

# A New Reality

HUMAN EVOLUTION FOR A SUSTAINABLE FUTURE

Jonas Salk and Jonathan Salk  
with David Dewane



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JONAS SALK, 1954

Jonas Salk's wish was that his ideas would continue to be disseminated so that, like a vaccine, they might have the most positive effect on the greatest number of people.

Jonas Salk, who died in 1995, was in the mid-1950s the developer of the first effective vaccine against poliomyelitis. He went on to found and help design the Salk Institute for Biological Studies in La Jolla, California, now a renowned center for basic biological research. What few people know is that in the last third of his life, he devoted much of his time and creative energy to the development of an evolutionary philosophy based on biological and natural principles. His wish was that these ideas would have the effect of giving people a scientific basis for hope and provide opportunities to enhance human well-being throughout the world.



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## FOREWORD

An inescapable reality is that there are now too many humans on Earth for us, or the planet, to handle well. Population growth, a burning topic some years ago, has somewhat faded from public prominence in recent years. This small but compelling book is a welcome and timely reminder of the issues of overpopulation, with a fresh look at the ways we can approach this reality.

The burgeoning world population of humans has commonly been framed in Malthusian terms, emphasizing Darwinism with its brutal selection of the “fittest” as an inevitable, and perhaps only, consequence of an overcrowded world. Jonas Salk took seriously, throughout his life, the overarching guideline called *Tikkun olam* (Hebrew: תיקון עולם) literally translated as “repair of the world,” alternatively meaning “construction for eternity”). *Tikkun olam* is a concept in Judaism that has been taken to mean aspiration towards actions and behaviors that are constructive and beneficial. Jonas Salk’s better-known life work, development of the polio vaccine that has been a life saver, literally, for millions around the globe, can be regarded as a remarkable exemplar of *Tikkun olam*. But Jonas Salk’s legacy should rightly be broadened beyond even this, because the way he thought about the looming human population problem was to envisage a new era to which humanity could aspire.

In short, as is elegantly unfolded in this book (co-authored by Jonas Salk and his son Jonathan Salk), Jonas Salk envisioned that an inflection point in human population growth—a transition from exponential rapid growth, to slower and, eventually, zero population growth—would also usher in an inflection point in human social behaviors and mores, leading to a much more collaborative ethos and way of doing things. Rather than our latter-day humanity’s central focus on competing in order to gain one’s own individual betterment and achievements (defining what Salk dubs “Epoch A”), individuals would evolve toward ways more attuned to



thinking beyond that, through expanding into wider and more generous frames of mind and spirit to encompass the needs, well-being, and attainment of many more, across more societies (“Epoch B”). Through use of simple diagrams and the building up of ideas, the book draws us gently but implacably into this vision.

Salk certainly is onto something here. While he was ahead of mainstream thinking at the time of the publication of the first edition of this book (1981), many of his ideas are already echoed much more commonly than they were then. As we look around us, in more recent years we see such trends at play in many arenas. Witness the evolving views of corporate leadership toward being more team- and participant-driven, rather than dictated by a sole top-dog figure. More and more academic learning and research are accomplished through fruitful interactions among multiple individuals, rather than solely through the lonely genius. And, *sine qua non*, we are realizing that to tackle shared world problems such as planetary climate challenges, individual, local, and national barriers get in the way. Thus, we will keep needing more worldwide, Paris Agreement-like, movements.

The extent of Jonas Salk’s legacy deserves to be appreciated in full. As this book presages, his help in ameliorating humankind’s scourges may yet turn out to be not confined to the near-eradication of polio. This elegant and hopeful book is small, but far from small in its vision and aspiration for humanity’s betterment. We will all be better off if we listen to it and heed it.

*Elizabeth H. Blackburn, PhD*  
*February 2018*





## PREFACE

In this time of conflict, we are seeking a pathway into the future.

Half a century ago, thinking about the future of humanity, my father, Jonas Salk, had a realization. He looked at human population growth, which appeared to be increasing without limit, and reasoned that its growth would likely slow and reach a plateau. In doing so, it would form an S-shaped, or sigmoid, curve, similar to that of a population of fruit flies in a bottle.



From the image of that curve he developed a set of diagrams depicting our past and future and suggested that we are at an epochal transition in human history and human social evolution. He perceived that we are moving from an era dominated by limitless growth, competitive strategies, short-range thinking, and independence to one characterized by awareness of limits, cooperation, long-range thinking, and interdependence.

