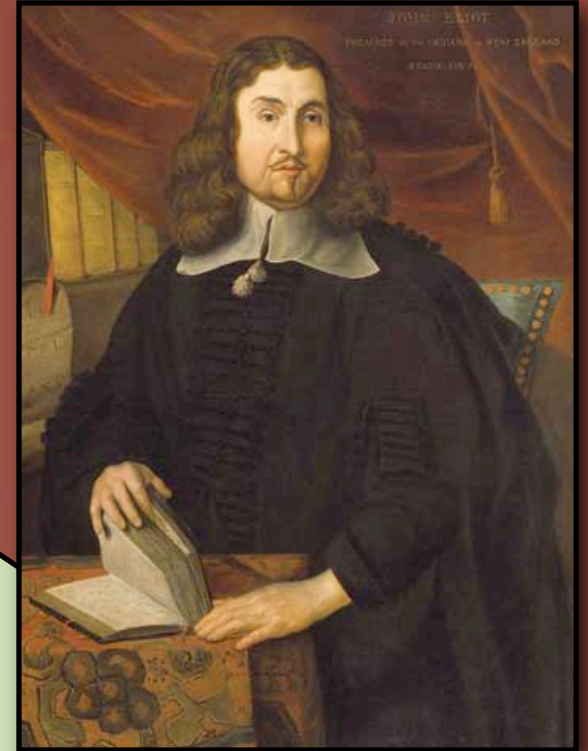




Exploring, Collecting, and  
Classifying  
STS.003, Fall 2010





## Review:

- Curiosity about the natural world
- Great skill with description and theorizing
- Natural world still infused with myth and meaning



# Unit 2: Nature

A detailed landscape painting showing a vast mountain range in the background with snow-capped peaks. In the foreground, a river flows through a lush green valley, surrounded by dense forests and large, leafy trees on the right bank. The sky is filled with soft, white clouds.

(1a) Are humans part of nature? Are they distinct from nature? Do they make nature?

(1b) Are living things, in particular species, changing or unchanging?

(2) Science and commerce



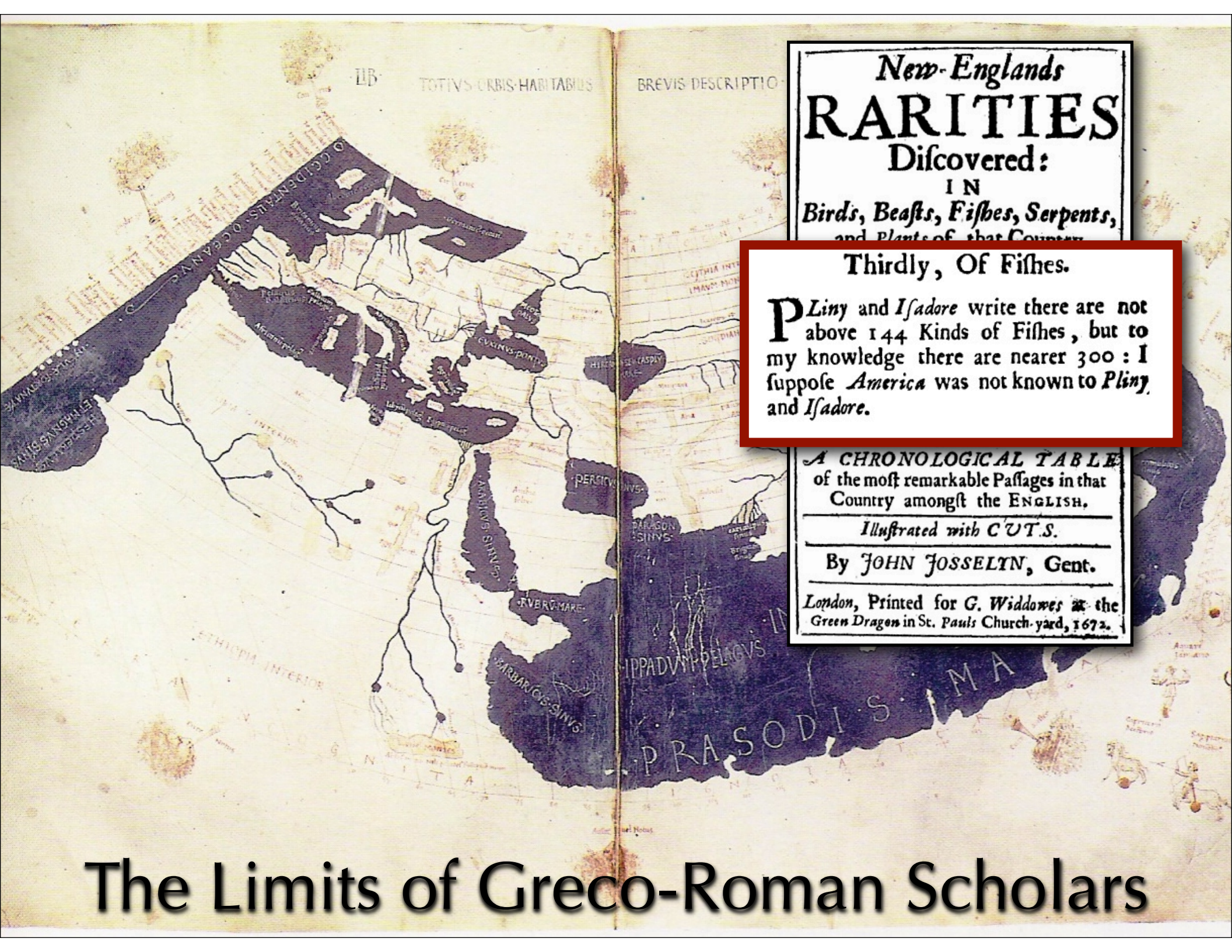
# The Birth of Science?

