

The Psychology of Adaptation

Chapter 10



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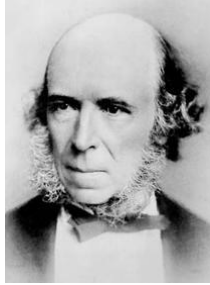


Evolution and Psychology

- Questions raised by evolution
 1. The *species* question
In what ways do the body and brain shape human behavior?
 2. The *individual* question
In what way is growth of the individual, through adaptation to the environment, considered comparable to organic evolution

Lamarckian Psychology

- Herbert Spencer (1820-1903)



The founder of the psychology of adaptation

- *Principles of Psychology* (1855) – Herbert Spencer
- Integrated associationism and sensorimotor physiology with Lamarckian evolution
- Answering the *species* and *individual* questions:
 - The law of 'associationism' attached to psychology
 - Ex. Intelligence

Spencer and the Brain

- Viewed the brain as an organizer of *infinite* experiences
 - Takes all the sensorimotor information and forms associations
- Instincts and reflexes no longer a challenge for Associationists and Empiricists
 - Given the Lamarckian idea of heritability
- All brains work by associationism
 - Quantitative not qualitative differences

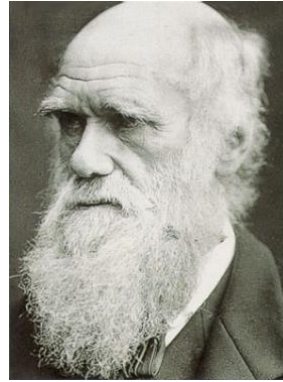
Influence of Spencer's Framework

- Comparative psychology
 - Aimed to find a single dimension of associative "intelligence" to arrange all species
- Behaviorism
 - Attempted to find the laws of learning based on mammalian models and apply them to human psychology
- Social Darwinism
 - The human species should be governed by the process of natural selection in order to perfect humanity

Darwinian Psychology

“IT IS NOT THE STRONGEST OF THE SPECIES THAT SURVIVES, NOR THE MOST INTELLIGENT, BUT THE ONE MOST RESPONSIVE TO *CHANGE*”

- Charles Darwin



The Descent of Man (1871)

- Charles Darwin (1809-1882)
 - Focused on *individual* question: faculties shaped by evolution
- Similarities with Spencer:
 - Quantitative not qualitative differences between species
 - Instincts and reflexes as a result of heredity

Francis Galton (1822-1911)

- Independently wealthy, so he turned to wherever his mind wandered
- Eclectic body of work includes:
 - Founding of mental testing
 - Pioneered the use of fingerprints for personal I.D.
 - Used twin studies
 - Invented free-association technique

Galton

- What factors make individuals different?
- Without variation there can be no “differential selection” and thus no evolutionary improvements
 - Complete contrast to the Wundt who wanted nothing to do with individual differences
- Goal: Demonstrate that the greatest human characteristics are innate and measurable
 - Eugenics movement

Eugenics

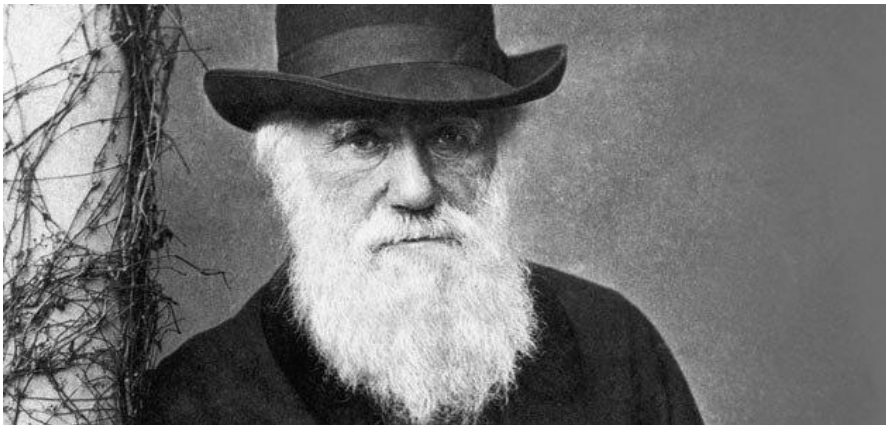
- Selective breeding to improve the human species
 - Galton: viewed selective breeding as a better method of improvement than education
- Eugenics gain in popularity in Britain
- Once attention was received however, it was only seen in two perspectives:
 - Negative eugenics: regulating the reproduction of lesser individuals
 - Reproduction of the upper and middle classes

