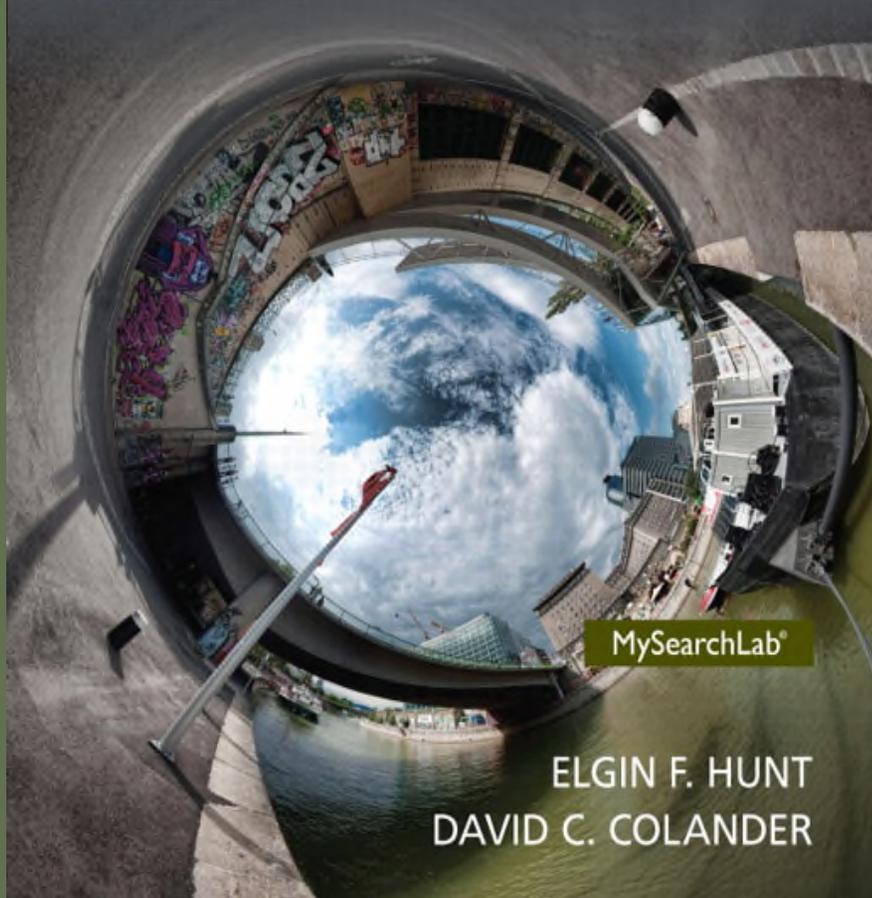


SOCIAL SCIENCE

An Introduction to the Study of Society

Fifteenth Edition



Human Origins

Chapter 2

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Origins of Human Species

- Most modern scientists agree:
 - First appeared in Africa
 - About 5 to 7 million years ago
 - Ape ancestors
 - Evolution produced first humanlike creatures

Darwin and Evolution

- Evolution: process of progressive change
- Human evolution
 - Popularized by English biologist Charles Darwin
 - Concept of natural selection
 - *The Origin of Species* (1859)
 - *The Descent of Man* (humans)

Concepts in Darwinian Evolution

- Darwin not the first
 - Aristotle, Lamarck, Linnaeus
- Natural selection
 - Some characteristics more favorable for survival
 - Survival of the fittest
- Mutation: random genetic changes

Mutation

- May be *neutral, beneficial* or *fatal*
 - Beneficial mutations make evolution possible
 - Over time, changes in species occur
- Random or accidental
- Increased by chemical/radiation exposure
- On genetic level, involves changes in alleles

Genetic Engineering

- DNA structure discovered in 1953
- Gene splicing makes gene manipulation possible (1970s)
- Genetic engineering: rearranging genetic materials to make new life forms
- Human Genome Project
 - Proteomics
 - Cloning

Sociobiology

- A combination of sociological and biological reflections that theorize a genetic basis for human behavior.
- Edward O. Wilson, Harvard entomologist, is a leader in sociobiology.