The diagrams were first published in 1973 in his book *The Survival of the Wisest*. In 1981 he and I wrote *World Population and Human Values: A New Reality*, a short book expanding on those diagrams and ideas. We introduced images and a way of thinking that we hoped would provide a framework for understanding the nature of our time. In the decades since, I often noted that many of the changes we foresaw were coming to pass. Several years ago, a young architect and designer, David Dewane, came across the book and called me to see if I would like to revise and republish the original. I said yes, and the book you are holding is the result.

The first edition ended with these words:

*We are on a frontier, but it is not territorial or technological; it is human and social. In this period of changing conditions and values, doubts arise as to our ability to cross this frontier and meet the demands of the future. We will, in the process of responding to forces and limits of nature, learn whether we have the capacity to meet this challenge. If we do, then we will emerge from the present period not merely as survivors, but as human beings in a new reality.*

Using a series of figures opposite sparse text, the book presents graphs showing human population size over the long term, notes a remarkable change in its growth pattern, and suggests shifts that must take place if we are to survive and flourish in this transition.

The book's simplicity of design and concept belies a complexity of ideas. The discussion touches on population biology, demographic change, and socioeconomic conditions. It uses the analogy of evolutionary selection to look at shifts in human attitudes, values, and behavior. It addresses conflicts between differing value systems and their role in our evolutionary past and future. It considers the relationship between traditional and contemporary cultures. It concludes with an appreciation that the shift we describe involves all aspects of our existence—from the molecular, to that of the organism, to the societal, and to our relationship to the planet as a whole.

In the decades since the publication of the first edition, the world and our awareness of it have changed dramatically, yet the ideas and images in that slim volume seem even more relevant today. Population growth is slowing worldwide and will likely plateau by the end of this century. Limits in terms of energy and other resources have been encountered. Poverty and ill health are greatly reduced but remain endemic. Disturbingly, global climate change threatens our species and the nature of life on this planet. And most significantly, since the first appearance of the book, an entire generation has been born and is reaching adulthood

in a period of decreasing population growth rates and awareness of limits—in a new reality.

In the course of change, there is conflict. The diagrams and concepts presented in the pages that follow address that conflict and suggest that the resolution of our current dilemma lies in the integration of opposing tendencies, one that will result in a synthesis that meets the needs and enhances the lives of all human beings. This point of view directs us to focus on the economic, political, and social changes we must make to adapt to a world with finite resources, more human beings than ever before, and a population that is at equilibrium or slowly declining.

While the figures and words contain a message of warning and danger, they also convey a message of hope. They point to our shared responsibility for the planet and our species, and they also provide, especially for those of younger generations, images and a vision that can be used to shape the future.

The current edition differs considerably from the original in both text and design. I have done my best to stay with the tone and style of the original document, but I confess that I have often missed my father's guiding hand. There was a quality that he brought to his writing—a complex focus and intensity that were uniquely his.

The book represents a type of intuitive thinking that was typical of my father, who often made creative leaps and saw connections that others might not see. As such, it is not intended to be an exhaustive synthesis of academic research, nor does it attempt to be a prescriptive document, laying out specific plans of action. It does aspire, however, to shape our thinking and our perception. It is also, I hope, a bit of an elegy to my father's work, vision, and dedication to helping humanity.

My father's desire was that the ideas in his writing be highly accessible so that they might have a positive effect on people and on the course of human evolution. Typical of him, his aim was grand. Also typical of

him, it was not beyond the bounds of reality. He wanted to put forth words and images that would affect people in a way similar to a vaccine, inoculating them with hope; immunizing them against stasis, rigidity, and despair; and allowing all human beings to live fuller, more creative, and more productive lives.

With humble respect for that grand idea, we present this revised and redesigned edition, now titled *A New Reality: Human Evolution for a Sustainable Future*

*Jonathan Salk*  
*Los Angeles, 2018*







Even though the discussion here suggests that, in the long term, the course of epochal change is predetermined, it is not.

It is under our influence.

