A History of Modern Psychology

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Resources

www.ecngagebrain.com
www3.uakron.edu/ahap - the archives of the History of American Psychology
www.apa.org/about/archives/index.aspx - historical archives of the APA
www.historyofpsychology.org - Society for the History of Psychology
Psychclassics.yorku.ca - Christopher Green, York Univ, Toronto, Canada

Chapter 1 - The Study of the History of Psychology

The Development of Modern Psychology

We can trace ideas and speculations about human nature and behavior back to the **5th century BC to the Greek philosophers**, grappling with the same issues that concern us today: learning, memory, motivation, thought, perception, and abnormal behavior. Thus, one starting point is to start with ancient philosophical writings.

Conversely, we could start **200 years ago** when modern psychology emerged from philosophy to claim its own identity. It is the approach taken and the techniques employed that distinguish the older discipline of philosophy from modern psychology and mark its emergence as a separate, scientific, field of study. Only when researchers came to rely on carefully controlled observation and experimentation to study the human mind - **instead of speculation and intuition** - did psychology begin to attain its separate identity.

Much of the history of psychology is **the story of the continuing development** of tools, techniques, and methods to achieve increased precision and objectivity, refining not only the questions asked but also the answers.

While the **19th century philosophers** were clearing the way for an experimental attack on the functioning of the mind, physiologists were independently approaching some of the same problems. These **19th century physiologists** were making great strides toward understanding the bodily mechanisms underlying mental processes. The eventual union of philosophy and physiology produced the new field of psychology.

The Data of History: Reconstructing the Past

With experimental research, there is a measure of control and the possibility of replication to gather and verify data. In contrast, the data of history **cannot be reconstructed or replicated,** each event occurred at some time in the past, perhaps centuries ago, and the particulars of the event might not have been recorded accurately - if at all.

For historians, **data of past events are available to us** as fragments, descriptions by participants or witnesses, letters and diaries, photographs, lab equipment, interviews, and other accounts. The approach is similar to that of archaeologists trying to describe past civilizations with whatever fragments they might uncover. In either case, the fragments can be so great as to leave little doubt or the fragments may be lost, distorted, or otherwise compromised.

Lost or Suppressed Data

Sometimes the historical record is incomplete because the data has been **lost, sometimes deliberately.** In 1958, John Watson at age 80, destroyed the entire unpublished record of his life and career before he died.

Sometimes data has been **misplaced.** In 2006, 500 handwritten pages were discovered in England, determined to be the official minutes of the Royal Society meetings for the years 1661 to 1682, recorded by **Robert Hooke**, a brilliant scientist. The papers revealed early work done with the new microscope and detailed discovery of bacteria and spermatozoa, as well as Hooke's correspondence with **Isaac Newton** concerning gravity and the movement of the

planets. In the early 1980s, papers and diaries from Hermann **Ebbinghaus** and Gustav **Fechner** were discovered, counting more than 100 years that authors of books about these scientists did not know of their existence. In 1990, 100 years after **Darwin's death**, large amounts of new materials, notebooks and personal letters became available.
Some data is **stolen and not recovered.** In 1641, an Italian mathematician stole more than 70 letters by Rene Descartes, one letter discovered in 2010 in the United States. It was returned to France.
Other data may be **hidden deliberately or altered** to protect the reputation of the people involved. Biographers working with the data and life of Freud, Jung and Kohler, were guilty of this behavior, as were others. Per one biographer, **"Whether the distorting lens is that of bias, vanity, sentimentality, or simple inaccuracy, there is no Absolute Truth….all records are to a greater or lesser degree based on illusions."**

Data Distorted in Translation
Most people rely on a translator's choice of the most appropriate words and phrases, but the translation does not always convey the original author's intent. For example, **Freud's ego and id** - the translation from what he intended a*s I* and *It* - is not as forceful for us as Freud intended. They are Latin equivalents of German words.
His concept of **free association** was also not translated as he intended the concept. His term in German was *Einfall,* which literally means an intrusion or an invasion, not a simple linking of ideas as we have come to know it, but rather to denote something from the unconscious mind that is uncontrollably intruding into or invading conscious thought.
An Italian proverb, *Traditore - Tradutore* **(to translate is to betray)**, makes the point clearly.

Self-Serving Data
People may, consciously or unconsciously, produce biased accounts to protect themselves or enhance their public image. In some cases it is possible to **seek corroborating evidence** from colleagues or observers to resolve controversies.
Our understanding of history is dynamic. The story constantly changes and grows, and is refined, enhanced, and corrected whenever new data is revealed or reinterpreted. History is never finished, it is always a work in progress, a story without ending.

Contextual Forces in Psychology
An understanding of any history must consider the context in which the discipline evolved, the prevailing ideas in the science and culture of the day - the **Zeitgeist** or intellectual climate of the times - as well as the social, economic, and political forces.

Economic Opportunity
By 1900, there were three times as many psychologists with doctoral degrees in the United States as there were labs to employ them (**academic**). Even as teaching jobs at universities were increasing in the West and Midwest, the new science of psychology had the smallest support compared to physics and chemistry. Psychologists quickly realized that they would have to prove their worth in **solving social, educational, and industrial problems (applied**). The influx of immigrants and rapid increase in public school formation and enrollments presented

more opportunities - applying their knowledge and research models to education. This pursuit marked a fundamental shift in American psychology, from academic experimentation to the application of psychology to teaching and learning.

The World Wars
War provided opportunities and jobs for psychologists and **accelerated the growth of applied psychology** as it extended into personnel selection, psychological testing, and engineering psychology. World War II and the Nazi menace caused researchers and theorists to emigrate to America, marking the final phase of psychology's relocation from Europe to America. Wat itself prompted **Freud's** ideas that aggression is a significant motivation force for the human personality and **Erich Fromm** attributed his interest in abnormal behavior to his exposure to the fanaticism that swept his native Germany

Prejudice and Discrimination

Against Women
For many years, the only academic jobs typically open to women were at women's colleges, although they also practiced prejudice by refusing to hire married women, the rationale being women were incapable of managing a husband and a career. They were routinely denied admission to graduate schools and excluded from faculty positions. The graduate students' libraries and cafeterias were reserved for men only. As late as 1960, Harvard was loath to admit women to graduate school.
However, James Cattell nominated two women for membership in the APA in 1893 and the APA was the first scientific society to accept women. By 1941, more than 1000 women had earned graduate degrees in psychology, and one-fourth of all Ph.D's were women.

Ethnic Origin
Well into the 1960s, Jewish men and women faced admission quotas in colleges and graduate schools. Exclusionary practices at Harvard, Yale, and Princeton during that time were widespread. Jews that were accepted were segregated, not allowed to join fraternities or clubs. In 1922, the director of admissions at Yale, wrote a paper entitled "The Jewish Problem" and **described Jews as an "alien and unwashed element".**
In the early history of psychology, two important institutions, Johns Hopkins and Clark University, by policy excluded Jews from faculty positions (academic). **Abraham Maslow** was urged by professors to change his first name to increase his chances of obtaining an academic job. He refused.
The prejudicial academic climate drove Jewish psychologists into **clinical psychology,** which offered greater job opportunities, rather than the more futile pursuit of an academic career.

In 1940, only four black colleges in the United States offered undergraduate degrees in psychology. The main university providing college psychology instruction for black students was **Howard Univ in Washington, DC**. and between 1920 and 1950, 32 blacks earned doctoral degrees in psychology. From 1920 to 1966, the 10 most prestigious psychology departments in

the United States awarded 8 doctorates to blacks, out of a total of more than 3,700 doctoral degrees granted.

Kenneth Clark

Undergrad - Howard Univ (1935)
Refused acceptance to graduate school at Cornell.
Ph.D - psychology, Columbia Univ (1940) first black Ph.D at Columbia.
First black to receive a permanent professorship, City College of New York.
1971 - first black president of the APA.

Mamie Phipps Clark

Ph.D - Columbia
Worked with husband, Kenneth Clark, to provide psychological services, including testing, to children. They developed the Northside Center for Child Development. The results of their research program on racial identity and self-concept in black children was cited in the 1954 Supreme Court landmark decision to end racial segregation in public schools.

Conceptions of Scientific History

Personalistic Approach vs Naturalist Approach

The Personalistic Theory

This theory of scientific history focuses on the achievements and contributions of specific individuals. In this viewpoint, progress and change are attributable directly to the will and charisma or unique personas who alone redirected the course of history and implies that the events never would have occurred without these people - Napoleon, Hitler, Darwin, etc.

We often define era by the persons and their discoveries, theories and other contributions. In science, art, and popular culture, individuals have produced dramatic change. So, the theory has merit, but is it insufficient in explaining entirely the developments of science and society.

1. Often the contributions were ignored or suppressed during their lifetimes, only to be recognized long afterward due to the intellectual, cultural, or spiritual climate of the times (the Zeitgeist) which can determine whether an idea is accepted or rejected, praised or scorned.
2. The history of science is the story of discoveries and insights that were originally rejected. Slow change is often the rule for scientific progress.

The Naturalistic Theory

This theory endorses the view that progress and change in history are attributable to the **Zeitgeist**, which makes culture receptive to some ideas, deaf to others, some exalted as geniuses and heroes, others shunned or put to death.
The **inhibiting or delaying effect** of the Zeitgeist operates non only at the broad cultural level but also within science itself, where its effects may be more pronounced. The conditioned response, forwarded by physiologist Ivan Pavlov in 1891, within a new system of psychology, was first suggested 100 years prior by Robert Whytt, in 1793. Discovery is often rediscovery.

Instances of **simultaneous discovery** also support the naturalistic concept. Genetics, calculus, oxygen, logarithms, sun spots, and the conversion of energy as well as the typewriter and color photography, were all discovered or promoted at approximately the same time by at least two researchers.
Findings that contradict or oppose current thinking **may be rejected** by a journal's editors, who function as gatekeepers or censors, enforcing conformity or thought by dismissing or trivializing revolutionary ideas or unusual interpretations.
The **Zeitgeist within a science** can have an inhibiting effect on methods of investigation, theoretical formulations, and the definition of the discipline's subject matter but this intellectual Zeitgeist is subject to change.

Therefore, we must examine the history of the ideas, of the great people of science, within the context of the times. Most times, new ideas that seem to be instantaneously revolutionary, were only so because **their paths were cleared for them** - Darwin and Freud. Individual creative work is like a prism that diffuses, elaborates, and magnifies current thought, rather than a beacon. But both the culture and the scientist will shed light on the path ahead.

Schools of Thought in the Evolution of Modern Psychology
The last quarter of the 19th century, the initial years psychology evolved as a distinct scientific discipline, was directed by Wilhelm Wundt, a German physiologist. Psychology, for some time, was shaped by his vision as he was influenced by the spirit of the times, drawing together the thread of philosophical and scientific thought.
By around 1900, several systematic positions and schools of thought coexisted uneasily - consider them different definitions of the nature of psychology. The emergence of the various schools of thought and their subsequent decline and replacement is a striking characteristic of psychology.
This stage in the development of a science is termed **preparadigmatic**. A paradigm is a model, or pattern, an accepted way of thinking within a discipline that provides essential questions and answers. Scientific revolutions take place when one paradigm is replaced by another.
Psychology has not yet reached the paradigmatic stage. There is nothing comparable to Newton's laws of motion or Darwin's theory of evolution.
Different schools of thought have developed during the course of the history of psychology, each an effective protest against what had gone before. Each new school used its older opponent as a base against which to push and gain momentum.

Chapter 2 - Philosophical Influences on Psychology

The Zeitgeist of the 17th to 19th centuries was the intellectual soil that nourished the new psychology. The underlying philosophy - the basic contextual force - of the 17th century was the **spirit of mechanism**, the image of the universe as a great machine. This doctrine held that all natural processes are mechanically determined and are capable of being explained by the laws of physics and chemistry.

This idea of **mechanism originated in physics** as a result of the work of Italian physicist **Galileo** Galilei (1564-1642) and the English physicist and mathematician **Isaac Newton** (1642-1727). Everything that existed in the universe was assumed to be composed of particles of matter in motion. Newton suggested that movement was communicated not by actual contact but by forces that acted to attract and repel the atoms. If the universe consists of atoms in motion, then every **effect** follows from a direct **cause**, and because the effect is subject to the laws of **measurement**, it should be **predictable.** Thus, the operation of the universe was considered to be orderly, like a smoothly running clock or any other good machine.
Observation and experimentation became the distinguishing features of science, followed closely by measurement. Thermometers, barometers, slide rules, micrometers, pendulum clocks and others were invented and perfected to show it was possible to measure the universe - even time.

The Clockwork Universe

Clocks in the 17th century were a technological sensation, as astonishing and influential as computers would become in the 20th century. No other mechanical device had such an impact on human thought at all levels of society, it was the **"mother of machines"**.
They were eventually developed small enough to be worn on a chain around the neck, a symbol of a person's wealth. The Calvinist and Puritan sects began carrying them in their pockets. Larger clocks, **housed in church towers and government buildings**, could be seen and heard by residents for miles around. Thus, clocks became available to everyone, regardless of social or economic class. However, people came to be dependent on them and be governed by them and punctuality became a part of daily life. Life was regularized and more orderly, and as a result, more predictable.
Scientists and philosophers (Kepler, Descartes) agreed that **the world itself was a vast clock** made and set in motion by the Creator, the belief that the harmony and order of the universe could be explained in terms of a clock's regularity. The **Founding Fathers** of the United States were influenced by Newtonian physics and the deist idea of God as cosmic clockmaker and devised a constitutional system of separated powers, checking and balancing one another

Determinism and Reductionism

The clock metaphor for the universe encompasses the idea of determinism, the belief that every act is determined or caused by past events. If you understand the order and regularity with which the universe functions, you can predict the changes that will occur.
Via clocks, scientists then popularized the notion of reductionism, explaining phenomenon on a complex level in terms of phenomenon on a simpler level - reducing things to their basic components. Similarly, we could understand the physical universe by analyzing and reducing it to its simplest parts - its molecules and atoms. Eventually, reductionism would come to characterize every science, including the new psychology.
Could human beings and animals be considered in the same way, as some type of machine?

Automata

In the 17th century, as the technology was refined, mechanical contraptions, built to imitate human movement and action, were offered up for public entertainment. These devices were called **automata**, capable of performing marvelous and amusing feats with precision and regularity. They can still be seen today in the central square of many European cities.
The philosophers and scientists of the time believed that this kind of clockwork technology might fulfill their **dream of creating an artificial being** and clearly many of the early automata give that appearance. Think of them as the Disney figures of their time, and it's easy to understand why people reached the conclusion that living beings were simply another kind of machine.

People as Machines
Thomas Hobbes (1588-1679, English philosopher, "for what is the heart but a spring, and the nerves but so many strings; and the joints but so many wheels, giving motion to the whole body". Descartes and other philosophers also adopted automata as models for human beings. Not only was the universe a clockwork machine, so too were its people. Thus, clocks and automata paved the way for the ideas that the experimental and quantitative methods so successful in uncovering the secrets of the physical universe could be applied to human nature. **This notion became a driving force for the Zeitgeist** of science and philosophy and for a considerable time altered the prevailing image of human nature, even among the general populations.
People were fascinated by the idea that lifelike figures could be recreated by machines and this permeated the literature of the 19th and early 20th centuries - Shelley's *Frankenstein,* Baum's *The Wizard of Oz*.
And so the legacy of the 17th to 19th centuries includes the conception of **humans operating as machines**, along the the **scientific method** by which this human functioning could be investigated. Also, in a rudimentary way, mechanism was also applied to human mental functioning.

The Calculating Engine
Charles Babbage (1791-1871)
Undergraduate and professor - Cambridge, one of the best known intellectuals of his day. His quest was to develop a calculating machine that could perform math operations faster than humans and then print the results. He formulated the **basic principles that drive modern computers.**
Before Babbage, see the so-called **Antikythera computer,** discovered in 1900, in the wreckage of a ship sunk around **100 BC**. The size of a laptop, it had a series of 37 gears, which when a date was entered, could output information about the position of the sun, moon and other planets.
Babbage's machine could tabulate the values of mathematical functions, play chess, checkers and other games and a memory that could hold intermediate results until they were needed to complete a given calculation. He called it the **"difference engine"** and referred to himself as **"the programmer".** It had 2000 precisely engineered brass and steel parts that were set in motion by a hand crank. It still exists and works today, and is considered a major breakthrough in simulating human thought, to fabricate a machine that would display "artificial" intelligence.

It was the **first successful attempt to externalize a faculty of thought in an inanimate object.**
In 1946, when the first fully automatic computing machine was developed at Harvard, one computer pioneer referred to it as the realization of Babbage's dream. In 1991, a group of British scientists constructed a duplicate of one of Babbage's machines based on original drawings. It has 4,000 parts and weighs 3 tons - and performs calculations flawlessly.

The Beginnings of Modern Science

Until the golden age of the 17th century, philosophers had looked to the past for answers, to the works of Aristotle, and to the bible and the dogma of the established church. In the 17th century, a new force became important: **empiricism**, the pursuit of knowledge through observation and experimentation. Knowledge handed down from the past became suspect.
Rene' Descartes contributed directly to the history of modern psychology, helping free scientific inquiry from the control of rigid, centuries old theological and intellectual beliefs.

Rene' Descartes (1596-1650)

He attended Jesuit School from 1604-1612, studying mathematics and humanities, and was an excellent student in all subjects.
He was poor of health and was excused from morning activities to lie in bed till noon, a practice he retained all his life. During these **quiet mornings** he did his most creative thinking.
Later in life, he was keenly interested in applying scientific knowledge to practical concerns, conducting experiments on the maneuverability of wheelchairs and also anticipated the conditioning in dogs, some 200 years before Pavlov refined the concept.
While on duty with the army, in his dreams he was rebuked for his idleness and the **"Spirit of Truth"** took possession of his mind and persuaded him to devote his life's work to the proposition that **mathematical principles can be applied to all science and thus produce certainty of knowledge.** He resolved to doubt everything and accept as true only that of which he could be certain.
He sold his inherited estates and lived in a series of 24 country homes, in 13 towns over 20 years in Holland. His only requirements were the proximity to a Roman Catholic church and to a university. He corresponded frequently with close friends but kept his address a secret. His motto was, **"He lives well who is well hidden"**. He wrote extensively on mathematics and philosophy amid growing fame.

The Contributions of Descartes: Mechanism and the Mind-Body Problem

Descartes most important work for the development of modern psychology was his attempt to resolve the mind-body problem, a controversial issue for centuries.
For thousands of years, scholars had taken the **dualistic approach,** arguing that the mind (the soul or spirit) and the body had different natures. But if so, what is their relationship? How do they interact? Before Descartes, the accepted theory was that the mind could exert enormous influence on the body, but the body had little effect on the mind.
Descartes accepted that they were of different essences, but he redefined the relationship, that the relationship is not in one direction only, **but rather is a mutual interaction**. This was a radical idea in the 17th century, and has important implications for psychology.

Descartes argued that the mind had only a single function, that of thought. To him, all other processes were functions of the body. He redirected the attention of scholars from the abstract theological concept of the soul **to the scientific study of the mind and mental processes,** thus the methods of inquiry shifted to **objective observation and experimentation.**

The Nature of the Body

Descartes argued that the body is matter and possesses those characteristics common to all matter - **extension in space and the capacity for movement** - and that the laws of physics and mechanics must apply to the body as well. He attempted to explain the physiological functioning of the body **in terms of physics**.

His observation of the automata of the times influenced his thoughts that there is involuntary movement of the automata and that a human's bodily movements frequently occur without a conscious intention. For this conception, he is often called **the author of the reflex action theory**, the precursor of modern behavioral S-R (stimulus-response) psychology.

His work also supported the growing trend in science toward the notion that **human behavior is predictable** and that the **mechanical body operates** in ways that can be expected or anticipated, as long as the inputs are known. Descartes found confirmation in contemporary physiology for his mechanical interpretation of the workings of the human body as they were uncovering the facts about blood circulation, the digestive process, that the muscles work in opposing pairs and that sensation and movement depended somehow on the nerves.

The Mind-Body Interaction

According to Descartes, the mind has **none of the physical properties of matter**. It does have the capacity to think, and it is this characteristic that sets it apart from the material or physical world. Because the mind perceives, thinks, and wills, it must somehow be influenced and be influenced by the body. **The mind wills the body to move and the body perceives and the mind determines the appropriate response.**

To complete his theory he needed to locate the actual physical part of the body where the mind and body mutually interacted. To him, it was obvious the brain had to be the focal point, and the only part of the brain that is single and unitary is the **pineal body and he chose this as the logical site of the interaction.**

The Doctrine of Ideas

Descartes suggested that the mind produces two kinds of ideas:

- **Derived ideas** arise from an external stimulus and are products of the experiences of the senses.
- **Innate ideas** develop not from the external world but instead develop out of the mind or consciousness. Among his innate ideas were God, the self, perfection, and infinity.

The concept of innate ideas led to the nativistic theory of perception - our ability to perceive is innate, not learned. This also influenced the Gestalt school which in turn, influenced the more contemporary cognitive movement in psychology. It also inspired opposition among early empiricists and associationists such as John Locke, Helmholtz and Wundt.

So widespread was the mechanistic philosophy in defining the **Zeitgeist** of that era that it was inevitable that someone would apply it to the human mind

Philosophical Foundations of the New Psychology: Positivism, Materialism, and Empiricism

Auguste Comte (1798-1857)
By the middle of the 19th century, 200 years after Descartes, prescientific psychology came to an end. The new spirit was positivism. Comte's **positivistic** approach referred to a system based exclusively on facts that are objectively observable and not debatable. Everything of a speculative, inferential, or metaphysical nature he declared illusory, and thus rejected. Positivism became a popular and dominant force in the European Zeitgeist of the late 1800s. Only knowledge derived from science was held to be valid.
The doctrine of **materialism** stated that the facts of the universe could be described in physical terms and explained by the properties of matter and energy, that even human consciousness could be understood in terms of the principles of physics and chemistry. Their work on mental processes focused on the **anatomical and physiological structures of the brain**.
A third group of philosophers, those advocating for **empiricism**, were concerned with how the mind acquires knowledge and argued that all knowledge is derived from sensory experience.

These three philosophies became the foundations of the new psychology. Of these three orientations, **empiricism played the major role.** Empiricism could be related to the growth of the mind; that is, to how the mind acquires knowledge and in their view the mind grows through the progressive accumulation of sensory experiences. This contrasts with Descartes, and his view that some ideas are innate.

John Locke (1632-1704)
Studied at university in London and Oxford. Studied natural philosophy, Greek, writing and medicine. Involved in politics and wrote books on education, religion and economics. He was concerned about religious freedom and the right of people to govern themselves. He was known throughout Europe as a champion of liberalism in government and some of this work had an impact on the writers of the American Declaration of Independence.
Book:
"An Essay Concerning Human Understanding" (1690), an accumulation of 20 years of study, appeared in four editions by 1700. Marks the beginning of British empiricism.

Locke rejected the existence of innate ideas, agreeing with Aristotle, that the mind at birth was a blank slate, *tabula rasa*. He explained the apparent inherent nature of some ideas - such as the idea of God - in terms of learning and habit. To Lock and Aristotle, the mind acquired knowledge through experience.
Lock recognized two kinds of experiences, one deriving from sensation and the other from reflection. Sensations are the necessary forerunner of reflections, a reservoir of sensory impressions for the mind to be able to reflect on. In reflecting, we recall past sensory

impressions and combine them to form abstractions and other high-level ideas. Thus, all ideas arise from sensation and reflection, but the ultimate source remains our sensory experience.
Locke distinguished between simple and complex ideas. Simple ideas arise from both sensation and reflection and are received passively by the mind. They are elemental - they can not be reduced. The mind then can, through the process of reflection, actively creates new and more complex ideas, compounds of simple ideas, which are then capable of being analyzed or resolved into their simpler component ideas.
The notion of compounding ideas begat **association**, an early name for the process psychologists call "learning" - central to the new scientific psychology. Association theory was a significant step in the direction of considering the mind, like the body, to be a machine.
Also to early psychologists, **Locke's distinction between primary and secondary qualities** as they apply to simple sensory ideas. Primary qualities exist in an object whether we perceive them or not. Secondary qualities such as color, odor, sound, and taste exist not in the object but in a person's perception of the object. Galileo had also proposed essentially these same notions. Locke proposed secondary qualities in an attempt to explain the lack of precise correspondence between the physical world and our perception of it.

George Berkeley (1685-1753)

Born and educated in Ireland, a deacon in the Anglican church at 24. The University of California at Berkeley is named for him.
Books:
"An Essay Towards a New Theory of Vision" (1709)
"A Treatise Concerning the Principles of Human Knowledge" (1710)
Burke argued that there were no primary qualities, only what Locke called secondary qualities.
That all knowledge was a function of, or depended on, the experiencing or perceiving person. This was later denoted as **mentalism**, a position of emphasis on purely mental phenomena.
To Berkeley, because perception is subjective - that is, within ourselves - it does not mirror the external world. **Therefore, the world of our experiences becomes the summation of our sensations**. We can never know the precise physical nature of objects, we can rely only on our own unique perception of them. He did recognize that objects exist independent of our perception of them and he accounts for this by invoking God - that God perceives everything.
Berkeley **applied association** in that complex ideas are formed by joining simple ideas (mental elements) that are received through the senses. He used the terms "constructs" and "building blocks", the mechanical analogy is not coincidental.
He forwarded that visual **depth perception** in not a simple sensory experience, but an association of ideas that must be learned. His explanation accurately anticipated the modern view of depth perception in its consideration of the physiological cues of accommodation and convergence.

David Hartley (1705-1757)

His father was a minister. He lived a quiet life as a doctor without a medical degree, pursued the study of philosophy on his own.
Book:

"Observations on Man, His Frame, His Duty, and His Expectations" (1749) - considered by many the first systematic treatise on association.
He proposed contiguity, that ideas or sensations that occur together, simultaneously or successively, become associated so that the occurrence of one is connected to the occurrence of the other. He also proposed that repetition of sensations and ideas is necessary for associations to be formed. He was the first to apply the theory of association to explain all types of mental activity.
He not only attempted to explain psychological processes in light of mechanical principles, but he also tried to similarly explain their underlying physiological processes. He proposed that the nerves were solid structures and that vibrations transmitted impulses from one part of the body to the other.

James Mill (1773-1836)

Son of a shoemaker, but his mother insisted he stay away from other children and devote his time to study. He would also subject this upbrining on his son.
Educated - Univ of Edinburgh, Scotland. Short stint as a clergyman.
Book:
"Analysis of the Phenomena of the Human Mind" (1829)
According to his view, the mind was set in operation by external physical forces and runs by internal physical forces. **That the mind is a totally passive entity that is acted on by external stimuli. We respond to these stimuli automatically, not spontaneously - there is no free will.**
He adhered to the mechanistic doctrine, that the mind should be studied by the method of analysis, that is, by reducing the mind to its elementary components. Mills believed that the mind had **no creative function** because association is a totally automatic, passive process.

John Stuart Mill (1806-1873)

His father, James Mills, vowed his son's black slate would be filled with what he determined. Every day, for up to 5 hours, he drilled young John in Greek, Latin, algebra, geometry, logic, history, and political economy. John described his father as "excessively severe. No fault, however trivial, escaped his notice…..no holidays were allowed, lest the habit of work should be broken and a taste of idleness acquired".
He wrote his first scholarly paper at 11, and mastered the standard university curriculum by 12. At 18 he described himself as a "logical machine" and **by 21 he suffered from major depression**. He blamed his parents for his mental difficulties, his mother who showed no regard for him and perpetual fear of his father.

Mental Chemistry

He argued against the mechanistic position of his father. He believed the mind played and active role in the association of ideas. He conceived of **creative synthesis** - the proper combining of mental elements always produces some distinct quality that was not present in the elements themselves. His thinking was influenced by research in chemistry, where chemists were demonstrating the concept of synthesis, in which chemical compounds were found to

exhibit attributes and qualities not present in their component parts of elements. Mill called this approach to the association of ideas **“mental chemistry”.**
He also argued that it was possible to make a scientific study of the mind. In addition, he recommended a new field of study, “ethology”, devoted to factors that influence the development of personality.

Contributions of Empiricism to Psychology

With the rise of empiricism, philosophers turned to different methods for considering problems: atomistic, mechanistic, and positivistic. By the middle of the 19th century, philosophers had established the theoretical rationale for a natural science of human nature. What was needed next, to translate theory into reality, **was an experimental attack on the same subject matter.** That was soon to occur, thanks to the physiologists, who supplied the kind of experimentation that would complete the foundation for the new psychology.

Chapter 3 - Physiological Influences on Psychology

Friedrich Wilhelm Bessel (1784-1846), a German astronomer, was interested in errors of measurement. He hypothesized that so-called mistakes were attributable to individual differences - personal differences among people over which they have no control. He tested this hypothesis and found it to be correct. Even amongst the most experienced astronomers, disagreements were common. This was termed the **“personal equation”.**
This led to **two** conclusions:

1. Astronomers would have to take into account the nature of the human observer because perceptions would necessarily influence the reported observations.
2. If the role of the human observer had to be considered in astronomy, then it surely was important in every other science that relied on observational methods.

This hard data from science supported empirical philosophers concerning the subjective nature of human perception, arguing that more often than not, **there is not an exact correspondence between the nature of an object and our perception of it**. Scientists then began to study the human **sense organs** as a way of investigating the psychological processes of sensing and perceiving, and the science of psychology as but a short and inevitable step away.

Developments of Early Physiology

Physiology became an experimentally oriented discipline during the 1830s, primarily under the influence of the German physiologist Johannes Muller (1801-1858), who advocated the experimental method. Professor of anatomy and physiology, Univ of Berlin.
Book:
“Handbook of the Physiology of Mankind” (1833-1840), summarized and systematized the evolving research of the times and. Translated to English 1838, with much interest outside Germany. Noteworthy for his theory of the specific energies of nerves, that the stimulation of a particular nerve always leads to a characteristic sensation. This stimulated research aimed at

localizing functions within the nervous system and pinpointing sensory receptor mechanisms on the periphery of the organism.

Research on Brain Functions: Mapping from the Inside

Early physiologists conducted the first efforts to conduct research directly on brain tissue, to map the brain's functions - to determine the specific parts of the brain that controlled different cognitive functions.

Marshall Hall (1790-1857), Scottish physician, London. He observed decapitated animals and postulated that voluntary movement depends on the cerebrum, reflex movement on the spinal cord, involuntary movement on direct stimulation of the muscles, and respiratory movement on the medulla.

Pierre Flourens (1794-1867), professor of natural history, Paris. Systematically destroyed part of the brain and spinal cord in pigeons and observed the consequences. He found cerebrum controls higher mental processes, parts of midbrain the visual and auditory reflexes, cerebellum controls coordination, and the medulla governs heartbeat, respiration and other vital organs. Thus, the importance of their use of the **extirpation method,** removing or destroying a part of the brain and observing the resulting changes in behavior.

The mid-19th century also introduced two other methods. The **clinical method**, developed in 1861 by Paul Broca, a surgeon at a hospital for the insane, autopsied a man that had been unable to speak intelligently and this revealed a lesion on the brain. He labeled it the speech center and it is now known as Broca's area.

The **electrical stimulation method** was first promoted in 1870 and involves the use of weak electrical currents to explore the cerebral cortex. With increasingly sophisticated equipment this method has become a productive technique.

Research on Brain Functions: Mapping from the Outside

Franz Josef Gall (1758-1828), German physician, dissecting deceased animals, confirmed the existence of both white and gray matter in the brain, the nerves connecting one side of the brain to the opposite side spinal cord and the fibers connecting both sides of the brain.

Studying the outside of the brain, his animal studies showed the tendency for higher intelligence in animals with larger brains. He then ventured into controversial territory, founding a movement called cranioscopy, or **phrenology,** which proposed that the shape of a person's skull, and corresponding protrusions, revealed intellectual and emotional characteristics. His reputation with colleagues plummeted. After many examinations, he mapped the location of 35 human attributes. Phrenology became very popular in America in the late 1830s. The *American Phrenological Journal* was published for 70 years.

Pierre Flourens drew the most **effective criticism of phrenology** by finding out through extirpation that the shape of the skull did not match the contours of the underlying tissue, that brain tissue was too soft to produce bulges in the bony surface of the skull and that areas Gall designated for specific mental functions were in error. His work did stimulate the growing belief that it was possible to localize specific brain functions.

The lesson to be learned - applicable to all movements of all time periods, there is not necessarily a relationship between the popularity of an idea, trend, or school of thought and its validity.

Research on the Nervous System

During this period there was also considerable research on the structure of the nervous system and the nature of neural activity.

Toward the end of the 18th century, the Italian researcher **Luigi Galvani** (1737-1798) had suggested that nerve impulses were electrical. **By the middle of the 19th century,** scientists accepted as fact the electrical nature of nerve impulses, that the nervous system was a conductor or impulses and that the central nervous system functioned like a switching station, shunting the impulses onto either sensory or motor nerve fibers.

These views were of a **reflexive system** that began externally: external stimuli, sense organ, nerve impulse, to the brain or CNS, response with new impulse, transmitted by the nerves to trigger a response.

Santiago Ramon y Cajal (1852-1934), Spanish physician, professor of anatomy, 1906 Nobel prize, discovered the direction of travel for nerve impulses in the brain and spinal cord. Most of his work was “rediscovered” by others at a later day due to translation issues and that Spanish was not used in the journals of the day.

Other researchers found that nerve fibers were composed of separate structures **(neurons)** that were somehow connected at specific points **(synapses)**. These findings were consistent with a mechanistic image of human functioning.

The Mechanistic Spirit

This spirit was dominant in 19th century physiology, as it was in philosophy. Physiologists were committed to the proposition that all phenomena could be accounted for by the principles of physics. They were experimentally investigating the mechanisms that underlie mental phenomena. The next step was to apply the experimental method to the mind itself.

The British empiricists argued that sensation was the only source of knowledge. It was time to experiment with and to quantify this doorway to the mind: **the subjective, mentalistic experience of sensation**. Now techniques would be developed to explore the mind - experimental psychology was ready to begin.

The Beginnings of Experimental Psychology

Four scientists were credited with the initial applications of the experimental method to the mind, the subject matter of the new psychology. All were German scientists trained in physiology.

Why Germany?

The sciences were developing in most of Western Europe in the 19th century, particularly in England, France, and Germany, and no one had a monopoly on the enthusiasm with which the various tools of science were being applied to a variety of research problems. But there were unique characteristics that made German science a more fertile breeding ground.

The German Approach to Science

Scientists in France and England favored the **deductive**, mathematical approach. German scientists adopted an **inductive** approach with emphasis on the careful, thorough collection of observable facts. This temperament and the fact that biological and physical sciences do not

lend themselves to grand generalizations from which facts can be deduced, paved the way for an experimental science of psychology.
Also, Germany **welcomed biology** to its family of sciences with its faith in taxonomic description and classification.
Further, the Germans **defined science broadly** and included such areas as phonetics, linguistics, history, archaeology, esthetics, logic and literary criticism. Science in France and England was limited to physics and chemistry and were skeptical about applying science to the human mind.

