The rise of physiological / experimental psychology

The Schools of Thought

the spirit of the times

late 1800s

Physics, chemistry, physiology established disciplines
first true "laboratories" begin to pop up

connecting basic mental phenomena to physical and physiological processes

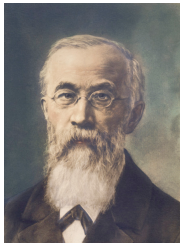
focus on psychology's **border w/ biology**

psychology seen as an extension of these other sciences
purely materialistic phenomena

promise of **evolution**: give guidelines to all of psychology.
naturalism v. experimentation

Wundt

"the story of [Wundt] is one of a physiological psychologist who so succeeded in turning psychology into a laboratory based endeavor that since his time all other aspects of psychology have suffered from 2nd class citizenship" (Murphy & Kovach, 1949)



student of **Bunsen, Müller**, **Helmholtz**
intellectual influences: **Kant, Herbart, Leibniz**

<u>… the isms</u> rationalist, anti-materialist

impact: highly influential. Many early, important psychologists spent time under Wundt's tutelage.
Cattell, G.S. Hall, Titchner, Kulpe

prolific writer: 2.5 pages / day for nearly 70 years

revered more for practical impact than theoretical contributions

defining an experimental psychology

recall **Herbart** and **Kant: can psychology be a science?**

YES:

understand **immediate** consciousness (as it occurs)

immediate v. **mediate** experience (what's really objective?)

NO:

useless in higher mental processes and their contents: language, art, myth, customs. These require a mode of explanation appropriate to their external, yet **non-physical phenomenology**

***<u>völkerpsychologie</u>*: "folk",** nearer to history and anthropology. Must study the developmental and social processes that lead to individual consciousness

Principles of Physiological Psychology

what are your **measurables**?

psychology investigated using physiological **methods**

- objectively knowable and preferably measurable stimuli
- stated physical conditions
- objectively knowable and preferably measurable response

study the processes by which we experience the world

immediate: conscious processes tied to stimulation

mediate: measures tied to stimulation

felt that psychophysical emphasis was here

contrast to **Fechner:** sensations cannot be measured, measurement only applies to stimuli. What can be tied are **judgments**

What is psychology?

scientific study of **consciousness**

principle of actuality: consciousness is a **process**

investigation of conscious processes in the modes of connection peculiar to them

Wundt saw this process as falling between physical & social sciences

1. inductive experimental science to understand **immediate** consciousness (as it occurs, sensation based)

2.völkerpsychologie: "folk", nearer to **history** and anthropology. Must study the **developmental** and social processes that lead to individual consciousness

language, art, myth, customs. These require a mode of explanation appropriate to their external, yet non-physical phenomenology

the Elements of conscious thought

used methods to isolate **sensations**:

modality, intensity, quality

aroused by physiology (sense organs + brain)

sensations accompanied by **feelings**: qualities of conscious experience that do not come from sensations

tri-dimensional theory of feeling

excitement-calm *pleasantness-unpleasantness* *strain-relaxation*

sensations carry with them feelings— complex sensations give rise to complex feelings. Specific patterns of which may be defined as emotions

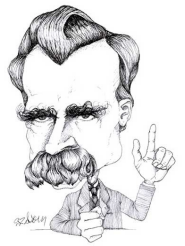
emotions lead to acts of will

Voluntarism

Wundt's approach stands in opposition to materialistic, empiricist psychology (critique: **M.E.P. lacks conception of central volitional processes**)

a particular series of sensations, feelings, emotions, and apperceptions represents **an act of will**

Wundt's position stresses the importance of **will** for all organisms



will is primal - reflexes begin as voluntary

the adaptive nature of acts - simple reflexes are what animal "needs" to do.