- 16th century Dutch traders: Brazil, Africa, India, Spice Islands, Japan
- New products of commercial and medicinal value
- Needed consensus about description and classification
- Cook's Claim: This fueled the emergence of an objective, materialist, fact-based (modern) natural history

Image for "Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age," Harold John Cook, removed due to copyright restrictions.

Image of a map of exploratory sailing routes from the Age of Exploration removed due to copyright restrictions. See: <http://jmundorf.edublogs.org/files/2009/11/AgeExpMap.jpg>.





*New-Englands*  
**RARITIES**  
Discovered:  
IN  
*Birds, Beasts, Fishes, Serpents,*  
and *Plants* of that Country

Thirdly, Of Fishes.  
**P**liny and *Isadore* write there are not above 144 Kinds of Fishes, but to my knowledge there are nearer 300: I suppose *America* was not known to *Pliny* and *Isadore*.

*A CHRONOLOGICAL TABLE*  
of the most remarkable Passages in that Country amongst the ENGLISH.  

---

*Illustrated with CUTS.*  

---

By JOHN JOSSELYN, Gent.  

---

London, Printed for G. Widdowes at the Green Dragon in St. Pauls Church-yard, 1672.

The Limits of Greco-Roman Scholars



# Overview:

- Natural history in early modern Europe and the Enlightenment
- How to organize and understand new discoveries
- The place of humans in systems of nature
- Science and commerce
- Classification and race







John James Audubon

A commercial market  
for natural history







MUSEI  
WORMIANI  
HISTORIA  
LUGD. BATAVORUM  
EX OFFICINA ELSEVIRIANA  
*Ad Typog. 1688.*

ANIMALIUM PARTES  
CONCHILIATA

SALIA  
TERRA  
RADICES



# Classification: Aristotle

- Blooded - Bloodless
- Viviparous - Oviparous
- Quadrapeds, marine mammals, birds, fish, mollusks, crustaceans, insects...







# Classification: Frederick II

“Birds, like all other animals, may be divided into various species in accordance with their sexual relations, their parturition, their methods of procuring food, their variations in residence at different seasons of the year (chiefly as a result of alterations in temperature), and their change in diet”



*New-Englands*  
**RARITIES**

**Discovered:**

**I N**

*Birds, Beasts, Fishes, Serpents,*  
and *Plants* of that Country.

