CHAPTER 10 – FUNCTIONALISM AT THE UNIVERSITY OF CHICAGO AND COLUMBIA UNIVERSITY

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Unlike the Structuralist and Gestalt schools, Functionalism did not have a single leader. Functionalism was intended to be an inclusive, pragmatic, useful American psychology.

Major American functionalists are:
- John Dewey
- James Rowland Angell & Harvey A. Carr

Woodworth & Thorndike were sympathetic to it.

Today, nearly all psychologists are functionalists.
John Dewey (1859-1952)

- Dewey was not only a psychologist but also an important philosopher and educational innovator, social critic and commentator.
  - He represented New England values all his life.

- After graduating from Univ. of Vermont Dewey taught for 2 years.
  - Teachers taught all subjects, with no required qualifications.
  - Discipline was physical, kids were expected to sit quietly until called, learn by rote and ask no questions.
John Dewey

“I channeled John Dewey. He says if you want to be a good teacher, don’t teach reading and writing. Teach students.”
Dewey at Johns Hopkins & Mich.

- Dewey was a grad student under G. Stanley Hall
  - Classmates were Woodrow Wilson & Cattell.
  - Following graduation he became an instructor at the Univ. of Michigan, teaching philosophy & psychology.

- He wrote “Psychology” in 1887, which was overshadowed by W. James Principles in 1890.

- He published an assessment of language development in children, one of his few empirical studies, in 1894.
  - Probably based on his own children.
In 1894, Dewey became chair at Univ. of Chicago. Dewey’s dept included psychology & pedagogy.

In 1896 he published “The Reflex Arc Concept in Psychology” emphasizing the adaptive value of mind and consciousness.

He criticized stimulus-response and sensation-idea dichotomies, saying that responses and ideas always occur in a functional context (child reaching for flame).

We must consider how the response adjusts to the environment, the stimulus’s “psychological value.”
Suppose now (these assumptions being granted) that we have a baby before us who sees a candle-flame for the first time, and, by virtue of a reflex tendency common in babies of a certain age, extends his hand to grasp it, so that his fingers get burned. So far we have two reflex currents in play: first, from the eye to the extension movement, along the line 1-1-1-1 of Fig. 3; and second, from the finger to the movement of drawing back the hand, along the line 2-2-2-2.

If this were the baby's whole nervous system, and if the reflexes were once for all organic, we should have no alteration in his behavior, no matter how often the experience recurred. The retinal image of the flame would always make the arm shoot forward, the burning of the finger would always send it back. But we know that 'the burnt child dreads the fire,' and that one experience usually protects the fingers forever.
Dewey considered himself a “democratic evolutionist.”

- Culture, education, government make people different than other species, ensuring ability to compete for all.
- All people should have an equal chance – to accomplish this, educational reform was critical.

Dewey wrote “The School and Society (1899) with psychology as the basis for sound educational theory and practice, meeting 4 child needs:

- Conversation, curiosity, construction, artistic expression.
Dewey’s Lab School

- Dewey established a university-based school to study how children think and learn.
  - 140 students, 23 teachers, 10 grad student assistants.
  - A model for similar lab schools on college campuses.
- Education must foster growth and keep the mind flexible – opposed to rote and drill learning.
  - Lessons were presented in some context (e.g., cooking & math together).
Dewey’s Later Life

- In 1904, Dewey went to the Columbia University.
- He was a charter member of the APA and president in 1899. He was the 4th psychologist elected to the National Academy of Sciences.
- He founded the first teacher’s union in NYC.
- With Cattell, he founded the AAUP & was its first president.
- He supported the ACLU & NAACP.
- He remains influential despite never doing a study.
James Rowland Angell (1869-1949)

- Angell took over leadership in Chicago when Dewey left.
- Angell was Dewey’s student in Michigan, then studied with W. James & Munsterberg at Harvard, then met Wundt, Ebbinghaus & Helmholtz.
- He wrote a doctoral dissertation on Kant but was never awarded his degree during to poor German.
  - His teaching positions led to becoming Acting president of the Univ. of Chicago in 1918.
James Rowland Angell