The Reform Movement in German Universities
In the early 19th century, a wave of educational reform swept over German universities devoted to the **principles of academic freedom**. The new German style of university provided the ideal environment for the flourishing of scientific inquiry. Professors were encouraged to teach whatever they wished and conduct research on topics of their choice. Students were unrestricted by a fixed curriculum and free to take whatever courses they preferred. The professors also could direct students in well-equipped laboratories. No other country promoted these approaches.
Contextually, prior to 1870, the year it became a unified nation, Germany consisted of a loose confederation of city-states, each with a well-financed university, highly paid faculty and state-of-the-art laboratory equipment. England at that time only had Oxford and Cambridge and neither supported scientific research. The only way to practice science in England and France was as a gentleman-scientist, living on an independent income, the way of Charles Darwin and Francis Galton.
The United States had no universities devoted to research **until 1876,** when **Johns Hopkins** was founded and it was based on the German model: its primary goal was to make scientific research **the core and focus of graduate student training.** The founding of Johns Hopkins has been called the “beginning of the great transformation in American higher learning”.
In Germany, most of the people selected for university careers were of **extremely high caliber - the competition for those positions fierce.** Once they joined the faculty, the pressure on them to publish was fierce. The rewards were worth the effort, and the result was a series of breakthroughs in all sciences, including the new psychology.

Hermann von Helmholtz (1821-1894)
One of the greatest scientists of the 19th century, a **prolific researcher in physics and physiology, and also psychology**. He emphasized the mechanistic and deterministic approach and assumed the sense organs functioned like machines.
Born in Potsdam, Germany, his father taught at *gymnasium* (in Europe, a high school/junior college preparatory for the university). Tutored at home, Berlin medical institute at 17, army surgeon for seven years. He mathematically formulated the law of the conservation of energy during this time.
Assoc. Professor of physiology - Univ of Konigsberg, then the next 30 years, physiology appointments at universities in Bonn and Heidelberg, and in physics in Berlin.
At the age of 30, **invented the ophthalmoscope,** a device still used to examine the retina of the eye and diagnosis and treatment of retinal disorders.

Books:
"Handbook of Physiological Optics" (1856-1866), three volumes, translated to English 60 years later.
"On the Sensation of Tone" (1863), his research and summary of findings to date.
He contributed to many subjects including afterimages, color blindness, eye movements and indirectly to the invention of wireless telegraphy and radio.

Contribution to the New Psychology
Of major importance in psychology were his **investigations of the speed of the nerve impulses** and his research on vision and hearing. Using the leg of a frog and different lengths of nerves, he recorded the delay between the stimulation of the nerve and the muscle's response. These measurements yielded the conduction speed of the neural impulse at **90 feet per second**. It was previously thought that a nerve impulse was instantaneous or at least too fast to be measured.
Later, the implications of his research for the new psychology produced a fruitful line of research in **reaction-time experiments**. His work was one of the earliest instances of experimentation and measurement for a psychophysiological process.
He also investigated the external **eye muscles** and the mechanism by which the internal eye muscles focus the lens and revised and extended the theory of color vision.
He also performed important **research in audition,** specifically the perception of tones, the nature of harmony and discord, and the problem resonance.
He focused on the **applied benefits of research** and did not believe in conducting experiments just to data. There would be further development of this approach in the functionalist school of psychology that took root in the United States. His work helped strengthen the experimental approach to the study of topics that would become central to the new psychology.

Ernst Weber (1795-1878)
Son of a theology professor, Wittenberg, Germany.
Ph.D - Univ of Leipzig (1815), taught anatomy and physiology there until 1871.
His primary research was the physiology of the sense organs. Previous research had almost exclusively been done on vision and hearing. He explored new fields, **notably cutaneous (skin) senses and muscular sensations.**

Two-Point Threshold
Using the two-point threshold - the point at which two separate sources of stimulation can be distinguished - his research marks the first systematic, experimental demonstration of the **concept of threshold** (the point at which a psychological effect begins to be produced). The concept of threshold also will eventually apply to consciousness - to that point at which unconscious ideas in the mind become conscious.
Just Noticeable Differences
His research led to psychology's first quantitative law - the smallest difference between weights that could be detected. He found that the just noticeable difference was **40:1.**
His experiments on visual discrimination found that the ratio was smaller than for the muscle sense experiments. His research showed that there is **not a direct correspondence between**

a physical stimulus and our perception of it. His research provided a method for investigating the relationship between body and mind - between the stimulus and the resulting sensation.

Gustav Theodor Fechner (1801-1887)

Father was a minister. Fechner's humanistic viewpoint rebelled against the prevailing mechanism of his scientific training.
Medical student - Univ of Leipzig (1817). He spent his entire career here.
After medical studies, began a career in physics and mathematics and was a book translator.
1824 - professor and researcher in physics
1830s - became interested in the problem of sensation and investigating afterimages.
1833 - became full professor at Leipzig, then fell into a depression for several years. This illness may have been neurotic in nature. He eventually had a dream that he would be well in 77 days - and he was. This depression turned to euphoria and delusions of grandeur, claiming God had chosen him to solve all the world's mysteries. From this experience, he developed the notion of **the pleasure principle**, which would later influence Freud's work.

Mind and Body: A Quantitative Relationship

In 1850, he had a flash of insight about the connection between mind and body, that it could be found in a quantitative relationship between a mental sensation and a material stimulus. He argued that a geometric series characterizes the stimulus a and an arithmetic series characterizes the sensation - it is therefore not a one-to-one increase. **Therefore, the effects of stimulus intensities are not absolute but are relative to the amount of sensation that already exists.** Thus, it is possible to formulate a quantitative relationship between the mental and material worlds and to conduct experiments on the mind.
To measure the physical intensity of the stimulus was not difficult. To measure the conscious experiences the subjects reported when they responded to the stimulus, he proposed two ways:

1. We can determine whether a stimulus is present or absent, sensed or not sensed.
2. We can measure the stimulus intensity at which subjects report that the sensation first occurs - the **absolute threshold** of sensitivity - below which there is no sensation, above which there is.

He also proposed the differential threshold of sensitivity, the least amount of change in a stimulus that gives rise to a change in sensation.
Fechner suggested that for each of the senses there is a certain relative increase in stimulus intensity that always produces an observable change in the intensity of the sensation.
$S = K \log R$, S = magnitude of the sensation, K is a constant, R is the magnitude of the stimulus. The relationship is logarithmic.

Methods of Psychophysics

Psychophysics - **mental + physical**. He experimented with lifted weights, visual brightness, visual distance, and tactile distance. He developed one and systematized two of the three fundamental methods used in psychological research today.

1. The **method of average error** - over a number of trials, subjects adjust a variable stimulus until they perceive it to be equal to a constant standard stimulus. Thus the

mean, or average error of observation. Used for reaction times, visual and auditory discriminations.
2. The **method of constant stimulus** - involves two constant stimuli, and the aim is to measure the stimulus difference required to produce a given proportion of correct judgements.
3. The **method of limits** - involves subjects detecting a change in one of two stimuli, finding the just noticeable difference.

It was largely because of Fechner's research that Wilhelm Wundt conceived his plan for an experimental psychology. Through Fechner's methods, he gave psychology what every discipline must possess if it is to be called a science: precise and elegant techniques of measurement.

Chapter 4 - The New Psychology

Johannes Muller (1801-1858) - extended and developed physiology as an experimentally oriented discipline.
Book:
"The Handbook of the Physiology of Mankind" (1833 thru 1840)

Gustav Theodor Fechner (1801-1887)
Germany, Univ of Leipzig, professor of physics and mathematics
Book:
"Elements of Psychophysics" (1860) - an outstanding original contribution to the development of scientific psychology, his statement of the quantitative relationship between stimulus and sensation was considered at the time, to be comparable to the discovery of the laws of gravity.
Subject of Inquiry: for each of the human senses there is a certain relative increase in stimulus intensity that always produces an observable change in the intensity of the sensation. Thus, the sensation (the mind or mental quality observed), as well as the stimulus (the body or material quality), can be measured.
S = K log R, S = magnitude of the sensation, K = constant, R = magnitude of the stimulus
> the measuring process is logarithmic,

*Every discipline, to be called a "science", must have precise and elegant techniques of measurement.

Zeitgeist 1850-1900 - science was ready for the application of experimental methodology to problems of the mind.

Wilhelm Wundt (1832-1920
Germany, founding father of psychology as a formal academic discipline.

1855 - Univ of Heidelberg, doctorate, physiology lecturer.

Books:
"Contributions to the Theory of Sensory Perception" (1858 thru 1862)
"Lectures on the Minds of Men and Animals" (1863)
"Principles of Physiological Psychology" (1873-1874), last published 1911
> firmly established experimental psychology as an independent laboratory science with its own problems and methods of experimentation.

1875 - Univ of Leipzig (45 years), Prof of Philosophy, establish a laboratory that exerted immense influence on the the development of modern psychology, serving as the model for additional labs and continuing research
Journal: Journal of Philosophical Studies (1881), renamed 1906 the Journal of Psychological Studies.
1880 to 1891 - he wrote on ethics, logic and systematic philosophy.
Book:
"Cultural Psychology" - 10 volumes, (1900-1920)
Cultural psychology dealt with the various stages of human mental development as manifested in language, art, myths, social customs, law, and morals. This served to divide the new science into two major parts: the experimental and the social.

Subjects of Inquiry:
The method of introspection - the examination of one's own mental state.
That **apperception** is an active process. Our consciousness is not merely acted on by the elemental sensations and feelings we experience. Instead, the mind acts on these elements in a creative way to make up the whole.

Zeitgeist 1900 to 1920 - By 1910 in the United States, there were many psychologists and psychology departments. Psychological knowledge and technique were being applied to practical problems in business and education and by the 1920's, Americans as a whole were far less open to foreign impressions than they were in the 1880's and 1890's, the latter influenced to some degree by Wundt's stance on WWI and the defense of Germany.

Attributes/Criticisms:
Introspection is self observation. Disagreements can't be settled by repeating the experiment.
High Competition from

- Gestalt psychology in Germany
- Psychoanalysis in Austria
- Functionalism and Behaviorism in America.
- Also influencing America, from England, Charles Darwin's theory of evolution and Francis Galton, psychology of individual differences.

Much of the history of psychology after Wundt consists of rebellion against the limitations he placed on the field. This fact enhances his greatness. Revolutions must have a target to push against. As that target Wundt's work provided a compelling and magnificent beginning to modern experimental psychology.

Herman Ebbinghaus (1850-1909), Germany
Univ of Bonn and Berlin, philosophy degree 1873.
Subjects of Inquiry:
First psychologist to investigate **learning and memory**, applying the experimental method to those higher mental processes. Changed the way association (learning) could be studied.
No lab, self-funded, worked alone.
Invented **nonsense syllables**: material that would be uniformly unassociated, completely homogenous, and equally unfamiliar, material with which there could be very few, if any, past associations (lef, bok, yat, etc.). Also, that the entire list of stimulus words would be meaningless with no prior connections. Found that material that is previously unassociated is 9X harder to memorize.
Ebbiinghaus's forgetting curve - material is forgotten rapidly in the first few hours after learning, more slowly thereafter.

Books:
"On Memory: A Contribution to Experimental Psychology" (1885)
"The Principles of Psychology" (textbook, dedicated to Fechner) 1902
"A Summary of Psychology" (1908)
Journal: Journal of Psychology and Physiology of the Sense Organs (with physicist Arther Konig, 1890)
Attributes/Criticisms:
His research brought objectivity, quantification and experimentation to the study of learning and memory

Franz Brentano (1838-1917)
Studied in the priesthood, Berlin, Munich. Degree in philosophy Univ Tubingen (1864), ordained that same year.
Professor of philosophy at Univ Wurzburg, Aristotle (1866)
1870 - resigned professorship and formally left the church (rejected the doctrine of papal infallibility).
Professor of Philosophy Univ Vienna (1874)
Book: ***"****Psychology from an Empirical Standpoint"* 1874) - which directly confronted Wundt's views. His students were Christian von Ehrenfels and Sigmund Freud
Attributes/Criticisms:
He argued that the proper subject matter for psychology is mental activity, such as the mutual action of seeing, rather than the mental content of what a person sees. This **act psychology** questioned the Wundtian view that mental processes involve contents or elements.
Why **empirical** observation? It accepts data from observation, individual experience as well as experimentation. Wundt = experimental, Brentano = empirical
His work was the precursor to Gestalt and Humanistic psychology.
With Wundt, he was also motivated to make psychology a science.
Advanced two ways to study mental acts:

- Through memory - recalling the mental processes involved in a particular mental state.

- Through imagination - imagining a mental state and observing the accompanying mental processes.

Carl Stumpf (1848-1936)
Born in Bavaria, young musician, violinist and other instruments.
Student at Wurzburg (Brentano), philosophy and science.
Doctoral Univ of Gottingen (1868)
Professor of Psychology, Univ of Berlin (1894) - developed labs and an institute.
Founded the Berlin association of Child Psychology
Wundt's main rival. Trained two psychologists that founded Gestalt psychology - that opposed Wundt's views.

Book: *"Psychology of Tone, 2 volumes"* (1883, 1890), with Helmholtz, acoustics, psychology of music.
Attributes/Criticisms:
Phenomenology - Stumpf's introspective method that examines experience as it occurs, unbiased, and did not try to reduce experience to elementary components, which he believed made that experience abstract and artificial and thus no longer natural.
Trained Edmund Husserl who proposed a philosophy of phenomenology, a precursor to Gestalt.
Published a theory of emotion that attempted to reduce feelings to sensations.

Oswald Kulpe (1862-1915)
Studied history at Univ of Leipzig (1881), and then philosophy and psychology per Wundt.
Psychology degree, associate professor with Wundt.
Professor at Wurzburg, developed a lab (1894)
Students James Rowland Angell, American, developed the functionalist school.
Book: *"Outline of Psychology"* (1893) - an intro textbook, defined psychology as the science of the facts of experience that are dependent on the experiencing person.
Attributes/Criticisms:
He challenged Wundt that higher mental processes, thought and memory, could be studied experimentally.
Systematic experimental introspection - subjects undertook some mental process, thinking/judging, after which they examined how they had thought or judged. Wundt studied conscious experience as it occurred.
Kulpe's approach was aimed directly at investigating what was going on in a subject's mind during a conscious experience, dividing it into time periods. Tasks were repeated many times into introspective reports. The experimenter assumed a more active role, asking direct questions to elicit details of their reactions to the stimuli. The goal was to expand Wundt's introspection methods and refine them.
Imageless thought - that thought can occur without any sensory or imaginal content, therefore, imageless thought, a non-sensory aspect of consciousness. This was proposed at the same time, independently, by American Robert Woodworth and French Alfred Binet.
Per student Henry Watt - word-association task, subjects had little relevant information to report about their conscious process of judgment. This suggested that predispositions outside of

consciousness were influencing conscious activities. ***Therefore the existence of an unconscious mind and tendencies that can have an influence on human behavior.*** These ideas were adopted by Freud and the psychoanalytic school of psychology.

Conclusions
The German psychologists, in spite of differences, were engaged in a common enterprise, that psychology was no longer a study of the soul, but a study, by observation and experiment, of certain reactions of the human organism not included in any other science.
Wundt's student, E.B. Tichner, brought psychology to America

Chapter 5 - Structuralism

Edward Bradford Titchener (1867-1927)
Born in Chichester, England
Attended Malvern College and Oxford Univ where he studied philosophy and the classics and as a research assistant in physiology. Brilliant student, flair for languages. He became interested in Wundtian psychology while at Oxford.
Moved and studied under Wundt at Leipzig, doctorate (1892).
Moved to America, Cornell University, to teach psychology and direct the lab, at 25 years old. Remained at Cornell for the rest of his life.
From 1893 to 1900, established his lab, conducted research and published 60 scholarly articles. He supervised 50 doctoral candidates in 35 years, and they did the research he assigned, building his system of structuralism.
Books:
"An Outline of Psychology" (1896)
"Primer of Psychology" (1898)
"Experimental Psychology: A Manual of Laboratory Practice", 4 volumes (1901-1905) - these manuals stimulated the growth of laboratory work in psychology in America and his textbooks were translated into 5 languages.
"A Textbook of Psychology" (1909) - the difference between dependent and independent experience.

Outstanding teacher and lecturer.
More than one third of his 56 doctoral students were women and he encouraged and supported their achievement in psychology, accepting women into his graduate studies program at Cornell, while Harvard and Columbia refused to do so.
Margaret Fly Washburn earned the first doctoral degree in psychology, also Tichener's first doctoral student. **Book:** The Animal Mind (1908), an important book on comparative psychology.

Attributes:
Structuralism focused on mental elements or contents, and their mechanical linking through the process of association, but he discarded Wundt's doctrine of apperception. Titchener's work

focused on the elements themselves. In his view, psychology's fundamental task was to discover the nature of the elementary conscious experiences - to analyze consciousness into its component parts and thus determine its structure.
Structuralism attained prominence in the United States and lasted some two decades before being overthrown by newer movements.

In 1904, his group of "Experimentalists", made up of psychologists from other universities, met regularly to compare notes. Women were not allowed. Two years after his death, the group was reborn as the **Society of Experimental Psychologists** which is still active (www.sepsych.org). It holds annual meetings and does include women.

In studying conscious experience, Titchener warned against committing what he called the stimulus error, which confuses the mental process with the object we are observing. Observers should observe the possibly many characteristics, not interpret what it is.
He defined consciousness as the sum of our experiences as they exist at a given time. The mind is the sum of an individual's experience accumulated over a lifetime. Consciousness and mind are similar, except that consciousness involves mental processes occurring at the moment whereas mind involves the total of these processes.
He envisioned structuralism as a pure science and not concerned with applying psychological knowledge to "curing sick minds or reforming society". Psychologists' only legitimate purpose was to discover the facts of the structure of the mind.

Introspection
Titchener adopted Kulpe's label, **systematic experimental introspection**, to describe his method. He used detailed, qualitative, subject reports of his subject's mental activities during the act of introspecting. He was interested in the analysis of complex conscious experience into its component parts, not in the synthesis of the elements through apperception. **Titchener emphasized the parts, whereas Wundt emphasized the whole**. His goal was to discover the so-called atoms of the mind.
In keeping with Wundt's idea, the trained observations would become so mechanical and habitual that the subjects would no longer be aware that they were carrying out a conscious process. Observers were machines, in line with the continuing influence of the Galilean-Newtonian mechanical view of the universe. **This image of human-as-machine continued to characterize experimental psychology through the first half of the twentieth century.**

The Elements of Consciousness
Titchener proposed three essential problems for psychology:

1. Reduce conscious processes to their simplest components.
2. Determine laws by which these elements of consciousness were associated.
3. Connect the elements with their physiological conditions.

Thus, the aims of Titchener's structural psychology coincided with those of the natural sciences. The bulk of his research was devoted to the **first problem**, to discovering the elements of consciousness

Criticisms of introspection:
A century before Titchener's work, the German philosopher **Immanuel Kant** wrote that any attempt at introspection necessarily altered the conscious experience being studied because it introduced an observing variable into the content of the conscious experience.
The positivist philosopher **Auguste Comte** attacked the method, arguing that if the mind were capable of observing its own activities, it would have to divide itself into two parts, which was impossible.

Per the English physician **Henry Maudsley**, the only agreement among them can be attributed to the fact that they must be meticulously trained, and therefore have a bias built into their observations. Due to the extent of the pathology of the mind, self-report is hardly to be trusted.

Other points of criticism:
Titchener had difficulty defining exactly what he meant by the introspective method.
Another point of attack on Titchener's methodology involves the question of precisely what the structuralist introspectors were trained to do. If ordinary words were stricken from the vocabulary, how should trained observers describe their experience? An **introspective language** would have to be developed and it was never realized.
Critics also charged that introspection was really a form of retrospection because some time elapsed between the experience and the reporting of it. Also, the very act of examining an experience in an introspective manner may in some way alter it.
Freud, in the early years of the twentieth century, claimed that if part of our mental functioning is **unconscious**, then clearly introspection is of no use in exploring it.

Further critics argued that experience does not come to us in individual sensations, images, or affective states but in unified wholes. Something of the conscious experience is inevitably lost in any artificial effort to analyze it. The **Gestalt** school of psychology made effective use of this point in launching its revolt against structuralism.

Contributions of Structuralism
Their subject matter - conscious experience - was clearly defined.
Their research methods based on observation, experimentation, and measurement, were in the highest traditions of science.
The method of introspection - more broadly defined as the giving of a verbal report based on experience - continues to be used in many areas of psychology.
Introspective reports involving cognitive processes such as reasoning are frequently used today.
Cognitive psychology, with a renewed interest in conscious processes, has conferred greater legitimacy on introspection.
Structuralism provided a strong, established orthodoxy against which newly developing movements in psychology could array their forces with their progressive reformulation of the structuralist position.

Chapter 6 - Functionalism: Antecedent Influences

Charles Darwin, and his notion of evolution, changed the focus of the new psychology from the structure of consciousness to its functions. It was inevitable that a functionalist school of thought would develop.
Functionalists studied the practical question: What do mental processes accomplish? They studied the mind not from the standpoint of its composition - its mental elements or its structure - but rather as a conglomerate or accumulation of functions and processes that lead to practical consequences in the real world.

It was the first uniquely American system of psychology, a direct protest against Wundt's experimental and Titchener's structural psychology. **The functionalists were asking: What does the mind do? And how does it do it?** The rapid development of applied psychology in the United States may be considered the most important legacy of the functionalist movement.

Darwin's pioneering book about evolution, *On the Origin of the Species* (1859) was published a year before Fecher's *Elements of Psychophysics* (1860) and 20 years before Wundt established his lab at the Univ of Leipzig. Francis Galton began work on the problem of measuring individual differences in 1869, before Wundt wrote his *Principles of Physiological Psychology* (1873). Animal experiments were conducted in the 1880's, before Titchener journeyed from England to Germany to study under Wundt.
Thus, major work on the functions of consciousness, on individual differences, and on animal behavior was being performed at the same time Wundt and Titchener chose to exclude these areas from their definitions of psychology. **Not until psychologists brought the new science to the United States would mental functions, individual differences, and lab rats attain prominence in psychology.**

The Evolution Revolution
The idea of evolution did not begin with **Charles Darwin** in 1859. The suggestion that living things change with time, which the fundamental notion of evolution, can be traced to the fifth century BC, although it was not until the late eighteenth century that it was investigated systematically.
The English physician **Erasmus Darwin** (grandfather of Charles Darwin and Francis Galton) wrote that all warm-blooded animals evolved from a single living filament and were given animation from God. He believed that there was a God who had originally set life on earth in motion but who did not intervene thereafter to alter animal or plant species or create new ones. He suggested that changes in animal forms developed in accordance with natural laws in which species were continually adapting to changes in their environment
In 1809, the French naturalist **Jean-Baptiste Lamarck** formulated a behavioral theory of evolution that emphasized the modification of an animal's bodily form through its efforts to adapt to its environment. Lamarck suggested that these modifications were inherited by succeeding generations.

In the mid 1880s, the British geologist **Charles Lyell** introduced the notion of evolution into geological theory, arguing that the earth had passed through various stages of development in evolving to its present structure.
A book entitled, *Vestiges of the Natural History of Creation* appeared, and it argued that people were descended from primates, and it quickly became a bestseller in Europe and America. Naturally, the subject matter aroused considerable controversy and discussion to all segments of society.
As early as 1501, Italian explorer **Amerigo Vespucci** wrote of the multitude of animal species in South America that were unlike anything in Europe, and questioned "whether so many species could have entered Noah's Ark."

In the 1830s, people in Europe began to see, for the first time, species such as **chimpanzees and orangutans** that appeared to be strikingly similar to human beings. In 1853, the British Museum displayed a gorilla skeleton alongside a human skeleton and the resemblance was striking.
Explorers also uncovered **fossils and bones** of creatures that did not match those of existing species. Such findings fascinated scientists and laypersons alike. People wanted to know what those fossils and bones might reveal about the origins of man. These artifacts meant that living things could no longer be seen as constant, as unchanged since the beginning of time. It was possible that everything in nature resulted from change and was still in the process of evolving.

Zeitgeist (mid 19th century) - the social zeitgeist was being transformed by the Industrial Revolution. Values, relationships, and cultural norms, constant for generations, were suddenly disrupted as masses of people migrated from the rural areas and small towns to the rapidly developing urban manufacturing centers. The growing domination of science permeated popular attitudes. People were less content to base their ideas about human nature and about society on what the Bible or ancient authorities claimed was true. Change was the order of the day. If affected the peasant farmer, whose life now pulsed to the ticking of the clock and the rhythm of the machine instead of to the seasons, as much as if affected the scientist, whose time was now spent puzzling over bones and fossils. The intellectual climate of the times rendered the idea of evolution not only scientifically respectable but also necessary. People were ready, even eager, to shift their allegiance - to put their faith in science.

For a long time, scientists and scholars thought and speculated and hypothesized but offered little supporting evidence for evolution. The Zeitgeist demanded a theory, and Charles Darwin became its agent. Darwin's On the Origin of the Species (1859) provided so much well-organized data that evolutionary theory could no longer be ignored.

Charles Darwin (1809-1882)

His grandfathers were two of the most famous men in England so he was in the company of clever and artistic people from his earliest years. He grew up in a comfortable home where his imagination was free to roam. His father, a physician, was wealthy and he did exactly as he pleased his entire life.

Young Charles did poorly in school but showed an interest in natural history and in collecting coins, shells, and minerals.
Studied medicine at Univ of Edinburgh, three years at Cambridge Univ.

The botanist John Steven Henslow, one of Darwin's teachers, secured Darwin's appointment as a naturalist aboard the **HMS Beagle**, a British effort and scientific voyage around the world from 1831 to 1836, exploring South America, Tahiti, New Zealand and the Azores. The captain, Robert Fitzroy, a deeply religious man, ironically, wanted a naturalist on board to find evidence to support the biblical theory of evolution.
Darwin collected various plant and animal specimens and data and returned to England a dedicated scientist with a single passion: to develop a theory of evolution.

He married in 1839 and moved outside London. He was plagued by various physical ailments throughout his life and his symptoms were apparently neurotic in origin, triggered by stress and disruption in routine - he worked no more than one day in three. His illness became a useful device to protect him from the mundane, allowing him the solitude and concentration he needed to develop his theory.

The idea of evolution was being condemned by the conservative authorities in the church, and even in some academic circles. He waited 22 years before presenting his ideas to the public, wanting to be certain that when he did publish, the theory would be supported by irrefutable scientific evidence. Only a shocking letter from the naturalist **Alfred Russell Wallace,** asking Darwin for his opinion about his ideas on evolution, which came fully developed to him in three days, and was remarkably similar to Darwin's, prompted him to release his book (and Wallace's paper) to be read at a meeting of the Linnaean Society on July 1, 1858. Each one of the 1250 copies of the first printing of *On the Origin of the Species* was sold on the day of publication.

On the Origin of the Species by Means of Natural Selection
Darwin formulated the ideas of the struggle for survival, and the "survival of the fittest," after reading *Essay on the Principles of Population* (1789) by the economist **Thomas Malthus** who noted that the world's food supply increases arithmetically, whereas the human population tends to increase geometrically. Only the most forceful, cunning, and adaptable will survive.
Darwin extended the Malthusian principle to all living organisms to develop his concept of natural selection. Those that survive the struggle and reach maturity tend to transmit to their offspring the skills and advantages that enabled them to thrive. Further, because variation is one of the general laws of heredity, offspring will show variation among themselves; that is, some will possess the useful qualities developed to a higher degree than their parents. The qualities tend to survive, and in the course of many generations changes may occur. These changes can be so extensive as to account for the differences among species today.
He also subscribed to Lamarck's doctrine that changes in form brought about by experience during an animal's lifetime can be passed to subsequent generations. (?)

Within a year of the publication of *On the Origin of the Species,* the British Association for the Advancement of Science hosted a debate at Oxford University. Defending Darwin was **Thomas**

Henry Huxley (1825-1905), an ambitious biologist and grandfather to Aldous Huxley, the author of Brave New World, and Samuel Wilberforce who defended the bible.
Robert Fitzroy, captain of the HMS Beagle, also attended the debate and defended the bible and admitted his mistake in including Darwin on the Voyage. He later served in Parliament and then devoted his life to meteorology. He developed the fundamental techniques of weather forecasting and invented the system of storm warnings and signals and issued the first daily weather forecasts - he invented the phrase.

Darwin's Other Work
Books:
"On the Origin of the Species" (1858)
"The Descent of Man" (1871) - This work gathered evidence of human evolution from lower life forms, emphasizing the similarity between animal and human mental processes.
"The Expression of the Emotions in Man and Animals" (1872) - This work explained emotional expressions as remnants of movements that once served some practical function. He also argued that facial expressions and so-called body language were "innate and uncontrollable manifestations" of internal emotional states and had come about through evolutionary means.

Journal:
"A Biographical Sketch of an Infant" (1877), paper published in the journal *Mind* - A recording via diary about his infant son's development. The diary is an important precursor to developmental psychology, illustrating Darwin's thesis that children pass through a series of developmental stages that parallel the stages of human evolution.

Darwin's Influence on Psychology
Today we can see the Darwin's work influenced contemporary psychology in a number of ways:

- A focus on animal psychology, which formed the basis for comparative psychology.
- An emphasis on the functions rather than the structure of consciousness.
- The acceptance of methodology and data from many fields.
- A focus on the description and measurement of individual differences.

Early **functionalists and behaviorist** psychologists embraced the commitment to strong continuity derived from the experimental studies of animals to accommodate virtually all forms of human psychology and behavior.
Gradually, as psychology came to be more concerned with how humans and animals functioned in adapting to their environments, the detailed investigation of mental elements - begun by Wundt and Titchener - lost its appeal.
Functionalism was not merely influenced by Darwinian theory, but constituted a radical attempt to start over by establishing a new scientific basis for psychology.
Darwin **broadened the methods** the new science of psychology could legitimately use. His data came from a variety of sources including geology, archeology, demography, observations of wild and domesticated animals, and breeding research.
While the **structural psychologists** continued to search for general laws that encompassed all minds, the psychologists influenced by Darwin's ideas searched for ways in which individual

minds differed, and soon proposed techniques for measuring those differences (individual differences).

Francis Galton (1822-1911)

Francis Galton's work on mental inheritance and the **individual differences** in human capacities effectively brought the spirit of evolution to bear on the new psychology, which was rarely considered an appropriate subject of study previously.
Historically, three hundred years before Galton's efforts, **Juan Huarte** (1530-1592) a Spanish physician, published The Examination of Talented Individuals. He proposed a wide range of individual differences and suggested that children be studied early in life so that their education could be planned, individually, in accordance with their abilities.

Francis Galton possessed an extraordinary intelligence, his IQ estimated at 200. He was a precocious child who learned quickly, reading at the age of 3, and at the age of 16, began medical training.
Birmingham General Hospital, as an apprentice to a physician.
King's College - medical training
Trinity College of Cambridge University - mathematics, where he earned his degree despite a mental breakdown.
Journeyed through Africa, published accounts of his trips. Stopped traveling in the 1850's and wrote *"The Art of Travel"*.
Studied **meteorology**, designed instruments to plot weather data which led to the development of the type of weather map still in use today.

After reading his cousin Charles Darwin's, *On the Origin of the Species*, he quoted, "it made a marked epoch in my own mental development, as it did in human thought generally". Although the genetic side of evolutionary theory did not hold his interest, the social implications guided his subsequent work and determined his influence on modern psychology.

Books:
"Hereditary Genius" (1869) - he sought to demonstrate that individual greatness or genius occurred within families far too often to be explained by environmental influences, and that this genius was specific. Galton's goal was to encourage the birth of the more eminent or fit individuals in a society and to discourage the birth of the unfit. Toward this end he founded the science of "eugenics," a word he coined (from the Greek *Eugenes*, namely, good in stock).
He discussed the limits to both physical and mental development that he believed were set in place for each of us by heredity and that no amount of physical or mental exertion will enable any person to rise above their genetic endowment.
"English Men of Science" (1874)
"Natural Inheritance" (1889)

Journal: Biometrika, and published more than 30 papers
Established the Eugenics Laboratory at University College, London

Statistical Methods

Adolph Quetelet (1796-1874), a Belgian mathematician, was convinced that statistics provided an insight into human behavior and the understanding of society. He was the first to use statistical methods and the normal curve of distribution with biological and social data. This **normal curve** had been used in work on the distribution of measurements and eros in scientific observations, but not applied to human variability. He found the “average man’s” physical measurements cluster around the average or center of the distribution, and fewer are found toward either extreme.

Galton found that grades given in university examinations followed the normal curve (the bell curve). Because of its consistency, he suggested that any large set of human characteristics could be meaningfully described by two numbers:

The **arithmetic mean** - the average value of the distribution - the sum of all values divided by the total number of values, the average.

The **standard deviation** - the dispersion or range of variation around the mean. A low standard deviation means the data is clustered around the mean, a high standard deviation indicates data are more spread out.

Galton’s work in statistics yielded one of science’s most important measures: the **correlation**, which first was reported by him as “co-relations” in 1888. Galton’s research on correlation was based on his observation that inherited characteristics tend to regress toward the mean. His student **Karl Pearson** (1857-1936) developed the current formula for calculating the **correlation coefficient**. The correlation coefficient is the specific measure that quantifies the strength of the linear relationship between two variables in a correlational analysis. If both variables tend to increase or decrease together, the coefficient is **positive**, and the line that represents the correlation slopes upward. If one variable tends to increase as the other decreases, the coefficient is **negative**, and the line that represents the correlation slopes downward. Per the equation. The quantity of the **strength** of the correlation, either positive or negative, is also provided by the equation.

The symbol for the correlation coefficient, r, is taken from the first letter of the word “regression”, in recognition of Galton’s discovery of the tendency of inherited human traits to regress towards the man. **Correlation is a fundamental tool** in the social and behavioral sciences as well as in engineering and the natural sciences.

Mental Tests

Galton assumed that intelligence could be measured in terms of a person’s sensory capacities, and that the higher the intelligence, the higher level of sensory functioning (sensory tests and motor skills).

To carry out his aim, Galton invented numerous **apparatus** with which sensory measurements could be taken quickly and accurately from large numbers of people:

Whistle - to test the highest frequency of sound that could be detected.

Photometer - to measure the precision with which one could match two spots of color.

A calibrated pendulum - to measure the speed of reaction to lights and sound.

A series of weights - to be arranged in order of heaviness to measure kinesthetic or muscle sensitivity.
A set of bottles - containing various substances to test olfactory discrimination (smell).

He then established the **Anthropometric Laboratory** in 1884 at the International Health Exhibition and then moved it to London's South Kensington Museum. Over 6 years, he collected data on more than 9,000 people. In addition, the laboratory workers recorded height, weight, breathing power, strength of pull and squeeze, quickness of blow, hearing, visions and color sense - a total of 17 tests. The grand aim was the definition of the range of human capacities of the entire British population to determine its collective mental resources. Galton's data provided information on developmental trends for childhood, adolescence, and maturity within the population tested

The Association of Ideas
Galton worked on two problems:

- The diversity of association of ideas
- The reaction time required to produce associations

In his self-experimentation, he traced approximately 40 percent of the origins of his personal associations to events in childhood and adolescence, and early demonstration of the influence of childhood experiences on the adult personality. He was highly impressed by the influence of his **unconscious** thought processes, and came to believe, "that my best brain work is wholly independent of consciousness". He wrote about the unconscious mind in an article published in the journal *Brain* (1879). A subscriber to this journal in Vienna, Sigmund Freud, who had his own ideas about the importance of the unconscious, was obviously influenced by Galton's work.