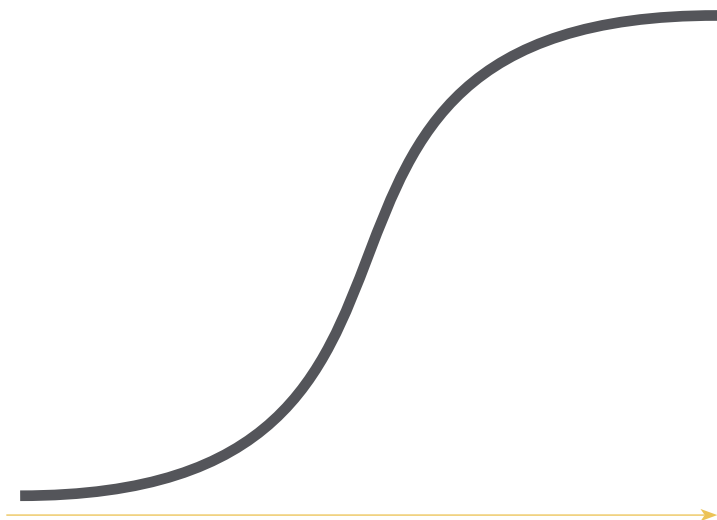


PART ONE

# Sigmoid Curves

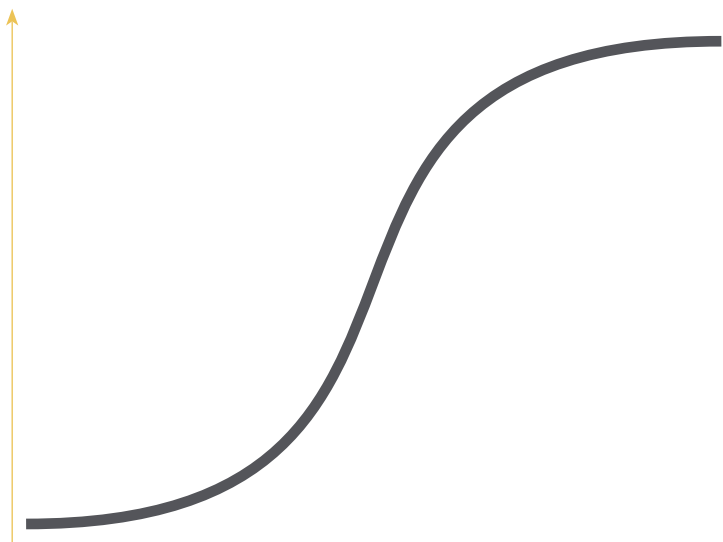


In this essay, the sigmoid curve will be used as a “thinking tool” and as a symbol. Its shape reflects a pattern that applies to growth in living systems and reflects the transformational character of change in our time.

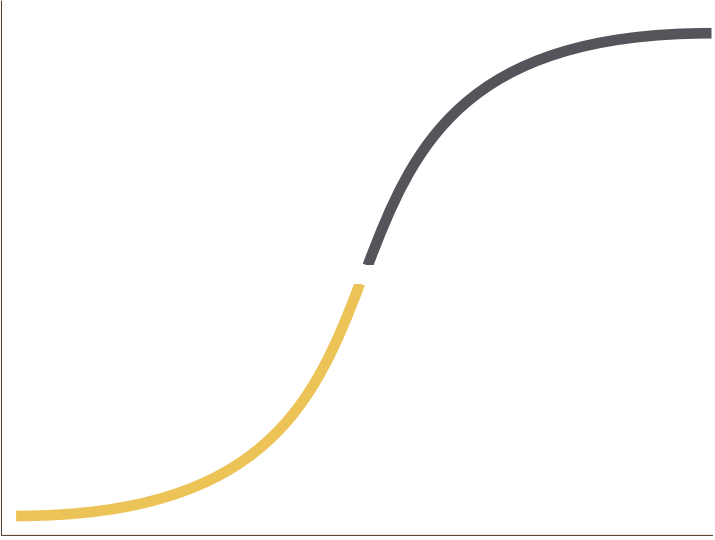


In this figure, and in those that follow,  
the horizontal axis represents time...

