Chapter 1: The Persistence of Misery in Europe and America before 1900

- The most remarkable change in the 20th century was the huge increase in life expectancy.

- Initial research to understand the secular decline in mortality:
  - Construction of time series of birth and death rates back in time
  - Analysis of data to find explanations and patterns for prediction
  - Efforts to understand the relationship between food supply and mortality rates

- Data developments:
  - Food supply estimates
  - Time series on physique or body builds

- 1953 UN study attributed the mortality trend to four advances:
  - Public health reforms
  - Advances in medical knowledge and practices
  - Improved personal hygiene
  - Rising income and standards of living

- 1973 UN study added “natural factors” (e.g., decline in the virulence of pathogens)

- McKeown’s work:
  - Residual argument rejecting most explanations
argued that changes in medical technology and public health were less important

- importance of nutrition
- neglected the synergism between infection and nutrition

• initially researchers argued that the elimination of mortality crises linked to famines was important in the decline of mortality, however, using better data we now understand that declines in “normal” mortality were much more important

• chronic malnutrition can be an important factor, but we don’t yet have a good understanding of the relative importance of various factors

• the technological and scientific advances of the 18th and the 19th century and the industrial revolution did not significantly improve the living conditions of most groups in society

• sources of evidence: the amount of food available in England and France was very low by current standards

• the height and weights of people in the 19th century was significantly lower than now, presumably due to smaller amounts of food

• even the US had chronic malnutrition

• note the two-way relationship between chronic malnutrition and infectious diseases

• there are cycles in the data, heights rise and then fall by large amounts

Chapter 2: Why the Twentieth Century Was So Remarkable

• new theory of techno-physio evolution:
  - synergism between technological and physiological improvements
  - biological but not genetic
  - rapid
  - culturally transmitted
  - not necessarily stable

• during the past 300 years, particularly during the past century, humans gained an unprecedented degree of control over the environment

• this control over the environment allowed humans to increase body size by over 50%, average longevity by over 100%, and improve the robustness and capacity of the vital organ systems
• strong relationship between height and mortality based on Norwegian and US data

• US historical data also shows that even people who survived early-life infectious diseases suffered a lot more from degenerative diseases than current populations because of worse physique

• earlier research relying on cause of death data misrepresented the changes in the prevalence of chronic conditions, they were actually more common in the past

• we don’t yet understand the exact mechanisms, but the early development of organs influenced by nutrition is very important later in life

• there is a two way relationship between technological changes and economic growth: economic growth has enabled better nutrition but better nutrition enables people to work better leading to more economic growth

• in the 19th century, real wages stagnated or increased while mortality increased too:
  
  – some of the factors promoting economic growth also promoted the spread of infectious diseases
  
  – wages were partially compensating for the increased risk of death

• there is an important measurement issue: focusing on incomes rather than biomedical measures misrepresents changes in welfare

• also we tend to undervalue and mismeasure the benefits of government investments in public programs which benefit the poor disproportionately

• leisure has also increased a lot over the last 150 years, which leads to an underestimate of economic growth

• large reduction of economic and biomedical inequality during the 20th century

• the most important government interventions were public health programs