THE RISE OF COMPARATIVE PSYCHOLOGY

The Rise of Comparative Psychology

- Study of the behavior and mental processes of animals, with a particular focus upon phylogenetic history, adaptive significance, and development of behaviors
- Comparisons of human and animal abilities date back to figures such as Aristotle, Descartes and Hume
- However, establishment of comparative psychology as a science spawned from the introduction of evolutionary theory in nineteenth century Britain

Rise of Modern Comparative Psychology in Great Britain – Charles Darwin (1809-1882)



Rise of Modern Comparative Psychology in Great Britain – Charles Darwin (1809- 1882)

- Often suggested to have begun with the publication of Darwin's *The Expression of the Emotions in Man and Animals*
- Surveyed the means of emotional expression possessed by humans and animals, noting the continuity between them and demonstrating universalities among races of humanity
- Developed a theory of how emotional expressions developed in humans and proposed that facial expressions of emotion is universal and innate
 - -Psychological research has supported/classified six facial expressions which correspond to distinct universal emotions: disgust, sadness, happiness, fear, anger, surprise
- Darwin's early contributions to comparative psychology carried on by his friend George John Romanes

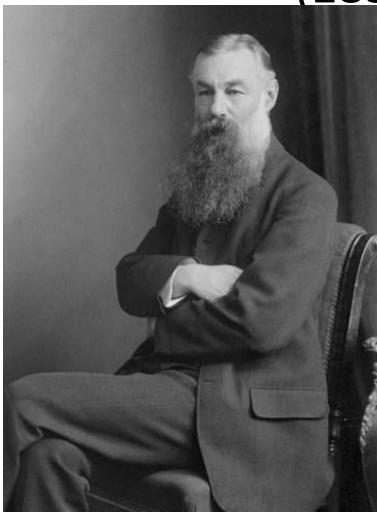
Rise of Modern Comparative Psychology in Great Britain – George John Romanes (1848-1894)



Rise of Modern Comparative Psychology in Great Britain – George John Romanes (1848-1894)

- Beginnings of methodology in comparative psychology
- Employed an anecdotal method, which used projective inferences from compilations of animal behavior observations he collected/received - lacked internal validity & overestimated animal intelligence
- In *Animal Intelligence* (1883) Romanes surveyed the mental abilities of animals from protozoans to primates
- Final works were never completed but attempted to trace gradual evolution of the mind through history
- Work left in the hand of his literary executive C. Lloyd Morgan

Rise of Modern Comparative Psychology in Great Britain – C. Lloyd Morgan (1852-1936)



Rise of Modern Comparative Psychology in Great Britain – C. Lloyd Morgan (1852-1936)

- Objected to Romanes overestimation of animal intelligence and introduced what is now known as *Morgan's canon*
- Believed that inferring mental processes from behavior presented difficulties and pushed for the usage of objective inferences as opposed to the projective inferences used by Romanes
- Objective inferences are scientifically legitimate because they do not depend on analogy, are not influenced by emotions of subjectivity, and, may be susceptible to experimental verification
- Sadly, the derision of Romanes anecdotal method overshadowed the suggestions made by Morgan, and led to the complete rejection of any consideration of the animal mind by American animal psychologists

Psychological Ideas in the New World

- Although the psychology of adaptation began in England, it truly flourished in one of Britain's former colonies
- The psychology of adaptation became one of the most prominent areas of psychological science in the United States

Psychological Ideas in the New World – General Intellect and Social Environment

- First settled by protestants (puritans) who brought two main intellectual ideals: evangelical religion and Enlightenment philosophy (very unwelcoming to catholic settlers)
- Widespread embracing of evangelical Christianity which focused upon salvation of the individuals soul and accepting God's will
- Influence of evangelical Christianity was strong enough to withstand ideals from the age of reason and the transcendental movement
- Rejected antireligious skepticisms of the enlightenment

Psychological Ideas in the New World – General Intellect and Social Environment

- Many early American psychologists, including John B. Watson, had originally intended to become preachers
- Similarities between evangelical Christianity attempts to modify soul and behavior and American psychologists' efforts to behavior; both in efforts to make the individual 'better'
- Preachers wrote about ways to change souls through preaching while psychologist wrote about ways to change behavior through conditioning