Together with

The *Physical* and *Chyrurgical* REMEDIES  
wherewith the *Natives* constantly use to  
Cure their DISTEMPERS, WOUNDS,  
and SORES.

*ALSO*

A perfect *Description* of an *Indian SQUA*,  
in all her Bravery; with a *POEM* not  
improperly conferr'd upon her.

*LASTLY*

*A CHRONOLOGICAL TABLE*  
of the most remarkable Passages in that  
Country amongst the *ENGLISH*.

---

*Illustrated with CUTS.*

---

By *JOHN JOSSELYN, Gent.*

---

*London*, Printed for *G. Widdowes* at the  
*Green Dragon* in *St. Pauls Church-yard*, 1672.

# Classification? Josselyn

- Birds
- Beasts
- Fishes
- Serpents & Insects
- Plants





# Carl Linnaeus (1707-1778)

- Swedish physician, botanist
- Only one trip outside Sweden, to England
- Chaos in botanical nomenclature, “the first step toward barbarism”
- Goal: classify everything, “the alphabet of nature”



You are here

CAROLI LINNÆI

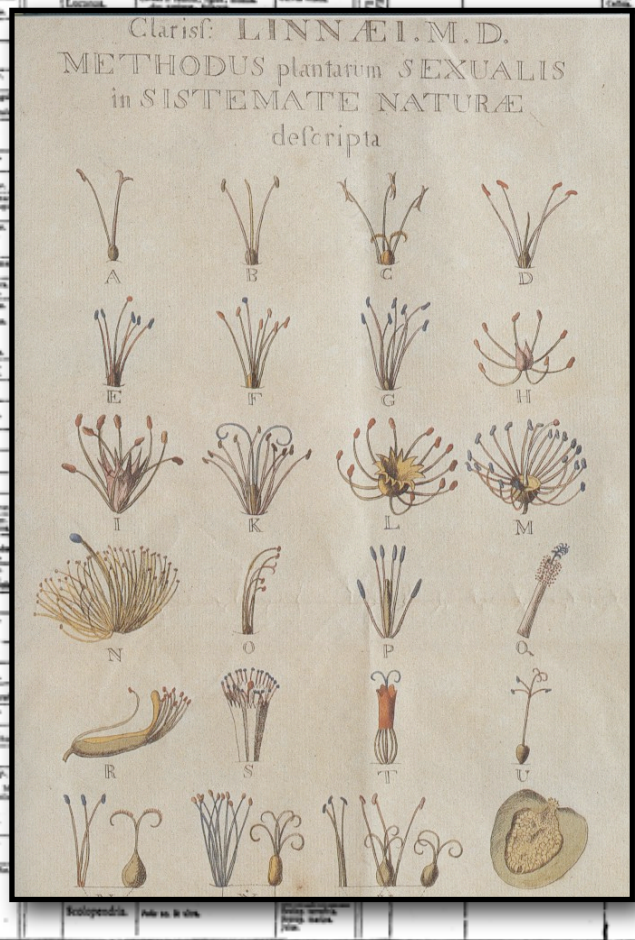
REGNUM ANIMALE.

I QUADRUPEDIA. II AVES. III AMPHIBIA.

IV PISCES. V INSECTA. VI VERMES.