Punctuated Equilibrium vs. Gradual Change

- Darwin
 - Gradual change
 - Natural selection process
 - Microevolution
- Eldredge and Gould
 - Long periods of stability, followed by sudden changes
 - “Stop and go” process
 - Macroevolution

Theories of Evolution

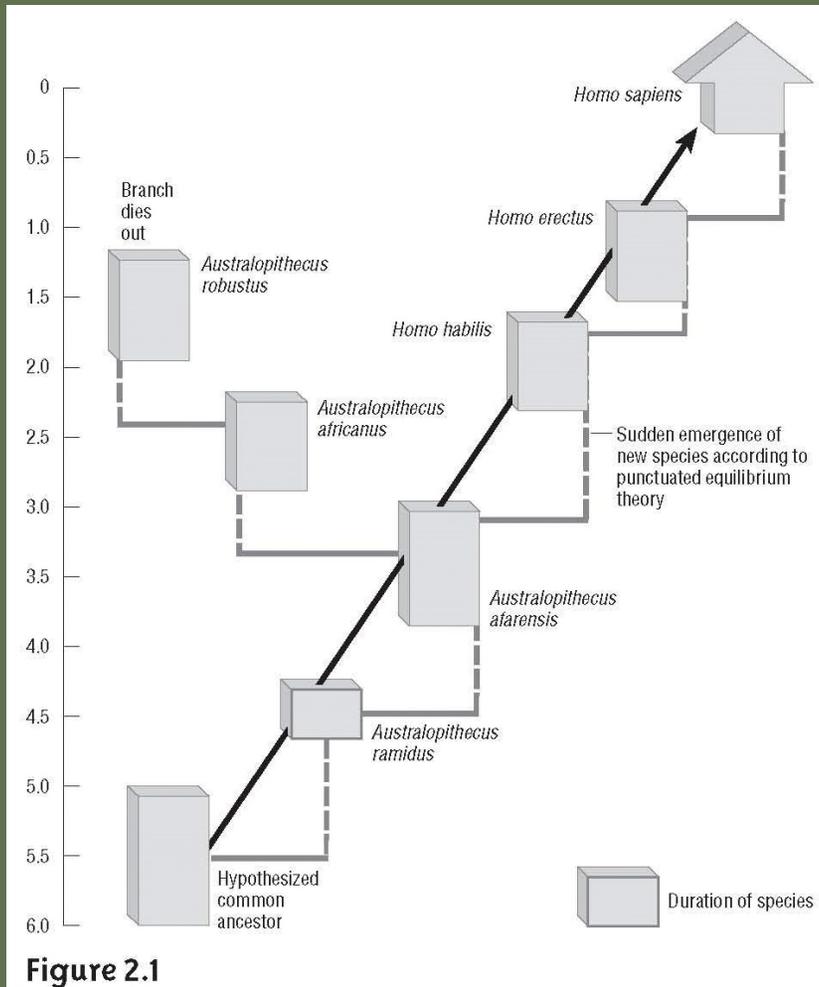


Figure 2.1

The Evolution of Human Beings: Science, Faith, and Controversy

- Scopes Trial (1925)
 - Teaching evolution in public schools
 - Laws against teaching evolution not repealed until 1960s
- Scientific creationism
 - Belief, not science-based
 - All life forms created spontaneously
 - Political pressure to include in texts, schools
 - Not endorsed by scientists
- Intelligent design theory

Timeline of Human Evolution

- **One-celled organisms** (billions of years ago)
- **Primates** (65 to 70 million years ago)
- **Apelike species** (22 to 38 million years ago)
- **Hominids** (6 to 10 million years ago)
 - Homo sapiens (reasoning man, MODERN)
 - Homo habilis (man with tool-making ability, EXTINCT)
 - Homo erectus (upright man, EXTINCT)