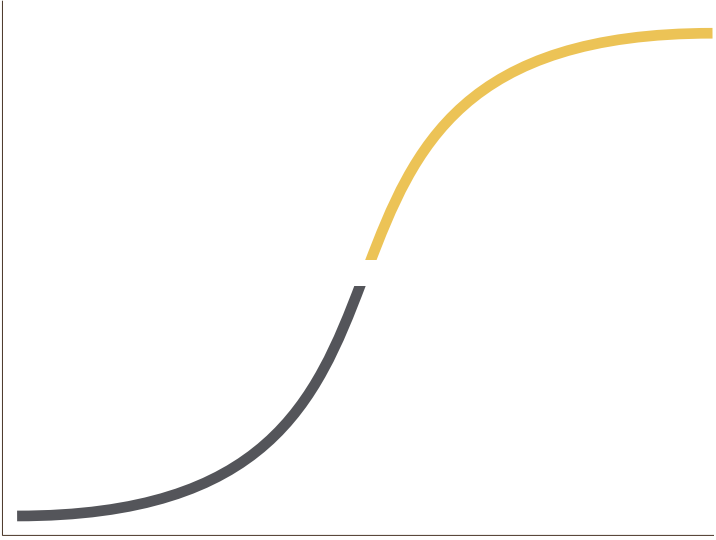




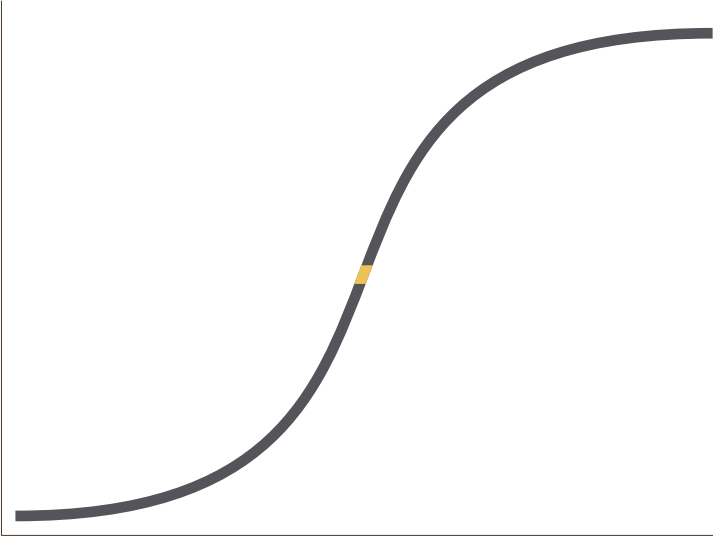
...and the vertical axis represents number.



In the first, upturned portion of the curve, population growth follows a pattern of acceleration;



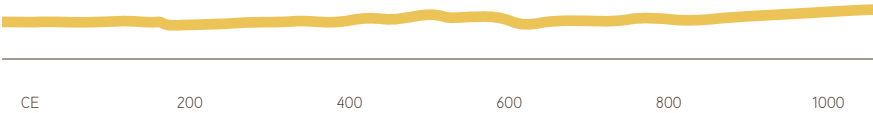
in the second part, growth decelerates  
and a plateau is reached.

