### Naming the Human Family:

A Brief History of Hominid Taxonomy

> Eliot Scott Anthropology 570 15 Minute Presentation



### Taxonomy

- Science of biological classification (Stanford et.al. 2006)

### \* Hominid

 Member of primate family Hominidae, distinguished by bipedal posture (Stanford et.al. 2006)

### \* Genus

- Species or group of species of common ancestry that share a unique adaptive zone different from that occupied by species of any other genus (Conroy 2005)
- Group of species that are more closely related to each other than to any other species assigned to any other genus (Conroy 2005)

### \* Species

 Groups of actually or potentially interbreeding natural populations which are reproductively isolated from other such groups (Mayr 1963)

### Type Specimen

 The anatomical reference specimen for the species definition (Stanford et.al. 2006)



### \* Homo monstrous



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## Medieval and Renaissance Period \* Homo sylvestris





### Linnaean Hominid Classification

- Carolus Linnaeus (1707-1778)
- \* Systema Naturae (1735-1766 Rev.)
- Primates
  - Homo
    - sapiens
      - ferus "wild man"
      - americanus "obstinate"
      - europaeus "gentle" "inventive" "governed by laws"
      - asiaticus "severe" "governed by opinions"
      - *afer* "negligent" "women without shame" "breasts lactate profusely"
      - monstrous giants
    - troglodytes "iris and pupils golden" "nocturnal"
      - nocturnus
      - sylvestris



## *Linnaean Hominid Classification*\* Christianus Hoppius (1736-?) – Student of Linnaeus \* *Homo caudatus*



### Linnaean Revisions

### Johann Friedrich Blumenbach (1752-1840)

- Reject H. sapiens monstrous and H. sapiens ferus
- H. troglodytes and H. caudatus imaginary
- Maintain geographic variation, add 5th Malaysian variety
- Despite varieties, all living humans H. sapiens



Feminae Georgianae

Tungusar

# Homo neanderthalensis 1856 - Neander Valley, Germany Identified by Johann Fuhlrott Presented by Hermann Schaafhausen Named by William King (1864)



# *Evolutionary Theory*Charles Darwin (1809-1882) *– The Descent of Man* (1871) Humanity developed via natural selection from an unidentified hominoid ape in the

- distant past, likely in Africa
- Ernst Haeckel (1834-1919)
   Hypothetical ancestors
  - Pithecanthropus alalus speechless ape man
  - Homo primigenius primitive humanity
  - Races divide with Indo-Germanic furthest from primeval condition toward "higher mental development"





### Anthropopithecus erectus \* Eugene Dubois (1858-1941) - Java (1891-1894) - Renames Pithecanthropus erectus (1894) for Haeckel \* Alfred Nehring (1845-1904) – P. erectus should be in genus Homo (1896)



### Evolutionary Phylogenies (late 1800's)

Gustav Schwalbe (1844-1917)
 *– H. neanderthalensis* intermediary between
 *P. erectus* and *H. sapiens*

Ludwig Wilsner (1850-1923)
 – *H. neanderthalensis* should be renamed
 *H. europaeus primigenius* in reference to
 Haeckel

# Homo heidelbergensis Otto Schoetensack (1850-1912) Mandible found near Heidelberg, Germany (1907)

 Site geologically older than any known Neanderthal site



### Eoanthropus dawsoni

- Charles Dawson (1864-1916)
  - Piltdown remains, England (1912)
  - Created enormous problems for evolutionary
    - phylogenies
  - Revealed as
    hoax 40 years
    later



## Homo rhodesiensis Arthur Smith Woodward (1864-1944) – Zambia, Africa (1921)

## Australopithecus africanus Raymond Dart (1893-1988) Taung, South Africa (1925) Not an "ape-like man" (*Pithecanthropus*) but a "man-like ape"



### Sinanthropus pekinensis Davidson Black (1884-1934) - Zhoukoudian, China (1927) - Type Specimen a single tooth - Now H. erectus – Questions emerge as to which continent humans evolved in



### Evolutionary Phylogenies (mid 1900's)

- Franz Weidenreich (1873-1948)
  - Fossil record represents continual line of evolution from *Pithecanthropus* & *Sinanthropus* through Neanderthal to the modern type of man



Reginald Ruggles Gates (AJPA 1944)

- Parallel evolution on each continent into modern races
- Races should therefore be separate species

