Lecture 12:  The Rise and Fall of Behaviorism

I. INTRODUCTION
A. Introduction
- The Rise and Fall of Behaviorism
  - By 1965, the tide began to turn.
    - There was the “cognitive revolution” and “humanistic psychology” which embraced the very mentalism which Behaviorism sought to reject.
- Why behaviorism declined is complicated.
  - Behaviorism was demonstrated to be overly simplistic and inadequate philosophically and empirically.
  - Behaviorism no longer theoretically dominant.

B. The Context of Behaviorism
- The zeitgeist of the time resulted in the developing of behaviorism.
  - Objective psychology was already established in Russia and several functionalists were discussing openly many ideas later emphasized by John Watson.
  - The success of animal research also contributed greatly to the development of behaviorism.
  - The strain resulting from proposals for a strict objective science of psychology but the continued use of introspection created the atmosphere that ultimately led to the “behaviorist revolution.”

- It started off slowly in 1910s
  - Watson’s 1913 manifesto, Psychology as the Behaviorist Views It, claimed that introspective psychology was unscientific because it did not deal with objective states.
- There is a complete rejection of mentalism by Watson in the 1910s and Skinner in the 1940s
- By the 1940s and 1950s, behaviorism reigned supreme in American experimental psychology.
  - There was an emphasis on learning and experience over inheritance of traits in every sphere of applied and theoretical psychology.

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I. INTRODUCTION
   B. The Context of Behaviorism
   ▪ Two sections to the presentation
   ▪ Origins of Behaviorism:
     ▪ Russian Physiology of Reflexes
     ▪ American Foundations: J.B. Watson
     ▪ British Foundation: MacDougall
   ▪ NeoBehaviorism
     ▪ Edward Chase Tolman
     ▪ Clark Leonard Hull
     ▪ Edwin R. Guthrie
     ▪ B. F. Skinner

II. ORIGINS OF BEHAVIORISM
   A. Russian Physiology of Reflexes
   ▪ Ivan Mikhailovich Sechenov (1829–1905)
     ▪ Sechenov's major interest was neurophysiology
     ▪ He showed that brain activity is linked to electric currents and was the first to introduce electrophysiology.
     ▪ Focused on the nature and inhibition of spinal reflexes
     ▪ Studying the physiology of reflexes was important part of the context of the founding of behaviorism
   ▪ Ivan Mikhailovich Sechenov
     ▪ Proposed
     ▪ Main purpose of the central nervous system was to inhibit reflexive behavior
     ▪ Development establishes inhibitory control over reflexive behavior.
     ▪ Rejected the idea of spontaneous or un-elicited behavior.
     ▪ The only valid Psychological approach was the objective methods of physiology.
II. ORIGINS OF BEHAVIORISM
A. Russian Physiology of Reflexes

- Ivan Petrovitch Pavlov (1849–1936)
  - Won the Nobel Prize in 1904 for his work in physiology.
  - During work on the physiology of the digestive system, he discovered the conditioned reflex.
  - Noted that objects or events associated with presentation of food also produced gastric secretions.
  - Referred to secretions as "conditional" (mistranslated as conditioned) responses because they depended on something else.

For details of Classical Conditioning, see the textbook.
- He applied objective physiological measures to study the association between stimulus and response.
- Explained how reflexes can be modified by environmental associations.
- Even explained neurosis: Experimental neurosis occurs when excitatory and inhibitory conditioned tendencies are brought into conflict.

- Pavlov’s Signal Systems
  - First-signal system or “the first signals of reality.”
  - Stimuli (conditioned stimuli) that come to signal biologically significant events
  - Second-signal system or “signals of signals”
  - Humans learn to respond to symbols of physical events (use of language, words are symbols referring to events).

- Low opinion of psychology.
  - But big influence on the discipline!
II. ORIGINS OF BEHAVIORISM

A. Russian Physiology of Reflexes

- Vladimir Mikhailovich Bekhterev (1857–1927)
  - Neurophysiologist who noted the role of the hippocampus in memory around 1900.
  - He founded the field of psychopharmacology.
  - An objective study of relations between environmental influences and overt behavior. In humans.
  - Critical of Pavlov's work
  - He transformed and applied it from dog secretions to human behavior.