Lines of Descent

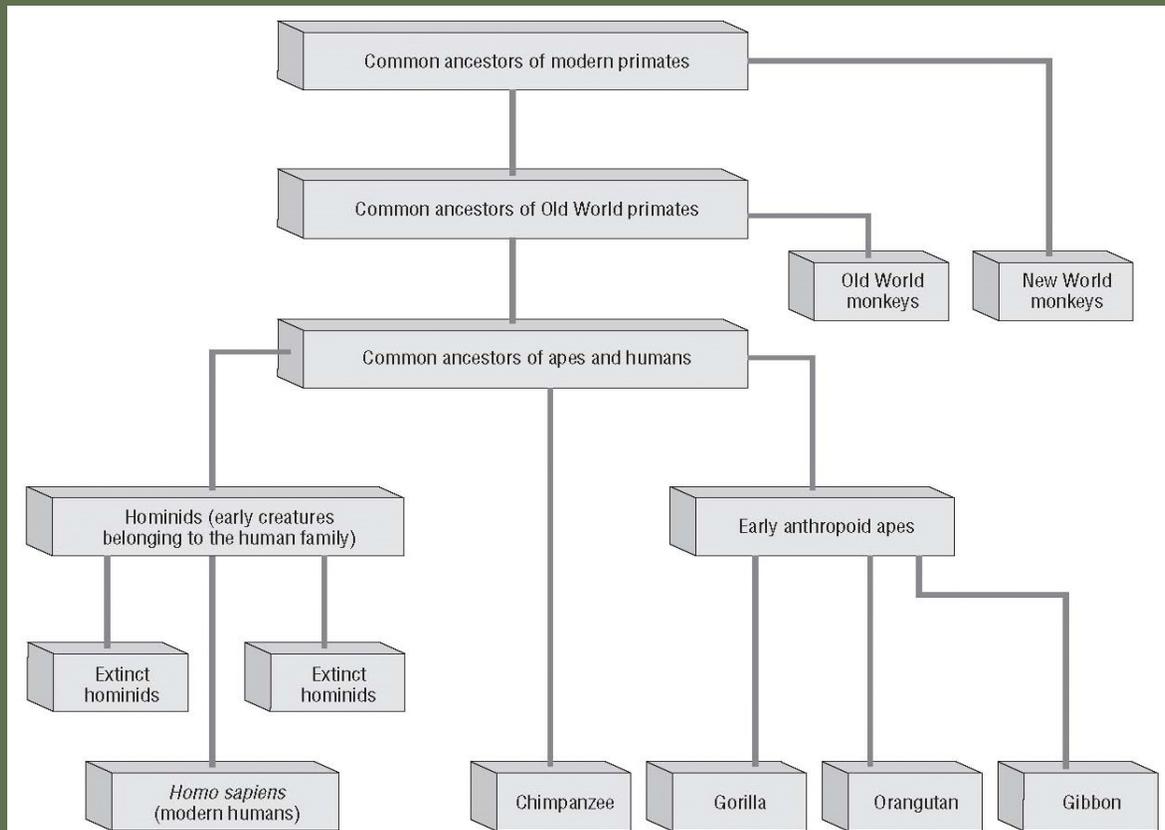


Figure 2.3

Possible lines of descent of humans and other higher primates from their common ancestral type.

Apes and Humans

Similarities

- Family life
- Care for young
- Emotions
- Social, cooperative
- Problem solving

Differences

- Brain size
- Brain complexity
- Normal posture
- Use of symbols
- Abstract thought

Emergence of Homo Sapiens

- Homo erectus changes into two branches:
 - Homo sapiens (modern humans)
 - Neanderthals
- **Homo sapiens**: larger brains, better tools
 - Emerges about 200,000-300,000 years ago, possibly longer
 - Supplants all other hominids
 - Ancestors of all modern humans
 - Immediately follows Cro-Magnons?

Modern Humans

- Physically distinct
- Culturally sophisticated
- Socially complex
- New era begins as Stone Age ends
 - Technological developments
 - New human interaction