# Australopithecus transvaalensis Robert Broom (1866-1951) Sterkfontein, South Africa (1936) Later assigned by Broom as



# Paranthropus robustus & crassidens \* Robert Broom (1866-1951) – Kromdraai, S. Africa (1938 - P. robustus) – Swartkrans, S. Africa (1949 - P. crassidens)







## More Hominids? \* Robert Broom (1866-1951) &

- John T. Robinson (1923-2001)
  - *Telanthropus capensis* Swartkrans, S. Africa (1949)
  - Now considered a species of *Homo*
- Hans Weinert (1887-1967)
    *Meganthropus africanus* Laetoli, Tanzania (1950)
   – Violates taxonomic rules



### Too many Hominids?

- \* Ernst Mayr (1904-2005)
  - Ornithologist
  - Finds in Hominid Taxonomy a "bewildering diversity of names"
  - "give categories species and genus new meaning in anthropology…
    the same one which has become the standard in other branches of zoology"
  - Anthropologists express slightest morphological difference with new name
  - Fossil and recent hominids into single genus *Homo* with 3 species -*H. transvaalensis*, *H. erectus*, & *H. sapiens*



## *Zinjanthropus boisei*Louis Leakey (1903-1972) Olduvai Gorge, Tanzania (1959)



### Anthropologists Unscientific?

### \* George Gaylord Simpson (1902-1984)

- Paleontologist
- Hominid nomenclature "chaotic"
- Chaos due to "faulty linguistics" not "zoological disagreement"
- Chaos stems from "ignorance or refusal to follow rules"
- "the only field of science in which those who do not know and follow the established norms have...the opportunity to publish research that is...incompetent"



### Homo habilis

### Louis Leakey (1903-1972), Phillip Tobias (b.1925) & JR Napier

- Olduvai, Tanzania (find 1960 pub 1964)
- Redefine *Homo & Australopithecus* genera
- More formal in taxonomy & nomenclature





### The Nomenclature of the Hominidae (B Campbell 1965)

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and some Till in Dataset (1998)

### *Fewer Hominids?* \* Bernard Campbell (b. 1930)

- The Nomenclature of the Hominidae (1965)
  - "Early workers not splitters in taxonomic sense, but ignorant of the meaning of the concept of species and used binomial nomenclature as a system of labeling"
  - No new taxa should be proposed unless new find falls "well clear of the range of variability of existing taxa, and that range should be computed by comparison to living species" not fossil specimens

### \* John T. Robinson (1923-2001)

- Mistake on Telanthropus
- Hominid researchers need "clear distinction between genus & species levels"

### More Hominids?

- *Paraustralopithecus aethiopicus* 
   C. Arambourg & Yves Coppens 1968

   *Homo ergaster*
  - Colin Groves & Vratislav Mazák 1975
- Australopithecus aff. africanus
   becomes Australopithecus afarensis
  - Donald Johanson, Tim White & Yves Coppens 1978
  - Following discovery of "Lucy" in 1974
  - Type specimen LH4 shown
- *Pithecanthropus rudolfensis* VP Alexeev 1986







### **Too Few Hominids?**

### Ian Tattersall

- Species Recognition in Human Paleontology (1986)
  - There is "a tendency to *underestimate* species diversity in the fossil record" (Tattersall 1986:252 emphasis added)
  - Lumping had become a "liability to [the] interpretation of the substantial morphological diversity that exists in the human fossil record"
  - Recognize more than 4 Australopithecines (*A. afarensis, A. africanus, A. robustus & A. boisei*) and 3 *Homo* (*H. habilis, H. erectus & H. sapiens*) in introductory texts



### More Hominids

\* Australopithecus anamensis \* Australopithecus bahrelghazali \* Australopithecus garhi \* Homo rudolfensis \* Homo neanderthalensis \* Homo heidelbergensis \* Sahelanthropus tchadensis \* Orrorin tugenensis \* Ardipithecus ramidus \* Ardipithecus kadabba Kenyanthropus platyops Ard. kadabba



### Conclusions

- "Classification is not an exact science and is not likely to soon become one" (Simpson 1963).
- How to define a species and what is acceptable range of diversity?
- Biological species concept "groups of actually or potentially interbreeding natural populations which are reproductively isolated from other such groups" (Mayr 1962)
- Difficult to classify paleoanthropological record due to its incomplete nature (Robinson 1967)
- No new taxa proposed unless the new find is "well clear of the range of variability of existing taxa, and that range should be computed by comparison to living species" not fossil specimens (Campbell 1965)
- Division of humans arbitrary since "you cannot mark out the limits between them" (Blumenbach 1795)