Angell’s father was president of the University Michigan, his brother Frank founded psychology labs at Cornell and Stanford Universities, his brother Alexis became a professor of law at the University of Michigan and later a judge, and his brother-in-law was head of the history department at the University of Michigan. His maternal grandfather was a professor of mathematics and later president of Brown University.
Angell’s Functionalism

- Angell described functionalism as a protest movement in his Presidential Address to the APA.
- He saw functionalism as the study of mental operations or functions, not mental elements.
  - The structuralist asks “What is mind?” The functionalist asks “What is mind for?”
  - Functions are studied under real life conditions.
  - Functionalism assumes a constant interplay between the psychological and the physical (they are one).
- He was interested in instinct — Watson was a student
Harvey A. Carr (1873-1954)

- **Carr** was a grad student at U of Chicago working with Watson and writing a dissertation on visual autokinetic effects (like Wertheimer).
  - In 1908, he replaced Watson and directed the animal laboratory at U of Chicago; in 1926 he became Dept Chair.
  - In 1927, Carr was elected APA President.

- He used a flexible, wide-ranging, mature functionalist approach and was a careful, precise experimenter.
Robert Sessions Woodworth (1869-1962)

- Woodworth studied religion but became a teacher instead. Hearing G. Stanley Hall lecture and reading William James changed his life.
  - He enrolled at Harvard to study psychology.
  - He earned a graduate fellowship at Columbia to work with Cattell, earning his Ph.D.
- His early experiments were on transfer of training, testing the idea of formal discipline of the mind (muscular doctrine to exercise and develop mind).
  - Negative transfer – driving on left, Dvorak keyboard.
Woodworth’s Psychometric Studies

- Cattell offered Woodworth a position in his lab at Columbia, where he stayed the rest of his career.
- Woodworth supervised testing of 1100 people at the St. Louis Exposition of 1904.
  - [http://www.youtube.com/watch?v=4JARDvdrAxk](http://www.youtube.com/watch?v=4JARDvdrAxk)
- Woodworth had a fair-minded view of racial differences in test performance.
  - He said psychological characteristics are difficult to measure and always distributed within a population (within group variance is greater than between group).
Woodworth criticized the approach of studying differences in intelligence by assessing cultures.

Are modern Germans more intelligent than Romans?

In 1906, APA appointed a group to study tests and measurements.

He developed a test for neuroticism based on symptoms of shell shock and case histories of soldiers in WWI.

He wrote a textbook “Experimental Psychology,” which became a definitive text.
Imageless Thoughts

- Woodworth studied imageless thought with Kulpe.
  - Titchener claimed that sensations and images are always present in thinking.
  - Woodworth tried to study the times when new ideas come to mind – not that frequent but without content.
  - He concluded that new ideas are determined by memories of past experiences.

- People were able to imagine the Supreme Court Building but not count its columns (unless they had done so before).
Woodworth introduced the concept of drive to S-R learning theories—motivational states are important determinants of response to a stimulus.

- Pulling a trigger causes a gun to fire, but the bullet’s velocity is determined by characteristics of the gun and bullet, not how hard the trigger is pulled.
- The same response can be elicited by many stimuli.

“Dynamics of Behavior” addressed drives.

His modified formula was S-O-R (O = organism).
But a little reflection shows that the formula, so interpreted, is incomplete; for the stimulus really acts upon the organism, and the organism makes the response. If we use the letter O for the organism or individual, our formula should properly read,

\[ S \rightarrow O \rightarrow R, \text{ or } S \rightarrow O \rightarrow R, \]

and be read that the stimulus, acting upon the organism, elicits a response, or that the organism makes a response when it is aroused by a stimulus. In order to predict the response, we must know not only the stimulus, but also the organism stimulated.

If you hear some creature stirring in a hedge, and "coo" to it, it will probably fly away if it is a bird, and rush toward you if it is a dog. If it is a human being, it would be hard to predict the response, without knowing the age, sex, and training of the individual, and the mood he or she happened to be in at the moment. You must know your O.
Technical Vocabulary

- The technical vocabulary of psychology consists of words that already have everyday meanings.
  - Intelligence, habit, drive, feeling, emotion.
  - Operational definitions are not completely satisfactory – intelligence is what an intelligence test measures.