Perception, Apperception, Creative Synthesis

under natural circumstances, the elements do not occur in isolation

perception: passive process, result interaction of stimulus, physiology, and history

when an individual attends to specific elements, the corresponding part of perceptual field is **apperceived**

active & voluntary

volitional attention allows for the willful arrangement and rearrangement of elements, resulting in **creative synthesis**

what makes psychology special and why our analysis cannot use the techniques of physics or chemistry

psychological events do not abide physical determinism

laws unknowable though experimental methods

Methodology

mental chronometry: look at RT under a variety of complications

borrowed methods of **Donders**

response only — discrimination — action selection

simple RT — **choice RT**

the will?

experimental introspection

variation in conditions for introspection

each team member acts as subject, experimenter, and observer

subjects were not naive, but in fact highly trained

final reports generated after much familiarity and practice

Wundt's legacy

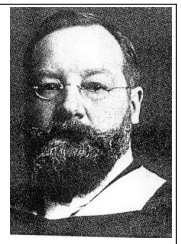
Wundt's method of introspection did not remain a fundamental tool of psychological experimentation past the early 1920's. **His greatest contribution was to show that psychology could be a valid experimental science. His influence in promoting psychology as a science was enormous.**

brings psychology to level of physiology; synthesis of sensation, perception, reaction time, associations, psychophysics, development

influenced many students who later attributed their ideas to Wundt

historically Wundt is often misrepresented

Structuralism



psychology = experimental study of mind

no place for children, abnormalities, application, or animals

positivism

avoid metaphysical speculation and trappings, rather than **explaining** mental activity he sought to **describe** mental activity.

Descriptions reduced experiences to their **elements**

trained subjects introspected on the raw sensory elements of an experience while avoiding assigning meaning (**stimulus error**)

Titchener's psychology

wanted to make psychology one of the 3 main sciences (physics and biology)

advocated a **reductionism** in general practice an in psychological descriptions

what **Mental elements**

sensations, images, affections vary in **quality, intensity, duration, clarity, and extensity (how they are known)**

reported in introspection

how **Law of combination**

associationism (law of contiguity); break from Wundt

meaning results from combinations (sensations elicit ideas)

why **Neural correlates**

physiology doesn't cause psychology (nervous system is something that mental events happen on). Our mental activities reflect this embodiment

in context & contrast

to Wundt... **Germans v. Brits.**

holistic view of mind v. **associationism** as explanatory method

Titchener primary focus on introspective method

major emphasis on **elements**

associationism as mechanism

other "schools"

held other schools in disregard

narrow and rigid view of ***what is psychology***

as field began to move into other arenas (practical, clinical, abnormal) Structuralism falls out of favor.

Wundt conceives of consciousness as process, **Brentano** further elaborates this train of thought

Psychology from an Empirical Standpoint

***notice he didn't say experimental**

if you are going to do an experiment make it a <u>crucial one</u>

Act Psychology

Brentano's method: introspection of intact experiences (phenomenology)

mental activity cannot be reduced to any physical or non-intentional composition

"in the sense that acts are directed towards objects or states, that is about something other than themselves—they are ***intentional***"

subject object dualism? mental activity involves both

Carl Stumpf and Clever Hans

interests in music and psychology (memory)

nasty rivalry with Wundt

one of original founders of **Journal of Psychology and Physiology of the Sense Organs**

helped to popularize the role of **phenomenology** in psychology

The Würzburg school

Kulpe: do all mental activities require an object or referent? Can thought itself be accessed through introspection?

interest in what people were thinking **while** they introspected

peanut butter ⇩ **jelly**

imageless thoughts: searching, doubting, confidence, hesitation

einstellung **➔ cognitive set**

4 + 9 = **8 + 2 =** **5 + 3 =**

11 **4**

systematic self observation

Forays into memory

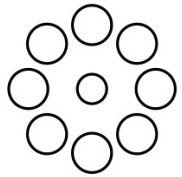
Ebbinghaus first to systematically investigate memory
he was his own subject

study **(formation of)** memory in purest form

Memorized ***nonsense syllables*** (2300: haj, kof, ral, etc.) from one to the next through repeated exposure. After given # of cycles tested what was committed to memory.

- how long to accurately recall list? time and practice
- after duration how much is retained? $\frac{\text{re-memorization}}{\text{first memorization}} = \%$

Über das Gedächtnis: highly influential; repetition effects, forgetting curve, stimulus attributes, modality, individual differences, interference and inhibition, learning, recognition



To recap...

rationalist tradition

2 types of psychologies

experimental
volkerpsychologie

mind understood as
perception
apperception
creative synthesis

will as dominant force

positivist
empiricist tradition

pure experimental psychology

mind understood as
elements of sensation
Law of Combination

association of elements

rationalist tradition

descriptive psychology

mind understood as
phenomenology

mind cannot be reduced

debates about what is to be studied and how...