

Chapter 2

- In February 2001, scientists published a map of the human genome (the complete set of genes for building and operating a human body)
- Focus on 4 main questions to answer “what makes development happen?”:
  - How are ideas about nature and nurture changed?
  - What are genes? What exactly do they do?
  - What is the “environment”?
  - How do the genetic code and environmental contexts interact in development?
- Perspectives on Nature and Nurture
  - 4 main views:
    - Development is driven by nature
      - Nativism: the idea that intelligence and other characteristics are innate or inborn, not acquired or learned
      - Preformationism (17<sup>th</sup> century)
        - Prevailing view was that the embryo was pre formed, a miniature adult whose future anatomy and behavior were already determined
        - Belief of Preformationism was accompanied by beliefs about human nature
        - In general, Western culture has viewed children as innately bad
      - Rousseau's Innocent Babes
        - Was an exception; believed children were innocent at birth and develop according to nature's plan- like a flower
        - The environment matters, but nature plays a leading role
        - Parent's job is to protect the child from harmful interference and let the child's development unfold
      - Genetic Determinism and Eugenics
        - Genetic determinism: the idea that human qualities are genetically determined and cannot be changed by nature or education
          - Internal (natural, genetic) factors control development, and external (nurturing, environmental) factors have little impact; the complete individual is already present in the fertilized egg
        - Eugenics (“good genes”): a philosophy that advocates the use of controlled breeding to encourage childbearing among individuals with characteristics considered “desirable” and to discourage childbearing among those with “undesirable” traits
          - Best known example is Hitler's effort to “purify” the Aryan race
    - Development is driven by nurture
      - Environmentalists hold that the newborn is uninformed, like a lump of clay, and the individual's characteristics are entirely the product of experience, upbringing, and learning
      - The Blank Slate

- 0 Introduced by John Locke in his essay "Concerning Human Understanding"
  - 0 Locke argued that the infant's mind is a tabula rasa, or blank slate, stating that nothing about development is predetermined and everything the child becomes is a product of his or her environmental experience
  - 0 Social consequence was the mental hygiene movement; advocates of mental hygiene took the environmentalist view
- Watson's Behaviorism
  - 0 Watson's theory on behaviorism was essentially a revival of Locke's tabula rasa- a strict, fundamentalist version of environmentalism
  - 0 Anyone can become intelligent if they are rewarded for studying or learning and for solving problems with intellect rather than emotions; nurture is everything
- Development is part nature, part nurture
  - How much does each contribute to different traits?
  - Heritability
    - 0 The degree to which different traits are influenced by genetic factors
    - 0 Heritability quotient
    - 0 Studies of heritability:
      - Twin studies; took advantage of a natural experiment
        - Identical twins vs. Fraternal twins
        - Identical twins are more alike than fraternal twins
      - Adoption studies; compared adopted children to their adopted parents and biological parents
      - Family relatedness studies; studied blended families
      - Concluded that virtually all human traits (physical, intellectual, social, emotional, etc) have substantial heritability quotients
    - 0 Shared environment: the environment that children growing up in the same household have in common
    - 0 Nonshared environment: the environment that children growing up together don't share
    - 0 Key factors:
      - Genetic and environmental influences work hand in hand
      - The idea that genes have the same impact in all environments is questionable
      - Heritability estimates do not consider malleability; even genes are flexible
    - 0 Every aspect of development is the product of both biological and environmental factors
- Development results from the interaction of nature with nurture
  - The contemporary view of nature and nurture emphasizes interaction

- The key to development is how genes and their environment interact
- Darwin's Influence
  - Believed that living plants and animals were descended from earlier, simpler forms
  - Theory of evolution rests on 2 main ideas:
    - Survival of the fittest: organisms best adapted to their environment survive
    - Natural selection: over time, adaptive traits become passed on while others die off
- Epigenesis
  - Gradual process of increasing complexity due to interaction between heredity (genes) and the environment
  - Nothing, or very little, is predetermined
  - Rooted in embryology and the theory of evolution
  - G. Stanley Hall (first president of the APA) believed that the early life of the individual resembled the evolutionary history of the species
  - Stem cells (primitive, undifferentiated cells found in large numbers in the embryo) demonstrate epigenesis
- What Are Genes, and What Do They Do?
  - Genes provide the continuity that make us human
  - Direct the cells of an embryo to become a human being
  - Help to establish our common modes of thinking, feeling, acting, and communicating
  - Contribute to the wide diversity within the human species
  - Study of human genetics deals with 2 different, related questions:
    - How do genes make us human and distinct from other species?
    - Within this human pattern, how do genes influence individual differences?
  - Becoming Human
    - All human beings have some traits in common:
      - Bipedalism: walking upright on 2 feet
      - Handiness: opposable thumbs
      - Language
      - Ability to alter our surroundings
      - Knack for calculations
      - Self-awareness
    - Canalization: the degree to which an element of development is dictated by the genetic program that all humans inherit
      - Locomotion is highly canalized
      - Development of morality is less highly canalized
    - One distinctive feature of human development is that we are born "prematurely"
      - Humans have evolved to be highly social animals; a prolonged period of juvenile appearance/behavior promotes the development of social bonds by attracting caregivers to infants
      - Humans depend on learning more than other species do
      - Our immaturity at birth make us more receptive to environmental influence