The **word association test** he developed to study associations was of great importance. Wundt adopted the technique and later Jung elaborated on the technique for his own word-association research on personality.

Mental Imagery
Galton's investigation of mental images marks the first extensive use of the psychological **questionnaire**. Subjects were asked to recall a scene and try to elicit images of it, to report dim or clear, bright or dark, colored or not, and so on. He found that imagery was distributed in the population in accordance with the normal curve, and that similar images were likely to occur between siblings than between people who were unrelated.

Comments
Galton spent 15 years investigating psychological issues, even though he was not a true psychologist. His talent and temperament were not bound by any single discipline. The scope of **his interests**: adaptation, heredity vs environment, comparison of species, child development, the questionnaire method, statistical techniques, individual differences, and mental tests. His work had a greater influence on developments in American psychology than the work of psychology's founder, Wilhelm Wundt.

American Psychology and the Development of Functionalism

Before Darwin published, there was no reason for scientists to be concerned about the animal mind because animals were considered "automata" with no minds or souls, per Descarte. Scientists could now propose a continuity between all mental and physical aspects of humans and animals because humans were believed to be derived from animals and the continuous evolutionary process. Thus, scientists were challenged to seek evidence of intelligence in animals.

In his second book, Darwin argued that human emotional behavior stems from inherited behavior that was once useful to animals but is no longer relevant for humans. In the 1860's and 1870's, the topic of animal intelligence grew in popularity among scientists and the general public. In 1863, even Wilhelm Wundt's voice was added to the many suggesting animals might be as mentally well endowed as humans.

George John Romanes (1848-1894

This British physiologist formalized and systemized the study of animal intelligence.
He and Darwin were friends and the latter gave Romanes his notebooks on animal behavior, thus Darwin chose Romanes to carry on that aspect of this work, applying the theory of evolution to the mind as Darwin applied it to the body.
He was wealthy and built a private laboratory as well equipped as any university.

Books:

"Animal Intelligence" (1883) - generally considered to be the first book on comparative psychology.
He wanted to show that there is "no difference in kind between the acts of reason performed by the crab and any act of reason performed by man". He collected data on the behavior of protozoa, ants, spiders, reptiles, fish, birds, elephants, monkeys and domestic animals.

He formed his opinions by collecting data by the **anecdotal method** defined as use of observational, often casual, reports or narratives about animal behavior. He derived his findings on animal intelligence from these anecdotal observations through a curious and eventually discarded technique called **introspection by analogy**: Investigators assume that the same mental processes that occur in their own minds must also occur in the minds of animals being observed. Thus, the presence of specific mental functions is inferred by drawing an analogy between known human mental processes and the process assumed to be taking place in the animals' mind.
Romane's work falls short of modern scientific rigor, however, he is respected for his pioneering efforts in **stimulating the development of comparative psychology** and preparing the way for the experimental study of animal behavior. Here, as in many other areas of science, we see the reliance on observational data that precedes the development of more refined experimental methodology.

C. Lloyd Morgan (1852-1936

Conway Loyd Morgan was designated as Romanes' successor.

Professor of psychology and education at the Univ of Bristol, England, also interested in geology and zoology.
He proposed the **law of parsimony** in 1894 (Loyd Morgan's Canon) to counteract the prevailing tendency to attribute excessive intelligence to animals. The law of parsimony states that an animal's behavior must not be interpreted as the outcome of higher mental processes when it can be explained in terms of a lower mental process.
He believed that most animal behavior resulted from learning or association based on sensory experience; the type of learning was a lower-level process than rational thought or ideation.
Morgan was the first to conduct large-scale experimental studies in animal psychology.

Comment
The initial work in comparative psychology was carried out in England, but leadership in the field quickly passed to the United States. It emerged from Darwin's suggestion of continuity between human and animal species.
Basic to Darwinian theory are the notion of function and the assertion that as a species evolves, its physical structure is determined by requirements for its survival. This premise led biologists **to regard each anatomical structure as a functioning or utilitarian element in a total living, adapting system**. When psychologists began to examine mental processes in the same way, they laid the groundwork for a new movement: functional psychology.

Chapter 7 - Functionalism: Development and Founding

Evolution Comes to America:
Interest in Darwin's theory of evolution was intense in the United States and his ideas had been accepted eagerly in universities, scholarly societies and also in popular magazines.

Herbert Spencer (1820-1903)
Spencer argued that the development of *all* aspects of the universe is evolutionary, including human character and societal institutions, in accordance with the principle of "survival of the fittest" - a phrase Spencer coined. Social Darwinism - applying the theory of evolution to human nature and society - met with enthusiasm in America.

In his view, human perfection was inevitable as long as no action was taken to interfere with the natural order of things. Individualism and a laissez-faire economic system were vital, Bowhereas governmental attempts to regulate business, industry and welfare were opposed - even subsidies for education, housing and the poor.
People, programs, businesses, or institutions that could not adapt were unfit for survival and should be allowed to perish for the betterment of society as a whole. Supporting poorly functioning enterprises would ultimately weaken society and violate the basic law of nature, that only the most fit shall survive.

This message was compatible with America's individualistic spirit. This pioneer nation was being settled by hardworking people who believed in free enterprise, self-sufficiency, and

independence from government regulation. They knew all about the survival of the fittest from their daily lives. Particularly on the Western frontier, survival and success depended on one's ability to adapt to the demands of that hostile environment.

Zeitgeist - The people of the United States were oriented toward the practical, the useful, and the functional. In its pioneering stages, American psychology mirrored those qualities. American psychology became a functional psychology because evolution and the functional spirit were in keeping with America's basic temperament.

Books:
"The Principles of Psychology" (1855) - this is two of ten books published by Spencer and later used by William James as a textbook for the first psychology course taught at Harvard.

Spencer formulated a system he called **synthetic philosophy** (synthesizing, not artificial). In this book he discussed the notion that the mind exists in its present form because of past and continuing efforts to adapt to various environments, emphasizing the adaptive nature of the nervous and mental processes. He wrote that **an increasing complexity of experiences, and hence of behavior, is part of the normal evolutionary process.**

The Continuing Evolution of Machines
Samuel Butler (1835-1902)
An English writer, painter and musician who carried on extensive correspondence with Darwin from his home in New Zealand.
Essay: "Darwin Among the Machines" - he wrote that the evolution of machines had already occurred via the complex machinery of industrial factories and steam-driven locomotives and ocean liners. He proposed that mechanical evolution was occurring through the same processes that guided human evolution - natural selection - and predicted that machines would one day become capable of simulating human mental processes - a kind of intelligence.
The census of 1880, tallied by hand by fifteen hundred clerks, to produce a report totalling more than 21,000 pages, had taken seven years to complete. A new information-processing machine was necessary.

Henry Hollerith (1859-1929)
An engineer, developed the punch card and machine system to collate all of the data of the 62 million people of the 1890 census. He used 56 million cards, each card the equivalent of up to 36 eight-bit bytes of information. The census took 2 years to complete at a savings of $5 million dollars.
He established his own business, the Tabulating Machine Company and sold it in 1911. We know it today as IBM.

The Anticipator of Functional Psychology

William James's work was the major American precursor of functional psychology and was a pioneer of the new scientific psychology as if developed in the United States. Although we was considered by most, "far and away the greatest of American psychologists", some of his colleagues viewed him as a negative force because he maintained a publicized interest in mystical events such as mental telepathy and clairvoyance, the very phenomena that they as experimental psychologists, were trying to banish from the field.

William James founded no formal system of psychology and trained no disciples. There was no Jamesian school of thought. Psychology was not his life-long passion. Later in life, he moved on, and turned his back on it. Although James did not found functional psychology, he presented his ideas clearly and effectively within the functionalist atmosphere that was pervading American psychology and in so doing, influenced the movement by inspiring subsequent generations of psychologists.

William James (1842-1910)
Born in NYC to a prominent family. He made frequent visits abroad for education. He was encouraged by his father to have an interest in science.
At 18 he decided to become an **artist,** but realized his lack of talent.
Enrolled at **Lawrence Business School** at Harvard, then medical school, but found the laboratory work in both not to his tastes.
He then studied **zoology** and assisted Louis Agasiz on an expedition to Brazil's Amazon River basin. He resumed his medical studies shortly thereafter.
He was probably a clinical depressive. He spent time in a German spa recuperating from "living in America" and after attending physiology lectures at the Univ of Berlin, speculated that perhaps it was time for "psychology to begin to be a science". He was then aware of scientific and intellectual trends 10 years before Wundt began his lab.
Harvard Medical Degree (1869) - At this time his depression had worsened and after contemplating suicide, he has himself committed to an asylum in Massachusetts. He was not alone, it seems, in his mental difficulties.

An epidemic of **"neurasthenia",** a particular American nervousness, was sweeping the country in the second half of the nineteenth century, mainly in the upper classes and "brain workers". James called the syndrome "Americanitius".
An American neurologist, **George Beard,** had coined the term and listed a variety of symptoms: insomnia, headache, skin rash, exhaustion and hypochondria. Beard related it to the rapid development of clocks and the resulting emphasis on keeping a schedule and increasing time pressures and punctuality. Beard related, "We are under constant strain, mostly unconscious, oftentimes in sleeping as well as in waking hours, to get somewhere, to do something at a definite moment". This malady apparently spread far and wide in the early nineteenth century
The **Rexall drug company** capitalized on the opportunity and introduced a patent medicine to combat the illness. They recommended **female** sufferers to "spend six weeks in bed without any work, reading, or social life, and to gain large amounts of weight". **Men**, however, were told to include "travel, adventure, and vigorous exercise".

Thus, initiating the purely benevolent aims of the pharmaceutical industry we are blessed with to this day.

1869 - James read widely on philosophy, including essays by Charles Renouvier on freedom of the will, which persuaded him of its existence. Thus, he resolved to believe that he could cure himself of his depression and apparently succeeded to some extent.

1872 - He accepted a teaching position at Harvard in physiology for one year. Around this time he became interested in the effects of mind-altering chemicals, which he tried himself, and was fascinated because of the way bodily changes influenced consciousness.
1875 - He taught his first psychology course at Harvard, “The Relations Between Physiology and Psychology”, thus **Harvard** became the first university to offer instruction in the new experimental psychology. The first psychology lecture James ever attended in his life, was his own. He also began developing a laboratory.
1878 -signed a publishing contract but traveled so often did not publish until 1890. He traveled often and alone and had many other female interests other than his wife. He was of the opinion that his affectionate nature should please his wife.
1885 - promoted to professor of philosophy
1889 - promoted to professor psychology. By this time James had met many European psychologists including Wundt.

Books:
“The Principles of Psychology”, (1890) two volumes, not Spencer’s book by the same name circa 1855. It was a tremendous success and significant contribution to the field. For several generations of students, *Principles* was the most influential textbook ever written in psychology and it is still read today by people who are not required to do so.
Wundt and Titchener, whose views James attacked in his text, did not like the book and Wundt was highly critical of James’s work.

With the publication of *Principles,* James moved on, no longer interested in psychology or Harvard’s experimental laboratories that he began and equipped. He was never convinced of the value of lab work and did not like it personally.
James spent the last 20 years in philosophy and was considered America’s leading philosopher.

Books:
“The Varieties of Religious Experience” (1902)
“Talks to Teachers” **(1899)** - marked the **beginning of educational psychology** and offered his ideas about how psychology could be applied to the classroom learning situation.
“Pragmatism” (1907) - James emphasized this as a basic tenet, that the validity of an idea or conception must be tested by its practical consequences.

The Principles of Psychology

Three reasons have been suggested for James's overwhelming stature and influence in American psychology:

1. He wrote with clarity that is rare in science, his style has magnetism, spontaneity and charm.
2. He opposed Wundt's goal for psychology; namely, the analysis of consciousness into elements.
3. He offered an alternative way of looking at the mind, a view congruent with the functional approach to psychology.

Zeitgeist - The times in American psychology were ready for what James had to say. In his Principles, he presented what would become the central tenet of American functionalism - that the goal of psychology is not the discovery of the elements of experience but rather the study of living people as they adapt to their environments. The function of consciousness is to guide us to those ends required for survival. Consciousness is vital to the needs of complex beings in a complex environment; without it, human evolution could not have occurred.

James also emphasized:

- the non-rational aspects of human nature, that people are creatures of emotion and passion as well as of thought and reason,
- that the body's physical condition can affect the intellect,
- that beliefs are determined by emotional factors
- that reason and concept formation are influenced by human wants and needs.

A New Look at Consciousness in Psychology

In terms of subject matter, the key words are:

Phenomena - used to indicate the subject matter of psychology is to be found in immediate experience.

Conditions - refers to the importance of the body, particularly the brain, in mental life.

Consciousness must be considered in its natural setting, which is the physical human being. This awareness of biology - the action of the brain on the consciousness - is a unique feature of James's approach to psychology. **James rebelled against the Wundtian position,** believing that conscious experiences are simply what they are, and they are not groups or collections of elements. Introspective analysis and discovery of discrete elements by a trained observer does not show that these elements exist independently of that trained observer.

Per James, 1890, "No one ever had a simple sensation by itself. Consciousness, from our natal day, is of a teeming multiplicity of objects and relations, and what we call simple sensations are results of discriminative attention, pushed often to a very high degree".

James coined the phrase **"stream of consciousness"** to express that mental life is a unity, a total experience that changes. Consciousness is a **continuous flow**, and any attempt to divide

it into temporally distinct phases can only distort it. Consciousness is therefore cumulative and not recurrent and we can never experience the same thought or sensation more than once. The mind is also **selective**, paying attention to some, combining or separating others, and filtering out still others. The most important criteria for selection is **relevance**, so that our consciousness can operate logically and a series of ideas can lead to a rational conclusion.

The function of consciousness is to enable us to adapt to our environment by allowing us to choose. Pursuing the idea, Jame distinguished **between conscious choice and habit**; he believed habits to be involuntary and unconscious.

The Methods of Psychology

James was aware of the difficulties of self-introspection, and he accepted it as a less-than-perfect form of observation. He believed that **introspective results** could be verified by appropriate checks and by comparing the findings obtained from several observers. He did acknowledge that the **experimental method** was an important tool, primarily for psychophysics research, the analysis of space perception, and research on memory.

James recommended the **comparative method** to supplement introspection and experimental methods, comparing different populations such as animals, infants, preliterate people, or emotionally disturbed people. Per James, the functionalist movement would not be restricted to a single method and this broadened considerably the scope of American psychology.

The Theory of Emotions

The traditional theory of emotion believes that emotion comes before the body's reaction to it. James reversed the order. He stated that the arousal of the physical response precedes the appearance of the emotion, especially with emotions such as fear, rage, grief and love. **"Our feeling of the bodily changes as they occur *is* the emotion"**. His views on emotions have stimulated considerable controversy and a great deal of research. With physiologist Carl Lange, in an instance of simultaneous discovery, this idea is designated as the "James-Lange theory of emotions".

The Three-Part Self

James suggested that a person's sense of self is made up of three aspects or components:

1. The material self - consists of everything we call uniquely our own, such as our body, family, home, or style of dress.
2. The social self - refers to the recognition we get from other people, and we have different social selves that we present to different people.
3. The spiritual self - refers to our inner or subjective being.

Habit

James described all living creatures as "bundles of habits". The repetitive nature of habitual actions serve to increase the plasticity of neural matter and as a result, habits become easier to perform on subsequent repetitions and require less conscious attention.

Comment
The Principles of Psychology (1890) was a major influence on American psychology and still inspires tributes a century later. It affected the views of thousands of students and inspired psychologists to shift the new science away from the structuralist view and toward the formal founding of the functionalist school of thought.

The Functional Inequality of Women

Mary Whiton Calkins (1863-1930)
She developed the **paired-association technique** used in the study of memory and made significant contributions to psychology while overcoming barriers of prejudice and discrimination. William James was instrumental in facilitating her graduate education at Harvard, and although she produced a brilliant doctoral examination, was refused her doctoral degree (Harvard did not award doctoral degrees to women until 1963). Further, not until the 1830's did some colleges lift their prohibitions and admit women as *undergraduates*. Today, the majority of graduates who receive their Ph.D's in psychology are women.

Much of the **myth** of the intellectual superiority of men derived from the so-called **variability hypothesis**, based on Darwinian ideas of male variability. He found that in many species, males showed a wider range of development of physical characteristics and abilities than females, whose tendencies were found to be clustered around the average, or mean. Therefore, in Darwinian reasoning, women would be less likely to benefit from education. It was a small step from that idea to the proposition that female brains were less highly evolved than male brains. The result was a widespread acceptance of the idea of functional inequality between the sexes.

A Harvard medical school professor, E. Clarke (1873) wrote that education for women would produce "monstrous brains and puny bodies; abnormally active cerebration and abnormally weak digestion; flowing thought and constipated bowels. Identical education of the sexes is a crime before God and humanity".

Helen Bradford Thompson Woolley (1874-1947)
Undergraduate degree - Univ of Chicago - 1897
Ph. D - Univ of Chicago 1900
Director of the psychology lab at Mount Holyoke College in Massachusetts
1908 - moved with her husband to Cincinnati, Ohio, and accepted the directorship of the vocation bureau of the public school system, concerned with child welfare issues. Her research on the effects of child labor led to changes in the state's labor laws. Few states had protective legislation regarding age, working hours, or minimum wages for children. Children as young as eight years were working in factories 10 hours/day, six days/week.

Her doctoral dissertation, an experimental test of the Darwinian notion that women were biologically inferior to men, consisted of a battery of tests given to 25 men and 25 women to

measure motor abilities, sensory thresholds, intellectual abilities, and personality traits. The results showed no differences in emotional functioning and only small, insignificant differences in intellectual abilities. The data also revealed that women were slightly superior in memory and sensory perception. She attributed these differences to social and environmental factors - the difference in child-rearing practices and sex-based expectations - rather than biological determinants. He published results and conclusions were not well received.

She worked for 30 years as a teacher, researcher, and mentor for psychologists in the areas of child development and education.

Leta Stetter Hollingworth (1886-1939)
Grew up motherless, in a sod home, in Nebraska.
Undergraduate degree Univ of Nebraska, Phi Beta Kappa (1906)
Taught high school for two years
Married Harry Hollingsworth, Ph.D in psychology, who later taught at Barnard College, NY.
She was, by law, not permitted to teach in public schools in NY - because she was married.
Graduate school and Ph. D from Teacher's College, Columbia Univ (1916).
She studied with Edward L. Thorndike, and worked as a psychologist for the civil service in New York City.

She conducted **extensive research on the variability hypothesis** between 1913 and 1916 on a variety of subjects: infants, male and female college students and women during their menstrual cycle. Her data refuted the variability hypothesis and other notions of female inferiority.
Concerning motherhood, she challenged the innate instinct of motherhood, and suggested that social and cultural attitudes rather than biological factors were influential in keeping women from becoming fully contributing members of society. She also made significant contributions to clinical, educational and school psychology, especially the education and emotional needs of so-called **"gifted" children,** a term she coined.
She was active in the women's suffrage movement, campaigning for women's right to vote (finally achieved in 1920).

Granville Stanley Hall (1844-1924)
An influential American psychologist between 1875 and 1900.
He received the first American doctoral degree in psychology, was the first student in the first psychology laboratory and began what is considered to be the first psychology lab in the United States. He also began the first journal of psychology and was the first president of the APA.

Attended Williams College (1863) and was enthusiastic for evolutionary theory, which would influence his career in psychology.
Then enrolled in the Union Theological Seminary in NYC, but did not complete his studies until returning from Europe.
Studied philosophy and theology, Univ of Bonn and physiology and physics in Berlin.

He returned to the United States in 1871, worked as a private tutor and secured a teaching job at Antioch College in Ohio, teaching English literature, foreign languages and philosophy. He was also the librarian, led the choir and preached in the chapel.

In 1874, he read Wundt's *Physiology Psychology* and then moved to Cambridge, Massachusetts to tutor English and begin graduate studies and research at the medical school. He worked with William James and they became close friends.
In 1878, he presented his doctoral dissertation on space perception.

He then left for Europe again, first to study physiology at Berlin and then to become Wundt's student at Leipzig, living next door to Fechner. He conducted his own research along more physiological lines and his subsequent career shows that Wundt had little influence on him.

In 1880, he returned to the United States, and to satisfy his ambitions, began the application of psychology to **education**. His lectures and speeches on this subject brought him success.
In 1883, offered a professorship at Johns Hopkins University and established the first laboratory in America called his "laboratory of psychophysiology".
He taught **John Dewey** and **James McKeen Cattel**.

1887 - he founded the *American Journal of Psychology*, which provided a platform for theoretical and experimental ideas and a sense of solidarity and independence for American psychology.
1888 - he became the first president of Clark University, Worcester, Massachusetts, and aspired to make it a graduate university along the lines of Johns Hopkins and the German universities, emphasizing research rather than teaching.
He later established the journal Pedagogical Seminary (now the *Journal of Genetic Psychology*) to serve as an outlet for research on child study and educational psychology.
1915 - he founded the *Journal of Applied Psychology.*

He was one of the first American psychologists to become interested in Freudian **psychoanalysis** and was largely responsible for the early attention this system received in the United States.
In 1909, he invited **Sigmund Freud** and **Carl Jung** to participate in conferences at Clark University, a courageous invitation because many scientists viewed psychoanalysis with suspicion.
During his 36 years at Clark Univ, 81 doctorates were awarded. Hall made the university more receptive to women and minority students than most schools in the United States at the time. Although he shared the nationwide opposition to coeducation for undergraduates, he readily admitted **women** as graduate students and junior faculty and also encouraged blacks to become graduate students. He also refused to restrict the hiring of **Jewish faculty**, when most universities would not hire them at all. The **first African American** to earn a Ph.D in psychology, Francis Cecil Sumner, studied with Hall and later became chair of the psychology department at Howard University in Washington, D.C.

Evolution and the Recapitulation Theory of Development
Hall is often called a genetic psychologist, with evolutionary theory being his single intellectual theme. His work was governed by the conviction that the normal growth of the mind involved a series of evolutionary stages.

At Clark, Hall's genetic interests led him to the psychological study of childhood, which he made the core of his psycholog, and to the functioning of the child in the real world. He made extensive use of **questionnaires**, learned in Germany and developed in England by Francis Galton. His early studies of children generated great public enthusiasm and led to the formalization of the child study movement. Although his research was poorly executed and criticized by colleagues, the child study movement promoted both the **empirical study of the child and the concept of psychological development.**

Book:
Adolescence: Its Psychology and Its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religion, and Education (1904). Two volumes, 1300 pages, 10 years of research.
It inaugurated the scientific study of adolescent psychology and recapitulation theory.

In essence **recapitulation theory** asserts that children in their personal development repeat the life history of the human race, evolving from a near-savage state in infancy and childhood to a rational, civilized being in adulthood. The book became controversial because of what some psychologists considered an excessive and enthusiastic focus on sex. E.L. Thorndike wrote in a letter to a colleague, that it was "chock full of errors, masturbation, and Jesus. He is a mad man".

As Hall grew older, he naturally became curious about the later stages of human development. He published *"Senescence"* (1922), the first large-scale survey of the psychological issues of old age. He also wrote two autobiographies, *"Recreations of a Psychologist"* (1920) and *"The Life and Confessions of a Psychologist"* (1923).

Hall was introduced to audiences as the **"Darwin of the mind"** and as the "greatest authority in the world on the study of the child". He agreed with both assertions. Hall was bold, versatile and aggressive, often at odds with colleagues, but he was never dull.

The Founding of Functionalism
The scholars associated with the founding of functionalism had no ambition to start a new school of thought as they protested against the restrictions and limitations of Wundt's psychology and of Titchener's structuralism. They did not claim the personal ambition to start a movement as those before them, they appeared content to modify the existing orthodoxy without actively striving to replace it.
Thus, **functionalism was never as rigid or as formally differentiated** a systematic position as Titchener's structuralism. Several functional psychologists coexisted, and although they differed somewhat, all shared an interest in studying the **functions of consciousness.** As an outgrowth

of this emphasis on mental functions, the functionalists became interested in the potential applications of psychology to everyday problems of how people function in, and adapt to, different environments. The **rapid development of applied psychology** in the United States may be the most important legacy of the functionalist movement.

Tichener, by attacking functionalism, unwittingly gave it an identity and a status it might otherwise not have attained. As before, every rebellion needs something solid to rebel against. By calling out structuralism, not functionalism, as they only proper psychology, structuralism became that opponent.

The Chicago School (John Dewey and James Rowland Angell)

The both arrived at the newly established Univ of Chicago in 1894 and each appeared on the cover of Time magazine. William James later announced that they should be considered the founders of the new system, which James designated the “Chicago school”.

John Dewey (1859-1952)

Undergraduate - Univ of Vermont
Taught high school for a few years, studied philosophy on his own, writing several scholarly articles.
Doctorate - Johns Hopkins (1884), taught at Univ of Michigan and Minnesota.

Book:
“Psychology” (1886) - the first American textbook in functionalism, eclipsed only later by James’s *The Principles of Psychology*.

University of Chicago (1894) - ten years, established a laboratory school - a radical innovation in education - which became the cornerstone for the progressive education movement.
Columbia University in New York (1904) - continued his work applying psychology to educational and philosophical problems, a practical orientation shared by many functional psychologists. He was brilliant, but not a good teacher.

The Reflex Arc
Dewey’s article, *“The Reflex Arc Concept in Psychology,”* published in the *Psychological Review* (1896) was the opening shot, the point of departure for functionalism. Dewey attacked the psychological molecularism, elementism, and reductionism of the reflex arc with its distinction between stimulus and response.
The **proponents of the reflex arc argued** that any unit of behavior ends with the response to a stimulus, such as when a child withdraws his or her hand from a flame. **Dewey suggested** that the reflex forms more of a circle than an arc because the child’s perception of the flame changes, thus serving a different function. Therefore, perception (stimulus) and movement (response) must be considered as a unit and not as a composition of individual sensations and responses.
Dewey argued that behavior involved in a reflexive response cannot be meaningfully reduced to basic sensorimotor elements any more than consciousness can be meaningfully analyzed

into elementary component parts. Dewey noted that behavior should be treated not as an artificial scientific construct but rather in terms of its significance in the organism adapting to its environment. Psychology should be the study of the total organism as it functions in its environment.

Dewey's ideas were strongly influenced by evolutionary theory. Dewey never called his psychology *functionalism* - he apparently **did not believe structure and function could be meaningfully separated.** Dewey's significance lay in his development of the philosophical framework for the new school of thought. He left the Univ of Chicago in 1904, leaving leadership of the functionalist movement to Angell.

James Rowland Angell (1869-1949)

Angell molded the functionalist movement into a working school of thought. He made the Univ of Chicago the major training ground for functional psychologists.
Both grandfather and father were university presidents.
Undergraduate - Univ of Michigan, studied under Dewey. Read James's *The Principles of Psychology* which he said influenced his thinking more than any other book.
Masters degree - Harvard (1892), studying under James.
Univ in Halle and Berlin, attended lectures by Ebbinghaus and Helmhotz, attempted to train with Wundt but did not. Never finished his doctorate.
Accepted teaching position at Univ of Minnesota for 1 year.
Univ of Chicago (1894), teaching position, remained for 25 years.
Also, President of Yale, president of APA.

Book:
"Psychology" (1904) - his textbook embodies the functionalist approach. He noted that the function of consciousness is to improve the organism's adaptive ability and the goal of psychology is to study how the mind assists the organism in adjusting to its environment.

In a speech, Angell said that it was structural psychology that had set itself apart from the older and more truly pervasive functional form of psychology. He described three major themes of the functionalist movement:

1. The task of functionalism is to discover **how a mental process operates, what it accomplishes, and under what conditions it occurs.**
2. Functionalism is the psychology of the fundamental utilities of consciousness. Thus, consciousness is viewed in a **utilitarian spirit** as it mediates between the needs of the organism and the demands of the environment.
3. Functionalism encompasses all **mind-body functions** and recognizes no real distinction between mind and body. It considers them as belonging to the same order and assumes an easy transfer from one to the other.

By 1906, the spirit of functionalism was already widely accepted and Angell shaped that spirit into a prominent, active enterprise with a laboratory, a body of research data, an enthusiastic staff of teachers, and a dedicated core of graduate students. **He guided functionalism to the**

status of a formal school and gave it focus and stature to make it effective. Thus, functionalism was referred to as the “Chicago school”.

Harvey A. Carr (1873-1954)

Majored in mathematics at DePauw Univ in Indiana and at the Univ of Colorado.
There was no psychology lab at Colorado, so he transferred to the Univ of Chicago.
His first course in experimental psychology was taught by Angell.
He served as a laboratory assistant.
Worked with John B. Watson, then an instructor and later the founder of the behaviorist school of thought. Watson introduced Carr to animal psychology.
Ph.D in 1905, then taught HS in Texas and a state teachers college in Michigan.
1908 - he returned to Chicago to replace Watson (who accepted a position at Johns Hopkins).
Eventually succeeded Angell as head of the Chicago psychology department from 1919-1938 and elaborated on Angell’s theoretical position and made functional psychology the American psychology

Book:
“Psychology” (1925) - textbook, presents functionalism in its most refined form. **Two major points:**

1. Carr defined the subject matter of psychology as mental activity - processes such as memory, perception, feeling, imagination, judgment, and will.
2. The function of mental activity is to acquire, fixate, retain, organize, and evaluate experiences and to use these experiences to determine one’s actions. Carr called the specific form of action in which mental activities appear “adaptive” and “adjustive” behavior.

Thus the **emphasis on mental processes** rather than on the elements and content of consciousness and mental activity in terms of what it accomplishes in enabling the organism to adapt to its environment. By 1925, these issues were accepted as fact, no longer as matters for dispute. By then, functionalism was mainstream psychology.

Functionalism at Columbia University

Although the primary development and founding of functionalism occurred at the Univ of Chicago, another was being shaped at Columbia Univ by Robert Woodsworth. It was also the academic base for James McKeen Cattell (worked on mental tests) and E.L. Thorndike (worked on problems of animal learning, reinforcing the functionalist trend towards greater objectivity).

Robert Sessions Woodworth (1869-1962)

Active in psychology for 60 years as a researcher, teacher, writer, and editor.
Undergraduate - Amherst College in Massachusetts, then taught HS science and small college mathematics.
The attending of a talk by G. Stanley Hall and the reading of William James’s *The Principles of Psychology* changed his path to becoming a psychologist.
Masters - Harvard Univ

Ph.D - Columbia Univ (James McKeen Cattel) - 1899
Taught physiology in NYC hospitals for three years, spent one year in England with physiologist Charles Scott Sherrington.
1903 - returned to Columbia and taught until his first retirement, 1945.

Books:
"Dynamic Psychology" (1918)
"Psychology" (1921) - an introductory text, 5 editions in 25 years.
"Experimental Psychology" (1938, 1954) - classic textbook
"Dynamics of Behavior" (1958)

Dynamic Psychology
Psychological knowledge must begin with an investigation of the nature of the stimulus and the response; this is, with objective, external events. Considering only the stimulus and the response misses what may be the most important part of their study - **the living organism itself.** A stimulus is not the complete cause of the particular response. The organism, with its varying energy levels and its current and past experiences, also acts to determine the response.

Psychology must consider the organism as interpolated between the stimulus and the response. Therefore, Woodworth suggested, the subject matter must be both consciousness and behavior. This position was later adopted by the **humanistic** psychologist and the **social-learning theorists.**

A dynamic psychology is concerned with motivation; Woodsworth's intention was to develop what he called " motivology". He emphasized the **physiological events** that underlie behavior. His primary interest was in the forces that drive or motivate humans and believed that psychology's goal should be to determine **why people behave as they do**. He focused on extending, elaborating, and synthesizing what he considered to be appropriate features of other approaches and he did not adhere to a single system.

Criticisms of Functionalism
Accusations, charges, and countercharges flew back and forth between the structuralists and functionalists with the righteousness typical of those convinced they alone possess the truth.

Titchener and the structuralists argued that functionalism was not psychology at all because it did not adhere to structuralism's subject matter and methods.

- Per their view, any approach to psychology that deviated from the introspective analysis of the mind into elements could not truly be called psychology - which of course, it was just this definition that the functionalists were questioning.
- Structuralists also found fault with the functionalist's interest in practical concerns, reawakening the long standing controversy between pure and applied science. Functionalists never apologized for their practical interests.

Carr and other functionalists argued that both sides could adhere to rigorous scientific procedures and that valid research could be performed in factories, offices, and classrooms as well as laboratories.
This practical application to real-life problems is among functionalism's most important and lasting contributions.

Contributions of Functionalism
The long-range consequences of the shift in emphasis from structure to function also were significant. One result was that research on **animal behavior,** which was not part of the structuralist approach, became a vital area of study.
The functionalists' broadly based psychology also incorporated studies of **infants, children and people with mental disabilities.**
They supplemented the introspective method with **data obtained from other methods,** such as physiological research, mental tests, questionnaires, and objective descriptions of behavior. These approaches became respectable sources of information for psychology.

By the time of Wundt's death in 1920 and Titchener's in 1927, their approaches to psychology had been overshadowed in the United States. **By 1930**, the functionalist victory was virtually complete. Functionalism left its imprint on contemporary American psychology most significantly through its **emphasis on the application of the methods and findings of psychology to the solution of practical problems.**

Chapter 8 - Applied Psychology: The Legacy of Functionalism

Toward a Practical Psychology
American psychology was guided more by the ideas of Darwin, Galton and Spencer than by the work of Wundt, which is curious and paradoxical, since Wundt trained many of the first generation of American psychologists. The new science, not unlike a living species, was changing to adapt to its new environment.

Zeitgeist - Wundt and Titchener's structuralism could not long survive in their original form in the American intellectual climate, and so they evolved into functionalism. They were not practical kinds of psychology; they did not deal with the mind in use and could not be applied to everyday demands and problems. Americans valued what worked. G. Stanley Hall said, "Wundtian thoughts can never be acclimated here, as they are antipathetic to the American spirit and temper".

The **applied psychologists** took their psychology into the real world, into the schools, factories, advertising agencies, courthouses, child guidance clinics, and mental health centers, thus changing the nature of American psychology even more radically that had the functionalist's academic founders.

The Growth of American Psychology (1880 - 1900)

- In 1880, there were no labs in the United States; by 1900 there were 41, and they were better equipped than those in Germany.
- In 1880, there were no American psychology journals, by 1895 there were three.
- By 1900, most Americans chose to enter graduate programs at home instead of Germany and by then there were 40 doctoral programs at American universities.
- In 1910, 50 percent of all published articles were in German, and only 30 percent in English. By 1933, 52 percent were in English and only 14 percent in German.
- *Who's Who in Science* for 1913 stated that the United States had more or the world's leading psychologists (84) than Germany, England, and France combined.