Psychological Ideas in the New World – General Intellect and Social Environment

- Many of the ideas of the enlightenment were deemed offensive by America's religious temperament, and only moderate elements of the enlightenment thought were deemed important by America
- However, these select elements were rather influential, especially the ideas of the Scottish enlightenment including Reid's commonsense philosophy which was perfectly compatible with religion
- Scottish philosophy became the established curriculum in every aspect of higher education in America from ethics to psychology
- Together the influence of evangelical Christianity, select ideas from the Enlightenment, and the interactions of both with development of business in America shaped the intellectual climate

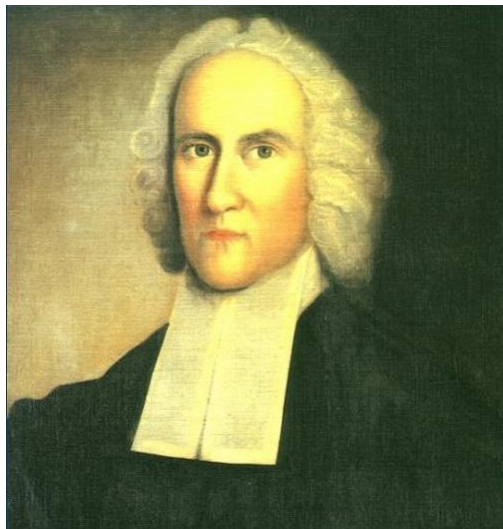
Psychological Ideas in the New World – The Role of Business in Early America

- With no feudal aristocracy, no established church, and a distant king; individual enterprise & struggle to survive whilst competing with other businessmen led to the high value of 'useful knowledge'
- American Protestants came to view invention/innovation as glorifying the ingenuity of god, and technology was an American word
- Leading the world in the development of practical knowledge, Americans vigorously pursued any accomplishment leading to the enrichment of the businessman & advancement of the American dream
- Believe that a free/democratic society would lead to the production of geniuses that would surpass even Newton

Psychological Ideas in the New World – Philosophical Psychology

- Puritan's had originally brought medieval faculty psychology with them to America, however it perished in the early eighteenth century
- However, when Jonathan Edwards read Locke, he fanatically delved into empiricism; concluding the mind knew only its perceptions and expanded upon the of associations in mental operations (like Hume)
- Edwards drive towards skepticism paved the way for the American form of transcendentalism
- But transcendentalism's influence in America was limited and eventually minimized as Scottish commonsense philosophy maintained it's grip on American though

Jonathan Edwards (1703-1758)



Psychological Ideas in the New World – Phrenology in America

- American's became much more interested in faculty psychology as the nineteenth century progressed, this interest led to the establishment of the pseudoscience known phrenology in America
- Johann Spurzheim and George Combe toured across America during the early nineteenth century lecturing about phrenology, which two American businessmen Orson & Lorenzo Fowler attended
- They minimized the scientific content of phrenology and maximized it's practical application and established a business in New York
- They developed a journal of phrenology, toured America, offering character readings for a price and molded phrenology into a very profitable enterprise (with many people seriously accepting life advice)

THE NEW AMERICAN PSYCHOLOGY

The Metaphysical Club

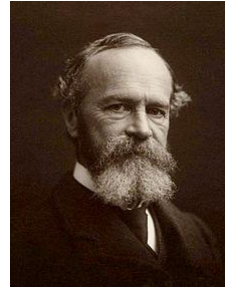
- Group of Harvard educated men who met between 1871 and 1872
- Three members important for the history of American psychology:
 - Chauncey Wright (1830-1875)
 - Charles S. Peirce (1839-1914)
 - William James (1842-1910)

The Metaphysical Club

Wright



Peirce



Pragmatism

- Metaphysical Club responsible for the only purely American philosophy, pragmatism
- Described as a hybrid of Bain and Darwin's ideas, name derived from Kantian philosophy
- Used Bain's idea that belief is a predisposition to behave
- From Darwin learned to treat the mind as part of nature
- Club rebelled against Scottish philosophy, separated soul from body, linked to creationism
- Despite name, disagreed with Kant about truth, believed NO belief can be held with absolute certainty

Chauncey Wright

- Proposed that a person's beliefs evolve just as species do
- Habit as relationship between stimuli and response
- Mind as part of nature, pointing towards American psychology's emphasis on behaviour

Charles S. Peirce

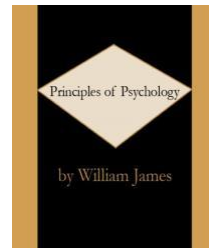
- Trained as physicist and worked for railway
- Published little of his own work
- Published conclusions of the Metaphysical Club in 1878 in a paper called *How to Make Our Ideas Clear*
- The function of thought to produce habits of action, beliefs are rules for actions
- Habits must be practical to be meaningful
- Peirce's earlier work as physicist meant that concept useless if it can't be translated into observable phenomenon