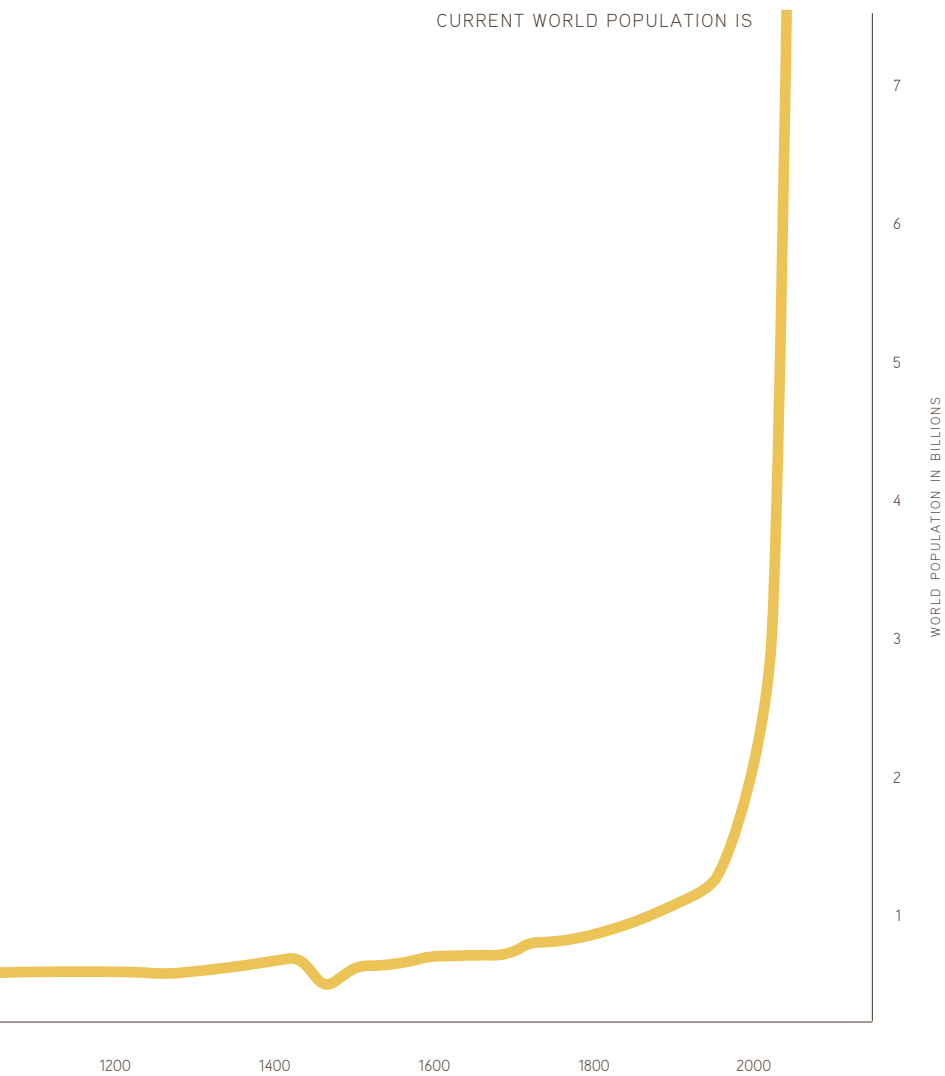


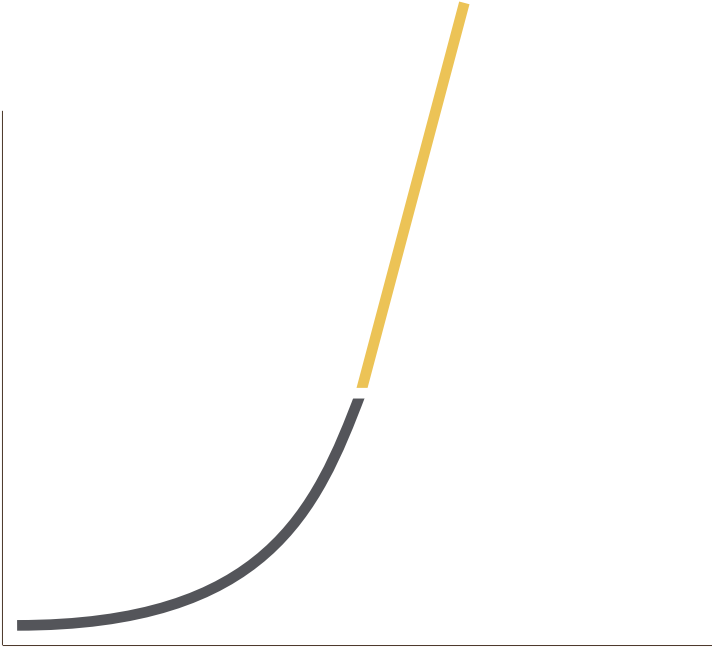
The gap in the curve emphasizes the *point of inflection* — the point of change from accelerating growth to decelerating growth.



From the beginning of the Common Era, the size of the human population grew gradually for about 16 centuries and then with increasing speed through the 19th century. The gradual but progressive acceleration was followed by a sudden steep rise in the 20th century—a consequence of the scientific, technological, industrial, and agricultural revolutions, which have had the effect of making it possible to sustain a human population far larger than ever before.