The **general public in America** took an immediate and avid interest in the fledgling discipline. Popular magazines devoted feature articles to promising new discoveries and anticipated exciting practical applications in education, industry, and medicine. It made its debut to the public at the **1893 Chicago World's Fair** via exhibits of research apparatus and a testing laboratory in which visitors could have their sensory capacities measured for a small fee. Thus, America embraced psychology with enthusiasm and quickly welcomed it into college classrooms and everyday life.

Economic Influences on Applied Psychology

Many of the new Ph.ds were forced to look beyond the university for means of economic survival.

Harry Hollingsworth at Barnard College did investigative research to support the Coca Cola company in its trial brought by the federal government, via the Federal Food and Drug Act, concerning the "poisonous and addictive" caffeine in their product in 1911. He also performed applied research for a firearms manufacturer **to determine the most effective advertisements** and also for Wrigley gum.

Other pioneers in applied psychology acted out of economic necessity and they also came to realize that human behavior and cognitive activities could be studied in real-world settings as effectively as in academic laboratories.

Around 1912, although psychology was popular with students, it was underfunded and underappreciated. Psychology needed to demonstrate to college administrators and politicians that the science could help cure society's ills. But apply it to what?

Public school enrollments between 1870 and 1915 rose from 7 million to 20 million, and spending grew from $63 million to $605 million. By 1910 more than one third of American psychologists expressed working in **education** and three-fourths of those calling themselves applied psychologists were already working in that area. Psychology had begun to find a place in the real world.

Mental Testing

James McKeen Cattell (1860-1944)

Undergraduate - Lafayette College - 1880

Graduate studies at Univ of Gottingen and then Leipzig with Wilhelm Wundt.
Philosophy at Johns Hopkins Univ - 1882, no psychology courses offered his first semester.
He became interested in psychology as a result of his own experiments with drugs
Enrolled in **G. Stanley Hall's** laboratory class in second semester and conducted research on reaction time, the time required for different mental activities. This reinforced his desire to become a psychologist.
Returned to Germany and became **Wundt's laboratory assistant** in 1886.
Ph. D - 1886
Returned to the United States to teach, then to England to lecture at Cambridge University, where he met **Francis Galton**. They share an interest in individual differences and Galton provided him with his goal - **the measurement of the psychological differences between people.**

Under Galton's influence, Cattell became one of the first American psychologists to stress quantification, ranking, and ratings. He developed the widely used **order-of-merit ranking method** and was the first psychologist to teach the statistical analysis of experimental results. This emphasis explains why American psychologists began to f**ocus on studies of large groups of subjects**, for which statistical comparisons could be made, rather than on individual subjects, as Wundt did.
The British statistician Karl Pearson, who proposed the formula for calculating the **correlation coefficient**, in 1900 devised the **chi-square test** - both techniques used more widely by American psychologists.
In 1907, John Edgar Cover at Stanford, was apparently the first to advocate the use of **experimental and control groups.**

In 1888, became professor of psychology (philosophy) at the Univ of Pennsylvania, for three years.
In 1891, became professor of psychology and department head - **Columbia Univ** for 25 years.
Cattell began the journal *Psychological Review* in 1894, bought *Popular Science Monthly* in 1900, later called *Scientific Monthly*. Published a weekly, *School and Society* in 1915. His wife Josephine served as the managing editor for the journals.

Cattell **advocated independent work** and gave his students considerable freedom to conduct their own research. He established a laboratory and an editorial office at home and visited campus only a few days each week. He **urged greater faculty participation**, arguing that the faculty, not administrators, should be making many of the decisions about university governance. He was characterized as difficult, disagreeable, and sarcastic and "an impatience with all groups of which he was not the center".
He was dismissed in 1917, charged with disloyalty to the United States, for his protesting to two U.S. Congressmen the practice of sending draftees into combat - an unpopular decision.

In 1921 Cattell realized one of his ambitions and organized the Psychological Corporation, to provide services to industry, the psychological community, and the public. It was not successful

until by 1969, it had generated $5 million in sales. It was later bought by publisher Harcourt Brace.

Mental Tests
While at the Univ of Pennsylvania, he administered a series of such tests to his students and continued the testing program at Columbia.
Cattell's tests, like Galton's, dealt **primarily with elementary sensorimotor measurements**, including dynamometer pressure, rate of movement, two-point skin sensitivity threshold, just noticeable differences in judging weights, reaction time for sound, and time for naming colors. These were not tests of intelligence or cognitive ability that psychologists developed later. By 1901, the correlations of the data were very low and **he concluded that these types of tests were not valid predictors of college achievement or, by assumption, of intellectual ability.**

Through his work on mental testing, the measurement of individual differences, and the promotion of applied psychology, Cattell energetically reinforced the functionalist movement in America.

The Psychological Testing Movement

Binet, Terman and the IQ Test
Alfred Binet (1857-1911) Developed the first truly psychological test of mental ability.
Studied psychology on his own and published more than 200 books and articles.
He disagreed with Galton and Cattell (sensorimotor processes) and believed that assessing such cognitive functions as memory, attention, imagination, and comprehension would provide a more appropriate measure of intelligence.
In 1904, Theodore Simon, a psychiatrist, investigated for the French government the intellectual tasks that the majority of children could master at different ages. From their identification of those tasks they constructed an intelligence test consisting of 30 problems arranged in ascending order of difficulty, focusing on judgment, comprehension, and reasoning. They introduced the concept of **mental age**, defined as the age at which children of average ability could perform specific tasks.
Henry Goddard (1866-1957) Translated Binet's test from French and presented it to American psychologists in **1908.**
He then earned his Ph. D from G. Stanley Hall at Clark Univ. and later worked at a school for children with mental disabilities. He called his translation the *Binet-Simon Measuring Scale for Intelligence.*
Lewis Terman, in **1916,** also a Hall student, developed the version of the test that has since become the standard, the **Stanford-Binet**, after the university with which he was affiliated. He adopted the concept of **intelligence quotient (IQ)**, which is defined as the ratio between mental age and chronological age (originally developed by the German psychologist William Stern). The test has undergone several revisions and continues to be widely used.

World War I and Group Testing

In 1917, the United States entered World War I and military leaders needed to assess the level of intelligence of a great many recruits to assign them suitable tasks. They needed a group test that was simple to administer, unlike the *Stanford-Binet* which required a highly trained person. **Robert Yerkes** assembled a staff of 40 psychologists and selected one prepared by Arthur S. Otis, who had studied under Terman. Otis's contribution to testing was the **multiple-choice type of question.**

Work on the program proceeded slowly and was not given to recruits until three months before the war ended. However, more than **1 million men were tested and the data revealed that one out of every 4 men could not read or comprehend articles in a daily newspaper or write letters home.** The publicity enhanced psychology's stature, and the army tests became prototypes for many devised later.

The war work also spurred development and application of group testing for **personality characteristics**. In 1910, **Carl Jung** developed his **word-association test**, to determine personality complexes in his patients. The army expressed interest in separating out neurotic recruits and **Robert Woodsworth** constructed the *Personal Data Sheet*, a self-report inventory on which respondents were instructed to check the nervous symptoms that applied to them. This also served as a prototype for future tests.

Psychological testing won its own victory in the war. The **public education** system in America was reorganized around the concept of intelligence quotient, and **IQ scores became the most important criterion for student placement and advancement.**

Ideas from Medicine and Engineering

To lend authority and scientific credibility to psychology, testers adopted terminology from the older disciplines to persuade people of psychology's relevance as a legitimate science. Subjects were described as **patients.** Tests were promoted as **X-ray machines** that enabled one to see inside the mind and dissect their patients' mental mechanisms.

Schools were referred to as educational factories and tests as ways to measure the products - the students' level of intelligence.

Racial Differences in Intelligence

In 1912, **Henry Goddard** visited Ellis Island in New York. There was considerable public concern that physicians were failing to prevent mentally retarded people from immigrating. He used the Stanford-Binet with the aid of an interpreter, who pointed out that he himself could not have answered the questions when he first arrived in the United States. According to Goddard's test results the majority of Russians, Jews, Hungarians and Italians were feebleminded, with a mental age less than 12. This evidence was used to support federal legislation restricting immigration of racial and ethnic groups assumed to be inferior.

In 1921, when the World War I test results were made public, the data showed that blacks and immigrants from Mediterranean and Latin America had lower IQs than whites.

Horace Mann Bond (1904-1972), an African-American scholar and president of Lincoln Univ in Pennsylvania, with a doctorate in education, argued that any recorded differences in IQ scores between blacks and whites were attributable to environmental rather than inheritable factors. His research showed that **blacks from northern states scored higher on intelligence tests than whites from southern states.**

A preponderance of evidence now shows that the more soundly researched intelligence tests are not culturally biased in any significant way and that current IQ scores predict equally accurately for all such Americans, regardless of race or social class.

Contributions of Women to the Testing Movement

Florence L. Goodenough
Ph.D. from Stanford - 1924
Developed the Draw-A-Man Test (now the *Goodenough-Harris Drawing Test*), a widely used non-verbal intelligence test for children.
Wrote several works on child psychology and worked for 20 years at the Institute of Child Development at the Univ of Minnesota.
Maude Merrill James - Director of a psychological clinic for children in California. Wrote with Terman the 1937 version of the *Stanford-Binet*, widely known as the *Terman-Merrill test*.
Thelma Gwinn Thurstone
Ph.D - University of Chicago (1927)
Professor of Education - Univ of North Carolina, director of the psychometric lab.
Helped develop the Primary Mental Abilities test battery, a group intelligence test.
Psyche Cattell (1893-1989)
Daughter of James Cattell
Ph.D in education - Harvard (1927)
She extended the age-range of the *Stanford-Binet* downward with the *Cattell Infant Intelligence Scale,* used with infants as young as 3 months old.
Anne Anastasi (1908-2001)
Ph. D - Fordham Univ at 21 years old, studied with Harry Hollingsworth.
Wrote more than 150 articles and books, as well as a popular textbook. Served as APA president.

Thus, the tremendous growth of applied psychology in America - the legacy of the functionalist movement - offered employment opportunities for women, but it also meant that they remained largely removed from mainstream academic psychology, where the theories, research and schools of thought were being developed. By 1941, approximately half of all psychology jobs in educational and clinical organizations were held by women.

The Clinical Psychology Movement

Lightner Witmer (1867-1956)

Undergraduate - Univ of Pennsylvania (1884), taught at a private school.
Law courses at Univ of Pennsylvania
Paid assistantship with Cattell in the psych department, began research on individual differences in reaction time.
Studied with Wundt and Kulpe in Germany, was not impressed with the introspective method, but earned his doctorate there in 1892.

He returned to the Univ of Penn to be Cattell's successor. For two years worked as an experimental psychologist, conducting research on individual differences and the psychology of pain, but he was searching for an opportunity to apply psychology to abnormal behavior.

He taught some of the courses established for public school teachers at the university.
To help a teacher with a student having difficulty learning to spell, he **organized a makeshift clinic** and thus embarked on his lifelong work. Within a few months, he was preparing courses on methods for treating mentally defective, blind, and disturbed children. He used the term "clinical psychology" for the first time.
Founded the journal Psychological Clinic in 1907, established a boarding school for retarded and disturbed children.

As the **world's first clinical psychologist**, Witmer offered, "the absence of any principles to guide me made it necessary to apply myself directly to the study of these children, working out my methods as I went along".
Children referred to him were eventually examined by **physicians** to determine if malnutrition or visual and hearing deficits were contributing factors. They were then tested and interviewed by **psychologists** and **social workers** prepared case histories on their family background.

Although he initially believed genetic factors were largely responsible for behavioral and cognitive disturbances, **he later realized that environmental factors were more important.**
He foresaw the need to provide a variety of sensory experiences early in a child's life. He argued that if home and school conditions were improved, a child's behavior might change for the better.
By 1914, following Witmer's example, 20 psychology clinics were operating in the United States. His influence spread over time to the area of special education and a student, Morris Viteles, extended his work by establishing a vocational guidance clinic.

The Profession of Clinical Psychology

In addition to Witmer's efforts in treating abnormal behavior:
Books:
"A Mind That Found Itself" - Clifford Beers, a former mental patient (1908). Focused public attention on the need to deal humanely with mentally ill people.
"Psychotherapy" - Hugo Munsterberg (1909), described specific ways in which disturbed persons could be helped.

First child guidance clinic - by Chicago psychiatrist William Healey (1909). These clinics used Witmer's team approach to evaluate all aspects of a patient's problems, their purpose to treat childhood disorders early so they would not develop into more serious disturbances. The ideas of **Freud** were crucial to the advancement of clinical psychology, moving it beyond Witmer's clinic. However, as late as 1918, nine years after Freud's visit to America, there were no graduate programs in clinical psychology.

The situation changed when the United States entered **World War II in 1941**, with large numbers of draftees “showing up at induction centers with severe anxieties, depression, antisocial demeanors, uncontrolled anger, and generally unstable psychic presentations. They were bed-wetters, dropouts, and chronic misfits”. **By the time the war ended in 1945,** almost 2 million men had been rejected for service, of those accepted, 1 million had to be treated for mental disorders during their time on active duty, and another 500 thousand were discharged for the same reason. The **army established training programs** for hundreds of clinical psychologists so they could treat military personnel and this stimulus helped make clinical psychology the dynamic applied specialty area it has become.

After the War, the VA found itself responsible for 40,000 plus veterans diagnosed with psychiatric problems. More than 3 million needed vocational and personal counseling to return to civilian life. Some 315,000 expected assistance in adjusting to physical disabilities from war wounds. The VA funded university-led graduate programs and paid tuition for graduate students willing to work at VA hospitals and clinics, **thus changing the patient profile from children to adults with severe emotional problems.** Today, clinical psychologists are employed in mental health centers, schools, businesses, and private practice.

The Industrial-Organizational Psychology Movement

Walter Dill Scott (1869-1955)

Scott was the first person to apply psychology to personnel selection, management and advertising. First to author a book in the field and the first professor of applied psychology. Founder of the first psychological consulting company.
Scott paid for his college tuition picking berries, salvaging scrap metal to sell and odd jobs. He spent most of his money on books.
Undergraduate - Illinois State Normal Univ.
Two years later, won a scholarship to Northwestern Univ in Illinois and played varsity football.
1898 - married and moved to Germany to study with Wundt. While he studied, his wife Anna Miller Scott worked on her Ph.D in literature at the Univ of Halle, 20 miles away.
1890 - both received their doctorates.
Returned to Northwestern as an instructor in psychology and was influenced by the trend in applying psychology to problems in education.

A few years later, his interests changed when an advertising executive asked him to apply psychology to make ads more effective.
Book:
“The Theory and Practice of Advertising” (1903), the first book on the topic.
1905 - became professor of advertising at Northwestern.
1916 - appointed professor of applied psychology at Pittsburgh’s Carnegie Technical Univ.
1917 - with the United States’ entry into World War I, he offered his skills to the army to help select military personnel and was later awarded a medal for his efforts.
After the war, formed the Scott Company to provide services to corporations that sought assistance with problems with personnel selection and worker efficiency.

Served as president of Northwestern from 1920 to 1939.

Advertising and Human Suggestibility
Scott attempted to extend the physiologically oriented Wundtian experimental psychology into the realm of the practical and is evident in his writings on advertising. Scott argued that because **consumers often do not act rationally,** they can easily be influenced and cited emotion, sympathy, and sentimentality as factors. He recommended that companies use **direct commands** to sell products. He promoted **return coupons** because they required direct action - tearing out the coupon, filling in name and address, and mailing it to the company to receive a free sample. These techniques were widely used by **1910.**

Employee Selection
Scott devised **rating scales and group tests** to measure the characteristics of people who were already successful in the occupations of sales, business executives and the military. He questioned managers and leaders to rank the importance of things such as demeanor, sincerity, productivity and the like, then rank job applicants on those qualities, a procedure similar to that in use today.
Scott's tests to measure intelligence and other abilities were based on characteristics needed to **perform well on the job such as judgment, quickness, and accuracy**. He wanted to understand how people processed information and how intelligence operated in the everyday world. He compared the applicants scores with scores of successful employees.

The Impact of the World Wars
World War I brought about a monumental increase in the scope, popularity and growth of industrial-organizational psychology. Walter Scott's work with the Army was previously noted. After the war, business, industry and government clamored for the services of industrial psychologists to reorganize their **personnel procedures and select the best employees.**
World War II brought even more psychologists for testing, screening and classifying recruits - especially for weapons that were becoming quite complex, like high speed aircraft. It also spawned a new specialty variously called engineering psychology, human engineering, or **ergonomics.** The engineering psychologists worked closely with weapons systems engineers to supply information about human capacities and limitations, their work directly influencing the design of equipment. Today, these psychologists also work on consumer products like keyboards and monitors, office furniture, appliances and auto dash displays.

Organizational Issues
In 1927, the Western Electric Company, at its Hawthorne plant in Illinois, conducted innovative research to extend the knowledge of testing for selection and job placement to more complex problems of human relations, motivation, and morale. Begun as an investigation on the physical work environment - light and temperature on the efficiency of employees - they found that the **social and psychological aspects** of the workplace were much more important than the physical conditions. They found that the workers appreciated that the company cared, that their boss was truly interested in them as people and not interchangeable cogs in the industrial machine.

This led to the exploration of the behavior of leaders, informal work groups, employee attitudes, communication patterns between workers and managers, and other factors influencing motivation, productivity, and satisfaction.

Contributions of Women to Industrial-Organizational Psychology

Lillian Moller Gilbreth (1878-1972)
Ph. D. - Brown University (1915)
With her husband, Frank Gilbreth, promoted time-and-motion analysis as a technique to improve efficiency and job performance.
They wrote a book on industrial efficiency and did work on efficiency of the home as well.

Hugo Munsterberg (1863-1916)

Born Danzig, Germany
Ph.D - Univ of Leipzig under Wilhelm Wundt (1885)
M.D. - Univ of Heidelberg (1887)
Teaching position Univ of Freiburg, set up a home lab.
Directory of the psychology laboratory - Harvard, via William James (1892)
Book:
"American Traits" (1902) - an analysis of American society.
After the book, wrote for the general public via popular magazines instead of journals. He created correspondence courses on learning and business and made films about mental tests that were shown in theaters.

He became involved in **Prohibition** in 1908, arguing against it. Adolphus Busch was appreciative and donated $50,000 for Munsterberg's proposed Germanic museum.
His views on women were controversial, that while supportive of several female graduate students at Harvard, in general thought that graduate work was too demanding for women, that they should stay in the home, should not teach in schools because they were a poor role model for boys and should not serve on juries. The Harvard administration and colleagues were not pleased with his comments.
He was **vocally defensive** of his German homeland during WWI and was suspected by newspapers to be a secret agent.

Forensic Psychology and Eyewitness Testimony
Munsterberg was particularly interested in the questionable trustworthiness of eye-witness testimony - the fallibility of human perception in viewing a criminal event and subsequently describing it. His research bore out his assumptions that eye-witness testimony is unreliable, especially over time.
Book:
"On the Witness Stand" (1908) - concerning false confessions, the power of suggestion in cross-examination and the use of physiological measurements - heart rate and blood pressure. The book was reprinted in 1976 and the American Psychology-Law Society was established at that time to promote basic and applied research on forensic-psychology.

Psychotherapy
Book:
"Psychotherapy" - 1909 - Munsterberg treated patients at his home lab rather than a clinic and never charged a fee.
He disagreed with Freud saying, "There is no subconscious", and believed mental illness was really a behavioral maladjustment problem not attributable to underlying unconscious conflicts. Lightner Witmer at the Univ of Pennsylvania was not impressed with his clinical results or his self-promotion.

Industrial Psychology
Book:
"Psychology and Industrial Efficiency" (1913). Made the best-seller list and Munsterberg argued that the best way to increase job efficiency, productivity, and satisfaction was to select workers for positions that matched their mental and emotional abilities. He proposed developing the proper psychological selection techniques, such as mental tests and job simulations to assess applicants.
His studies showed that talking while working decreased efficiency and suggested increasing the distance between machine workstations and **partitions** between desks in offices.

Applied Psychology in America: A National Mania

Post WW I, people came to believe that psychologists could fix everything and sell everything. News magazines promoted the field and there was an increasing clamor for solutions to real-world problems that drew more and more psychologists away from academic research and into applied areas.
However, by the 1930's during the world-wide depression, applied psychology came under attack for failing to live up to its promises. Public attention declined, and its image was not restored until 1941 and WWII. Fully 25 percent of American psychologists were involved in the war effort. The war and the changed conditions of postwar American life resulted in exponential growth in every area of psychology.
In the last half of the twentieth century, applied psychology oustripped the academic, research-oriented psychology that had dominated for so many years. Currently, nearly 65% of all psychologists work in applied areas.

Comment
The functionalist school of thought compelled American psychology to move far beyond the confines of Wundt's Leipzig laboratory and its focus on mental elements or the contents of conscious experience.
Consider the following factors:

- Darwin's notion of adaptation and function
- Galton's measurement of individual differences
- The American intellectual focus on the **practical and the useful**
- The **shift from content to function** brought about by James, Angell, and Woodworth
- Economic and social factors and the forces of war

These forces intertwined to bring about the active, assertive, engaging, and influential science of psychology that has changed our lives. This overall movement toward the practical was reinforced by the next school of thought in psychology's evolution - **Behaviorism.**

Chapter 9 - Behaviorism: Antecedent Influences

The situation in the second decade of the twentieth century was that functionalism was maturing, while structuralism maintained a strong but no longer exclusive position.
The year 1913 brought a declaration of war, a deliberate break of both of these positions. This revolutionary movement was called **behaviorism** and it was promoted by the 35-year-old American psychologist John B. Watson.

John B. Watson

Ph.D - University of Chicago (1903), student of James Rowland Angell.
The basic tenets of behaviorism were simple, direct, and bold. He called for a scientific psychology that dealt only with observable behavioral acts that could be described objectively in terms of **"stimulus"** and **"response"**. It rejected all mentalistic concepts and terms, such as: Image, sensation, mind and consciousness.
Watson was particularly vehement in **rejecting the concept of consciousness** and that it had no value for behavioral psychology and was as unprovable as the "soul". Therefore, introspection, which assumed the existence of conscious processes, was irrelevant and of no use to the science of behavior.
The **major forces** Watson effectively brought together to form behaviorism were the philosophical traditions of objectivism and mechanism via Descarte and Comte, animal psychology, and functional psychology.
The earlier influences of objectivism, mechanism and materialism were so pervasive in the early years of the twentieth century that they inevitably led to a new kind of psychology - **one without consciousness, mind, or soul** - one that focused on only what could be seen, heard, or touched. The result was **a science of behavior that viewed human beings as machines.**

The Influence of Animal Psychology on Behaviorism

The most important antecedent of Watson's program was animal psychology, which grew out of evolutionary theory which led to the attempt to demonstrate the existence of mind in lower organisms and the continuity between animal and human minds.

Jacques Loeb (1859-1924)

German physiologist and zoologist, took significant steps toward **greater objectivity** in animal psychology.
He developed a theory of animal behavior based on the concept of **tropism,** and involuntary forced movement, believing an animal's reaction to a stimulus is direct and automatic. Thus, the

behavioral response is said to be forced by the stimulus and does not require any explanation in terms of the animal's alleged consciousness.
However, he did not fully reject consciousness in animals high on the evolutionary scale, but argued this was **associative memory** - a reaction to certain stimuli in a desirable way.

Robert Yerkes - 1900 - using a variety of animals, strengthened the position and influence of comparative psychology.
Willard S. Small, Clark Univ. - 1900 - introduced the rat maze and the white rate and maze became a standard method for the study of learning. Yet consciousness continued to intrude as Small, in interpreting the rat's behavior, used mentalistic terms like the rat's ideas and images.
Margaret Floy Washburn - Titchener's first Ph.D, taught animal psychology at Cornell. Her book: *"The Animal Mind"* (1908), was the first comparative psych textbook published in America. In her book, the attribution of consciousness to animals persisted, as did the method of introspecting the animal mind by analogy with the human mind.
It also marked the end of an era. After it, no other text would use the approach of inferring mental states from behavior. All subsequent texts were behaviorist in orientation, and primarily concerned with the issues and problems of learning.

State legislators and university administrators did not consider the field to have any practical value. In 1908 only six animal studies were published in journals.
1911 - the Journal of Animal Behavior began publication
1906 - a lecture by Russian physiologist Ivan Pavlov was reprinted in *Science*, introducing his work on animal psychology **to the American audience**.
1909 - a more detailed account of Pavlo's methodology and results in the *Psychological Bulletin.*

Pavlo's research supported an objective psychology, and Watson's behaviorism in particular. Thus, **animal psychology became established** and grew increasingly objective in subject matter and methodology.

Edward Lee Thorndike (1874-1949)

One of the first American psychologists to receive all of his education in America.
Undergraduate - Wesleyan Univ, Connecticut
Harvard - under William James - began his investigation into learning.
He improvised mazes by stacking books on end and trained his chicks to run through them.
Fellowship and Ph.D - Columbia Univ - under Cattell (1898).
He was ambitious and turned to applied psychology as an instructor at Teachers College of Columbia Univ. and researcher for 50 years.
He worked with human subjects on problems of learning.
He next branched out to educational psychology and mental testing and wrote several textbooks that made him wealthy.
Founded the *Journal of Educational Psychology* (1910).

Thorndike called his experimental approach to the study of association **connectionism**. This was a direct extension of the older philosophical notion of association, but with one significant

difference. Instead of talking about associations or connections between ideas, **he was dealing with connections between objectively verifiable situations and responses**. Although a more objective frame of reference, he continued to invoke mental processes - but yet, a steady reduction in the importance of consciousness in animal psychology from its beginnings.

He argued that behavior must be reduced to its simplest elements - **the stimulus-response units** - and that these units are the elements of behavior (not of consciousness) and are **the building blocks from which more complex behaviors are compounded.**

The Puzzle Box
To escape from the box, the animal had to learn to operate a latch. In one experiment with a hungry cat, food was left outside as a reward for escaping. At first the cat displayed random behaviors but eventually executed the correct behavior by hitting the latch. Subsequent trials showed these random behaviors displayed less frequently until learning was complete.
Thorndike used **quantitative measures** of the number of times the wrong behavior occurred but then decreased over time and how fast it took the cat to escape in subsequent trials over time.

He wrote about **"stamping in"** and **"stamping out"** a response tendency by its favorable or unfavorable consequences. Unsuccessful response tendencies tended to be stamped out over a number of trials, successful responses, stamped in.
This developed into the idea of **trial-and-error learning**. He called it trial-and-accidental success.

He formally presented his ideas about stamping in and out of a response tendency as the **law of effect.** A companion law - *the law of exercise or the law of use and disuse* - states that any response made in a particular situation becomes associated with that situation. The more the response is used in that situation, the more strongly it becomes associated with it. Prolonged disuse of the response tends to weaken the association.
Through an extensive research program on humans, he found that rewarding a response did indeed strengthen it, but punishing a response did not produce a comparable negative effect, placing a **greater emphasis on reward than on punishment**.

His work heralded the rise of learning theory to prominence in American psychology, and the objective spirit in which he conducted his research was an important contribution to behaviorism. Watson agreed that Thorndike laid the foundation of behaviorism.

Ivan Petrovitch Pavlov (1849-1936
Helped shift associationism from its traditional emphasis on subjective ideas to objective and quantifiable physiological events such as glandular secretions and muscular movements.

Tutored at home by his father then entered the **theological seminary** to prepare for priesthood, but changed his mind after reading about Darwin's theory.

Studied at the **Univ of St. Petersburg to study animal physiology.** With this training, became a part of the intelligentsia, an emerging class in Russian society, distinct from the aristocracy and the peasantry. He was a dedicated intellectual centered on pursuits that justified this new existence. He adhered to a rigorous schedule, working 7 days per week from September to May and spending summers in the countryside.

1875 - degree in physiology, began medical training.
Then studied in Germany for 2 years, then back to St. Petersburg to spend several years as a laboratory research assistant.
Ph.D - 1883
The Pavlov family **lived in poverty until 1890** when he received an appointment as professor of pharmacology at St. Petersburg's Military Medical Academy. He refused to be distracted by practical matters such as salary, clothing, or living conditions. His wife, Sara, often had to remind him to collect his pay. Any extra funds were used to purchase dogs for research.

Although laboratory research was his overriding interest, he rarely conducted research himself, instead usually supervising the efforts of others. From 1897 to 1936, nearly **150 researchers** worked under his direction, producing more that **500 scientific papers**. Those that worked with him said the "entire laboratory worked like the mechanism of a watch". He was always honest and direct, if not always considerate and had a famous temper. Experimental success brought such joy that he would congratulate both the assistants and the dogs, with which he tried to be as humane as possible.

Pavlov was one of the few Russians to allow women and Jews to study in his laboratory. He was openly critical of the 1917 Russian Revolution and of the Soviet political and economic system and wrote protest letters to Joseph Stalin. Despite his attitude, he continued to receive generous research support from the government.

Conditioned Reflexes

Pavlov worked on three major problems during his distinguished career:

1. The function of the nerves of the heart
2. The primary digestive glands (which won him the 1904 Nobel Prize)
3. The study of conditioned reflexes

In working on the digestive glands of dogs, Pavlov used the method of surgical exposure to permit digestive secretions to be collected outside the body where they could be observed, measured, and recorded. The dogs secreted saliva involuntarily whenever food was placed in their mouths and he noticed it flowed at the sight of the food or at the sounds of the footsteps of the man who regularly fed them. The **unlearned response** of salivation somehow had become connected with, or **conditioned to**, stimuli previously associated with receiving food.
He focused initially on the mentalistic experiences of the animals' desires but dropped such references in favor of a more objective, descriptive approach.

Book:

"Conditioned Reflexes" (1927) - Pavlov gave due credit to Rene' Descartes for developing the idea of the reflex 300 years before.

Unconditional Reflex - A dog salivating when the food is placed in its mouth is an innate, natural response of the digestive system.
Conditional Reflex - Salivating at the sight of food, is not reflexive, but must be learned because it was conditional on the dog's forming an association between the sight of food and the subsequent eating of it

Pavlov developed **sophisticated equipment** devised to collect saliva, recording the precise number of drops and the exact moment at which each fell.
He developed a **three-story research building** with extra-thick glass windows, double steel doors that formed an airtight seal when closed, steel girders embedded in sand to support the floors and a straw-filled moat encircled the building. Vibration, noise, temperature extremes, odors and drafts were eliminated. He designed special cubicles as well, separating the dogs from the experimenter.
He was painstaking in following the **scientific method** - standardized experimental conditions, rigorous controls, and elimination of sources of error. Pavlov wanted nothing to influence the experimental animals except the conditioning stimuli to which he exposed them.

He established the concept of **reinforcement**, something that increases the likelihood of a response to a new, conditioned stimulus - that was paired with an unconditioned stimulus previously. For example, pairing a light with food before feeding. Over time, the dog will salivate to the light only, but only because it was introduced while actually feeding him. **Actually feeding the dog is the reinforcement, and necessary for learning to take place.**

E. B. Twitmyer (1873-1943)
Univ of Penn - student of Lightner Wimer
1904 - paper presented at APA conference. Garnered no attention at the time, he did not pursue further research.
Independent simultaneous discovery of the conditioned reflex via the familiar knee-jerk reflex. Noticed his subjects began to respond to stimuli other than the original stimulus. Thus, the reaction was a new and unusual kind of reflex.

Alois Kreidl - Austrian physiologist
1896 - demonstrated the basic principles of conditioning, via research on fish. His interest was the process of sensation, not conditioning or learning, so the findings were never pursued by other scientists.
This predates Twitmyer's report above by some eight years.

Comments
Pavlov demonstrated that higher mental processes in animal subjects could be described in physiological terms without any mention of consciousness. His conditioning methods have had

broad practical applications in areas such as behavior therapy, see Joseph Wolpe (1915-1997), the founder of behavior therapy.
Pavlov's research also influenced psychology's shift towards greater objectivity in subject matter and method and reinforced the trend toward functional and practical applications.

Pavlov continued in the tradition of mechanism and atomism, views that shaped the new psychology from the beginning. To him, all animals and humans were machines, "just as submissive and obedient as any other machine".
John B. Watson recognized the basic unit of behavior and made it the core of his program. Pavlov was concerned with physiology foremost, but later revised his attitude towards psychology and occasionally referred to himself as an experimental psychologist.

Vladimir M. Bekhterev (1857-1927)

Russian physiologist, neurologist, psychiatrist.
Degree from St. Petersburg Military Medical Academy (1881)
Studied at Leipzig with Willhelm Wundt and Berlin and Paris.
Professorship in mental diseases - Univ of Kazan, Russia
Chair of mental and nervous diseases - Military Medical Academy (1893)
Founded the Psychoneurological Institute.
He and Pavlov were enemies. In 1927, he was poisoned by Joseph Stalin, who later had his research suppressed and his son executed.

Bekhterev applied Pavlov's conditioning principles to the muscles. His basic discoveries were the **associated reflexes**, revealed through motor responses - a buzzer sounding when shocked, eventually became the associated reflex, instead of the shock itself.
He believed that higher-level behaviors of greater complexity could be explained in the same way; that is, as an accumulation or compounding of lower-level motor reflexes. Thoughts processes were therefore similar, in that they depended on inner actions of speech musculature, an idea later adopted by Watson.
Book:
"Objective Psychology" (1907), translated to German and French. 1932 edition published in English as "General Principles of Human Reflexology".
John B. Watson made the findings and techniques of the animal psychologists the foundation of behaviorism, applicable to animals and humans alike

The Influence of Functionalism on Behaviorism

The functional psychologists had moved away from the Wundt's and Titchener's pure psychology of conscious experience. Some functionalists were quite specific in calling for an objective psychology that would **focus on behavior - not consciousness**. If Watson is the father of behaviorism, then Cattell was the grandfather.

In the decade before Watson formally founded behaviorism, the intellectual climate in America was in a behavioristic direction, that psychology should be the study of behavior. Walter Pillsbury, in 1911, argued that it was possible to treat human beings as objectively as any other

aspect of the universe. Knight Dunlap, a psychologist at Johns Hopkins, where Watson was teaching, proposed that introspection be banned from psychology. J.R. Angell, Univ of Chicago, in 1910, commented that it seemed possible that the term “consciousness” would disappear from psychology, much as the term “soul” had.

Watson’s greatness was not being the first to propose the idea but in seeing, perhaps more clearly than anyone else, what the times were calling for. He responded boldly and articulately as the agent of a revolution whose inevitability and success were assured, because it was already under way.

Chapter 10 - Behaviorism: The Beginnings

Little Albert (8 months old), having never shown fear of any kind so far in his short life, showed an *unconditioned emotional response* to a bar being struck by a hammer behind his head by John Watson. Watson then paired the sound with the sight of a white rat. In no more than seven pairings of the sound with the white rat, the child showed fear every time he spotted the rat, even without the sound of the hammer and bar. Thus Watson established a fear of a previously neutral object - easily and effectively. They then showed that the response could be generalized to other furry white things such as a rabbit, a dog and a fur coat.
Founding is not the same as originating. Watson described his efforts as a crystallization of the ideas already emerging within psychology and announced his goal of founding a new school.