Charles S. Peirce

- James later expanded pragmatism to involve emotions, Peirce didn't agree
- Peirce never became psychologist, campaigned against Scottish School and for experimental psychology
- 1877 published paper on psychophysical study of colour, first study on experimental psychology done in America
- 1887 posed the question: Can a machine think like a man?
- Despite this his influence was minimal in the long term

William James

- Began working on his own version of pragmatism, psychology not philosophy
- Published *Principles of Psychology* in 1890, watershed moment for American Psychology
- Inspired psychology students and set the tone for American psychology



William James

- Started career as MD, teaching physiology
- Became interested in psychology and eventually moved to philosophy
- Function of consciousness more important than content
- Consciousness serves the ends of the organism (i.e. survival)
- Consciousness always choosing, acting towards an end

William James

- Two aspects of adaptive nature of consciousness:
 - Gives its bearer interest, machines don't care about survival
 - Gives its bearer choice, dependant on interest in survival
 - Consciousness arises when instinct and habit can't cope with challenges of new situation

William James

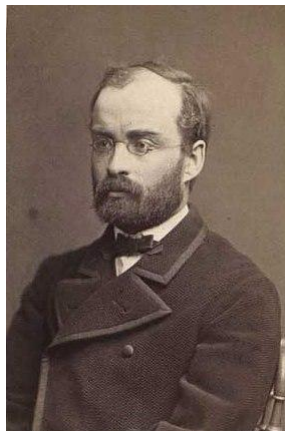
- Believed that without consciousness there is no survival, humans clockwork mechanisms (automaton theory)
- Consciousness increases efficiency of brain by loading its dice
- Also strongly believed in physiology, "the brain is the one immediate bodily condition of the mental operation"
- Created contradiction between James' cerebral views on consciousness and his belief in behavioural efficacy of same

William James

- Wrestled with the question: what is emotion?
- James (1884) stated that a perceived stimulus brings about a reaction in the nervous system that triggers a conscious response, emotion
- Became known as the James-Lange theory of emotion
- 2 effects mental states have on the body
 - Thought of an act automatically leads to the execution of it, unless otherwise inhibited
 - Cause internal bodily changes (eg. Change in heart rate, glandular secretions)

James-Lange?

Carl Lange



William James

- James (1890) set out psychology to be a natural science, physiological aspect should make it part of biology
- Psychology as an applied discipline, should be practical and make a difference in the lives of ordinary people
- 1892 James left psychology and returned to philosophy, appointing Hugo Münsterberg to succeed him

Jamesian Pragmatism

- Starting 1895 James developed pragmatic approach to all problems of science and philosophy
- Idea meaningless unless it contributed to peoples lives
“Ideas become true just in so far as they help us get into satisfactory relations with other parts of our existence”
- James breaks from Peirce, making his idea of truth much broader
- Ideas about God or free will could be true because they held meaning to people

Jamesian Pragmatism

- Pragmatism considered anti-intellectual, held head and heart equal
- Pragmatism offered as a functional philosophy, method for people to live their lives
- Trend continued in functional psychologists and behaviouralists
- James remembered for his roles in philosophy and psychology, called father of American psychology

TO BEHAVIOURALISM

From Mentalism to Behaviouralism

- April 1913: Warner Fite reviewed *The Nation*
-psychology little concerned with consciousness
- Psychology changed since James wrote *Principles*
- Transition from mentalism, defining psychology as scientific study of consciousness, to behaviourism

The Motor Theory of Consciousness, 1892-1896

- Spirit of new psychology in America was that of James' *Principles of Psychology*
- James had doubts about the professional and commercial attitudes in academia
- He also had doubts about scientific psychology, yet it was from his text that American psychology developed

Hugo Munsterburg

- James -> psychology to philosophy
- He sought Munsterburg to replace him as Harvard's experimental psychologist
 - the nature of will
 - stimulus->psychological process-> response
- Motor Theory grew from Munsterburg, James, and others:
S---Consciousness/Physiological Process---R

John Dewey and the Reflex Arc

- Own pragmatic view of consciousness: instrumentalism
- America's native psychology: functionalism
- "The Reflex Arc Concept of Psychology"
- 1943: One of most important papers ever published

From Philosophy to Biology: Functional Psychology 1896-1910

- Experiments become functional
- Functional Psychology Defined
 - Titchener
 - Morphology->Experimental Psych
 - Physiology->Functional Psych
 - Ontogeny->Genetic Psychology