B. American Behaviorism: Watson

- John Broadus Watson (1878–1958)
  - Founder and promoter of behaviorism
  - Objective methodology applicable to humans and animals
  - Physiological basis
  - Critical paper was *Psychology as the Behaviorist Views It* (1913)
  - Polemical tone
  - Emphasis on application

- 1908 announces behaviorist views and 1913 publishes the so-called *Behaviorist Manifesto*
  - Psychology is a purely objective experimental branch of natural science.
  - Its theoretical goal is the prediction and control of behavior.
  - Introspection forms no essential part of its method.
  - The behaviorist, in his efforts to get a unitary scheme of animal response, recognizes no dividing line between man and brute.
II. ORIGINS OF BEHAVIORISM
B. American Behaviorism: Watson

- John Broadus Watson
  - Four types of behavior
    - Explicit (overt) learned behavior
      - talking, writing, etc.
    - Implicit (covert) learned behavior
      - increased heart rate caused by a feared stimulus
    - Explicit unlearned behavior
      - grasping, blinking, sneezing, etc.
    - Implicit learned behavior
      - glandular secretions
  - All behavior, including thinking, falls into one of the categories.

II. ORIGINS OF BEHAVIORISM
B. American Behaviorism: Watson

- John Broadus Watson
  - Four methods of research
    - Observation, naturalistic or controlled
    - Conditioned-reflex method, proposed by Pavlov and Bechterev
    - Testing, meant taking samples of behavior and not measurement of “capacity” or “personality”
    - Verbal reports, which were treated as any other type of overt behavior.

II. ORIGINS OF BEHAVIORISM
B. American Behaviorism: Watson

- John Broadus Watson
  - Language & thinking as behavior.
    - Speech overt behavior, while thinking was sub-vocal speech.
  - There were a few simple reflexes
    - No complex innate behavior; only experience impacts behavior
  - Humans inherit basic reflexes and emotions of fear, rage, and love.
    - These Emotions elicited by stimuli and others are derived from the 3.
      - Little Albert and emotional conditioning

II. ORIGINS OF BEHAVIORISM
B. American Behaviorism: Watson

- John Broadus Watson
  - Proposed that children should be raised in an objective manner
    - Little displays of affection; treated as adults; receive sex education.
  - Contiguity and Frequency
    - Events associated in time, which produces conditioning of behavior.
  - Adopted physical monism.
    - Switched to a physical monism mind-body position, rejecting mental events (consciousness) altogether.
II. ORIGINS OF BEHAVIORISM
B. American Behaviorism: Watson
- John Broadus Watson
- Watson’s Behaviorism had two long-lasting effects
  - Psychology’s main goal changed from description and explanation of states of consciousness to the prediction and control of behavior.
  - Overt behavior was the almost-exclusive subject matter of psychology.

II. ORIGINS OF BEHAVIORISM
B. American Behaviorism: McDougall
- William McDougall (1871 – 1938)
  - He wrote a number of highly influential textbooks
  - He was particularly important in the development of the theory of instinct and of social psychology.
  - Critiqued Watson’s behaviorism for its lack of instinct and purpose.
  - His work was very well known and respected among lay people.

II. ORIGINS OF BEHAVIORISM
B. American Behaviorism: McDougall
- William McDougall
  - Defined psychology as the science of behavior
    - Mental events valued and could be studied objectively by observing their influence on behavior.
  - Behavior is goal-directed and stimulated by instinctual motive
    - Minimized environmental events and emphasized purposive nature of behavior.

II. ORIGINS OF BEHAVIORISM
B. American Behaviorism: McDougall
- William McDougall
  - Believed that all behavior is stimulated by instinctual energy
    - Instincts provide motivation to act in certain ways.
  - Single event or thought tends to elicit several instinctual tendencies
  - Associating multiple instincts with a single object or thought creates a sentiment
  - Most human social behavior is governed by sentiments.
II. ORIGINS OF BEHAVIORISM
   B. American Behaviorism: McDougall
      - McDougall vs. Watson
        - On Instincts
          - Watson denied humans instincts whereas for McDougall they motivated of all behavior.
        - On Reinforcement
          - Watson rejected reinforcement in learning whereas for McDougall reinforcement was a process of need reduction central to learning
        - On Debates
          - McDougall is seen as the narrow victor over Watson in debates.

III. NEOBEHAVIORISM
   A. Introduction
      - Characteristics of Neobehaviorism
        - Were radical empiricist
          - All theoretical terms must be operationally defined as demanded by Logical Positivists of the Vienna Circle (philosophers committed to eliminating metaphysics)
        - Nonhuman animals should be used as research participants for two reasons:
          - Relevant variables are easier to control in animals than when using human subjects.
          - Perceptual and learning processes in animals differ only in degree from those processes in humans
        - Information gained from research with nonhuman animals can be generalized to humans.

III. NEOBEHAVIORISM
   B. E. C. Tolman
      - Edward Chance Tolman (1886 - 1959)
        - American psychologist best known for his studies of learning in rats using mazes.
          - His major theoretical contributions came in his 1932 book, Purposive Behavior in Animals and Men
          - Psychological Review papers included
            - The determinants of behavior at a choice point (1938)
            - Cognitive maps in rats and men (1948)
            - Principles of performance (1955)
III. NEOBEHAVIORISM

B. E. C. Tolman

- Edward Chance Tolman
  - Purposive and molar behavior
    - Studied purposive (molar) behavior in contrast to the molecular behavior that he saw Watson studying.
  - Rats used to avoid introspection
    - Rats guarded against even indirect introspection that could occur if humans were experimental participants.
  - Cognitive intervening variables
    - To Tolman, cognitive processes (hypotheses, expectations, beliefs, and sometimes cognitive maps) intervene between stimuli and responses.