John B. Watson (1878-1958)

Born on a farm in South Carolina. Attended a one-room schoolhouse. As a youth and teenager, he was something of a delinquent and never earned more than passing grades at school. He was arrested twice before the age of 16.
1894 - Enrolled at Furman Univ (Baptist affiliated) at the age of 16 to study to be a minister, studying philosophy, mathematics, Latin and Greek. Expected to enter Princeton Theological Seminary after graduation.
Masters - at Furman (1898)
Ph.D - Univ of Chicago (1903) Youngest ever to attain his doctorate. Studied biology and physiology under Jacques Loeb and was attracted to the work of James Rowleand Angell, the functional psychologist.

Watson stayed at the Univ of Chicago as an instructor until 1908. He published his **dissertation** on the neurological and psychological maturation of the white rat, showing a preference for animal subjects. He apparently showed no talent for introspection.
1908 - offered a professorship and to direct the lab at **Johns Hopkins.** His 12 years here were his most productive.
Later, became chair of the psychology department and editor of the influential *Psychological Review*. Thus at 31, he was at the right place at the right time.

The Development of Behaviorism

1913 - *Psychology as the Behaviorist Views* It - Famous article in *Psychological Review*, officially launching behaviorism.

Watson's Book:

"Behavior: An Introduction to Comparative Psychology" (1914). He argued for the acceptance of animal psychology and described the advantages of using animal subjects. Many younger psychologists and graduate students found his proposals appealing, insisting that he was clearing the muddied waters and casting out longstanding mysteries carried over from philosophy.

He promoted psychology's **applied specialties** and became a personal consultant for a large insurance company. Offered a course on the psychology of advertising and started an industrial psychology program for graduate students.

WWI, served as a major, developed perceptual and motor ability tests for pilots and research on reduced oxygen environments. Post-war, established the Industrial Service Corporation to provide personnel selection and management consulting assistance to businesses.

Book:

"Psychology from the Standpoint of a Behaviorist" (1919) - A more complete statement of his behavioral psychology and that his methods for studying animals were appropriate for the study of humans and caused the movement to begin to have a significant impact.

University career ended in divorce.

Watson's Business Career

1921 - Joined the J. Walter Thompson advertising agency as an applied psychologist. Was vice-president within 3 years. Joined another ad agency in 1936, retired in 1945.

He believed that human consumer behavior, like machines, could be predicted and controlled and proposed laboratory studies of consumer behavior. He stressed that ad messages should focus on style rather than substance and convey a "new and improved image" - to make them dissatisfied with their current products.

Pioneered the use of celebrity endorsements of products and services and techniques to manipulate our motives and emotions.

After 1920, presented his ideas outside of academia through lectures, radio addresses, and articles in popular magazines, increasing his visibility and notoriety.

Book:

"Behaviorism" (1925, rerelease 1930) Both very successful and his ideas influenced a large audience outside the realm of psychology.

Child-Rearing Practices

Book"

"Psychological Care of the Infant and Child" (1928) He severely criticized the child-rearing practices of the day. He proposed a **regulatory rather than a permissive system** of child rearing. The book was full of stern advice, "parents should never hug and kiss them. If you must, kiss them once on the forehead when they say goodnight. Shake hands with them in the morning. Pat them on the head if they have done an extraordinarily good job". **The book was extremely popular and it transformed American child-rearing practices.**

His wife Rosalie was not completely in agreement with his ideas. Both of his sons suffered from **serious depression** throughout their lives. One committed **suicide**, the other suffered a mental collapse but survived - his daughter committed suicide some years later. Watson's daughter by his first marriage made several suicide attempts. Her daughter, the actress **Mariette Hartely,** also suffered from **depression, alcoholism, and suicidal thoughts**. She noted, in the third generation post-Watson's child-rearing practices, a general lack of physical affection in the family.

Watson's Later Years
He built a mansion in Connecticut and staffed it with servants. He liked "manly" activities and had a Hemingway-like aura about him for he valued competency, bravery, and manliness.
In 1935, his wife Rosalie died at the age of 37. He sold his house and became a recluse, plunging into work.
Before he died he burned all his letters, manuscripts, and notes, refusing to leave them to history.

The Methods of Behaviorism

Watson insisted that psychology restrict itself to the data of the natural sciences, to what could be observed. It should restrict itself to the **objective study of behavior**.
Watson's acceptable methods of investigation:

- Observations with and without the use of instruments
- Testing methods
- The verbal report method
- The conditioned reflex method

Watson proposed that **test results** be treated as samples of behavior rather than indicators of mental qualities. A test did not measure intelligence or personality; instead, it measured the subject's response to the stimulus situation of taking the test, and nothing more.
Verbal report was controversial. Watson agreed that verbal reports were imprecise and not a satisfactory substitute for objective observation. He restricted them to reverification, such as reporting differences between tones. Opponents contended that he was offering merely a semantic change.
Watson was largely responsible for the wide-spread application of the **conditioned reflex** in American psychological research, around 1915. He described conditioning in terms of stimulus substitution and that it provided an objective method of analyzing behavior, or reducing it to its elementary units, the stimulus-response (S-R) bonds. This would allow them to investigate complex human behaviors.

Watson was continuing in the **mechanistic tradition** adopted by structural psychologists. For Wundt/Titchener, who used introspection, subjects were both observer and observed because they observed their own conscious experience, and their role was more important than the experimenter. In behaviorism, the subjects became less important. They no longer observed; instead they were observed, and became "subjects".

The Subject Matter of Behaviorism

The primary subject matter for Watson's behavioral psychology was the elements of behavior; that is, the body's muscular movements and glandular secretions. It was the study of behavior, the study of acts.
More **complex response acts**, such as eating, writing, working, were movements in space to affect one's environment and could also be reduced to lower-level motor or glandular responses.
Responses were either:

- Explicit - overt and directly observable.
- Implicit - visceral movements, glandular secretions, and nerve pulses inside the body and could be observable through using instruments.

He noted that **stimuli** could also be simple or complex. Therefore, all S-R complexes could be analyzed into their elementary S-R units.
Thus, in both methods and subject matter, behaviorism was an attempt to construct a science free of subjective notions and methods, a science as objective as physics.

Instincts

Initially Watson accepted the role of instincts in behavior. In 1914, his book described 11 instincts. By 1925, he revised his position and eliminated the concept of instinct altogether, arguing that behaviors that seem instinctive are really socially conditioned responses. He then **refused to admit in his system any inherited capacities, temperaments, or talents of any kind.** Behaviors that seemed inherited were traced to early childhood training (nurture). He concluded simply and optimistically, that children could be trained to be whatever one wanted them to be and was one reason for Watson's phenomenal popularity. He was not alone in this suggestion, a viewpoint shift already in progress in American psychology.
Psychology could not be applied in ways to alter behavior unless it was accepted that behavior was capable of being changed - behaviors governed by instincts could not be modified.

Emotions

To Watson, emotions were merely physiological responses to stimuli. Thus, **emotion is a form of implicit behavior** in which internal reactions are evident in physical manifestations, such as blushing, perspiring and increased heart rate. **William James countered** that the bodily changes immediately followed the perception of stimulus, and the feelings of those bodily changes was the emotion.
Watson proposed that infants show three fundamental unlearned response patterns: fear, rage and love. Other emotional responses are compounds of these basic emotions through the conditioning process, and they may become attached to stimuli that were not originally capable of eliciting them (baby Albert and the white rat).
Watson concluded that all adult fears, aversions, and anxieties are also conditioned early in childhood. They do not arise, as Freud claimed, from unconscious conflicts, which could not be objectively observed.
The Albert study has never been successfully replicated but has been accepted as scientific evidence despite serious methodological flaws.
1924 - **Mary Cover Jones** successfully eliminated a fear response to rabbits in a three-year old subject named Peter. Over several weeks, a rabbit was brought progressively closer to Peter

while he was eating, eventually being able to touch it without fear. This work is considered the precursor of behavior therapy almost 50 years before it became popular.

Thought Processes
Watson's behaviorist system attempted to reduce thinking to implicit motor behavior. He reasoned that the behavior of thinking must involve implicit speech reactions and movements. Thinking is a way of talking silently, that we learn over time due to being admonished to be quiet. Watson suggested that the focal points for much of this implicit behavior are the muscles of the tongue and larynx and he made experimental attempts to record tongue and larynx movements during thought but was unable to secure reliable supportive results.

Behaviorism's Popular Appeal
The public was stirred by Watson's call for a society based on scientifically shaped and controlled behavior, free of myths, customs, and conventional behaviors. **His ideas offered hope** to people disenchanted with old ideas - behaviorism took on aspects of a religion. The press, predictably, sung his praises ad nauseum. The hope that people felt stemmed from Watson's emphasis on the nurturing effect of the childhood environment in determining behavior and from his minimization of the impact of inherited tendencies.
Per his **conditioned reflex experiments**, he believed that emotional disturbances in adulthood are caused by conditioned responses established in infancy, childhood, and adolescence. Watson believed in practical control over childhood behavior, and thus later adult behavior, was not only possible, but was absolutely necessary. He noted that people that believed the impact of heredity was greater had no real evidence for their view.
Watson's plan to **replace religion-based ethics with his experimental ethics** based on behaviorism remained only a hope and was never carried out, left as a framework for others. Years later, **B.F Skinner** conceived in greater detail a scientifically shaped Utopia in the spirit of Watson's ideas.

An Outbreak of Psychology
By the 1920's the field had captured and captivated the public's attention and they were convinced that psychology provided the path to health, happiness, and prosperity. By 1924, psychology was everywhere and welcomed throughout the United States and John B. Watson may have done more than any other individual to help it spread.

Joseph Jastrow (1863-1944)
Ph. D - Johns Hopkins (1886)
Univ of Wisconsin - lengthy academic career. He wrote **magazine articles** on topics such as inferiority complexes, fears and worries, family conflicts and the meaning of IQ scores for *Popular Science Monthly, Cosmopolitan*, and *Harper's.*
His newspaper column, "Keeping Mentally Fit", was syndicated in **150 papers**, participated in radio programs. He wrote a pop psychology manual not unlike the self-help books on today's best-seller list.

Criticisms of Watson's Behaviorism

Not all psychologists were ready to accept the extreme objectivity that Watson proposed. Many psychologists believed that Watson's program omitted important components such as sensory and perceptual processes.

Karl Lashley (1890-1958)
Ph.D - Johns Hopkins, genetics (1911) - student of Watson's.
Physiological psychiatrist, Univ of Minn, Chicago, Harvard, Yerkes Laboratory of Primate Biology and upheld the mechanistic traditions.
His research on brain mechanisms in rats challenged one of Watson's basic points. He offered two now famous principles:
The law of mass action - states that the efficiency of learning is a function of the intact mass of the cortex - the more cortical tissue available, the better the learning.
The principle of equipotentiality - states that one part of the cortex is essentially equal to another in terms of its contribution to learning.
His results challenged Watson's idea of a simple point-to-point connection to reflexes, according to which the brain serves merely to switch incoming sensory nerve impulses into outgoing motor impulses. **His findings suggest that the brain plays a more active role in learning than Watson could accept,** contesting Watson's assumption that behavior is compounded bit by bit solely through conditioned reflexes. Lashley's work did confirm the value of objective methods in research.

William McDougall (1871-1938)
Educated in medicine and physiology in England.
Professor of psychology at Harvard (1920-1927)
Established the Parapsychology Lab at Duke Univ (1927-1938)
Book:
He is known for his instinct theory of behavior and for the impetus his book on social psychology gave to that area - **"An Introduction to Social Psychology"** (1908).
He was a supporter of unpopular causes such as free will, Nordic superiority, and psychic research, and was frequently denounced in the American press. He **strongly criticized behaviorism** in the 1920's when most psychologists had accepted its influence.
His **instinct theory** states that human behavior derives from innate tendencies to thought and action. It was initially well received, but rapidly lost ground to behaviorism - Watson rejected the notion of instincts.

Watson-McDougall Debate - 1924, Washington, D.C.
The debate came 11 years after Watson formally found the behaviorist school of thought.

McDougall agreed with Watson that the data of behavior are a proper focus for research, but he argued that the **data of consciousness are also indispensable.** This position was later upheld by humanistic psychologists and social-learning theorists.
He offered that **without introspection and self-report,** how can researchers know anything about daydreams and fantasies or understand and appreciate aesthetic experiences?

He questioned Watson's assumption that behavior is fully determined and is the result of past experiences and can be predicted. Such a psychology leaves **no room for free will** or freedom of choice. If the determinist position were true, that humans have no free will and can not be held responsible for their actions, there would be no human initiative, no desire to improve ourselves or society.

Contributions of Watson's Behaviorism

Zeitgeist - Watson's 20 year career was an effective agent of the times that were changing not only in psychology but in general scientific attitudes as well. The nineteenth century had witnessed magnificent advances in every branch of science. The twentieth century promised even more marvels. It was thought then that scientists, if given enough time, would find solutions to every problem, answers to every question.

Watson made psychology more objective in methods and terminology. As a distinct school of thought, Watsonian behaviorism was replaced by other forms of objectivism that built on it. By 1929, behaviorism was already past its prime.
Objective methods and language became identified with American psychology, and eventually died, **by being absorbed in the main body of thought to provide a strong conceptual base for modern psychology**. He is widely recognized for his founding role. However, his hometown residents remembered him somewhat less favorably, calling him "an upstart and an atheist who turned his back on his Southern heritage and Baptist upbrining".

Chapter 11 - Behaviorism: After the Founding

Three Stages of Behaviorism
Watson's behaviorism was the **first stage** in the evolution of the behavioral school of thought and by 1930 was able to proclaim that his victory was complete.
The **second stage, neobehaviorism**, dates from 1930 to about 1960 and includes the work of Tolmann, Hull, and Skinner.
They agreed on several points:

- The core of psychology is the study of learning.
- Most behavior, no matter how complex, can be accounted for by the laws of conditioning.
- Psychology must adopt the principle of operationism.

The **third stage** in behaviorism's evolution, neo-neo behaviorism or **sociobehaviorism**, dates from about 1960 to 1990 and includes the work of Bandura and Rotter and is distinguished by a return to the consideration of cognitive processes while maintaining a focus on the observation of overt behavior.

Operationism

The purpose of operationism, a major characteristic of neobehaviorism, was to r**ender the language and terminology of science more objective and precise** and to rid all of science of "pseudo-problems". Operationism holds that the validity of any scientific finding or theoretical

construct depends on the validity of the operations used in arriving at that problem. Thus, a physical concept is the same as the set of operations or procedures by which it is determined. This viewpoint was promoted by **Percy W. Bridgeman** (1882-1961), a Nobel Prize-winning physicist at Harvard. His book, *"The Logic of Modern Physics"* (1927) captured the attention of many psychologists.

Following his reasoning, the concept of individual or **private conscious experience** is a pseudo-problem for the science of psychology. The existence or characteristics of consciousness can not be determined or even investigated by objective methods. **According to the operationist viewpoint, consciousness has no place in a scientific psychology.**
The long-term trend in American psychology was toward greater objectivity in methodology and subject matter, so operationist approaches to research and theory had already been accepted. **Physics** had always been the paragon of scientific respectability for the new psychology and when they claimed their acceptance of operationism as a formal doctrine, many psychologists felt compelled to follow this role model. Operationism in psychology was later discarded.

Edward Chace Tolman (1886-1959)

Studied engineering at M.I.T.
Studied in Germany with the Gestalt psychologist Kurt Koffka.
Ph.D - Harvard, psychology (1915)
Instructor - Northwestern
1918 - Taught comparative psychology, research on learning in rats - Univ California Berkeley
WWII - served in the OSS, the forerunner of the CIA.
Book:
"Purposive Behavior in Animals and Men" (1932)

Purposive Behaviorism

Tolman argued that purposiveness in behavior can be defined in objective behavioral terms without resorting to introspection or reports about how one may feel about an experience. It seemed obvious to Tolman that all actions are goal-directed. In other words, Tolman said, behavior "reeks" of purpose and is oriented toward achieving a goal or learning the means to an end - a cat trying to escape a puzzle box, children trying to learn to play the piano.
The fact of learning, whether in rats or humans, is objective behavioral evidence of purpose. Note that Tolman is dealing with the objective responses of the organism and the measurements are stated in terms of changes in response behavior as a **function of learning.** These are measures that yield objective data - overt responses.
Tolman believed, the **conscious experience** - if there was any - associated with purposive behavior did not influence the organism's behavioral responses.

Intervening Variables

Tolman listed **five independent variables** as causes of behavior: environmental stimuli, physiological drives, heredity, previous training, and age. Behavior is a function of these five variables, an idea he expressed in a mathematical equation.

Between these observable independent variables (stimuli) and the resulting behavior (response), Tolman inferred a set of unobservable factors, the **intervening variables,** which were the actual determinants of behavior. These factors are internal processes that connect the stimulus with the response.
The behaviorist's S-R proposition **should read S-O-R** per Tolman. The intervening variable was whatever is going on within **O (the organism)** that brings about the response to the stimulus. By specifying the independent (stimulus) and dependent (response) variables, which are observable events, Tolman was able to provide operational definitions of unobservable, internal states (organism).

Learning Theory

Tolman rejected Thorndike's law of effect (reward and punishment) and proposed a cognitive explanation for learning, suggesting that the repeated performance of a task strengthens the learned relationship between environment cues and the organism's expectations. In this way, it learns its environment.
Animals and humans learn **"sign Gestalts"** - the cue expectancy associated with a particular choice point while attempting to learn an environmental novelty. Every environmental novelty has many choice points, but the organism, over time, **establishes a cognitive map, which is a pattern of the sign Gestalts of successful choices.** The pattern is what the organism learns, that is, the cognitive map that leads to success, not merely a set of motor habits. The brain now has a comprehensive picture of the map, enabling it to go from one place to another without being restricted to a fixed series of bodily movements.

Comments

Intervening variables made unobservable internal states respectable subjects of study and were used by Hull and Skinner. Another contribution was his strong support for the rat as an appropriate subject of psychological study, the white rat becoming the primary research subject for neobehaviorists and learning theorists from 1930 to the 1960's.

Clark Leonard Hull (1884-1952)

Hull and his followers dominated American psychology from the 1940s until the 1960s. He was very devoted to the problems of the scientific method and applied mathematics and formal logic to psychological theory in a way never done before.
His family was poor, he was memory impaired from typhoid and had a permanent disability in one leg from polio.
Ph.D - Univ of Wisconsin (1918) at the age of 34. Studied mining engineering before psychology
Instructor at Univ of Wisconsin next 10 years - He invented a machine for calculating correlations and published a textbook on aptitude testing. He devoted 10 years to studying hypnosis and suggestibility, publishing 32 papers and a book summarizing the research.
Professor - Yale Univ (1929) - Pursued his interest in formulating a theory of behavior based on Pavlov's laws of conditioning.
Books:

“Principles of Behavior " (1943) - outlined a comprehensive theoretical framework to account for all behavior. Hull continually revised his system, incorporating the results of his research. The final form was published in 1952, *“A Behavior System”.*

The Spirit of Mechanism

Hull described his behaviorism and his image of human nature in **mechanistic** terms and regarded human behavior as automatic and capable of being reduced to the language of physics. He subscribed to the view that **machines** would one day be constructed to think and display other human cognitive functions (1926).
Hall’s methods would have to be objective and quantitative, with the fundamental laws of behavior expressed in the precise language of mathematics. Also, he believed the only appropriate method of inquiry for psychology is the **hypothetico-deductive method** - deductions that are established before experimentation and revised or discarded based on the experimental evidence.

Drives

To Hull, the basis of motivation was a state of bodily need that arose from a deviation from optimal biological conditions. **Drive was defined** as a stimulus arising from a state of tissue need that arouses or activates behavior. In his view, reduction or satisfaction of a drive is the sole basis for reinforcement. He placed great emphasis on measuring the **response strength** of the behavior.
Two kinds of drives:

1. **Primary drives** - associated with innate biological need states vital to survival. Includes food, water, air, temp regulation, defecation, urination, sleep, activity, sex and pain relief.
2. **Secondary drives** (learned) - these are previously neutral stimuli that may acquire the characteristics of a drive because they are capable of eliciting responses similar to the responses aroused by the primary drive or original need state.

Learning

Hull’s learning theory focuses on reinforcement, essentially Thorndike’s law of effect. Hull’s law of primary reinforcement states that when a S-R relationship is followed by a reduction in need, the probability increases that on subsequent occasions the same stimulus will evoke the same response. Hull’s reinforcement is then based on reducing a primary need - not Thorndike’s notion of satisfaction. **Thus, primary reinforcement is reduction of a primary drive.** Hull called the strength of the S-R connection **habit strength**.
Learning can not take place in the absence of reinforcement, which is necessary to bring about a reduction of the drive. The emphasis on reinforcement characterizes his system as a need-reduction theory, as opposed to Tolman’s cognitive theory.

Comment

His system can be faulted for its lack of generalizability, his precise variables, stated in quantitative terms operated on a narrow plane. His extreme approach reduced the range of applicability of his research findings. Nonetheless, his influence was substantial. He defended,

extended, and expounded the objective behaviorist approach and inspired large numbers of psychologists.

B.F. Skinner (1904-1990)

Undergraduate - English degree, Hamilton College, NY. Phi Beta Kappa, desired to become a writer.
Masters and Ph.D. - psychology, Harvard (1931)
Professor - Univ of Minnesota (1936-1945)
Professor - Indiana Univ (1945-1947), then returned to Harvard.
Per his dissertation topic, he proposed that a reflex is the correlation between a stimulus and a response, nothing more. He noted the use of the reflex concept in describing behavior and gave ample credit to Descartes.

Books:

"The Behavior of Organisms" (1938) - It was an initial failure but was eventually successful due to its usefulness **for applied areas** such as educational and clinical psychology. He was keenly interested in solving real-world problems.
"Science and Human Behavior" (1953) - became the basic textbook for Skinner's behavioral psychology. He described how the work of Descartes (200 years prior) and the mechanical figures of 17th century Europe influenced his thinking.
At 78 he wrote a paper titled *"Intellectual Self-Management in Old Age"* (1983), and described the necessity for the brain to work fewer hours each day, with rest periods in between, to cope with diminished intellectual abilities.

Skinner's Behaviorism

Whereas Hull emphasized the importance of theory, Skinner advocated **an empirical system with no theoretical framework within which to conduct research**. He said that he never attacked a problem by constructing a hypothesis or deduced theorems or submitted them to experimental check. He had no physiological or mentalistic preconceived model of behavior. Other than Watson and Pavlov, he did not draw on the work of others.
Skinner's behaviorism was devoted to the study of response, concerned with describing rather than explaining behavior. **His program included no presumptions about internal entities, whether intervening variables, drives or physiological processes.** Whatever might happen between stimulus and response is not the sort of objective data the Skinnerian behaviorist dealt with.
His descriptive behaviorism has been called the **"empty organism" approach** - human organisms are controlled and operated by forces, in the external world, and not by forces within themselves. His position was not a denial of mental events, but a refusal to resort to them as explanatory entities.
In contrast to most of his contemporaries, he did not consider it necessary to use large numbers of subjects or to make statistical comparisons between the average responses of subject groups. **His method was the comprehensive investigation of a single subject.** Per Skinner, "A science of behavior which concerns only the behavior of groups is not likely to be of help in our understanding of a particular case".

Journal:
"Journal of the Experimental Analysis of Behavior" (1958) - established largely in response to the unwritten requirements of mainstream psychology journals concerning statistical analysis and the size of the subject sample.

Operant Conditioning

Operant conditioning occurs without any observable external antecedent stimulus, so that the organism's response appears to be spontaneous. There is a stimulus that elicits the response, but that stimulus is not detected when the spontaneous response occurs. The experimenter has not applied a stimulus and can not see one.
The operant conditioning is taking place inside the organism as it operates on the environment. With Pavlov's respondent behavior, the organism can do nothing but respond to the stimulus that is given - it can not "operate" on its environment to secure the stimulus.
Skinner believed that operant behavior better represents the **typical learning situation**. Thus, it follows that the most effective approach to a science of behavior is **to study the conditioning and extinguishing of these operant behaviors.**
From the Skinner box experiments, with rats and levers to release a food pellet, Skinner derived his law of acquisition, which states that the strength of an operant behavior increases when it is followed by the presentation of a reinforcing stimulus. Skinner did not deal with any pleasure/pain or satisfaction/dissatisfaction consequences (Thorndike and Hull) of reinforcement. Skinner's system is therefore simply descriptive.

Schedules of Reinforcement

Skinner wanted to know how behavior might be affected by variable reinforcement and would one **reinforcement schedule** or pattern be better than another in determining an organism's responses.
Fixed interval reinforcement schedule - reinforcement only occurs after the passage of a fixed period of time (Ex. - being paid every 2 weeks). Skinner found the shorter the time interval between reinforcers, the faster the responses. As the interval time lengthened, the response rate declined.
Frequency of reinforcement and extinction - behaviors are eliminated more quickly when they have been reinforced continuously and reinforcement is then stopped than when they have been reinforced intermittently.
Fixed ratio schedule - the reinforcer is presented after a predetermined number of responses, not after a certain time interval. Animals respond much faster on fixed ratio vs fixed interval. (Ex. pay depends on the number of items produced or sold).

Successive Approximation: The Shaping of Behavior

Humans demonstrate many more complex operant behaviors that have a much lower probability of occurrence in the normal course of events. How do you reinforce behaviors that are not likely to occur spontaneously, eventually, like pressing a bar in a Skinner box?
Skinner answered these questions with the method of **successive approximation**, or *shaping* (1953).

An organism is reinforced as its behavior comes in successive or consecutive stages to approximate the final behavior desired. He suggests this is how children learn to speak. Acquiring language skills is shaped by providing differential reinforcement in stages, from meaningless sounds, to sounds that approximate words and then restricted to appropriate usage and pronunciation.

Teaching Machines
First introduced in the 1920's, but at the time, there was a surplus of teachers and no public pressure to improve the teaching process. In the 1950's, Skinner promoted a similar device when there was a shortage of teachers. Teaching machines were widely used in the 1950's and 1960's until they were superseded by computer-assisted instructional methods.
Book:
"The Technology of Teaching" (1968) - a summary of his work in the field of education

Walden Two - A Behaviorist Society
Skinner mapped out a technology of behavior, an attempt to apply his laboratory findings to society as a whole.
His novel, *"Walden Two"* (1948), follows life in a 1000 member community in which behavior is controlled by positive reinforcement, an outgrowth of own personal midlife crises, a depression he suffered at 41. The main character, T.E. Frazier was his outlet to be able to say things that he was not yet ready to say to anyone.
Skinner's line of thought that human nature is machine-like reflects the line of thought that has been traced here from Galileo and Newton through the British empiricists to Watson and Skinner himself.
Skinner's mechanistic, analytic, and deterministic natural science approach, reinforced by the results of his conditioning experiments, **persuaded many behavioral psychologists that with an awareness of environmental conditions and the application of positive reinforcement, human behavior could be guided, modified, and shaped.**

Behavior Modification
Behavior modification through positive reinforcement is a frequently used clinical application in mental hospitals, factories, prisons, and schools to change undesirable behaviors to more acceptable ones. **This is operant conditioning** - reinforcing the "operation", the behavior exhibited by the organism that is desired and not reinforcing the undesired behavior. The focus is exclusively on overt behavior and positive reinforcement - not what is going on in the organism's mind.
Behavior modification programs are usually only successful within an environment or organization in which they are carried out.
Punishment is not part of a behavior modification program - only reinforcement when behavior changes in a positive way. This is supported by considerable human and animal research.

Criticisms of Skinner's Behaviorism
In 1986, he wrote an article, "What Is Wrong with Life in the Western World?". He stated that "human behavior in the West has grown weak, but it can be strengthened through the

application of principles derived from an experimental analysis of behavior". This willingness to extrapolate from the data, particularly for proposals about solutions to complex human problems is **inconsistent with an anti-theoretical stand** and shows that Skinner went beyond observable data in presenting his blueprint for the redesign of society.
His position that all behaviors are learned was challenged within animal training. Trainers found that animals demonstrated a tendency toward **"instinctive drift"** - they tended to substitute instinctive behaviors for behaviors that had been reinforced, even when such instinctive behaviors interfered with obtaining food. Clearly in these cases, reinforcement was not all-powerful.

Contributions of Skinner's Behaviorism

Skinner was the uncontested champion of behavioral psychology from the 1950s to the 1980s. His overall goal was the betterment of human lives and society through the application of the principles of his form of behaviorism in real-world settings of homes, schools, businesses, and institutions. Although it continues to be applied, it has been challenged by the work of the neo-neo behaviorists, including Bandura and Rotter, among others, who take a more sociobehavioral approach.

Sociobehaviorism: The Cognitive Challenge

The sociobehaviorists question Skinner's disavowal of mental or cognitive processes and instead propose a social learning or sociobehavioral approach. Social learning theories mark the third stage in the behaviorist school of thought. (Chapter 15)

Albert Bandura (1925-2021)
Studied - Univ of British Columbia, Vancouver
Ph.D - clinical psychology - Univ of Iowa (1952)
Teacher - Stanford Univ (1952), professor emeritus (2010)

Social Cognitive Theory

In addition to being a behavioral theory, Bandura's system is cognitive. **He stressed the influence on external reinforcement schedules** of such thought processes as beliefs, expectations, and instructions. When an external reinforcer alters behavior, it does so because the person is consciously aware of the response that is being reinforced and anticipates receiving the same reinforcer for behaving in the same way the next time the situation arises.

He agreed that human behavior can be changed with reinforcement, but also demonstrated empirically, that people can learn behavior without experiencing reinforcement directly.
We can also learn through what Bandura called **vicarious reinforcement**, by observing how other people behave and seeing the consequences of their behavior. Because of his ability to regulate our behavior by visualizing the consequences we have not personally experienced, there is **a mediating mechanism interposed between stimulus and response** - the person's cognitive processes.

To Bandura, it is not the actual reinforcement schedule that elicits a change in a person's behavior but rather what the person thinks that schedule is. We learn through **"modeling"**, by observing other people.
For Skinner, whoever controls the reinforcers controls the behavior. For Bandura, whoever controls society's models controls behavior.

We tend to model our behavior after a person of the same sex and age, our peers, who have solved problems similar to our own, and also tend to be impressed by models high in status and prestige**. Hostile and aggressive behaviors** tend to be strongly imitated, especially in children. Thus, what we see in real life or in the media can often determine our behavior (video games, music, etc.).

Bandura's approach is a ***social* learning** theory because it studies behavior as formed and modified in social situations. He charged that psychologists cannot expect research findings that ignore social interactions to be relevant to the modern world. He also criticized the use of only using individual subjects and animals - per Skinners' methodology.

Self-Efficacy

Bandura conducted considerable research on self-efficacy, **described as** our sense of self-esteem or self-worth and our feeling of adequacy, efficiency, and competency in dealing with problems (Bandura, 1982).
People **high in self-efficacy** expect to overcome obstacles, seek challenges, persevere, maintain high confidence in their ability to succeed and exert control over their lives. They also enjoy better physical and mental health, are less bothered by stress and are likely to recover more quickly from illness or surgery (2001).
People **high in social self-efficacy** feel confident about their ability to initiate social contact and develop new friendships. They score high on measures of emotional well-being and are less likely to become addicted to Internet use (2010).
People **low in self-efficacy** feel helpless about coping and they can affect little change in situations they confront. When confronting problems, they are likely to give up if initial solutions fail. They believe they have little or no control over their fate.
Bandura's research showed that **groups develop collective efficacy** levels that influence their performance (2001).

Behavior Modification

Bandura reasoned that if all behaviors are learned by modeling other people, then undesirable behaviors can be altered or relearned in the same way. **To Bandura, treating the symptom (behavior) means treating the disorder, because symptom and disorder are the same.**
Modeling techniques are used to change behavior by having the subject observe a model in a situation that causes them some anxiety. They observe the model progressively working towards the cause of fear (dogs, snakes, etc.), and this can reduce the subjects' fear. They can then attempt the progression as the model has shown.
This form of behavior therapy is widely used in clinical, business, and classroom situations and is supported by copious experimental studies. It has been effective in eliminating phobias,

obsessive-compulsive disorders, sexual dysfunctions and some forms of anxiety as well as adapted to radio and TV programs designed to present models for appropriate behavior in addressing social and national problems (safe-sex, literacy, etc.)

Comment
Bandura's theory and the modeling therapy derived from it fit the functional, practical cast of American psychology. His approach is objective and amenable to precise laboratory methods. It is responsive to the current intellectual climate that focuses on internal cognitive variables and applicable to real-world problems,

Julian Rotter (1916-2014)

During HS, he read Freud and Alfred Adler.
Undergraduate - (1933) chemistry, Brooklyn College - met Adler and switched to psychology, even though he realized Jews were not being hired for academic positions.
Masters - Univ of Iowa, under Kurt Lewin.
Ph.D - Indiana Univ (1941)
Accepted job at a state mental hospital, served as psychologist with the US Army in WWII.
Teacher - Ohio State Univ until 1963.
Director Clinical Psychology Program - Univ of Conn (1963 until retirement).

Cognitive Processes
Rotter was the first person to use the term **"social learning theory"** (1947). His laboratory research was rigorous and well-controlled, typical of the behaviorist movement and studied only human subjects in social interaction. He, like Bandura, criticized Skinner for studying subjects in isolation.
Rotter emphasized cognitive processes to a greater extent than Bandura. He stated that our behavior is determined by external stimuli and by the reinforcements they provide, but the relative influence of these two factors **is mediated by our cognitive processes.** Rotter delineated the following four principles that govern behavioral outcomes:

- We form subjective **expectations** of the outcomes or results of our behavior in terms of the amount and kind of reinforcement likely to follow it.
- We estimate the **likelihood** that behaving in a certain way leads to a specific reinforcement and adjust our behavior accordingly.
- Because of our unique psychological environment, we place **different values** on different reinforcers and assess their relative worth for different situations.

Locus of Control

Some people believe that reinforcement depends on their own behavior - they have an **internal locus of control** and high self-efficacy.
Others believe reinforcement depends on outside forces such as fate, luck or the actions of other people - they have an **external locus of control** and low self-efficacy.
His research suggests that **locus of control is learned in childhood** from the behavior of parents. Parents who are supportive, generous with praise for achievement, consistent in their

discipline, and not authoritarian in their attitudes tend to produce children with an internal locus of control.
Rotter considered locus of control his most significant discovery and one of the most studied variables in psychology and social science.

The Fate of Behaviorism

Watson and Skinner were **radical behaviorists**, believing that psychology must study only overt behavior and environmental stimuli, not any presumed mental states.
Hull, Tolman, Bandura, and Rotter were **methodological behaviorists**, because they invoke internal cognitive processes as part of psychology's subject matter.
The dominance of Skinner's behaviorism peaked in the 1980s and declined after his death in 1990. The behaviorism that remains vital in contemporary psychology, especially within applied psychology, is a different behaviorism than that which flourished between Watson's 1913 manifesto and Skinner's death. Behaviorism survives in the spirit of its founders intent, which was to develop a technology that could be used to change behavior for the better.