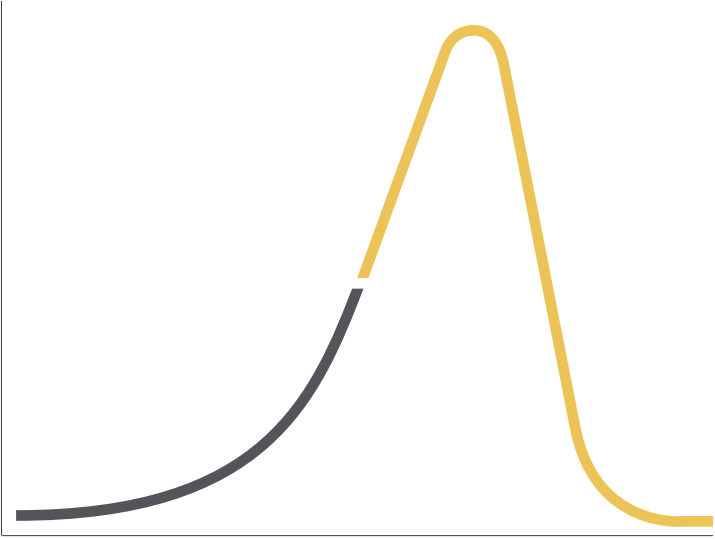




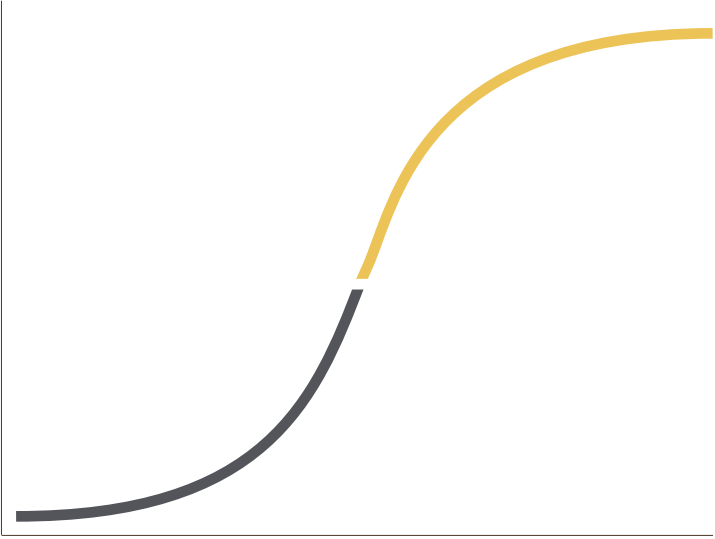


The sharp increase in the size of human population in recent times raises reasonable questions:

Will the curve continue to rise at its present rate?



Will it crash?

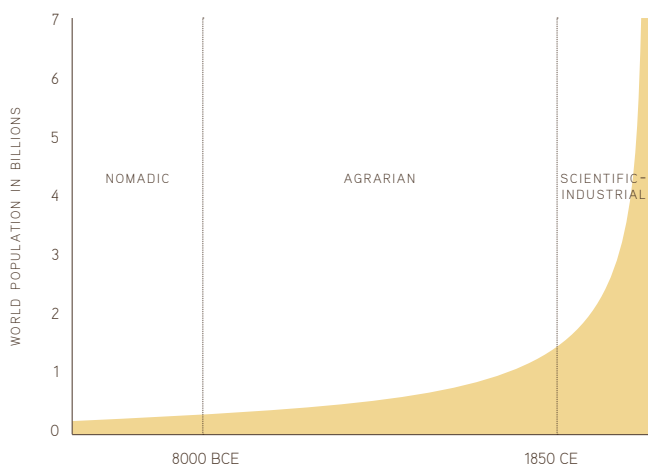


Or will it bend and assume  
a sigmoid shape?



For 200,000 years before the advent of agriculture, human population increased very slowly. Agriculture emerged 10,000 to 15,000 years ago, making more food and energy available to support greater numbers of human beings. A pattern of gradual increase then continued throughout the agrarian period. In the last two centuries, scientific, technological, industrial, and agricultural developments have reduced mortality and made it possible to support and feed far larger numbers of people, resulting in the recent sharp rise in population.

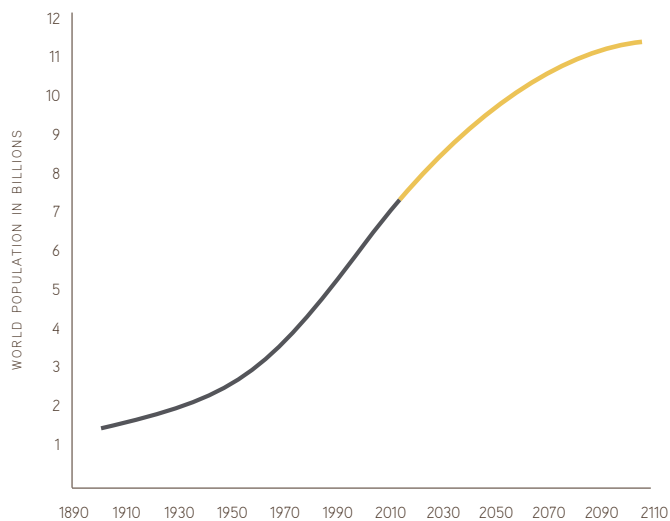
The factors involved in human population growth are far more complex than those affecting the populations seen in part 1. The picture is complicated by family, cultural, sociopolitical, economic, and technological factors. Marked differences between patterns of population growth in the more and less developed regions of the world are also significant. Nevertheless, in part 2 we will see that, taken globally, a similar pattern is emerging.