- From Undercurrent to Main Current
 - Reversing of Titchener's priorities
 - James' consciousness to behaviourism
 - by 1907 functional psychology had replaced structural psychology

Functional Psychology in Europe

- Brentano to Ward
- Atomism
- Refutation of naturalism and support of Christianity

Rethinking the Mind: The Consciousness debate, 1904-1912

- Pragmatism: Does Consciousness Exist?
- The Relational Theory of Consciousness: Neorealism
 - The Mind within and the Mind Without – 1904 (Perry)
- The Functional Theory of Consciousness: Instrumentalism
 - Dewey (1939)

Establishing American Psychology

- Experimental: New
- Protestantism
- G. Stanley Hall (1844-1924)

To the Future

- By 1892 psychology was well established in America
- Behaviour over Consciousness

Questions?

Review

- The *Species* and *Individual* questions
- Lamarckian Psychology
- Darwinian Psychology
 - Galton and eugenics

Review

- Metaphysical Club from 1871-1872, 3 important people of psychology Wright, Peirce, and James
- Peirce first to publish about pragmatism, any idea that could not be translated into visible phenomenon was useless
- First psychophysical work done in US
- James stated consciousness important to survival
- Expanded pragmatism to involve emotion, James-Lange theory of emotion
- Never could fully reconcile cerebralist and behaviouralist beliefs

Review

- Psychology of adaptation began with comparative psychology
- Comparative psychology initiated by early works of Charles Darwin in Britain, which was then carried on by his friend George Romanes
- Romanes developed first methodology of studying comparative psychology but lacked control and relied on subjective interpretations
- C. Lloyd Morgan carried on with Romanes interest in the animal mind, but approached comparative psychology with a less subjective method of study and utilized more parsimonious methodology/inferences
- Influence of Morgan overlooked by American psychologist in the nineteenth century due to the Romanes anecdotal methods and projective inferences

Review

- First settled by puritan protestants whom brought their ideals and select influences of the Enlightenment to America
- Rejected anti-religious skepticisms of many European philosophies
- Strong evangelical Christian influence upon early directions of science, academic institutions, and philosophies adopted
- Scottish philosophy and Reid's commonsense philosophy not surprisingly accepted as the established curriculum in early American colleges as it was perfectly compatible with religion
- Central focus shifted towards useful/applicable knowledge (invention/innovation) in America which could be used to enrich the businessmen and further the 'American Dream'

Review

- When puritans first arrived to the United States they brought medieval faculty psychology with them, however it perished in favor of Scottish philosophy and the pursuit of useful knowledge
- America's first great philosopher Johnathan Edwards, inspired by work of Locke, delved deeply into empiricism and paved the way for transcendentalism in America, but Scottish commonsense philosophy still managed to maintain a grip upon academia in early America
- Interest in faculty psychology however returned in the nineteenth century, leading to the great success of the pseudoscience known as phrenology
- American businessmen Orson & Lorenzo Fowler attended a lecture on phrenology early in the nineteenth century and developed phrenology into a vastly successful and profitable enterprise based upon applicable theory from phrenology

Review Questions

- Why did behaviouralism become the psychology of the age? Is there really a difference between studying consciousness versus behaviour?
- What was the overall effect that William James had on psychology in America?
- How does Lamarckian psychology compare to Darwinian psychology in answering the *species* and *individual* questions?
- How did religion influence the scientific environment of early America and what effect did this have on the directions of psychology at the time?

Glossary Terms

Social Darwinism: Is a modern name given to various theories of society that emerged in England and the United States in the 1870s, and which allegedly sought to apply biological concepts of natural selection and survival of the fittest to sociology and politics

Eugenics: Is the belief and practice of improving the genetic quality of the human population.

Functionalism: is a theory of the mind developed largely as an alternative to both the identity theory of mind and behaviourism. Its core idea is that mental states are constituted solely by their functional role.

Individual Question: The scientific investigation/questioning of individual differences that exist amongst the members of the same species.

Glossary Terms

Morgan's Canon- a concept in comparative (animal) psychology that states that any activity performed by an animal should not be interpreted as a result of a higher psychological function if it can fairly be interpreted by a function which occurs lower in psychological development

Pragmatism- a philosophy that originates in the United States in the 1870s which created as a hybrid of Bain and Darwinian ideals and in opposition to the reigning Scottish philosophy at the time

The Species Question- a question posed by Charles Darwin that asked how new species arose, leading him to his theory of evolution

- the members of the same species.