Chapter 12 - Gestalt Psychology

"Gestalt" - an organized whole that is perceived as more than the sum of its parts.

In 1912:

- Watson's behaviorism was beginning its attack on Wundt and Titchener and on functionalism.
- Animal research from Thorndike and Pavlov was exerting a significant impact.
- Freud's psychoanalysis was already a decade old (next chapter),

Although the Gestalt psychologists' movement against Wundt's position in Germany paralleled the rise of behaviorism in the United States, they were independent of one another. Although both schools of thought started by opposing the same ideas - Wundt's focus on sensory elements - eventually they would come to oppose each other.
Gestalt psychologists accepted the value of consciousness while criticizing the attempt to reduce it to elements. **Behavioral psychologists** refused to acknowledge the usefulness of the concept of consciousness for a scientific psychology.

Gestalt psychologists argued that when we look out a window we really see trees and sky, not individual sensory elements such as brightness or hue that may be somehow connected to constitute our perception of trees and sky. The popular way to say this is that **the whole is different from the sum of its parts.** Music is created this way. The notes are finite and known, but the combination of them is what we perceive in a particular song - the whole - not the notes. Gestalt psychologists believe that perception goes beyond the sensory elements, the basic physical data provided to the sense organs.

Antecedent Influences

Immanuel Kant - German philosopher (1724-1804)
He argued that perception is not a passive impression and combination of sensory elements, but an active organizing of elements into a coherent experience. The mind give shape and form to the raw data of perception,
Franz Brentano's approach, to study the act of experiencing, was much like the later methods of the Gestalt psychologists,
Ernst Mach (1838-1916), a physics professor, Univ of Prague, *"The Analysis of Sensations"* (1885), discussed spatial patterns such as geometric figures and temporal patterns such as melodies, and considered them sensations - independent of their individual elements. He argued that the perception of an object does not change, even if we change our orientation to it.
Christian von Ehrenfels (1859-1932) elaborated on Mach's ideas. A melody is a form quality (Gestalt quality) because it sounds the same even when transposed to a different key. The melody is independent of the sensations of which it is composed. The mind creates form out of elementary sensations.
William James is also a precursor to Gestaltism, stating that people see wholes, not bundles of sensations.
Phenomenology (German)**,** a doctrine based on an unbiased description of immediate experience just as it occurs, is another early influence. The experience is not analyzed or reduced to elements or otherwise artificially abstracted.

Zeitgeist - In the closing decades of the 19th century, ideas in physics were becoming less atomistic with the recognition and acceptance of **fields of force**, those regions or spaces crossed by lines of force such as electric current and magnetism. Light was believed to operate similarly. These force fields were considered new structural entities, not summations of the effects of individual elements or particles. Physicists were describing fields and organic wholes, thus providing ammunition for Gestaltian ways of looking at perception as they reflected the new physics.

The Phi Phenomenon: A Challenge to Wundtian Psychology

Max Wertheimer (1910), along with Koffka and Kohler, conducted research that involved perceiving apparent movement, when no actual movement has taken place. He used light projected through two slits, one vertical and one 20-30 degrees from the vertical. With an optimal time interval between the lights, about 60 milliseconds, the subjects saw a single line that appeared to move from one slit to the other and back again. Wertheimer believed that the phenomenon was as elementary as a sensation yet obviously was different from a sensation or a series of sensations. He gave it the name **phi phenomenon**. Accordingly, the apparent movement did not need explaining. It existed as it was perceived and could not be reduced to anything simpler.
Westerheimer's published research in **1912**, "Experimental Studies of the Perception of Movement" is considered the **formal beginning of the Gestalt psychology school of thought.**

Max Wertheimer (1880-1943)

Studied law - Univ of Prague, changed to philosophy
Philosophy and psychology - Univ of Berlin
Ph.D - Univ of Wurzburg, under Oswald Kulpe (1904)
Lectured and research - Univ of Frankfurt, professorship (1929)
Book:
"Productive Thinking" (published after his death, 1945)
Journal:
"Psychological Research" (1921), official publication of the Gestalt school of thought.
Suspended by the Nazi's in 1938, resumed in 1949.
Was among the first group of refugee scholars to flee Nazi Germany for the United States (1933).
He made a strong impression on the young psychologist **Abraham Maslow**, who was so in awe that he began studying and observing Werthheimer and others' personal characteristics, Maslow developed the concept of self-actualization and later promoted the **humanistic psychology school of thought.**

Kurt Koffka (1886-1941)
Ph.D - University of Berlin, studied with Carl Strumpf (1909)
Teaching - University of Giessen (1911-1924)
Also did work with Werheimer and Kohler at the Univ of Berlin.
Post WWI, he wrote an article for the American journal *"Psychological Bulletin"* (1922), presenting the basic concepts of Gestalt psychology along with the results and implications of considerable research.
Gestalt psychology was broadly concerned with cognitive processes, with problems of thinking, learning, and other aspects of conscious experience.
Books:
"The Growth of the Mind" (1921) - a book about developmental child psychology that was successful in Germany and America.
"Principles of Gestalt Psychology" (1935)
Visiting professor at Cornell and Univ of Wisconsin
Professor - Smith College, Massachusetts (1927-1941)

Wolfgang Kohler (1897-1967)
His books became the standard works of Gestalt psychology.
Training with Max Planck persuaded him that psychology must align itself with physics and that forms or patterns (Gestalten) occur not only in physics but in psychology.
University education at Tubingen, Bonn, and Berlin.
Ph.D - Univ of Berlin, studied with Stumpf (1909)
Univ of Frankfurt (1910-1913)
Studied chimpanzees in the Canary Islands for seven years.
Book:
"The Mentality of Apes" (1917) a classic book, 2nd edition 1924.
In 1920, returned to Germany.
1922 - succeeded Stumpf as professor of psychology a the Univ of Berlin

Books:
"Static and Stationary Physical Gestals" (1920), suggesting that Gestalt theory was a general law of nature that should be extended to all sciences
"Gestalt Psychology" (1929) - a comprehensive account of the Gestalt movement.

He left Nazi Germany in 1935 and was the only non-Jewish psychologist in Germany to publicly protest the dismissals of Jewish scholars. The majority of faculty and students supported the Nazi government from its earliest days.
After immigrating to America, taught at Swarthmore College, Pennsylvania, published several books and edited the Gestalt journal Psychological Research.

The Nature of the Gestalt Revolt

The pronouncements of the Gestalt psychologists in Germany, contradicting much of the German tradition of psychology, were nothing less than a revolt. The Gestalt leaders demanded a complete revision of the old order.
Gestalt psychologists seized on other perceptual phenomena beyond Wertheimer's studies on the perception of apparent movement. The experience of **perceptual constancies** - that a perception of an object remains constant even though the sensory data (the image projected on the retina) changes. Similarly, with brightness and size constancy the sensory elements may change but perception does not. The perceptual experience has a quality of wholeness or completeness that is not found in any of the component parts. Thus, there is a difference between the character of the sensory stimulation and the character of the actual resulting perception.
The perception cannot be explained simply as a collection of elements or the sum of the parts. The perception is a whole, a Gestalt, and any attempt to analyze or reduce it to elements will destroy it.

Kohler noted in his book, "Gestalt Psychology", that Gestalt can be used to refer to objects as well as their characteristic forms. Also, the term is not restricted to the visual or even the total sensory field. **It may encompass learning, thinking, emotions, and behavior** (1947). It is this general, functional sense of the word that the Gestalt psychologists attempted to deal with the entire province of psychology.

Gestalt Principles of Perceptual Organization

Wertheirmer paper presented in 1923 - he asserted that we perceive objects as unified wholes rather than clusters of individual sensations. These Gestalt principles are essentially the rules by which we organize our perceptual world.
Perceptual organization occurs **instantly** whenever we sense various shapes or patterns. The discrete parts of the perceptual field connect, uniting to form structures distinct from their background. This happens when we look or listen. **Typically, we do not have to learn most patterns.** Learning does occur with some higher-level perception, such as labeling objects by name.

According to Gestalt theory, the brain is a dynamic system in which all elements at a given time interact - **there is no mechanical "process"**. Elements that are similar or close together tend to combine, and elements that are dissimilar or farther apart tend not to combine.

Perceptual organizational principles:

- Proximity - parts that are close together in time or space appear to belong together and tend to be perceived together.
- Continuity - there is a tendency to follow a direction, to connect the elements that makes them continuous or flowing in a particular order.
- Similarity - similar parts tend to be seen together as forming a group.
- Closure - there is a tendency to complete incomplete figures, to fill in the gaps.
- Simplicity - we tend to see a figure being as good as possible under the stimulus conditions, called a *pragnanz,* or good form.
- Figure/ground - we tend to organize perceptions into the object being looked at (the figure) and background against which it appears (the ground). The figure and ground are reversible depending on how your perception is organized.

These organizing principles do not depend on higher mental processes or past experiences and are called **peripheral factors**. Wertheimer did acknowledge **central factors** within the organism influence perception - like experience and learning - but the Gestaltists focused more on the peripheral factors.

Gestalt Studies of Learning: Apes

Kohler's work with chimpanzees (1913-1920) investigated their intelligence as demonstrated in their problem-solving skills with props such as bananas, sticks and boxes. Kohler described his observations of the animal's reactions to the situations he created. He used no formal experimental design or measurement, no control group, or statistical analysis.

Kohler interpreted the results of this animal research in terms of the whole situation and the relationship among the stimuli. He considered problem solving to be a matter of restructuring the perceptual field. He interpreted his studies as providing evidence of **insight**, the apparently spontaneous apprehension of understanding of relationships. In addition, **Robert Yerkes**, in work with orangutans, found evidence to support the concept of insight, which he called **"ideational learning".**

In the **1930's, Pavlov** replicated some of these experiments and found it took months for them to solve the problem and called their problem-solving skills "chaotic". He believed their responses were not so different from trial-and-error learning in Thorndike's research. Kohler countered that an animal in a maze could not see the overall pattern or design but only each alley as it was encountered. Therefore, the animal could do little but try one path at a time. To the Gestalts, insight learning can only occur if the organism can perceive (see or hear) the relationships among the parts of the problem.

Kohler's research reinforced the Gestalt idea **that learning involves a reorganization or restructuring of one's psychological environment.**

Productive Thinking in Humans

Wertheimer's book on productive thinking (1945) applied Gestalt principles of learning to creative thinking in humans. He proposed that thinking is done in terms of wholes, that the learner regards the situation as a whole, and it should be taught as a whole. He believed that the details of a problem should be considered only in relation to the total situation and that **problem solving should proceed from the whole problem downward to the parts, not the reverse.**

He challenged mechanical drill and **rote learning,** derived from the associationist approach to learning. He cited student's inability to solve variations of problems when the solution had been learned by rote rather than grasped by insight. **He conceded that facts such as names and dates should be learned by rote, strengthened by repetition,** but that repetition could lead to mechanical performance rather than to understanding or to creative or productive thinking.

Isomorphism

From Wertheimer's research on apparent movement, he suggested that brain activity is a configural, whole process. Because apparent motion and actual motion are experienced identically, the cortical processes for them must be similar. It follows that corresponding brain processes must be operating - a correspondence between the psychological or conscious experience and the underlying brain experience. This idea is **isomorphism**, a principle already accepted in biology and chemistry.

Gestaltists likened a perception to a map, in that it is identical ("iso") in form or shape ("morph") to what it represents, without it being a literal copy of the terrain. However, the perception does serve as a reliable guide to the perceived world.

The Spread of Gestalt Psychology

By the 1920s, the movement was a coherent, dominant, and forceful school of thought in Germany, centered at the Psychological Institute of the Univ of Berlin, and had one of the world's largest laboratories.

After the Nazis seized power in 1933, their anti-intellectualism, anti-Semitism, and repressive actions forced the founders of the Gestalt school to leave the country. The core of the school shifted to the United States, but its acceptance came slowly.

First, **behaviorism** was at its peak of popularity. **Second,** there was a language barrier. **Third,** many psychologists incorrectly believed that Gestalt psychology dealt only with perception. **Fourth,** the founders, Werheimer, Koffka, and Kohler settled at small colleges that did not have graduate programs to attract disciples. **Fifth, and most important,** American psychology was already advanced far beyond the elementalism that Gestalt was opposing - behaviorism was already the second stage of opposition. Gestalt psychology was protesting something that in America was no longer a concern.

Initially, Gestalt psychologists arriving in America found little to revolt against.

The Battle with Behaviorism

The Gestalt psychologists argued that behaviorism, like Wundt's psychology, also dealt with **artificial abstractions.** It made no difference to them whether the analysis was in terms of introspective reduction to mental elements (Wundt) or objective reduction to conditioned S-R

units (Watson). The result was the same: a molecular instead of a molar approach. Koffka also argues that it was senseless to develop a psychology without consciousness, as behaviorists had done, because that meant that the science would be restricted to a collection of animal studies.

Field Theory

Field theory, or thinking in terms of field relationships rather than within an atomistic and elementistic framework, arose within psychology as a counterpart to the concept of force fields in physics. Today, the term field theory usually refers to the ideas of Kurt Lewin. His work is Gestalt in orientation but extends beyond the orthodox position to include:
human needs, personality, and social influences on behavior.

Kurt Lewin (1890-1947)

Studied in Munich and Berlin.
Ph.D - Univ of Berlin, studied under Carl Stumpf (1914)
Also trained in mathematics and physics.
After WWI, returned to Univ of Berlin and pursued Gestalt research in association and motivation.
1929 - presented a version of his field theory at the International Congress of Psychology at Yale.
Visiting professor - Stanford (1932)
Fled Germany in 1934. Spent 2 years at Cornell, then the Univ of Iowa.
Developed the Research Center for Group Dynamics at MIT due to his research on the social psychology of the child.

The Life Space

Lewin's knowledge of field theory in physics led him to consider that a person's psychological activities occur within a kind of psychological field, which he called the **life space.** The life space encompasses all past, present, and future events that may affect us. From a psychologist's standpoint, each of these events determines behavior in a given situation. Thus, the life space consists of a person's needs in interaction with the psychological environment. A life space shows varying degrees of development as a function of the amount and kind of experience we have accumulated.
He sought a mathematical model to represent his concept, but because he was interested in the single individual, statistical analysis was not useful. He chose **topology,** a form of geometry, to diagram the life space, showing at any given moment a person's possible goals and paths leading to them.
Within these maps, he used **arrows (vectors)** to represent the direction of movement toward a goal and **weighing those choices (valences)** to refer to the positive or negative value of objects within the life space. Objects that satisfied human needs had a **positive valence**, those that were threatening had a **negative valence**. Referred to as "blackboard psychology".

Motivation and the Zeigarnik Effect

Lewin proposed a basic state of balance or equilibrium between the person and the environment, with any disturbance leading to tension, which then leads to some action to relieve the tension and restore balance. Thus, to explain human motivation, he believed that behavior involves a cycle of tension-states or need-states followed by activity and relief.
In 1927, with Bluma Zeigarnik, an experiment to test the proposition. All propositions were confirmed:

- Tension develops when given a task to complete
- Tension is dissipated when the task is complete
- If the task is not complete, the persistence of tension results in a greater likelihood that the subjects will recall the task.

Social Psychology

Beginning in the 1930s, the outstanding feature of Lewin's social psychology is **group dynamics** - the application of concepts to individual and group behavior. A group and its environment also form a social field just like an individual psychological field. Group behavior at any given time is a function of the total field situation: subgroups, group members, barriers and channels of communication. A **classic experiment** among groups of boys showed that authoritarian groups become very aggressive and those in a democratic group were friendly toward one another and completed more tasks than either the authoritarian or laissez-faire groups.
He worked with his personal concerns about racial problems and his sensitivity training groups (T-groups) were the forerunners of the encounter groups of the 1960s and 1970s. His influence on social and child psychology is considerable, and many of his concepts and techniques are still used in studies of personality and motivation.

Criticisms of Gestalt Psychology

Experimental psychologists **asserted** that the Gestalt position was vague and that basic concepts were not defined with sufficient rigor to be scientifically meaningful. They **countered** that incomplete as of yet, was not the same as being vague.
Also, Gestalt psychologists held that because **qualitative results** took precedence in their system, much of their research was **deliberately less quantitative** than the other schools thought necessary. Much of Gestalt research was exploratory, investigating psychological problems within a different framework.

Contributions of Gestalt Psychology

The Gestalt movement left an indelible imprint on psychology and influenced work on perception, learning, thinking, personality, social psychology, and motivation. Its major tenets were not fully absorbed into mainstream psychological thought.
The Gestalt focus on conscious experience was centered on a modern version of phenomenology. **Contemporary adherents to the Gestalt position** believe that conscious experience does occur and is a legitimate subject for study, but realize that it can not be studied with the same objectivity as overt behavior.

A **phenomenological approach** is more widely accepted in Europe, but its influence can be seen in the American humanistic psychology movement, as well as many aspects of contemporary cognitive psychology.

Chapter 13 - Psychoanalysis: The Beginnings

The Development of Psychoanalysis

Sigmund Freud appeared on the cover of Time Magazine three times, the last time, 60 years after his death. He was one of a handful of people pivotal in the history of civilization who altered the way humans think about themselves.
Freud himself suggested that in all recorded history, there have been **three great shocks** to the collective human ego (1917).

1. The **first** was when Copernicus (1473-1543), the Polish astronomer, showed us the earth was not the center of the universe but merely one of many planets revolving around the sun.
2. The **second** revelation came in the 19th century when Darwin demonstrated that we are not a unique and separate species with a privileged place in creation.
3. The **third** was revealed by Freud proclaiming that we are not rational rulers of our lives but are under the influence of unconscious forces of which we are unaware and over which we have little, if any, control.

Chronologically, psychoanalysis overlaps the other schools of thought. In 1895, the year Freud published his first book marking the formal beginning of his new movement:

- Wundt was 63 years old.
- Titchener, at 28 years old, had been at Cornell for only 2 years and was just beginning to develop structural psychology.
- The spirit of functionalism was starting to flourish in America.
- Neither behaviorism or Gestalt had yet been proposed - Watson was 17, Wertheimer 15.

By the time of Freud's death in 1939:

- Wundtian, Titchenerian structuralism, and functionalism were history.
- Gestalt was being transplanted from Germany.
- Behaviorism was the dominant form of American psychology.

Unlike all the other schools of psychological thought, psychoanalysis was neither a product of the universities nor a pure science, but **arose within the traditions of medicine and psychiatry** from attempts to treat persons labeled by society as mentally ill. Therefore, it is not comparable to the other schools of thought.
Psychoanalysis was distinct in goals, subject matter and methods. Its subject matter is **psychopathology, or abnormal behavior**, neglected by the other schools. Its primary method is clinical observation rather than controlled lab experiments. It deals with the unconscious, a topic virtually ignored by the other systems of thought.

Antecedent Influences on Psychoanalysis

1. Philosophical speculations about unconscious phenomena
2. Early ideas about psychopathology
3. Evolutionary theory

Theories of the Unconscious Mind

Gottfried Wilhelm Leibnitz (1646-1716) - German philosopher and mathematician
Developed **monadology,** that monads were physical atoms, not wholly composed of matter, but the individual elements of all reality. Each monad was a psychic entity and created extensions when grouped together. Monads can be likened to perceptions and that mental events, consisting of these monads, ranged from completely unconscious to clearly conscious with conscious realization known as **apperception**.
We do not consciously perceive each drop of water crashing with a wave (**petites perceptions**), but when enough of them collect to make us consciously aware of the sound, they have then summated to produce an apperception.
Johann Friedrich Herbart (1776-1841) - German philosopher
Refined the above to the concept of threshold of consciousness. In order for an idea to rise into consciousness, it must be compatible with the ideas already in consciousness. Incongruous or irrelevant ideas are forced out of consciousness and inhibited. These inhibited ideas exist below the threshold of consciousness. Also, conflicts develop among ideas as they struggle for conscious realization.
Zeitgeist - Discussion of the unconscious was very much a part of the European intellectual climate in the 1880s when Freud began his clinical practice. A book titled **"Philosophy of the Unconscious"** was reprinted nine times and there were half a dozen other books. Robert Louis Stevenson published "Dr. Jekyll and Mr. Hyde" in 1889, introducing this lower self, this demanding amoral presence that gradually consumes the moral, upstanding, rational self. Freud conceded the unconscious had been dealt with extensively but he claimed that he had discovered a scientific way to study it.

Early Ideas About Psychopathology

To understand what Freud opposed, you must consider the history of mental illness and the prevailing trends in the area in which he worked: the treatment of mental disorders.

Recognition of mental disturbances dates to 2000 BC. The **Babylonians, ancient Hebrew cultures and Greek philosophers** believed in mental illness, but with different causasions and cures. When **Christianity** established in the fourth century, mental illness was blamed on evil spirits and the treatment mandated by the *church* (not the bible) for over 1000 years involved torture and execution for those thought to be possessed by the devil.
Beginning in the 15th century, and carrying on for 300 years, the **Inquisition** carried on the tradition of relentlessly identifying symptoms of mental disorder as it pursued heresy and witchcraft, for which severe punishment was the only cure.

By the **18th century**, mental illness came to be viewed as irrational behavior and these persons were confined to institutions similar to jails and no treatment was offered. Some were chained to beds for years or had arms or legs pinioned by iron bars. These prisons came to be known as **lunatic asylums**, described as “cemeteries for the still breathing”.

More Humane Treatments

Juan Luis Vives (1492-1540), Spanish scholar, first to urge that mentally disturbed persons be treated sensitively and humanely.
Philippe Pinel (1745-1826), French physician, considered mental illness to be a natural phenomenon and treatable by the methods of natural science. Under his direction, some patients were pronounced cured and following his example, chains were struck from patients in Europe and the United States, and the study of mental illness became widespread.
Dorthea Dix (1802-1887), United States, a religious person who suffered from depression, tried to duplicate Pinel’s success. Petitioned state legislatures for more humane treatment of the mentally ill.
Benjamin Rush (1745-1813), United States, signer of the Declaration of Independence, first psychiatrist in the United States. He stated that, “everything in the universe including man’s mind and mortality, could be explained in terms of physical laws and fitted within a scientific, rational, structure”. He prescribed bloodletting *and* blood adding and developed a rotating chair to spin patients at high speeds.

During the **19th century**, there were two schools of thought:
Somatic - this approach held that abnormal behavior had physical causes such as brain lesions, under or over-stimulated nerves.
Psychic - subscribed to emotional or psychological explanations for abnormal behavior.
In general, the somatic view dominated and was supported by the ideas of the German philosopher Immanuel Kant. psychoanalysis developed as a revolt against the somatic orientation.

The Emmanuel Movement

The Emmanuel Church Healing Movement (**1906-1910)** argued for the use of psychotherapy by focusing on the benefits of talk therapy.
The movement was begun by **Elwood Worcester,** rector of the Emmanuel Church in Boston, Mass. He had a **Ph.D in philosophy and psychology from the Univ of Leipzig,** and studied under Wundt, thus becoming another of his students who left the confines of his experimental approach to apply psychology to the problems of the real world.
Sessions for individuals or groups relied heavily on the power of suggestion and the moral authority of the clergymen in urging the proper course of behavior. The therapy quickly became popular, supplemented by articles in ***Good Housekeeping*** magazine. A **1908 book** by Worcester and colleagues was hailed by the press as the most important book dealing with “scientific psychotherapy”. In 1909, a journal was published, ***“Psychotherapy”,*** and it called for “sound psychology, sound medicine, and sound religion”.

Zeitgeist - Although opposed by the medical and psychological community, the movement was embraced enthusiastically by the public. This popularity brought a warm welcome in the United States when **Freud brought his message in person in 1909.** The notion of talk therapy was already part of the national consciousness.

Hypnosis

As early as the mid 18th century, **"mesmerizers"** were attempting to cure patients via magnets, believing that emotional disturbances were caused by disturbances in a person's magnetic field. It became quite popular in Paris but was eventually revealed as quackery.

James Braid (1795-1860), an English physician and surgeon, gave mesmerism a new name and greater credibility, calling the trancelike state neruohypnology, from which the term *hypnosis* was derived. His careful work earned hypnosis some credibility.

Jean Martin Charcot (1825-1893), a French physician and head of a clinic for insane women in Paris, gave hypnosis a greater professional recognition in medical circles. He described the symptoms of hysteria and the **use of hypnosis in medical terms.** He also helped map centers in the brain as well as the structure of the lungs, liver, and kidneys. He made recording a patient's body temperature standard hospital practice.

Pierre Janet (1859-1947), student of Charcot, eventually the director of the psychological laboratory at Salpetriere in Paris, **rejected the opinion that hysteria was a physical problem** and thought it a mental disorder caused by memory impairments, fixed ideas, and unconscious forces. His work anticipated many of Freud's ideas. He chose hypnosis as a method of treatment.

Physicians now began to think in terms of curing emotional disturbances by treating the mind **(psychic)** instead of the body **(somatic).**

The Influence of Charles Darwin

It has been proposed that Darwin "probably did more than any other individual to pave the way for Freud and the psychoanalytic movement".

Darwin discussed several ideas that Freud later made central issues in psychoanalysis, including unconscious mental processes and conflicts, the significance of dreams, the hidden symbolism of certain behaviors, and the importance of sexual arousal. Overall, Darwin focused, as Freud did later, on the nonrational aspects of thought and behavior.

Later in life, Darwin had given his notes and unpublished materials to George John Romanes, who later wrote two books based on that material about mental evolution in humans and animals. Freud read those books. Romanes elaborated on Darwin's notion of **a continuous progression in emotional behavior from childhood to adulthood and that the evidence of a sex drive appears at a very early age**. Both themes became central to Freudian psychoanalysis.

Other respected scientists followed Darwin's lead that humans were driven by the biological forces of **love and hunger**, and that they were **the only instincts in human physiology.**

Additional Influences

When Freud later formulated his theory of human behavior it was a deterministic one, referred to as psychic determinism. This was influenced by his earlier training, and his exposure to the idea of mechanism, as represented by the physiologists, including Helmhotz.

Zeitgeist - The 1880s and 1890s were characterized by a breakdown of the Victorian sublimation of sexuality. Vienna at the time was a permissive society and England and America were not really as prudish and inhibited as we usually think. Interest in sex was apparent in everyday life as well as scientific literature. Researchers, called "sexologists," were expected to bring a naturalist's cold eye to matters long thought indecent, immoral, disgusting, and sinful. So in the years before Freud advanced his sex-based theory, research had been published on sexual pathologies and the suppression of sexual impulses and the consequences for mental and physical health.

In 1886, Krafft-Ebing published a book about childhood sexuality and the child's love for the parent of the opposite sex, anticipating **Freud's Oedipus complex**.
Moritz Benedict, a colleague of Freud's, achieved dramatic cures with hysterical women by getting them to talk about their sex lives. Even the word **"libido"** was already in use in much the same meaning that Freud intended. The public zeitgeist was already receptive, Freud's ideas would receive a great deal of attention.
The concept of **Aristotlian catharsis** was also popular pre-Freud, and soon became a popular topic of conversation among the elite. By 1890, there were more than 140 publications in German about catharsis.
Many of Freud's ideas about **dream symbolism** were anticipated in philosophy and physiology as early as the 17th century. By the end of the 19th century, more than a dozen works on dreams were published annually. Three of Freud's contemporaries were already working on dreams.
Given there were many diverse influences on Freud's thinking, we should not lose sight of his **genius**, and that of all founders. **It lies in their ability to draw together the threads of various ideas and trends to weave a coherent system**. Freud acknowledged his anticipators.

Development of Psychoanalysis

Sigmund Freud (1856-1939)

Freud lived in Vienna for nearly 80 years. He had an authoritarian father and a protective mother - this fear of the father and sexual attraction to the mother is what Freud later call the Oedipus complex. **Much of Freud's theory is autobiographical, deriving from his childhood experiences and recollections.**
Freud's mother was convinced of her first-born's (of 8 children) future greatness. He demonstrated considerable intellectual ability which the family encouraged. Freud's adult personality characteristics were self-confidence, ambition, desire for achievement, and dreams of glory and fame.

He graduated from high school at 17, spoke German and Hebrew at home, and learned Latin, Greek, French, and English. He also taught himself Italian and Spanish. Darwin's work pushed him to the interest in the scientific approach to knowledge and he decided to study medicine. He hoped the medical degree would lead to a career in research, not practice.
Undergraduate - **Univ of Vienna,** started in **1873.** Studied philosophy, concentrated on biology, then physiology.
During these college years he experimented with **cocaine**, not illegal at the time. He claimed it eased his depression and chronic indigestion. Carl Koller, a colleague, achieved fame by finding that cocaine could be used to anesthetize the human eye to facilitate surgery. Freud published a paper on cocaine's benefits, which was later held partly responsible for the epidemic of cocaine use in Europe and America that lasted well into the 1920s. Evidence suggests he personally used the drug well into middle age.
M.D. - **1881** - due to monetary reasons, established a practice as a clinical neurologist, due to the lack of availability in academic labs at the time.
Freud married soon after and was extremely jealous toward anyone who claimed her attention - even her own family. He eventually had six children but did not spend a great deal of time with his wife or children due to long working hours. He took vacations alone or with his sister.

The Case of Anna O.

Patient of physician **Josef Breur (**1849-1925), who befriended Freud. She was a 21 year old female suffering from paralysis, memory loss, nausea and disturbances of vision and speech. The symptoms appeared when she was nursing her ailing father. Breur saw her daily for a year, talking about experiences and daily incidences under hypnosis. Breur and Freud realized that the incidents involved thoughts or events she found repulsive. Reliving them under hypnosis reduced or eliminated the symptoms. Her real name was **Bertha Pappenheim** and she became a social worker and feminist, endorsing education for women, publishing short stories and a play about women's rights. She died in 1936, not long after a strenuous interrogation by the Nazi Gestapo regarding an anti-naze remark she allegedly made.
The case of Anna O. is significant in the development of psychoanalysis because it introduced Freud to the **cathartic method**, the so-called talking cure, that later figured so prominently in his work.

The Sexual Basis of Neurosis

In 1885, Freud spent several months in Paris studying with Charcot, who altered him to the role of sex in hysterical behavior. Freud returned to Vienna and took a case from Rudolph Chrobak, an eminent gynecologist, of a woman suffering from anxiety attacks and Chrobak told Freud the anxiety was the impotence of the patient's husband. Chrobak said the prescription for cure would be sex.
Freud adopted hypnosis and catharsis, but eventually grew dissatisfied with the long-term effectiveness of hypnosis. He retained catharsis as a method and developed it into the technique of **free association** (the intended meaning was **free intrusion**). Freud believed there was nothing random about the material that entered the patient's mind. The experiences thus recounted were predetermined and could not be censored by the patient's conscious choice.

The nature of the patient's conflict forced this material to intrude on the patient's consciousness so that it had to be expressed to the therapist.
Freud found through this technique that memories stretched back to childhood and many of the repressed experiences they recalled concerned sexual issues. By 1898, he was "convinced the most significant causes of neurotic illness are to be found in factors arising from sexual life".

Studies on Hysteria

In 1895, Freud and Breur published "Studies in Hysteria", the book considered to mark the formal beginning of psychoanalysis. It was generally praised in scientific and literary journals in Europe. Freud and Breur disagreed on the extent of the effect of sex as the sole cause of neurotic behavior. Freud believed it was and there was no need to accumulate additional data. This caused a rift in their friendship.

The Childhood Seduction Controversy

At first, Fred presented a paper in 1896, reporting that data uncovered from free-association revealed childhood seductions, with the seducer usually being an older relative, often the father, and that these seduction traumas were the cause of adult neurotic behavior. Opposition to the seduction theory claim was based both in the current belief in somatic bases of nervous disorder and on the grounds that the findings, per free-association, were unreliable.
About a year later, Freud reversed his position and claimed that in most cases, the seduction experiences were not real; they had not actually happened. However, on reflection, he decided that the patient's fantasies were quite real to them, and because they focused on sex, sex remained the root problem. Thus, Freud preserved the basic idea of sex as causation.
Later evidence indicates that childhood sexual abuse if far more common that Freud may have been prepared to accept. Freud's original conception of the seduction theory may have been correct. **We do not know if Freud actively suppressed the truth, or whether he actually came to believe his patients were reporting fantasies.**

Freud's Sex Life

Freud wrote of the dangers of sexuality and argued that people should strive to rise above this "common animal need". He had occasionally experienced impotence and sometimes abstained from sex because he did not like condoms. A biographer wrote, "He felt resentful because his wife became pregnant so easily and was uninterested in any sexual activity beyond procreative acts". His conflicts led to an attraction to and fascination with beautiful women, who seemed to gravitate to his circle of disciples.
He described a **personal, major neurotic episode** the year he gave up sex when he was 41. His physical symptoms included migraine headaches, urinary problems, and spastic colon. His self-diagnosis was anxiety neurosis and neurasthenia resulting from the accumulation of sexual tension. Freud's theory of actual neurosis is thus a theory of his own neurotic symptoms. He chose to analyze himself. The method he chose was the analysis of dreams.

Dream Analysis

Freud assumed that dream events could not be completely without meaning and most likely caused from something in the unconscious mind. Each morning, he conducted a personal dream analysis, writing down the dream stories and then free-associated with the material.
The intense exploration of the unconscious became the basis of his theory. Thus, much of his system was formulated from analyzing his own neurotic episodes and childhood experiences.
His self-analysis continued for two years, culminating in the publication of ***"The Interpretation of Dreams"*** **(1906)**, now considered his major work. It was favorably praised in newspapers and magazines and reviewed by journals in Vienna, Berlin and other European cities. In Zurich, **Carl Jung** read it and became a convert to psychoanalysis.
It is interesting that of the more than 40 of his own dreams Freud described in the book, few had any sexual content. The significant theme in Freud's dreams was ambition, a personal trait he denied.

The Pinnacle of Success

In 1901, he published ***"The Psychopathology of Everyday Life"***, which contains a description of the famous **Freudian slip**, Freud's term in German was *Fehileistung*, which means a blunder or a faulty performance. The term became popular in the 1950s.
In everyday behavior, unconscious ideas struggle for expression in our thoughts and actions. What might seem a casual slip of the tongue or act of forgetting is actually a reflection of real, though unacknowledged motive.

"Three Essays on the Theory of Sexuality" appeared in 1905. Early students and disciples included **Jung and Adler**, who later developed important systems in opposition to Freud. They were part of a group of students that urged Freud to conduct weekly discussion groups that discussed not only the problems of others, but also their own difficulties.
Freud tolerated no disagreement about the role of sexuality in his theory. Freud was not merely the father of the system, but also its tyrant.

From 1900 to 1910, his status improved. His private practice was thriving and colleagues paid attention to his views. In **1909, he and Jung were invited by G. Stanley Hall to speak at Clark Univ.** Freud met prominent American psychologists such as James, Titchener, and Cattell and his lectures were published in the American Journal of Psychology.
Freud's concept of the unconscious mind also received an enthusiastic reception from the American public. They were already interested in the unconscious due to the 63 magazine articles and seven books written by H. Addington Bruce between 1903 and 1917. Freud was widely welcomed and honored on the trip, but he never acquired a liking of America in general. To be fair, he also claimed to dislike Vienna, where he lived for 80 years.

