY HUNTT RANSOM (1976)
EMIL C. RASSMAN
FANNIE ELIZABETH RATCHFORD
SAM RAYBURN (1961)
JOHN SAYRES REDDITT (1972)
LAWRENCE JOSEPH RHEA (1946)
WILLIAM ALEXANDER RHEA (1941)
JAMES OTTO RICHARDSON
RUPERT NORVAL RICHARDSON (1987)
JAMES FRED RIPPY
SUMMERFIELD G. ROBERTS (1969)
FRENCH MARTEL ROBERTSON (1976)
CURTICE ROSSER
JOHN ELIJAH ROSSER (1960)
JOSEPH ROWE
JAMES EARL RUDDER (1969)
THOMAS J. RUSK
McGRUDER ELLIS SADLER (1966)
JEFFERSON DAVIS SANDEFER (1940)
MARLIN ELIJAH SANDLIN
HYMAN JUDAH SCHACHTEL (1991)
EDWARD MUEGGE "BUCK" SCHIWETZ (1985)
VICTOR HUMBERT SCHOFFELMAYER (1966)
ARTHUR CARROLL SCOTT (1940)
ELMER SCOTT (1954)
JOHN THADDEUS SCOTT (1955)
WOODROW BRADLEY SEALS (1991)
TOM SEALY (1992)
GEORGE DUBOSE SEARS (1974)
WILLIAM G. SEARS (1997)
ELIAS HOWARD SELLARDS (1960)
DUDLEY CRAWFORD SHARP
ESTELLE BOUGHTON SHARP (1965)
JAMES LEFTWICH SHEPHERD JR. (1964)
MORRIS SHEPPARD (1941)
JOHN BEN SHEPPERD (1989)
STUART SHERAR (1969)
PRESTON SHIRLEY (1991)
ALLAN SHIVERS (1985)
RALPH HENDERSON SHUFFLER (1975)
JOHN DAVID SIMPSON JR.
ALBERT OLIN SINGLETON (1947)
JOSEPH ROYALL SMILEY (1991)
A. FRANK SMITH JR. (1993)
A. FRANK SMITH SR. (1962)
ASHBEL SMITH

FRANK CHESLEY SMITH SR. (1970)
HARLAN J. SMITH (1991)
HENRY SMITH
HENRY NASH SMITH
THOMAS VERNON SMITH (1964)
HARRIET WINGFIELD SMITHER (1955)
ROBERT S. SPARKMAN (1997)
RALPH SPENCE (1994)
JOHN WILLIAM SPIES
TOM DOUGLAS SPIES (1960)
STEPHEN H. SPURR (1990)
ROBERT WELDON STAYTON (1963)
ZOLLIE C. STEAKLEY (1991)
RALPH WRIGHT STEEN (1980)
IRA KENDRICK STEPHENS (1956)
MARSHALL T. STEVES
ROBERT GERALD STOREY (1981)
GEORGE WILFORD STUMBERG
HATTON WILLIAM SUMNERS (1962)
ROBERT LEE SUTHERLAND (1976)
HENRY GARDINER SYMONDS (1971)
MARGARET CLOVER SYMONDS
WILLIS M. TATE (1989)
JAMES U. TEAGUE (1996)
ROBERT EWING THOMASON (1974)
J. CLEO THOMPSON (1974)
BASCOM N. TIMMONS (1987)
LON TINKLE (1980)
CHARLES RUDOLPH TIPS (1976)
MARGARET LYNN BATTS TOBIN (1994)
VIRGIL W. TOPAZIO (1999)
JOHN G. TOWER (1991)
HENRY TRANTHAM (1961)
FRANK EDWARD TRITICO SR. (1993)
GEORGE WASHINGTON TRUETT (1944)
RADOSLAV ANDREA TSANOFF (1976)
EDWARD BLOUNT TUCKER (1972)
WILLIAM BUCKHOUT TUTTLE (1954)
THOMAS WAYLAND VAUGHAN (1952)
ROBERT ERNEST VINSON (1945)
LESLIE WAGGENER (1951)
AGESILAUS WILSON WALKER JR. (1988)
EVERETT DONALD WALKER (1991)
RUEL C. WALKER (2000)
THOMAS OTTO WALTON
FRANK H. WARDLAW (1989)
ALONZO WASSON (1952)
WILLIAM WARD WATKIN (1952)
ROYALL RICHARD WATKINS (1954)
WALTER PRESCOTT WEBB (1963)
HARRY BOYER WEISER (1950)
PETER BOYD WELLS JR. (1991)
ELIZABETH HOWARD WEST (1948)
CLARENCE RAY WHARTON (1941)
JOHN A. WHARTON
WILLIAM H. WHARTON
WILLIAM MORTON WHEELER (1937)
GAIL WHITCOMB (1994)
JAMES LEE WHITCOMB
WILLIAM RICHARDSON WHITE (1977)
WILLIAM MARVIN WHYBURN (1972)
HARRY CAROTHERS WIESS (1948)
DOSSIE MARION WIGGINS (1978)
PLATT K. WIGGINS
DAN C. WILLIAMS
JACK KENNY WILLIAMS (1982)
ROGER JOHN WILLIAMS (1987)
LOGAN WILSON (1992)
JAMES BUCHANAN WINN JR. (1980)
JAMES RALPH WOOD (1973)
DUDLEY KEZER WOODWARD JR. (1967)
WILLIS RAYMOND WOOLRICH (1977)
BENJAMIN HARRISON WOOTEN (1971)
SAM PAUL WORDEN (1988)
GUS SESSIONS WORTHAM (1976)
LYNDALL FINLEY WORTHAM
FRANK McREYNOLDS WOZENCRAFT (1993)
FRANK WILSON WOZENCRAFT (1967)
WILLIAM EMBRY WRATHER (1963)
ANDREW JACKSON WRAY (1981)
CHARLES ALAN WRIGHT (2000)
RALPH WEBSTER YARBOROUGH (1999)
RAMSEY YELVINGTON (1972)
HUGH HAMPTON YOUNG (1945)
SAMUEL DOAK YOUNG
STARK YOUNG
HENRY B. ZACHRY (1984)
PAULINE BUTTE ZACHRY (1998)