Learning can occur without reinforcement or motivation.

- Distinguished learning & performance
  - Learning takes place constantly as the organism interacts with its environment.
  - Whether the organism uses what it has learned is determined by its motivational state.
- Performance is translation of learning into behavior.
  - Latent Learning: Tolman & Honzik, (1930)
  - Latent Extinction: In extinction, an animal’s expectation is modified by a lack of contingency.

C. Clark L. Hull

- Clark Leonard Hull (1984 - 1952)
- American who explained motivation and learning by scientific laws
  - His most significant works were the *Mathematico-Deductive Theory of Rote Learning* (1940), and *Principles of Behavior* (1943), established his formal analysis of learning and conditioning.
- Model is couched in biological terms:
  - Organisms suffer deprivation. Deprivation creates needs. Needs activate drives. Drives activate behavior. Behavior is goal directed. Achieving goals have survival value.

Hull’s hypothetico-deductive theory of learning

- Used intervening variables as Tolman, but used them more extensively.
- From summarizing the research on learning, he formed postulates from which he inferred theorems that yielded testable propositions.
  - Hull’s intervening variables were primarily physiological, in contrast to the cognitive variables of Tolman.
  - His final theory had 17 postulates and 133 theorems.
III. NEOBEHAVIORISM
C. Clark L. Hull

- Clark Leonard Hull (1984 - 1952)
  - Reinforcement: Drive-reduction theory of reinforcement.
    - A biological need creates a drive and the decrease of drive constitutes reinforcement.
  - Habit strength: An increase in habit strength constitutes learning.
    - The number of reinforced pairings between an environmental situation and a response.
  - Reaction potential: Probability a learned response will occur.
    - Function of amount of drive and habit strength and other intervening variables.

III. NEOBEHAVIORISM
D. Edwin R. Guthrie

- Edwin R. Guthrie (1984 - 1952)
  - American who played an important role in the development of the contiguity theory of learning.
    - Contiguity (how close in time two events must be for a bond to be created)
    - Reinforcement (any means of increasing the likelihood that an event will be repeated) are central to explaining the learning process.
  - He developed a one-trial, contiguity, non-reinforcement theory of learning.
III. NEOBEHAVIORISM

E. B. F. Skinner

- Burrhus Frederic Skinner (1904 – 1990)
  - American who discovered the operant conditioning which was the basis of:
    - An approach to psychology *The Experimental Analysis of Behavior* and a philosophy of psychology *Radical Behaviorism*
    - Skinner was listed as the most influential psychologist of the 20th C.
    - He published 21 books and 180 articles.

- Burrhus Frederic Skinner
  - Radical Behaviorism
    - Scientists were to collect empirical facts and then infer knowledge from the facts
    - Science is to be descriptive and inductive rather than theoretical and deductive.
  - Functional analysis of behavior
    - An analysis of the relations between environmental and behavioral events.
    - Internal events have no place in such an analysis because they are events also and thus need to be explained also.
    - Internal events cannot serve as explanations or causes of behavior.

- Burrhus Frederic Skinner
  - Operant behavior
    - Two types of behavior
      - Respondent behavior is reflexive behavior in which Watson and Pavlov were interested
      - Operant behavior is influenced by its consequences. (Gets around calling it volitional)
    - Operant conditioning occurs as behavior affected by its consequences.
      - Reinforcement is when a consequence increases the rate/probability of behavior
        - The reinforcer can be anything as long as its effect is an increase in behavior probability.
  - Punishment is when a consequence decreases the rate/probability of behavior
    - Reinforcement exerts better control over behavior than punishment.
  - Selection of behavior by consequence is a Darwinian idea.
    - The organism produces a variety of behaviors
      - Some will result in consequences that will increase the behavior (reinforcing).
      - These behaviors will be selected as part of the organism’s repertoire while others will not
III. NEOBEHAVIORISM

E. B. F. Skinner

- Burrhus Frederic Skinner

- Behavior Analysis
  - Skinner and other behavior analysts have always sought to apply operant principles to solve practical problems.
  - Applied behavior analysis has provided a behavior technology to change behavior in multitudes of settings.
  - Prominent area is application of to help people in educational settings
    - Problems ranging from psychosis, drug addiction, mental retardation/learning disabilities, speech disorders, shyness, phobias, and juvenile delinquency.