Freud's break with Adler came in 1911 and three years later with Jung, whom Freud considered his spiritual son and heir to psychoanalysis. In 1923, at the peak of his fame, he was diagnosed with mouth cancer. He had 33 operations over the next 16 years. He continued to see patients and disciples. He never stopped his habit of smoking 20 cigars a day.

The Nazi's burned Freud's books at a Berlin rally in May 1933. By 1934, the more farsighted Jewish psychologists and psychoanalysts had emigrated. The Nazi campaign basically eradicated the knowledge of psychoanalysis. Many important psychoanalytical books remain unavailable in the German language.
He remained in Vienna despite the danger. In March, 1938, German troops were welcomed into Austria and shortly thereafter a gang of Nazis invaded his home. His daughter was arrested and detained. He then left the country, to England, for his own safety. Four of his sisters remained in Vienna and died in Nazi concentration camps.

On September 21, 1939, Max Schur, his personal physician, made good on his promise to Freud to not let him suffer till his last days. He administered an overdose of morphine over a 24 hour period, thus bringing to an end Freud's many years of suffering. T**his account has been challenged** and it is now believed that the fatal dose of morphine was administered by Josephine Stross, a retired physician and long-time friend of Anna Freud. This is yet another example of the dynamic, ever-changing nature of history.

Psychoanalysis as a Method of Treatment

During free-association, Freud thought that **resistances** indicated a protection against the emotional pain of bringing things to consciousness. The resistance indicated that the analytical process was closing in on the source of the problem and that the particular line of thought should be probed further.
This led him to the **principle of repression**, the process of rejecting or excluding from consciousness any unacceptable ideas, memories, and desires, leaving them in the unconscious. He regarded repression as "the cornerstone on which the whole structure of psychoanalysis rests".
Freud believed effective treatment depended on developing an intimate, personal relationship with the patient, and then the goal of therapy was to then wean them from a child-like dependency on the therapist and help them assume a more adult role in their own lives.
With **dream analysis**, Freud believed the essence of a dream is the fulfillment of one's wishes, and they occur on two levels: the dream's **manifest content** is the patient's actual story, recalling the events of the dream. **The dream's true significance lies in the latent content,** the dream's hidden symbolic meaning and what forbidden desires they are actually expressing in symbolic form. He believed some symbols are common to all of us. We know that not all dreams are caused by emotional conflict.
Freud's primary concern was not to cure people but to **explain the dynamics of human behavior.** He identified more as a scientist collecting data than a therapist. Freud has been described as an impersonal, even indifferent therapist. He did not collect data from controlled experiments or use statistics to analyze results. He insisted that case histories and self-analysis provided ample support for his conclusions. He ignored criticism from others.

Psychoanalysis as a System of Personality

Instincts

Instincts are the motivating forces of the personality, the biological forces that release mental energy and he only used this word when referring to animals. Freud's term for human motivating forces was *Trieb*, best translated as impulse or driving forces. **Freudian instincts are not inherited instincts, but rather sources of stimulation within the body,** the goal being to remove or reduce that stimulation through some behavior such as eating, drinking, or sexual activity.
He grouped instincts into two general categories:

1. The **life instincts** include hunger, thirst, and sex, those concerned with self-preservation and the survival of the species, creative forces that sustain life. The energy through which these instincts are manifested is called libido.
2. The **death instinct** is a destructive force that can be directed inward, as suicide, or outward as in hatred or aggression.

The concept of aggression as a motivator has been far better received by psychoanalysts than the death instinct.

Levels of Personality

In his early work, Freud suggested that mental life consisted of two parts: conscious and unconscious.
Conscious - like the visible part of an iceberg, is small and insignificant, presenting only the surface, a superficial glimpse of the total personality.
Unconscious - the invisible part of the iceberg beneath the surface, vast and powerful, it contains the instincts, the driving forces for all human behavior.
He **later revised his simple dichotomy** and proposed the id, ego, and superego.

The **Id**, which corresponds roughly to his earlier notion of **unconscious**, is the most primitive and least accessible part of personality. The id's powerful forces include the **sex and aggressive instincts**. Id forces seek immediate satisfaction without regard for the circumstances of reality. They operate according to the pleasure principle, concerned with reducing tension by seeking pleasure and avoiding pain. Freud wrote, "The id knows no judgment of value, no good and evil, no morality. Id forces seek immediate satisfaction without regard for the circumstances of reality". The German for the id was *es*, meaning "it".
The id contains **our basic psychic energy, or libido,** and is expressed through the reduction of tension. Increases in libidinal energy result in increased tension and we then attempt to reduce this tension to a more tolerable level. However, we must interact with the real world in order to satisfy our needs and maintain **a comfortable level of tension.**

The **ego serves as the mediator** between the id and the external world to facilitate their interaction. It represents rationality. Freud called the ego *ich,* which translates to "I". The ego is aware of reality, manipulates it, and regulates the id accordingly. The **ego suppresses and guides the id** until an appropriate object can be found to satisfy the need and reduce tension. The ego derives its power from the id and exists to help the id satisfy its instincts. Freud compared them to a horse and rider.

The **superego develops early in life** when the child assimilates the rules of conduct taught by parents through a system of **rewards and punishments.** Thus, childhood behavior is initially controlled by parental actions, but once the superego has formed, behavior is determined by self-control - the person administers his or her own rewards/punishments. Fred's term was a word he coined, *uber-ich*, meaning, literally, "above I". The superego represents **morality**, striving toward perfection. The ego postpones the id, the superego attempts to inhibit it completely.
Thus, Freud envisioned a continuous struggle within the personality as the **ego is pressured on three sides:** by the urges of the id, reality, and the superego's demands for perfection. When the ego becomes too severely stressed, anxiety develops.

Anxiety

Anxiety functions as a warning that the ego is being threatened. Freud described three types of anxiety;

- Objective anxiety - arises from actual dangers in the real world.
- Neurotic anxiety - is the fear of being punished for expressing impulsive, id-generated instinctual behaviors.
- Moral anxiety - arises from fear of performing, or even think of performing, something contrary to our moral values - guilt or shame. Less virtuous people experience less moral anxiety.

Anxiety induces tension, which motivates the individual to take action to reduce it. The ego develops protective defenses - **defense mechanisms** - which are unconscious denials or distortions of reality.
> denial, displacement (to another object), projection (your impulses to someone else), rationalization, reaction formation (expressing the opposite id impulse), regression, repression, sublimation (converting id impulses into socially acceptable behaviors).

Psychosexual Stages of Personality Development

Freud was one of the first theorists to emphasize the importance of child development. He believed the adult personality was formed almost completely by age five.
Stage 1 - The Oral Stage - from birth into the second year. Stimulation of the mouth is the primary source of sensual satisfaction. Too little or too much may produce an oral personality type, preoccupied with mouth habits. Freud believed a wide range of adult behaviors could be attributed to this stage, from excessive optimism to cynicism.
Stage 2 - The Anal Stage - gratification shifts to the anus and includes toilet training. Children may expel or hold feces - showing defiance of parental wishes. Conflicts in this stage produce an *anal-expulsive adult* who is dirty, wasteful, and extravagant, or an *anal-retentive adult*, who is excessively neat, clean, and compulsive.
Stage 3 - The Phallic Stage - around age four, erotic/sensual satisfaction involves sexual fantasies, fondling, and exhibiting of the genitals. The **Oedipus complex** occurs during this stage. Freud suggested children become attracted to the parent of the opposite sex and fearful of the parent of the same sex, who is perceived as a rival. Fred's childhood supported the idea.

Children normally overcome the complex **by identifying with the parent of the same sex**, adopting the mannerisms and attitudes of the same sex parent, adopting their superego standards. Also, the attitudes towards the opposite sex parent will later affect adult relationships.
> There is a period of latency from about age five to 12 years.
Stage 4 - The Genital Stage - begins with the onset of **puberty** and heterosexual behavior becomes important and the person begins to prepare for marriage and parenthood.

Mechanism and Determinism in Freud's System
No less vigorously than the experimental psychologists, Freud believed that all mental events, even dreams, are predetermined; nothing occurs by chance or free will. Every action has a conscious or unconscious motive or cause. He accepted the doctrine that all phenomena could be reduced to the principles of the natural sciences. Psychology's aim would be to **"represent mental processes as quantitatively determined states of specifiable material particles"** (1895).
He never completed the project.

Relations Between Psychoanalysis and Psychology
Many academic psychologists offered **forceful criticisms** of psychoanalysis. Few articles on psychoanalysis were accepted for professional publication until the 1940s. John B. Watson called it "voodooism". Cattle described Freud as a man who "lives in the fairyland of dreams among the ogres of perverted sex". However, by the 1920s, defense mechanisms were being discussed seriously, along with the concept of the unconscious mind and the manifest and latent contents of dreams.
By the 1930s and 1940s, psychoanalysis had captured public attention. The combination of sex, violence, and hidden motives, and the promise to cure a wide variety of emotional problems, proved almost irresistible.
The 1950s and 1960s found behaviorists translating psychoanalytic terminology into the language of behavior. Watson defined emotions as merely sets of habits and neurotic behavior as the result of faulty conditioning. Skinner recast the Freudian defense mechanisms in the language of operant conditioning.
The role of the unconscious, the importance of childhood experiences, and the operating of defense mechanisms are a few examples of psychoanalytic ideas that are firmly part of contemporary psychology.

The Scientific Validation of Psychoanalytic Concepts
An analysis of **2,500 studies** from psychiatry, psychology, anthropology, and other disciplines examined the scientific credibility of Freud's formulations. The id, ego superego, death wish, libido, and anxiety resisted attempts at validation. However, others were amenable to testing and published studies **find some support for:**

1. Some characteristics of the oral and anal personality types
2. Castration anxiety
3. The notion that dreams reflect emotional concerns
4. Aspects of the Oedipus complex in boys

Freudian concepts that were ***not*** supported:

1. Dreams satisfy symbolically repressed wishes and dreams
2. In resolving the Oedipus complex, boys identify with the father and accept his superego standards out of fear.
3. Women have an inferior conception of their bodies, have less superego standards than men, and find it difficult to achieve an identity.
4. Personality forms by age five and changes little after that.

More recent research shows **strong support for** the influence of unconscious thought processes on thoughts, emotions, and behavior, suggesting that unconscious influences may be more pervasive than Freud claimed.
Research **also supports** the defense mechanisms of repression, denial, identification, projection, and displacement and that there is some validity to the so-called Freudian slip.

Criticisms of Psychoanalysis

Freud's methods of collecting data have brought considerable criticism.

1. The conditions under which Freud collected data were unsystematic and uncontrolled. The data consist of only what Freud remembered - he did not record verbatim transcripts in real time.
2. While recalling his patient's words at a later time, he may have reinterpreted them, guided by a desire to find supportive material.
3. Freud may have inferred, rather than actually heard, the stories of sexual seduction in childhood. Examination of the actual cases reveals not a single instance in which a patient ever told him she had been seduced by her father. Critics contend he may have used suggestion to elicit or implant such memories.
4. His research was based on himself and a small sample of people who were mostly young, unmarried, educated, upper-class women, making it impossible to generalize to the general public.
5. There are discrepancies between Freud's notes on the therapy sessions and the published case histories. He destroyed most of the patient files that were unpublished.
6. Freud made limited attempts to verify his patient's reported accounts of their childhood experiences. Thus, data collection was incomplete, imperfect and inaccurate. Also, Freud never explained his reasoning for drawing inferences and generalizations from the data. The data can not be quantified or analyzed statistically.

Most analysts today believe Freud's ideas about female psychosexual development (ex., penis envy) are unproven and incorrect. Other theorists disagree about his emphasis on biological forces, particularly sex, as determinants of personality. They considered the impact of **social forces on personality development.**
Others challenged his denial of free will and his focus on past behavior while excluding future hopes and goals as motivating forces and also developing his personality theory based on neurotics and **ignoring the traits of emotionally healthy persons.**

All of these points were used to build competing views of personality.

Contributions of Psychoanalysis

Psychologists in search of a theory must sometimes select it on the basis of criteria other than precision and to some extent all theories of behavior can be criticized on the grounds of scientific acceptability. Those who choose psychoanalysis do not do so in the absence of supporting evidence. It does offer evidence, although not the kind usually accepted by science. Its acceptance is **based instead on an intuitive appearance of plausibility.**
Regardless of the scientific credibility of Freud's work, there is no denying the impact it has had on American academic psychology, and interest in his ideas remains high. Some research supports the contention that Freudian psychotherapy can be successful, however, the popularity of it as therapy has declined.
Behavioral and cognitive therapies, less expensive and briefer psychotherapies, have superseded it. Also, it is **less expensive to prescribe a psychoactive drug** in a single doctor's visit than a course of therapy lasting several months, and drug prescriptions have skyrocketed in the last 30 years. This shift toward drug therapy has caused a revision of thought, away from the psychic school and back to the somatic. Freud predicted this development years ago.
After Freud's visit to America in 1909, by 1920, more than 200 books had been published on psychoanalysis. Dr. Benjamin Spock's successful baby and child care books were based on Freud's teachings. Freud appeared on the cover of Time magazine in 1924 and was offered $100,000 to collaborate on a movie about love - he refused.
The 20th century saw a loosening of sexual restraints in behavior, the arts, literature and entertainment, and it has become widely believed that inhibiting or repressing sexual impulses can be harmful. Ironically, Freud never argued for weakening sexual codes of conduct or for increased sexual freedom. **Rather, his view was that inhibiting the sex drive was necessary for the survival of civilization.**
When Time magazine put Freud on its cover in 1956 for the second time, the psychoanalytical movement in America had arrived, and for the next several decades it largely dominated the mental health field.
In 1940, E.G. Boring wrote in his textbook, "Freud is now seen as the greatest originator of all, the agent of the Zeitgeist who accomplished the invasion of psychology by the principle of the unconscious process".

Chapter 14 - Psychoanalysis: After the Founding

Competing Factions

Barely 20 years after he founded the movement, psychoanalysis splintered into competing factions by analysts who disagreed on basic points.

1. Anna Freud and Melanie Klein - they did not disagree totally with his basic views; they built upon and expanded his work.
2. **Carl Jung, Alfred Adler** and **Karen Horney** - the three most prominent dissenters, who developed their own theories during Freud's lifetime.
3. **Abraham Maslow and Carl Rogers** - aspired to replace psychoanalysis, as well as behaviorism, with their own view of human nature - the **humanistic movement**. A contemporary derivative and expansion is today's positive psychology, which applies the experimental method to **the study of human strengths**.

They all derived their ideas from Freud's work, either by elaborating on it or opposing it.

The Neo-Freudians and Ego Psychology

The major change these Freudian loyalists introduced was an expansion of the concept of the ego. Rather than being a servant of the id, the **ego was seen as having a more extensive role.**

- The ego possessed its own energy not derived from the id.
- Had functions separate from the id.
- Was free of the conflict produced when id impulses pressed for satisfaction.
- The ego could function independently from the id.

They also placed less emphasis on biological forces as influences of personality. More credit was given to the impact of social and psychological forces. They also suggested that **personality development was determined primarily by psychosocial** rather than psychosexual forces, thus, social interactions in childhood assumed greater importance than real or imagined sexual interactions.

Anna Freud (1895-1982)

The leader of ego psychology, the only child to become an analyst. She recalled being bored and lonely and left out of activities by her older siblings. She was, however, Sigmund's favorite child. At 14, she began sitting in on meetings of the Vienna Psychoanalytic Society. At 22, she entered into analysis with her father which lasted four years. She reported violent dreams.
In 1924, she read her first scholarly paper at the society and it was well received.
At age 30, after rejecting numerous offers of courtship, she decided to become an analyst.
Anna Freud devoted her life to the development and extensive of psychoanalytic theory and its application to the **treatment of emotionally disturbed children.**

Books:

"Introduction to the Technique of Child Analysis" (1927)
"The Ego and the Mechanisms of Defense" (1936)

She developed an approach with children that took into account their relative immaturity and the level of their verbal skills. Her **innovations** included the use of play materials and observing children in the home setting.
She developed the **Anna Freud Centre in London**, which continues her work today, to establish a treatment center and training institute for clinical psychologists. The standard list of Freudian **defense mechanisms** was substantially her work.

Comment

Ego psychology became the primary American form of psychoanalysis from the 1940s to the early 1970s. The neo-Freudians fostered a more conciliatory relationship with academic experimental psychology by translating, simplifying, and operational defining Freudian notions. They encouraged experimental investigation.

Object Relations Theories

Object relations theories focused on the interpersonal relationships with "objects" - referred to by Freud as any person, object, or activity that can satisfy an instinct. Thus, they emphasize the

social and environmental influences on personality, particularly the **mother-child interaction,** and that the personality is formed in infancy because of that relationship.
Object relations theorists believe that the increasing need of the child, over time, to break free from their primary object (the mother), in order to establish a strong sense of self and to develop relations with other objects (people) **is crucial**

Melanie Klein (1882-1960)

She suffered from life-long depressions due to her parents rejecting her and became estranged from her own daughter.
Klein's object relations theory focused on the **mother-infant connection**. She suggested that the mother's breast is the first part-object, and the infant judges it as either good or bad, based on id satisfaction. As the infant's world expands, they relate **to whole-objects instead of part-objects**, and defines them the same way as the breast was defined; that is, satisfying or hostile. This continues on through their adult life and the adult personality is rooted in the relationship of the first six months of life.

Carl Jung (1875-1961)

His friendship with Freud disintegrated in 1914. He developed analytical psychology, which opposed much of Freud's work.
Jung's childhood was **lonely, isolated, and unhappy**. His father was irritable and raged often, his mother suffered from emotional disorders. The whole maternal side seemed to be tainted with insanity. Jung did not trust the outer world, so he turned from the conscious world of reason and ventured inward to the world of dreams, visions, and fantasies, **the world of his unconscious.** He was described as "an asocial monster".
Per his dreams of underground caverns, he believed they foretold his future study of personality - he would focus on the unconscious forces that lie beneath the surface of the mind.
MD - Univ of Basel, Switzerland (1900)
Post-grad work - mental hospital, psychiatry, worked with schizophrenics.
Lecturer in psychiatry - Univ of Zurich (1905)
1909 - He married very rich and resigned from the university to devote time to writing, research, and private practice.
Jung became interested in Freud's work in 1900. By 1906, they had begun to correspond and eventually met in Vienna. Unlike most Freud disciples, Jung had already established a professional reputation before becoming associated with Freud.
Book:
"The Psychology of the Unconscious" (1912) - publicly setting forth his own position that differed significantly from orthodox psychoanalysis.

When he was 38, he was stricken with **intense emotional problems** that lasted three years - Freud experienced a similar period at the same stage of life. During those years he was haunted by visions of a bloody apocalypse. He meticulously recorded these dreams in calligraphy and drawings, some 200 pages, which became known as *The Red Book*. It was kept secret and not published until 2009. During this time of crisis he did not stop treating patients.

Jung resolved his dilemma, as did Freud, by confronting his unconscious mind and followed his unconscious impulses as revealed in dreams and fantasies. As with Freud, it became an intense time of creativity for Jung and **led him to his personality theory.** Based on this experience, he concluded that the most important stage in personality development was not childhood, per Freud, **but middle age** - the time of his own crisis. Jung remained highly productive and continued to write and develop his system for most of his 86 years.

Analytical Psychology

Jungian Theory vs Freudian Theory

1. Jung's theory had no place for the Oedipus complex; it simply wasn't relevant to his childhood and he never developed adult insecurities, inhibitions, or anxieties about sex. He made no attempt to limit his sexual activities, as Freud had, and was very promiscuous. **To him, sex played a minimal role in human motivation.**
2. **Jung's isolated childhood led him to focus his theory on inner growth instead of social relationships**. Freud did not have an isolated and introverted childhood and his theory is more concerned with interpersonal relationships.
3. **Jung regarded libido as a generalized life energy of which sex was only a part.** For Jung, basic libidinal energy expressed itself in growth, reproduction, and other activities, depending on what was crucial at any given time. Freud defined libido largely in sexual terms.
4. **Jung believed we are shaped not only by the past but also by our goals, hopes, and aspirations** - personality could be changed throughout one's lifetime. Freud described people as victims of childhood events, their personalities set during the first five years of life.
5. Jung attempted to **probe more deeply into the unconscious mind** and added a new dimension - the *collective consciousness* - which he described as the inherited experiences of the human species and their animal ancestors.

The Collective Unconscious

Jung described two levels of the unconscious mind:

1. The **personal unconscious** contains memories, impulses, wishes, faint perceptions and other experiences that have been suppressed or forgotten. This level is not very deep and can easily be recalled to conscious awareness. Experiences are grouped into **complexes** which are patterns of memories/emotions with common themes. These are manifested with an idea (power, inferiority, etc.) that then influences behavior. Complexes are essentially smaller personalities within the total personality.
2. The **collective unconscious** is at a level below the personal one and is unknown to the individual. It contains the accumulated experiences of previous generations, including our animal ancestors. It is these universal, evolutionary experiences that form the basis of personality.

Archetypes

Jung referred to archetypes as the “gods” of the unconscious. They are inherited tendencies within the collective unconscious and are **innate determinants of mental life** that disposes a person to behave not unlike ancestors who confronted similar situations. We experience them in the form of emotions associated with significant life events such as birth, adolescence, marriage, and death or reactions to extreme danger.
Jung discovered common archetypal symbols in cultures too widely separated to have influence on each other and considered traces of these symbols in dreams of patients. The three that occur most frequently are:

- The **anima/animus** reflect the idea that each person exhibits some characteristics of the other sex. Anima = female, animus = male.
- The **shadow** is the animalistic part of personality from lower forms of life. It contains a negative side that is immoral, passionate, and unacceptable desires and activities but also a positive side that serves as a wellspring of spontaneity, creativity, insight, and deep emotion. In both cases, once having experienced them, we insist “something came over us”.
- The **self** was considered the most important, integrating and balancing all aspects of the unconscious, providing the personality with unity and stability. Jung likened it to a drive toward self-actualization - harmony, completeness and full development of abilities. He believed self-actualization could not be attained until mid-life (30-40).

Introversion and Extroversion

The **extrovert** directs libido (life energy) outside the self and is strongly influenced by forces in the environment and is sociable/self-confident in a variety of situations. The **introvert** directs libido inward and is contemplative, introspective, and resistant to external influences. They tend to be less confident in dealing with other people and situations.
Everyone has both attributes, but one is usually stronger than the other. The dominant attitude at any given time can be determined by circumstances. Introverts can be social if the situation holds their interest.

Psychological Types: The Functions and Attitudes

Personality types are expressed not only by intro/extroversion but also through four functions, ways we orient ourselves to the objective external world - as well are our subjective inner world:
Thinking - a conceptual process that provides meaning and understanding
Feeling - a subjective process of weighing and evaluating
Sensing - the conscious perception of physical objects
Intuiting - involves perceiving in an unconscious way.
The first two are the **rational modes** because they involve the cognitive processes of reason and judgment. The second two are **non-rational** because they do not involve reason. Within each pair of functions, only one is dominant at a given time.
Thus, the dominant functions above combine with the dominant attitude of extraversion or introversion to produce *eight* psychological types.

Comment

Jung's **disdain for traditional scientific methods** repels many experimental psychologists and he was generally ignored until the 1960s when his books were first translated to English. His writing style is convoluted and his unsystematic organization impedes the full understanding of his work. **However, his ideas have influenced** such diverse fields as religion, history, are, and literature and historians, theologians, and writers acknowledge him as a source of inspiration. Some of his work has had a continuing influence on psychology.
The **word-association test**, developed in the early 1900s is now a standard laboratory and clinical tool in psychology. His version listed 100 stimulus words that elicited emotions. He measured the time to respond and noted physiological reactions to determine the emotional intensity of the words.
Jung's **eight psychological types** have stimulated considerable research:

- The Myers-Briggs Type Indicator (1920s) for research and applied purposes like employee selection and counseling.
- The Maudsley Personality Inventory - a test to measure introversion/extroversion. Jung's concepts of intro/extroversion are widely used today.

As with Freud's work, broader aspects of his theory resist attempts at scientific validation - complexes, archetypes, the collective unconscious). However, the concept of **self-actualization** anticipated the work of Maslow and the humanistic school. The notion of **midlife crisis** has been embraced by Maslow and others and is accepted as a necessary stage of personality development, and is supported by considerable research.
Formal training in Jungian analysis is available in a number of cities world-wide. Their journal is the Jungian Journal of Analytical Psychology.

Zeitgeist - Toward the end of the 19th century, new disciplines like anthropology, sociology and social psychology were suggesting other ways to view human nature. Anthropologists found that various cultures did have some of the neurotic symptoms and taboos Freud described and thus were not universal - and therefore not biological. Sociologists learned that much of human behavior stems from social conditioning rather than from actions taken to satisfy biological needs. The Zeitgeist was calling for a revised concept of human nature, that personality is more a product of environment than of biological instincts. **This was more compatible with American culture and thought and offered a more optimistic scenario than Freud's deterministic position.**

Alfred Adler (1870-1937)

Broke with Freud in 1911 and is usually considered the first proponent of the social psychology approach to psychoanalysis.
Born to wealthy parents in Vienna, Austria. Childhood marked by illness, jealousy of siblings and rejection by his mother. **He later rejected the Oedipus complex, as did Jung**. He was initially a poor student but with persistence and dedication overcame his handicaps and inferiorities. He was thus an early example of his later theory of the **necessity of compensating** for one's weaknesses. **Inferiority feelings**, at the core of his system, are a direct reflection of his childhood.
M.D - Univ of Vienna (1895) specializing in ophthalmology and practiced general medicine. He later became one of the four charter members of Freud's weekly discussion group in 1902. He

developed a personality theory that differed from Freud's in several ways, especially Freud's emphasis on sexual factors. Their parting in 1911 was bitter.
During WW I, he served as a physician in the Austrian Army and later organized child guidance clinics for the Vienna school system.
During the 1920s, his social psychological system, **individual psychology**, attracted many followers. His talks and writings in America were immensely popular. Adler's personal qualities made it easy for people to accord him celebrity status and accept him as an expert on human nature.

Individual Psychology

Adler believed that human behavior is determined largely by **social forces,** not biological instincts. He proposed the concept of **social interest,** defined as an innate potential to cooperate with others to achieve personal and societal goals, and that this develops in infancy through learning experiences. Also, Adler **focused on conscious rather than unconscious determinants of behavior**. Adler believed we are more strongly affected by our plans for the future rather than past experiences, per Freud. Striving for goals or anticipating events influences present behavior.
Adler **emphasized the unity and consistency of personality** - not a divided one as Freud proposed. He posited an innate, dynamic force that channels the personality's resources toward an overriding goal. This goal, for all of us, is the sense of perfection and it represents complete development and fulfillment of the self.
He also disagreed with Freud concerning women and that there was **no biological reason for any alleged sense of inferiority women might feel**. He charged that this was a myth invented by men to bolster their own alleged sense of superiority and that if it existed in any women, it resulted from sex-role stereotypes. He believed in equality for the sexes.

Inferiority Feelings

Adler proposed a generalized feeling of inferiority as a motivating force in behavior. He broadened this later to include any physical, mental or social handicap - real or imagined.
In infancy, the child's helplessness and dependence on other people awaken this sense of inferiority. Thus, it is a feeling experienced by everyone. **Becoming increasingly consciously aware of the need to overcome it, the child at the same time is driven by the innate striving for the betterment of the self.** This process continues throughout life, propelling us to greater success. If in childhood these feelings are met with pampering or rejection, the result can be abnormal compensatory behavior, leading to an **inferiority complex**, rendering the person incapable of coping with life's problems.

Style of Life

The drive for perfection is universal, but each of us demonstrates this striving in a unique or characteristic mode of responding by developing a **style of life** - the behaviors by which we compensate for real or imagined inferiority. This is fixed by the age of four or five and difficult to change. It thereafter provides the framework within which all later experiences are dealt with.

The Creative Power of the Self

Certain abilities and experiences come to us through heredity and environment, but the way we actively use and interpret these experiences provides the basis for our personality, our attitude toward life. We can determine our fate rather than have it determined by past experience and by unconscious force. **This active, creative human power** may be likened to the notion of the soul.

Birth Order

Because of birth positions in the family, children have varying social experiences and thus different attitudes towards life and ways of coping.
The **oldest child** receives a great deal of attention until the next child, then may become insecure and hostile, authoritarian and conservative.
The **second child** he found to be ambitious, rebellious, and jealous, constantly trying to surpass the first born. He believed the second-born child to be more adjusted than the first-born or the youngest child. Adler was a second-born child.
The **youngest child** was likely to be spoiled and predisposed to behavioral problems in childhood and adulthood,
An **only child** may find it difficult adjusting to the world outside the family, where they are not the center of attention.

Comment

Adler presented a far more satisfying and optimistic view of human nature, a view warmly welcomed by scholars dissatisfied with Freud's personality dominated by sexual forces and childhood experiences. Critics claimed his theories were superficial and simply relied on observations from everyday life; others considered his ideas shrewd and insightful.
The objections of experimental psychologists to the work of Freud and Jung also apply to Adler.

Although many of Adler's concepts resist attempts at scientific validation, the notion of birth order has had considerable research:

- First-born children are high in intelligence and the need to achieve, complete more years of formal education, work prestigious occupations and achieve eminence in their careers.
- Second-borns, as of latest research, have shown a higher consideration with Adler's notion that they are more competitive and ambitious than their siblings, and also participate in high-risk activities.
- Research does not support Adler's view that only children are more selfish and have difficulty adjusting to the real world.

The work of the ego psychologist, which focuses more on rational, conscious processes than on the unconscious, follows Adler's lead. His social forces influenced Karn Horney. His creative power to shape one's style of life influenced Abraham Maslow and humanism. Adler's followers claim that individual psychology remains influential among psychiatrists, psychologists, social workers, and educators. There are at present Adlerian training institutes operating in the United States.

Karen Horney (1885-1952)

Her parents made her feel inferior, worthless, and hostile. This lack of parental love fostered what she called “basic anxiety”.
M.D. - Univ of Berlin (1916)
She married, had children and became increasingly depressed with crying spells, stomach pain, chronic fatigue, compulsive behaviors and suicidal thoughts. After several affairs, she divorced. She continued an affair with a psychoanalyst. When that affair ended, she entered therapy and was told she had childhood Oedipal longings for her father, and that caused her to search for love and her attention to forceful men.
1914-1918 - training at psychoanalytical training at the Berlin Psychoanalytical Institute, later becoming faculty and beginning a private practice.
She wrote about problems with the female personality, disagreeing with certain Freudian concepts. She eventually severed ties with the group and established the American Institute of Psychoanalysis.

Disagreements with Freud
She accepted unconscious motivation and the existence of emotional, non-rational motives.
She disputed that personality depends on unchanging biological forces, denied the preeminence of sexual factors, challenged the validity of the Oedipal theory and discarded the concepts of libido and the three-part structure of the personality.
She countered Freud that **men have womb envy** and the fundamental reason for unconscious behaviors designed to harass and belittle women.
Her views on **human nature** were that “man can change and go on changing as long as he lives”. Freud postulated, “that man is doomed to suffer or destroy”.

Basic Anxiety
Basic anxiety is the **fundamental concept** in Horn’s system, defined as “the feeling a child has of being isolated and helpless in a potentially hostile world”. Basic anxiety results from parental actions, thus the condition is not innate, but results from social forces and interactions. Horney proposed that the infant was **driven by the need to seek security, safety, and freedom from fear in the world.**
She denied universal development phases and nothing in a child’s development was universal - **everything depended on social, cultural, and environmental factors.**

Neurotic Needs
Basic anxiety arises from the parent-child relationship, to which the child develops behavioral strategies to cope with any helplessness/insecurity.
If any of these strategies becomes a fixed part of their personality to defend against anxiety it is called a **neurotic need**.
Horney initially listed 10, then grouped them into three trends (1945):
Compliant personality - seeks to move toward people, expressing needs for approval, affection, and a dominant partner.
Detached personality - moves away from people, expressing needs for independence, perfection, and withdrawal.

Aggressive personality - needs to move against people, expressing needs of power, exploitation, prestige, admiration, and achievement.
> None of the trends is a realistic strategy of dealing with anxiety because once we establish one of the trends, the pattern ceases to be flexible enough to permit alternate behaviors and in a given situation may be inappropriate - **which further increases anxiety and further entrenches the trend in that behavior/personality**. This affects the personality in total, relations with other people and ourselves, and therefore with life as a whole.

The Idealized Self
The idealized self provides a false picture of the personality or self, an imperfect, misleading mask that prevents neurotic persons from understanding their true selves. When donning the mask, **they deny the existence of their inner conflicts while believing this self-image is genuine** - and that belief enables them to think they are superior to the person they really are. It is not innate and can be prevented if a child's home life is warm, understanding, secure and loving.

Comment
As with Adler, **Horney's optimism** about avoiding neurosis was welcomed by psychologists and psychiatrists, personality development in terms of social forces and very little to innate factors. Like Freud, Jung, and Adler, her evidence to support her theory is from clinical observations and thus subject to the same scientific credibility - little research has been done on the concepts of her system.
She had no disciples or a journal, but her books enjoyed renewed popularity during the feminist movement in the 1960s and many of her feminist positions from 80 years ago have a strong contemporary ring.
Horney drew the distinction between the **traditional women** - seeking self-identity through marriage and motherhood, and the **modern women** - seeking identity through a career. She focused on work, and searched for love throughout her life. Restrictions of a male-dominated society make that dilemma as relevant today as it was to her in the 1930s.

The Evolution of Personality Theory: Humanistic Psychology
Frued's theories on human personality were never the sole approach for long. In his lifetime, alternatives were offered by Jung, social psychologists and neo-Freudian loyalists. The study of personality has grown immensely, splintering the field with conflicting viewpoints, 15-20 theories exist today.
Freud provided the inspiration as well as the force to oppose, as Wundt did in the beginning. He provided a solid and challenging base on which to build.
In the early 1960s, a third-force developed in American psychology - the humanistic movement. It was not intended to revise or adapt any current school of thought. Humanistic psychologists expected to supplant both of psychology's two main forces: behaviorism and psychoanalysis.
Humanistic psychology emphasized human strengths and positive aspirations, conscious experience, free will vs determinism, the fulfillment of human potential, and a belief in the wholeness of human nature.

Antecedent Influences on Humanism

- **Franz Brentano** (1838-1917), opposing Wundt (1832-1920), an anticipator of Gestalt, criticized the mechanistic and reductionist approach and favored the study of consciousness as a molar rather than molecular quality.
- **Oswald Kulp** (1862-1915), demonstrated that not all conscious experience could be reduced to elementary form or explained in terms of responses to stimuli.
- **William James** (1842-1910) and the **functional movement** he anticipated, argued against the mechanistic approach and urged a focus on consciousness and the whole individual.
- **Gestalt** psychologists (Wertheimer, Koffka and Kohler) had solidified by the mid 1920s their belief in the "wholes" approach to consciousness in defiance of behaviorism and continued to insist that conscious experience was a legitimate and fruitful area of study.
- Within **psychoanalysis**, **Adler, Horney,** and other personality theorists disagreed with Freud's notion that our lives are governed by unconscious forces, that we are conscious beings with spontaneity and free will and who are influenced by the present and future as well as by the past - **personality has the creative power to shape itself.**

Zeitgeist - Humanistic psychology reflected the disaffection of the 1960s in Western culture that was voiced against mechanism and materialism. The counterculture at the time, hippies, college students and dropouts - some who relied on the use of hallucinogenic drugs - shared ideals consistent with the humanistic approach: personal fulfillment, human perfectibility, an emphasis on the present and on hedonism and the tendency to self-disclose (speak one's mind freely), and the value of feelings over reason and intellect. This was the current Zeitgeist that was influential in organizing the precedents and trends of the times into a cohesive viewpoint.