- Woodworth suggested that psychology invent a technical vocabulary.
  - Psychology should be called “motivology.”
  - Conscious attitudes should be called “marbs” for Marbe
  - Thoughts should be called kulps for Kulpe.
Edward Lee Thorndike (1874-1949)

- Thorndike studied at Wesleyan Univ, founded by the Methodist church – a very shy but brilliant student.
  - He read Principles of Psychology & it changed his life.
- Thorndike went to Harvard and studied with James.
- Mind-reading experiments with children looked for subtle movements in the face, rewarding children with candy for correct guesses.
- Later, he penned chickens who had to find a way out to get food and water – eventually they learned to escape.
Thorndike accepted a grad fellowship at Columbia. He planned to study Lamarckian inheritance of learning so he took his chickens with him but switched to cats.

He built 15 puzzle boxes for use with cats. Cats showed trial & error at first but learned to escape quickly and smoothly. Satisfiers strengthen responses, annoyers weaken them.

Tolman said: “The psychology of learning has been … a matter of disagreeing with Thorndike or trying to improve in a minimum way upon him.” (1898)
Change in Behavior for One Cat

B: A puzzle box

Graph showing time in seconds versus number of trials.
Thorndike used 15 different boxes requiring different behaviors to escape. Animals did not learn all with the same ease. Boxes using a single, discrete response were easiest. Boxes requiring multiple responses (pulling a loop then moving a stick or two bolts) were not learned. Boxes requiring more force (400 gms) were not learned.

The more boxes a cat was tested in, the better it learned to escape — they developed “learning sets.” No benefit from observation or imitation or help.
Some of his Puzzle Boxes
Thorndike’s Critics

- Thorndike intentionally ignored previous comparative researchers.
  - He felt their anecdotal reports needed to be replaced by objective experiments.

- Mills asserted that animals put into non-natural settings may be too confused to behave normally.

- Thorndike published a harsh rebuttal addressing the criticisms in the June 1899 Psychological Review.
  - His cats grew up in the lab so for them it was not artificial.
After a year at the College for Women of Western Reserve University in Cleveland, OH, Thorndike was offered a job at Teacher’s College, Columbia Univ.

- He averaged 10 publications a year, most major.
- He was criticized for publishing his lecture notes.

He extended his learning studies to dogs and Cebus monkeys and studied fish at Woods Hole, MA.

Ultimately he emphasized education more and became an expert on educational measurement.
Thorndike’s Mental Measurements

- He opposed Spearman’s concept of “general intelligence” but thought of intelligence as a combination of specific skills and abilities.
- He developed a CAVD IQ test consisting of subtests to measure sentence completion (C), arithmetic (A), vocabulary (V) and ability to follow directions (D).
- He believed that heredity determined intelligence and supported systematic eugenics.
  - He opposed educational egalitarianism – proposing tracking and nurture of high intelligence.
Thorndike’s Applied Research

- Thorndike worked on numerous industrial problems.
  - Employee exams and selection tests for workers.
  - Statistical analysis for the Army Testing Project in WWI.
  - Invested in Cattell’s Psychological Corporation.
- Surveyed quality of life in American cities, published in Your City (1939) and One Hundred Forty-Four Smaller Cities (1940).
  - A composite G score evaluated quality of life.
  - A composite P score measured genetic quality of the population in each city.
Thorndike studied word usage, compiling lists of the 10,000 most frequently occurring words. He urged teachers to spend time teaching children to spell and use these words.

In 1931, he published a Junior Dictionary and in 1940 the Thorndike Senior-Century Dictionary.

Bear = a carnivorous plantigrade quadruped.

Thorndike made a rule that the definition must be simpler than the word itself.

He proposed “babble-luck” as a learning theory.
Thorndike’s Honors

- Thorndike turned down a professorship at Harvard and was elected APA president in 1912, and president of the AAAS in 1933.
- He attracted many students and was generous with them and coworkers.
  - Some people found him aggressive, abrasive and domineering – Thorndike considered this his mask for shyness.
- He made a lot of money from his books but was depressed after his retirement.