In this figure, we have added the median variant United Nations(UN) projection to 2100.

We see the change from accelerating growth to decelerating growth. We also see that the inflection point of the curve was passed in the last decades of the 20th century and that, as of this writing, we are living in an age of slowing growth, one that may be very different, in terms of environmental limits and human social interactions, from the previous period. In part three, we will explore that difference.

Population projections are based on present knowledge of continually changing trends. As such, they cannot be taken as firm predictions of the future, but they do provide us with a perspective for viewing and understanding the present human situation.





# Why does population growth slow?

The dynamics of population growth are complex, but it appears that improvements in health care, lowering of infant and maternal mortality, availability of education—particularly for women—and overall economic development result in people deferring the birth of the first child and having smaller families. The further lowering of birth rates and slowing of growth are thus closely tied to improving conditions throughout the world.

It is a notable phenomenon that reducing problems and increasing well-being accompany slower population growth. We once thought that more people would lead to more problems, but our approach and perspective have shifted. Now we understand that more solutions lead to slower growth.



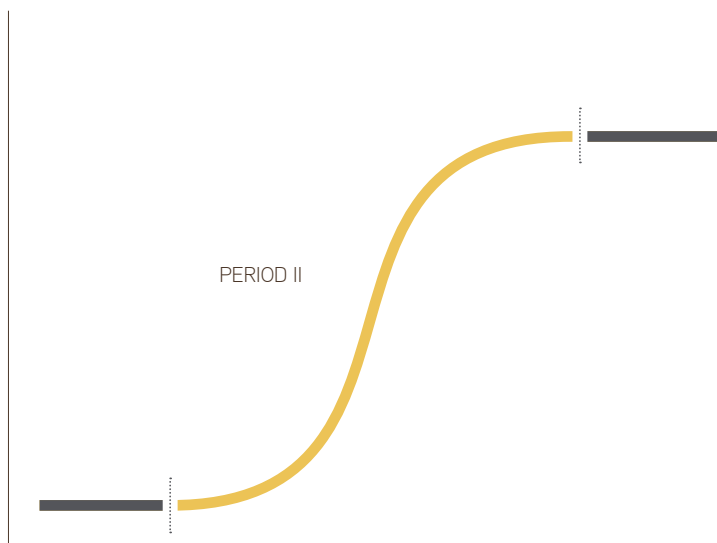
### Less Developed Countries



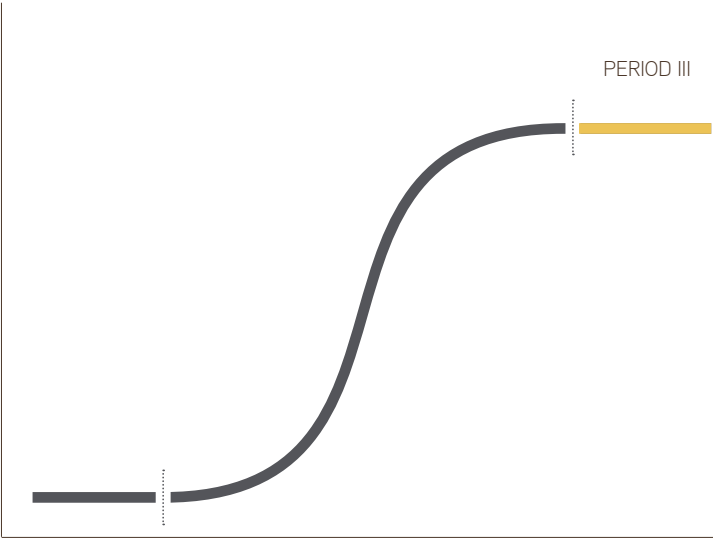
higher age levels in the figure. Population size in these areas will continue to grow for the next 50 to 100 years. Eventually, the figure for the less developed regions will be straight-sided like the figure for the more developed regions. Population size will be stable, but there will be many more people in what we currently think of as the developing world.

An additional inference from this figure is the huge proportion of young people in the world. This constitutes a whole generation, the largest of any in human history, who are influenced by current events and who will, in turn, influence the course of the future.





Second, our current period of rapid change,  
in which growth follows a sigmoid pattern.



Third, the more distant future, when  
population size will be steady or declining.

