

## PSYCHOPHYSICS

### I. Ernst Weber (1795-1878)

- A. Published important findings on touch and sensation in 1834 and 1846
- B. Was interested in thresholds or how much of a stimulus had to be present to be perceived -- an important issue for touch -- and also in difference thresholds.
  - 1. Muscle sense
  - 2. Two-point thresholds
    - a. discriminating two points on the skin
    - b. varies across the body
- C. His major discovery was what Fechner later called Weber's Law
  - 1. This is the fact that a **just noticeable difference** (jnd) was a constant proportion of the difference to the focal stimulus.
    - a. that is one had to have a bigger difference for a large than for a small stimulus
    - b. it can be put in equation form

### II. Gustav Theodor Fechner (1801-1887)

#### A. Life

- 1. Studied medicine
- 2. Important discoveries in physics
- 3. Taught physics at Leipzig which had been Weber's university
- 4. Blind after studying after-images by looking into sun
- 5. Nervous breakdown

#### B. General philosophy was materialist

- 1. Felt that mental life was a function of the organization and complexity of objects
  - a. this meant that all objects had some mental life
  - b. a rejection of vitalism
  - c. his life's program was to demonstrate the equivalency of mental and physical life.
    - (1) usually he is portrayed as a dualist
    - (2) but strong strains of monism, of seeking an absolute identity

### C. The general program

1. To show the identity, quantitatively, of the physical and mental

2. But there are problems

a. one cannot measure mental life

b. and one cannot get at the biology underlying the mental life

3. Two kinds of psychophysics

a. he was most concerned with inner psychophysics

(1) relating mental events to biology

(2) but he couldn't get at the biology

b. outer psychophysics

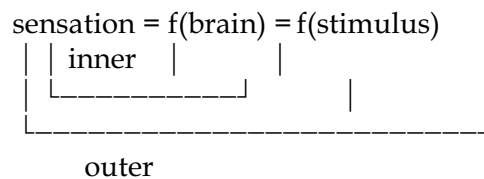
(1) dealt with the relationship of physical stimuli to thoughts

(2) and in this case the physical events could be measured

(3) and the principle of conservation allowed him to assume

that there was a basic proportionality between the physical  
and the brain processes.

(4) therefore a kind of implied equation



(5) so he can "prove" the inner by studying the outer

4. The measurement problem

a. the only thing we know for sure is that there is a lawful relationship  
between stimuli and both absolute and difference thresholds

b. assumed (and this is the giant step) that each sensation is made up of  
separate increments

(1) a Leibnitizian idea

(2) these increments are difference increments or jnds

(3) thus a unit of sensation