The Nature of Humanistic Psychology

Humanistic psychologists, in response to the perceived limitations of both behaviorism and psychoanalysis, advanced what they hoped would be the **third force** within psychology with a serious study of neglected aspects of human nature.

1. They believed that the focus on overt behavior was dehumanizing and reduced us to animals and machines. They disputed the contention that we function in a predetermined fashion in response to stimulus in our lives.
2. They argued that humans are more complex than animals or robots and cannot be objectified, quantified, and reduced to S-R units - via **behaviorism.**
3. They also opposed the deterministic tendencies of **psychoanalysis** and its minimization of the role of consciousness. They also criticized Freud for studying only neurotic and psychotic individuals - how could they learn anything about emotional health and other positive human qualities?

Abraham Maslow (1908-1970)

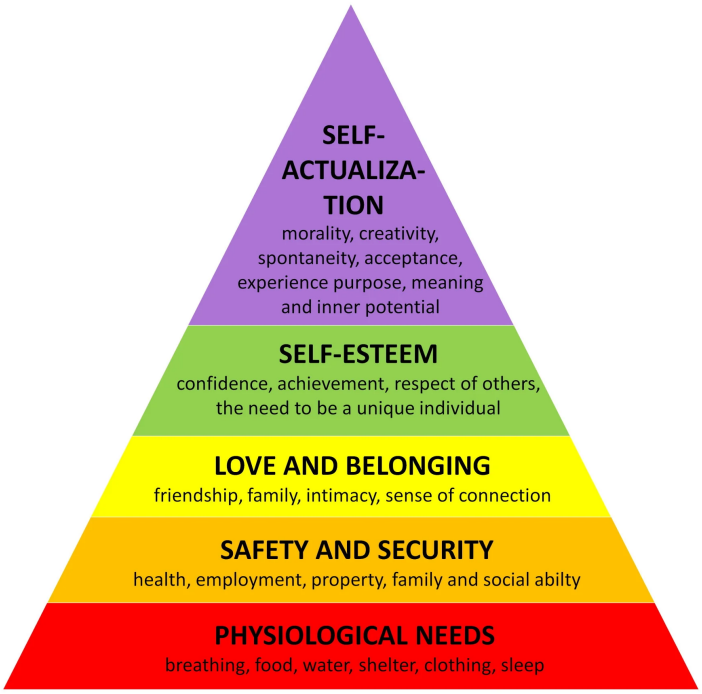
He was one of seven children of poor Russian immigrants living in a Brooklyn, NY, tenement apartment. He had a **nightmarish childhood**, growing up isolated and unloved. His father was a drinker and womanizer and his mother rejected him and frequently punished him for any

indiscretions. He never forgave her and refused to attend her funeral. He said, “The whole thrust of my life philosophy, and all my research and theorizing, had its roots in a hatred for and revision against everything she stood for”. He felt he was ugly and scrawny and felt peculiar and alone in the world. The local library became his solitary playground, and reading and education provided the path that would take him out of his isolation.
He has been called the **spiritual father of humanism** and was driven to understand the greatest achievements of which we are capable. He studied a small sample of outstanding people to determine how they differed from those of average or normal mental health.
Undergraduate - City College of NY (1930)
Masters - Univ of Wisconsin (1931)
Ph.D - Univ of Wisconsin (1934)
Teacher - Brooklyn College
Professor - Brandeis Univ (1951-1969)
Books:
“Motivation and Personality” (1954, 1970, 1987)
“Religions, Values, and Peak Experiences” (1964)
“Maslow on Management” (1998)
“The Psychology of Science: A Reconnaissance”, New York: Harper & Row, 1966; Chapel Hill: Maurice Bassett, 2002.
“Toward a Psychology of Being”, (1st edition, 1962; 2nd edition, 1968; 3rd edition, 1999)
“The Farther Reaches of Human Nature”, 1971
“Future Visions: The Unpublished Papers of Abraham Maslow” by E. L. Hoffman (editor) 1996

Initially a behaviorist, the birth of his child and the reading of philosophy, Gestalt psychology, and psychoanalysis persuaded him that mechanistic behaviorism was too limited to be relevant to enduring human issues. He was also influenced by emigrated psychologists from Europe, particularly **Max Werthiemer** and anthropologies **Ruth Benedict.** His relationship with these two people led to his first study of the characteristics of healthy self-actualizing people - he considered them the best of human nature.
America’s entry into WWII changed his life and he resolved to devote himself to developing a psychology that would improve the human personality and show that people are of more noble behaviors than hatred, prejudice, and war.
His initial attempts to humanize psychology were unsuccessful. The predominant behaviorist psychology community shunned him and major journals refused to publish his work. It was at Brandeis University, between 1951-1969, that he **developed and refined his theory** and presented it in a series of popular books. He supported the sensitivity group movement, and in 1967 he was elected president of the APA. In the 1960s he became a celebrity and a hero to the counterculture movement.

Self-Actualization

In Maslow's view, each person possesses an innate tendency toward self-actualization (1970). This state involves the active use of all our qualities and abilities and the development and fulfillment of our potential. To do so, we must first satisfy needs that stand lower in an innate hierarchy.
Originally, it was posited that each need must be satisfied in turn before the next need can motivate us, it was later found that beyond the basic physiological and safety needs, the higher needs can be achieved in any order and does not tend to affect their subjective well-being. (Tay/Deiner https://pubmed.ncbi.nlm.nih.gov/21688922/)



1. Physiological needs: food, water, shelter, clothing, sex
2. Safety needs: security, order, stability
3. Belongingness and love
4. Esteem needs from self and others
5. Self-actualization needs

> What are the drivers in the process to self-actualization growth and simultaneous immutation?

- Flow - optimal experiences - how often, how long, what kind, what breadth of kinds?

Maslow's research sought to identify characteristics of people who satisfied the self-actualization need and therefore could be psychologically healthy and free of neurosis. Per his research, they are almost always middle-aged or older, and account for less than 1% of the population.
> Einstein, Elenanor Roosevelt, George Washington Carver, Max Wertheimer (Gestalt)

.

Self-actualizers share these tendencies: (innateness vs tendencies!!!

1. An objective perception of reality
2. A full acceptance of their own nature (tendencies - deterministic vs modifiable)
3. A commitment and dedication to some kind of work
4. Simplicity and naturalness of behavior
5. A need for autonomy, privacy, and independence
6. Intense mystical and peak experiences
7. Empathy with and affection for all humanity
8. Resistance to conformity
9. A democratic character structure
10. An attitude of creativeness
11. A high degree of what Adler termed “social interest” - an innate potential to cooperate with others to achieve personal and societal goals. **Innate ??**

Maslow believed that prerequisites for self-actualization are sufficient love in childhood and the satisfaction of the physiological and safety needs within the first two years of life.
If so, they will remain so as adults > secure and confident.
If parental love, security, and esteem in childhood > self-actualization is possible.

Comment

Maslow’s data and research methodology have been faulted because the **subject sample was considered too small** to permit the kinds of generalizations he made. Also, his subjects were selected via his selective criteria of psychological health, and his **terms are defined ambiguously and inconsistently**. He admitted the lack of scientific rigor but believed there was no other way to study self-actualization (small data set of self-actualizers), and that his work was “preliminary”.
> Later studies have provided some support for his work.
Despite lack of empirical support for his ideas, his goal of dealing with the highest human ideals won a large following from those disenchanted with both behaviorism and psychoanalysis. His theories have had a broad impact beyond psychology - teachers, counselors, business and government leaders, health care professionals, and others trying to cope with the problems of modern life. Some of the themes of his approach to psychology can be found in the contemporary positive psychology movement and some promoters of positive psychology credit Maslow as a forerunner, his legacy lasting several decades.

Carl Rogers (1902-1987)

His parents had strict fundamentalist views and suppressed emotion. This held him like a vise within a code that was not his own, which gave him something to rebel against. He was a **solitary child, read incessantly,** felt in constant competition with older brother, starved of joy by his mother. His solitude forced him to depend on his own resources and his own personal view of the world. His health as a child was poor and he was considered sensitive and nervous

by his family. Moved to a farm at 12, read about agricultural experiments and the scientific method, **helping to focus his intellectual life. His emotional life was still in turmoil.**
At 22, while attending a Christian student conference in China, he intellectualized **two cornerstones** of his personality theory:

1. He became convinced that people must choose to guide their lives by their own interpretation of events (attention) rather than relying on the views of others.
2. He was also persuaded that we must strive actively to improve ourselves.

Ph.D - clinical and educational psychology - Teachers College of Columbia Univ.
Nine years - the Society for the Prevention of Cruelty to Children
1940 - began teaching career, Ohio State, Univ of Chicago, Univ of Wisconsin - during these years he developed and refined his theory and method of psychotherapy. At one point in his academic career he had what he called a “nervous breakdown”.
Books:
“On Becoming a Person: A Therapist’s View of Psychotherapy ” (1961)
“Person to Person: The Problem of Being Human” (1967)
“Freedom to Learn: A View of What Education Might Become” (1969)
“On Personal Power: Inner Strength and Its Revolutionary Impact” (1977)
“A Way of Being” (1980)

Person-Centered Therapy
Known for **person-centered therapy.** Unlike Maslow, Rogers’ ideas derived from applying his therapy to those treated at his university counseling centers. Note that his clinical experience during the time he was developing his theory was undertaken mostly with college students - primarily young, intelligent, and highly verbal. Their problems were mostly adjustment issues, not severe emotional disorders - a vastly different subject population than seen by clinical psychologists.
In his view, by placing the responsibility for improvement on the person rather than on the therapist, Rogers assumed that people can **consciously and rationally** change their thoughts and behaviors from undesirable to desirable. He did not believe that we are permanently restrained by unconscious forces or childhood experiences. **Personality has power, and can be shaped in the present, by the present and how we consciously perceive it and direct it.**

Self-Actualization
The greatest motivating force in personality is **the drive to actualize the self** (Rogers, 1961). Although this drive is innate, it can be helped or hindered by childhood experiences and learning. He emphasized the mother-child relationship as it affects the child’s growing sense of self. If the infant's need for love is satisfied - **positive regard** - then the infant will tend to become a healthy personality.
> If it is conditioned on proper behavior - **conditional positive regard** - the child internalizes the mother’s attitude and feels worthy only under certain conditions, avoiding behaviors that bring disapproval. As a result, the child’s self is not allowed to develop fully and cannot express all aspects of the self.

> Ideally, the mother will demonstrate love and acceptance regardless of the child's behavior **- unconditional positive regard.** As a result, the child will not develop conditions of worth and will not have to repress any part of the emerging self. Only in this way can a person eventually achieve self-actualization.
Roger's conception, by his own admission, is similar in principle to Maslow's, although they differ somewhat in the characteristics of psychologically healthy people.

To Rogers, psychologically healthy or **fully-functioning persons** have the following qualities:

- An openness to, and a freshness of appreciation of, all experience.
- A tendency to live fully in every moment.
- The ability to be guided by their instincts rather than by reason or the opinions of others.
- A sense of freedom in thought and action.
- A high degree of creativity.
- The continual need to maximize their potential.

He described fully functioning people **as actualizing, rather than actualized,** to indicate that the development of the self is always a work in progress.

Zeitgeist - Roger's unique person-centered therapy had a major impact, and rapid acceptance, due to the **end of WWII** and the need to help veterans readjust to civilian life. The demand was for psychologists and an effective technique that could be learned quickly, unlike psychoanalysis which required a medical degree and years of training.
It perfectly suited the needs of the time.

Comment

Roger's approach remains influential in counseling and psychotherapy. More than 50 professional journals and 200 organizations worldwide are dedicated to promoting some version of person-centered therapy. Rogers was influential in the human potential movement of the 1060s and the overall trend toward humanizing psychology.

The Fate of Humanistic Psychology

Humanistic psychologists offered a definition of psychology distinct from the other two forces in the field (behaviorism and psychoanalysis) and had a passionate conviction that theirs was the best path. Despite these attributes of a school of thought, **humanism did not actually become one.**
Carl Rogers agreed, "humanistic psychology has not had a significant impact on mainstream psychology"(Rogers, 1985). A psychologist evaluating mainstream psychology in the late 1990s described it as "surprisingly unaffected" by the concerns of humanistic psychology, noting its exclusion from publications, research grants, college courses, and licensing and accreditation standards (Aanstoos, 1994).
In the 21st century, humanism remains isolated outside the mainstream of psychology. **Why did humanism remain isolated?;**

1. Most humanistic psychologists were in **clinical practice** and not at universities, and thus could not conduct research, publish papers, or train new generations of graduate students.

2. At its peak, the 1960s and early 1970s, humanists were attacking positions that were **no longer influential in their original form** - behaviorism and psychoanalysis.

Although it did not transform psychology it did strengthen the idea that people can consciously and freely shape their lives and indirectly helped **restore the study of consciousness** to academic experimental psychology. Humanism arose contemporaneously with the cognitive psychology movement. **Humanism helped ratify changes already occurring** in the field, and from that standpoint, can be considered successful. It would also have an impact four decades later on contemporary psychology via Martin Seligman.

Positive Psychology

Martin Seligman, APA President, speaking at a symposium on the science of optimism and hope, 1998:

"How is it that the social science view the human **strengths and virtues** - altruism, courage, honesty, duty, joy, health, responsibility and good cheer - as derivative, defensive or downright illusions, while **weakness and negative emotions** - anxiety, lust, selfishness, paranoia, anger, disorder and sadness - are viewed as authentic?"

Seligman's call for a positive psychology received a highly enthusiastic response. Research studies, articles, and books began to pour forth. By 2001 studies of subjective well-being, of dealing with the causes and correlates of happiness and other positive emotions had shown the "strongest increase in number of publications over the past 40 years.

Book:

"Authentic Happiness: Using the New Positive Psychology to Realize Your Potential for Lasting Fulfillment" (2002)

*"Positive Psychology: An Introduction" (*Selligman, Csikszentmihalyi, M., American Psychologist, https://psycnet.apa.org/record/2000-13324-001.

Journal of Happiness Studies (2000)

Journal of Positive Psychology (2006)

What are the characteristics of a happy person? What accounts for the state of subject well-being?

Per research, money makes you more satisfied than it makes you feel good. Positive feelings are less affected by money and more affected by the things people are doing day to day. (Stein, 2010). However, a lack of financial resources and economic insecurity can lead to unhappiness.

The **hedonic treadmill** model of happiness has had strong research support. Hedonic refers to that which is characterized by pleasure. The theory states that both positive and negative events will affect our level of happiness only temporarily, after which we revert to our normal level of hedonic neutrality. "Thus, happiness and unhappiness are merely short-lived reactions to changes in people's circumstances. People pursue happiness because they incorrectly believe that greater happiness lies around the corner". (Diener, Lucus & Scollon, 2006)
https://psycnet.apa.org/record/2006-05893-003

High income people tend to be more tense and spend less of their time on relaxation and leisure. (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2006)
https://psycnet.apa.org/record/2006-08879-003

Having **good health** does not guarantee happiness either, but poor health, like low income, can diminish overall life satisfaction. No gender differences.
Studies show that SWB improves with age except among people with serious health problems or physical limitations, that happiness increases with age.
Longevity - Happier people live longer. (Xu & Roberts, 2010)
https://psycnet.apa.org/record/2010-00152-012
Research shows that **married people** report higher levels of happiness than those that have never married or who are divorced or widowed.
People who score **high on measure of SWB** are also high in:
Self-efficacy, internal locus of control, a strong desire for control over one's life, self-esteem, self-acceptance, self-determination, extraversion, and conscientiousness. They also score low in neuroticism.
There is a very **low correlation** between physical attractiveness and happiness.
People who live in highly developed, urbanized, and industrial nations are happier and live longer than those living in less-developed nations.
Research indicates that happiness comes first and leads to the kinds of behaviors that can result in success (Oishi, Deiner & Lucus, 2007)
https://www.researchgate.net/publication/239544457_The_Optimum_Level_of_Well-being_Can_People_Be_Too_Happy

Comment
Instead of using highly subjective case histories, like the self-actualization work of Maslow, positive psychology relies solely on rigorous experimental research, avoiding the downfall of humanistic psychology.
Seligman "sees positive psychology not as a movement or school of thought, but with a less structured goal. Not as a replacement, but just as a supplement or extension for what has gone on before. A mere change of focus from a study of some of the worst things in life to the study of what makes life worth living".
Researchers have written that the "range of topics isP now so great that positive psychology can truly be considered a general psychology". (2005)

The Psychoanalytical Tradition in History
Psychoanalysis was more divided by its revisionist theorists that was behaviorism. Despite the changes introduced by neo-behaviorists, they shared Watson's belief that behavior should be the main focus of study. In contrast, few of Freud's followers agreed that the focus of study should remain on unconscious biological forces or that people are motivated by sex and aggression.

Chapter 15 - Contemporary Developments in Psychology

Schools of Thought in Perspective

Structuralism - There have not been any true structuralists like Titchener in more than a century. However, it was an enormous success in promoting the enterprise Wundt began, the establishment of an independent science of psychology free of the strictures of philosophy. It was also a vital source of opposition for the systems that followed.
Functionalism - Has also not survived as a separate school. It was an attitude and viewpoint that permeated American psychological thought and that functional, utilitarian attitude has changed the nature of psychology to become not only a science, but a profession.
Gestalt Psychology - It was an opposition to elementism, the support of a "wholes" approach, and the interest in consciousness and influenced psychologists in clinical psychology, learning, perception, social psychology, and thinking.

> The effects of **behaviorism** (Watson) and **psychoanalysis** (Freud) have been profound and they have maintained their identities as separate and unique schools of thought.
> No single form of either school has won allegiance from all members of either school, the emergence of subschools dividing the systems into competing factions, each with its own map of the truth.
> Despite this internal diversity of each school, they stand firmly opposed to each other in their approaches to psychology. Their vitality is evident in their continuing evolution.

Humanism - Never made an impact as a separate school of thought, but influenced contemporary thought through the growth of the positive psychology movement.
The 1960s and 1970s also brought forth two additional movements: cognitive psychology and evolutionary psychology.

The Cognitive Movement in Psychology

In Watson's behaviorist manifesto of 1913, he insisted that psychology drop all references to mind, consciousness, or conscious processes. For decades, all mentalistic terminology was banished.
In the later 1970s, a trend that had been building for some time came into the light, via journal articles and the annual address at the 1976 APA conference, where the president told the assembled audience that psychology was changing and that the new conception included a **refocus on consciousness.**
Revisions in textbooks redefined psychology as the science of behavior and mental process instead of only behavior, a science seeking to explain overt behavior and its relationship to mental processes.

Antecedent Influences on Cognitive Psychology

The writings of the Greek philosophers Plato and Aristotle deal with thought processes, as do the theories of the British empiricists and associationists. Wundt emphasized the mind's creative activity, the structuralists and functionalists dealt with consciousness, studying its elements and functions. Then behaviorism brought fundamental change, dismissing consciousness for nearly 50 years.
However, as early as the 1950s, **E.R. Guthrie**, a behaviorist, deplored the mechanistic model and argued that stimuli cannot always be reduced to physical terms. He suggested describing

stimuli in perceptual or cognitive terms so that they will be meaningful for the responding organism.
The purposive behaviorism of **E. C. Tolman** was another precursor. He recognized the importance of cognitive variables and contributed to the decline of the S-R approach. He proposed cognitive maps, attributed purposive behavior to animals, and emphasized intervening variables.
Gestalt psychology helped keep alive a token of interest in consciousness during behaviorism's dominance, focusing on "organization, structure, relationships, the active role of the subject and the importance of perception on learning and memory".
The Swiss psychologist **Jean Piaget** (1896-1980), helped with the initial development of psychological tests of mental ability and testing children. He was important for his work on child development in **cognitive stages vs psychosexual stages.** His clinical method of interviewing insisted on detailed note-taking during interviews - a major inspiration for the Hawthorne studies of industrial workers in the 1920s. His work, published in the 1920s and 1930s was influential in Europe but not America.

The Changing Zeitgeist in Physics

When we find a major shift in the evolution of science, we know it is reflecting changes that are already part of its intellectual Zeitgeist - it adapts to its environment. Once again we look to the Zeitgeist in physics, long psychology's role model, influencing the field since its beginnings.
From the early 20th century work of Einstein, Bohr, and Hesenburg, there was a rejection of the mechanistic model of the universe (Galileo/Newton), which was the prototype for the mechanistic, reductionist, and deterministic view of human nature embraced by the psychologists from Wundt to Skinner. Physicists realized that any observation we make of the natural world is likely to disturb it and investigation **shifted from an independent and objectively knowable universe to one's observation of that universe**. They would become "participant-observers".
As a result, the ideal of totally objective reality was no longer considered attainable. Knowledge is actually subjective, that is, dependent on the observer. **Physicist's rejection of an objective, mechanistic world and their recognition of subjectivity restored the vital role of conscious experience as a way of obtaining information about our world**. **This revolution in physics was an effective argument for making consciousness a legitimate part of psychology's subject matter.** The psychology establishment resisted it for 50 years.
"Our picture of the world, far from being a genuine photographic reproduction of an independent reality 'out there', is rather more on the order of a painting; a subjective creation of the mind which can convey a likeness but can never produce a replica".

The Founding of Cognitive Psychology

The founding of cognitive psychology did not happen overnight, nor could it be attributed to one person. However, history identifies two scholars who did contribute groundbreaking work in the form of a research center and books now considered milestones in the development of cognitive psychology - George Miller and Ulric Neisser.

George Miller (1920 - 2012)

Masters - speech (English) - Univ of Alabama (1941), then taught intro psychology classes.
Ph. D. - Harvard (1946) - psychoacoustics lab on problems in vocal communication
Book:
"Language and Communication" (1951) - landmark book on psycholinguistics.
In the mid-1950s he investigated statistical learning theory, information theory and computer-based models of the mind and he became more cognitively oriented.
"The Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information" (1956), article - that we have a conscious capacity for short-term memory limited to approximately seven "chunks" of information.

The Center of Cognitive Studies

In 1960, at Harvard with **Jerome Bruner**, established this research center. The center was not set up for anything in particular; it was set up against things. What was important was what it was not. It was not behaviorism - the ruling authority, the establishment.
Miller did not consider cognitive psychology as a true revolution. He called it an **"accretion"**, a change by slow growth of accumulation, an evolution rather than revolution - a return to the concern with mental life as well as behavior.
The center investigated language, memory, perception, concept formation, thinking and developmental psychology.
He later established another program at **Princeton Univ.**

Ulric Neisser (1928 - 2012)
Born in Kiel, Germany, emigrated in 1931.
Undergraduate - Harvard (1950)
Masters - Swarthmore College (1952), under Gestaltist Wolfgang Kohler.
Ph.D - Harvard (1956)
Teacher - Brandeis Univ, under Abraham Maslow, who provided the opportunity for his to pursue his interest in cognitive issues.
Also Emory Univ., Univ of Penn. and Cornell (17 years).
Books:
"Cognitive Psychology" (1967), an attempt to define himself and the kind of psychologist he wanted to be. It was extremely popular and made him the **"father of cognitive psychology".**
"Cognition and Reality (1976), expressed his dissatisfaction with the narrowing of the field to labs instead of real-world settings. He insisted that the results of research should be generalizable to situations beyond the laboratory, and also be able to **apply their findings to practical problems** and everyday issues in people's lives and at work.

The Computer Metaphor

Cognitive psychologists are interested in the sequence of symbol manipulation that underlies human thought processes. They are concerned with how the mind processes information. Their goal is to discover the programs each of us has stored in our memory, those patterns of thinking that allow us to understand and articulate ideas, to remember and recall events and concepts,

and to grasp and solve new problems. Computer programming has become the basis for the cognitive view of human information processing, reasoning, and problem-solving.

The Development of the Modern Computer

See the work of **Charles Babbage** and **Henry Hollerith** for machine development.
The first giant computer, Electronic Numerical Integrator and Calculator (ENIAC) - completed in 1943, in response to the need to find a faster way to make the **rapid calculations required to fire artillery pieces.**

Artificial Intelligence

1950 - **Alan Turing** (1912-1954), the Turing Test, his response to examine the proposition that computers can think.
1980 **- John Searle** (1932-), disagreed with the premise of the Turing Test, who advanced the **Chinese Room problem.** A computer no more understands the messages it receives than you can understand Chinese in this experiment. In both instances, both you and the computer are operating strictly in accordance with a set of programmed rules.
See 1997 chess match between IBM's **Deep Blue and Garry Kasparov** - In three minutes, Deep Blue could process 50 billion chess moves, which is not like playing against a human at all.

The Nature of Cognitive Psychology

Cognitive factors are considered by researchers in virtually all areas, experimental and applied. Cognitive psychology differs from behaviorism on several points:

1. **There is a focus on the process of knowing rather than simply responding to stimuli** with the emphasis on the mind, not behavior and S-R connections. Behavioral responses are sources for making inferences and drawing conclusions about the mental processes accompanying them.
2. **They are interested in how the mind structures or organizes experience.** The mind gives form and coherence to mental experience; this process is the subject matter or cognitive psychology. Skinnerian behaviorists and others insisted that the mind did not possess inherent organizational abilities.
3. **They believe that the individual actively and creatively arranges the stimuli received from the environment**. We are capable of participating in the acquisition and application of knowledge, deliberately attending to some events and choosing to commit them to memory. The behaviorist claimed that we are passive responders to external forces or blank slates on which sensory experiences will write.

Cognitive Neuroscience

Early physiologists (Hall, Flourens, Broca, Chapter 3) researched mapping of the brain in the 18th and 19th centuries. Extirpation and electrical stimulus were their methods as they attempted to determine the specific parts of the brain that controlled various cognitive functions. Today that continues with cognitive neuroscience, the goal being to **determine how brain functions give rise to mental activity and to correlate specific aspects of information processing with specific brain regions.**

EEG - electroencephalogram - records variations in electrical activity in selected parts of the brain
CAT - computerized axial tomography - reveal detailed cross-sections of the brain
MRI - magnetic resonance imagery - produce three-dimensional pictures of the brain
> all still pictures
PET - positron emission tomography - provides live pictures of various cognitive activities as they occur.
Neuroprosthetics - Cognitive neuroscientists have shown that the brain can exert control over a computer, via sensors implanted in the motor cortex of a person's brain. He exercised this control by thinking about it - that is, by willing or intending to make - such movements.

The Role of Introspection
Cognitive psychologists' acceptance of conscious experiences led them to reconsider the introspective method, psychology's first research approach, first introduced by Wundt more than a century ago. Today, psychologists affirm that **introspection is indispensable to psychology.** They have attempted to quantify introspective reports to render them more objective and amenable to statistical analysis
Retrospective phenomenological assessment - involves asking subjects to rate the intensity of their subjective experiences while they were responding to a previous stimulus. These are often good predictors of people's behavior.
There are **limitations to introspection's validity**. Subjects may give socially desirable reports, telling researchers what they think they want to hear. Also, subjects may not be able to access some of their thoughts or feelings because they reside deep in the unconscious, a topic receiving increasing attention.

Unconscious Cognition
Research suggests that much of our thinking and information processing **takes place first in the unconscious**, which may operate more quickly and efficiently than does the conscious mind. This is not Freud's unconscious. The new unconscious is **more rational than emotional and is involved in the first state of cognition when responding to stimuli**. Thus, it forms an integral part of learning and can be studied experimentally.
Some prefer the term "nonconscious", and most researchers agree that most human mental processing occurs at a nonconscious level. It appears to play a role in **problem solving, hypothesis testing, and creativity.**
Subliminal activation involves presenting stimuli below the subject's levels of conscious awareness. Despite lack of perception, the stimuli activate the subjects' conscious process and behavior - we can be influenced by stimuli we cannot see or hear. Therefore, the process of acquiring knowledge takes place at both conscious and nonconscious levels, **but that most of the mental work involved in learning occurs at the nonconscious level.**

Animal Cognition
The same computer-like information processing system believed to be operating in humans is being studied in animals.

Animals can form cognitive maps, sense the motives of others, plan via past experiences, understand the concept of numbers, and solve problems through the use of reason. In addition, their use of tools and their ability to modify tools to operate in different situations also implies a basic sense of reasoning. However, the gap between human and animal functioning proposed by Descartes in the 17th century retains its appeal.
Behavioral psychologists still reject the notion of consciousness, in animals as well humans. The contradictory view is that animals do show all the observable aspects of consciousness and may also display common personality characteristics. A growing number of psychologists believe they do.

Animal Personality
Per a study in the early 1990s of **44 red octopuses** at the aquarium in Seattle, Washington, psychologists them in three experimental situations and found that they differed on three factors: **activity, reactivity, and avoidance**. They believed this proved personality.
With the emergence of animal personality studies, we are gaining an even fuller appreciation of the distinctiveness among them and their behaviors but also of their deep resemblance to humans in cognitive processing, temperament, and personality. Does this lead to additional support for the importance of evolution in all living creatures?

Current Status of Cognitive Psychology
As a school of thought, cognitive psychology boasts all the trappings of success. Within the decade of the 1970s, the movement had so many adherents that it could support its own journals. By 2010 there were more than **40 journals** in total.
The impact of cognitive psychology has been felt in most areas of interest to psychologists.
A perspective, dubbed **cognitive science**, is an amalgam of cognitive psychology, linguistics, anthropology, philosophy, computer sciences, AI, and the neurosciences.
Cognitive science labs and institutes have been established at universities throughout the United States.
Perhaps the only feature it shares with its predecessor, behaviorism, is the use of the experimental method.
Embedded cognition posits that perceptual and motor response systems affect, direct, and often determine the cognitive processes that occur in the mind. **Thus, the mind must be understood in the context of its relationship to a physical body that interacts with the world.** Physical cues give context to situations and influence thought processes.
Another important topic is cognitive overload, or multitasking. Research shows that multitaskers are more easily distracted and have difficulty organizing information and shifting from one task to another (2009).
There is criticism of an overemphasis on cognition at the expense of other influences on thought and behavior - **motivation and emotion.** Ulric Neisser, in 1985, sensed a danger that cognitive psychology was fixated on thought processes to the same extreme that behaviorism focused solely on overt behavior. Also, as of 1997, one critic noted that there is, as yet, “no common view of the mind”.
M (motivation) > Stimulus > O (organism and emotion) > Response (+ post-reflection)

Cognitive psychology is still developing and it has the characteristics of a school of thought. We may speak of cognitivism, as we do of functionalism and behaviorism. It is already part of psychology's mainstream.

Evolutionary Psychology

Evolutionary psychology argues that people are **biological creatures** that have been programmed by evolution to behave, think, feel, and learn in ways that have fostered survival over many past generations. The **genes** for these behaviors that facilitate survival were passed on through the generations because they were adaptive, enhancing our survival or reproductive success, and eventually, they spread widely and became standard equipment. (Goode, 2000)
While **not denying that social and cultural forces** can influence our behavior through learning, they proclaim that we are predisposed at birth to certain ways of behaving as shaped by evolution.
Evolutionary psychology is **a broad field** that makes use of research findings from disciplines such as animal behavior, biology, genetics, neuropsychology, and evolutionary theory. It applies these to intelligence, personality and individual differences, social psychology, and risk-taking behavior.
David Buss, a founder of evolutionary psychology, wrote that it "represents a true scientific revolution, a profound paradigm shift in the field of psychology." (2003) Proponents claim that it can unite the disparate field of psychology.

Antecedent Influences on Evolutionary Psychology

Per David Buss, "The emergence of evolutionary psychology and related disciplines signals the fulfillment of Darwin's vision". **William James,** 31 years after Darwin published his work, predicted that one day psychology would be based upon evolutionary theory. He proposed the idea of **instincts**, that much of human behavior is programmed at birth by genetic predispositions, and that **although they could be modified** by experience and learning, initially they are formed independent of experience.
James believed that a **wide range of behaviors were instinctive**, including fears of specific objects, heights - all survival skills. Also parenting skills, love, sociability and the tendency to quarrel and fight.
Recall the Brelands who trained animals for commercials and state fairs. Some of the animals substituted instinctive behaviors for those that had been reinforced with food, even when that behavior interfered with obtaining food - **instinctive drift.**
Also, the **monkey-mother love research** of Harry Harlow (19710, whose monkeys, when frightened, would cling to the wire mother covered in soft terry cloth instead of the bare wired monkey that had the nipple that supplied milk. Clearly, there is some other guiding force at work that can not be explained by operant conditioning and reinforcement.

Martin Seligman (1971) showed that it was easy to condition people to fear snakes, dogs, tunnels, heights, etc., but much harder to condition fear to neutral items such as a car or screwdriver. Fearing a snake has always been useful for survival, a screwdriver, not so much. Seligman called this **biological preparedness**, that certain fears serve some adaptive purpose

Evolutionary psychology expands the cognitive revolution as a necessary framework within which to understand the mind, focusing on consciousness as it evolved over time and places a great emphasis on the notion of **the computer as a metaphor for all conscious processes**. "The brain's evolved funcion is to extract information from the environment and use that information to generate behavior and regulate physiology. Hence, the brain is a computer, a physical system that was designed to process information.

The Influence of Sociobiology

Per **Edward O. Wilson** and his book, *"Sociobiology: A New Synthesis"* (1975), a book that was both hailed and reviled, took a strong hereditarian position at a time when such a view was anathema. It challenged the cherished belief that everyone is created equal, and that environmental and social forces alone can foster or limit human development.
"Human beings inherit a propensity to acquire behavior and social structures, a propensity that is shared by enough people to be called human nature…..with defining traits. Although people have free will…..the channels of their psychological development…..cut more deeply by genes in certain directions than others".(Wilson, 1994).
The field he started became incorporated into evolutionary psychology and has become immensely popular.

Current Status of Evolutionary Psychology

It occupies a central role in cognitive neuroscience. **They do not claim that all behavior is immutably determined by our genes**. Behavior is changeable, we remain free to choose. Social and cultural forces are influential and sometimes override or alter inherited programming to respond in certain ways.
Opponents argue that the breadth of the field "makes the theory difficult to test in any convincing way". They also question **how it is possible to clearly identify a history of adaptation in a particular behavior,** through hundreds of generations, to primitive peoples where the survival value of the behavior presumably originated.

Comment

It is too early in the development of cognitive and evolutionary psychology to judge its ultimate value. Proponents believe it is a powerful principle that will provide a foundation for a deeper and richer psychology.
So it is in the progress of any science, an evolutionary building to higher levels of development, no completion, no finish, just a never-ending process of growth, as newer species evolve from older ones and attempt to adapt to an ever-changing environment.