The sigmoid growth curve consists of two sections of different shape: the upturned portion describes a phase of progressive acceleration of growth; the second portion is downturned and describes a phase of progressive deceleration. The difference in shape between the two portions of the curve suggests both quantitative and qualitative differences in human life between the two periods of time. It not only indicates differences in population growth patterns but also suggests differences in the characteristics of prevailing conditions and the nature of human life in the two periods.\*

\* We are using the sigmoid curve as an image of qualitative as well as quantitative change over time, but in this and the following sections we have not labeled the axes. When the curves are used to reflect quantity, the horizontal axis indicates time and the vertical axis, number. When the curves reflect qualitative differences, the horizontal axis reflects time and the vertical axis indicates change in relative prevalence.





PART FOUR

# Paradox and Conflict





Human beings possess the capacity for a wide range of attitudes and behaviors. The idea underlying the discussion in part 3 is that attitudes and behaviors that are appropriate in the reality of Epoch A may be less advantageous and less appropriate in the reality of Epoch B. Another set of values that is less advantageous in Epoch A may be much more so in Epoch B.

The context or circumstances that prevail determine which attitudes and behaviors are appropriate at different times. Thus, the emergence of Epoch B values outlined in part 3 is seen as a necessary response to the different reality of that era.

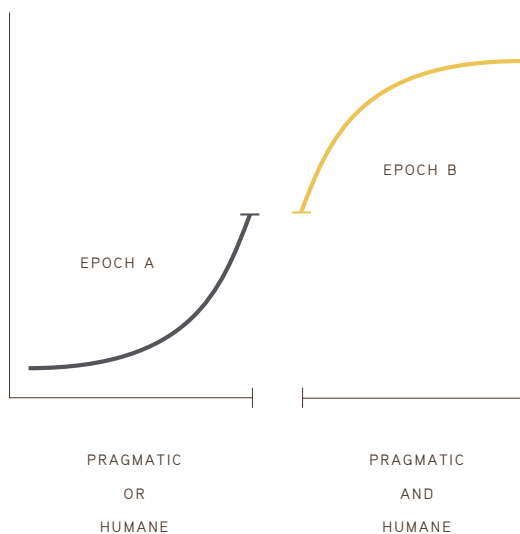


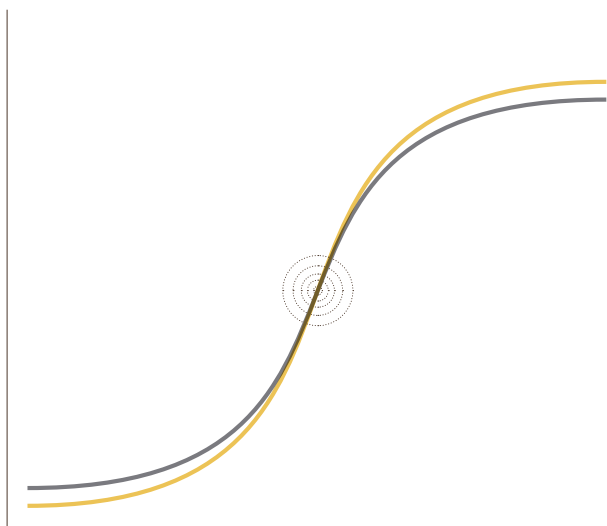
In the region of inflection, growth rates are highest; acceleration is changing to deceleration; and values are shifting most rapidly. The period can be expected to be a time of increased conflict. In the following section, we will look more closely at this period.

In the context of Epoch A, the generous or humane attitudes appropriate in Epoch B were not perceived as pragmatic. However, in the different reality of Epoch B, such attitudes will be both pragmatic and humane.

Thus, the shift will not come about simply because Epoch B values are morally or spiritually better than those of Epoch A. They will change because the values of Epoch B, in the context of that epoch, will be more advantageous.

For example, improvement in the quality of life in developing regions and the self-sufficiency of those nations will benefit the people both in those areas and in the more developed world. Improvements in health care, education, and economic viability in the less developed areas will help in ameliorating population pressures, which would benefit the world as a whole. In addition, a balanced relationship of wealth and exchange would lead to more stability as well as an increase in personal satisfaction and well-being. In Epoch A, such changes would have been perceived as conferring no advantage to the interests of the more developed areas; now they are being seen as advantageous to all regions.





However, when viewed from a longer-range perspective, as shown in the sigmoid curves in this figure, these conflicts and uncertainties can be seen as part of an orderly if somewhat difficult process of nature. Looked at in this way, the disturbances of the present time may be seen not as a symptom of a disease that must be treated or eradicated but as a result of the obsolescence of formerly successful patterns of life and the uncertain beginnings of new patterns appropriate to the emerging conditions.