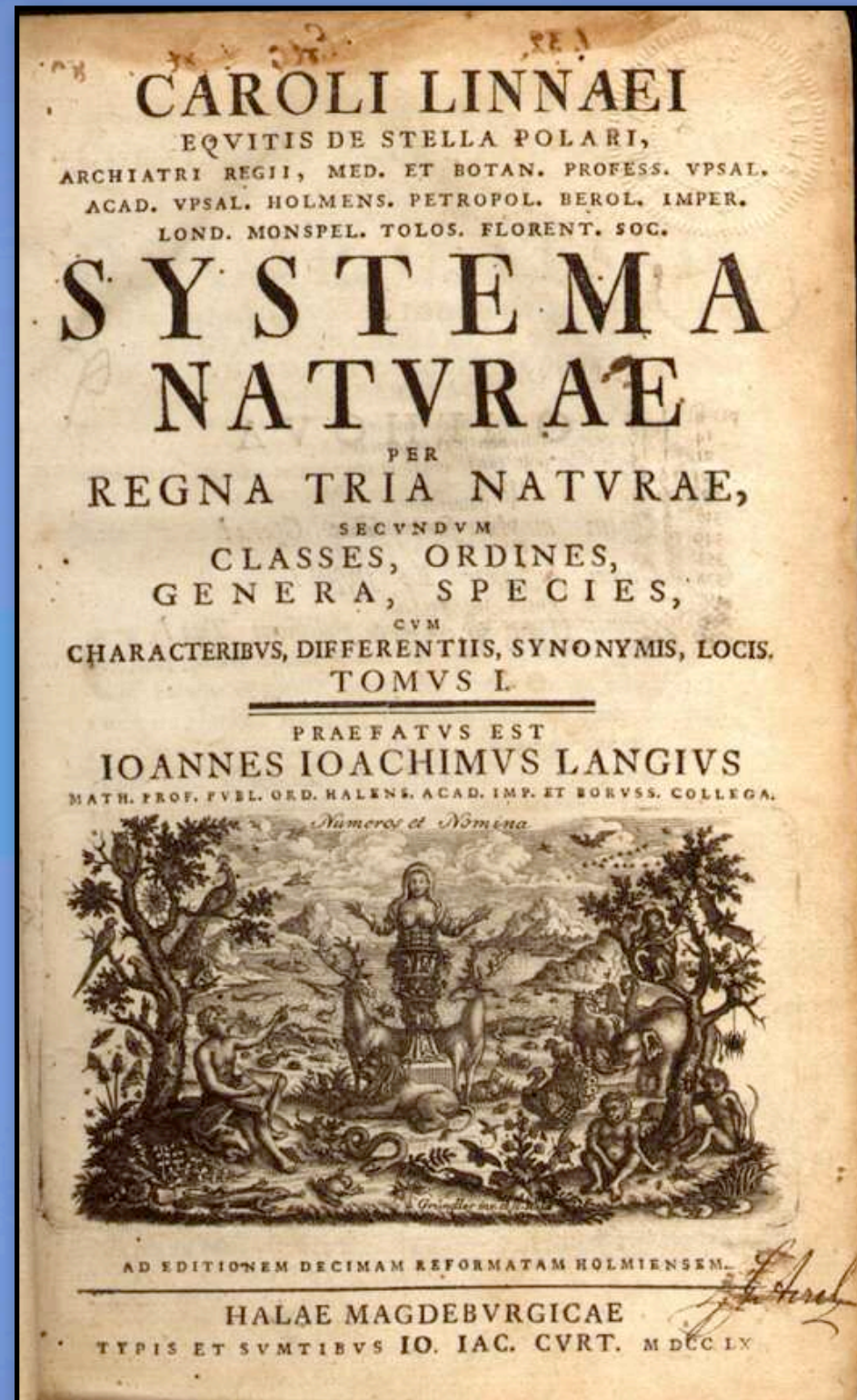
Table of animal classification for Quadrupedia, Aves, and Amphibia, including sub-headers like I QUADRUPEDIA, II AVES, III AMPHIBIA and various animal groups like Felina, Canina, etc.

Table of animal classification for Pisces, Insecta, and Vermes, including sub-headers like IV PISCES, V INSECTA, VI VERMES and various animal groups like Theresites, Carodis, etc.





- Why study nature?
- Theology: “Surely for no other reason than that the observer of the wonderful work might admire and praise its Maker.”
- Commerce: “All that is useful to man originates from these natural objects”





THE  
**Wisdom of God**  
Manifested in the  
**WORKS**  
OF THE  
**CREATION,**  
In Two P A R T S.

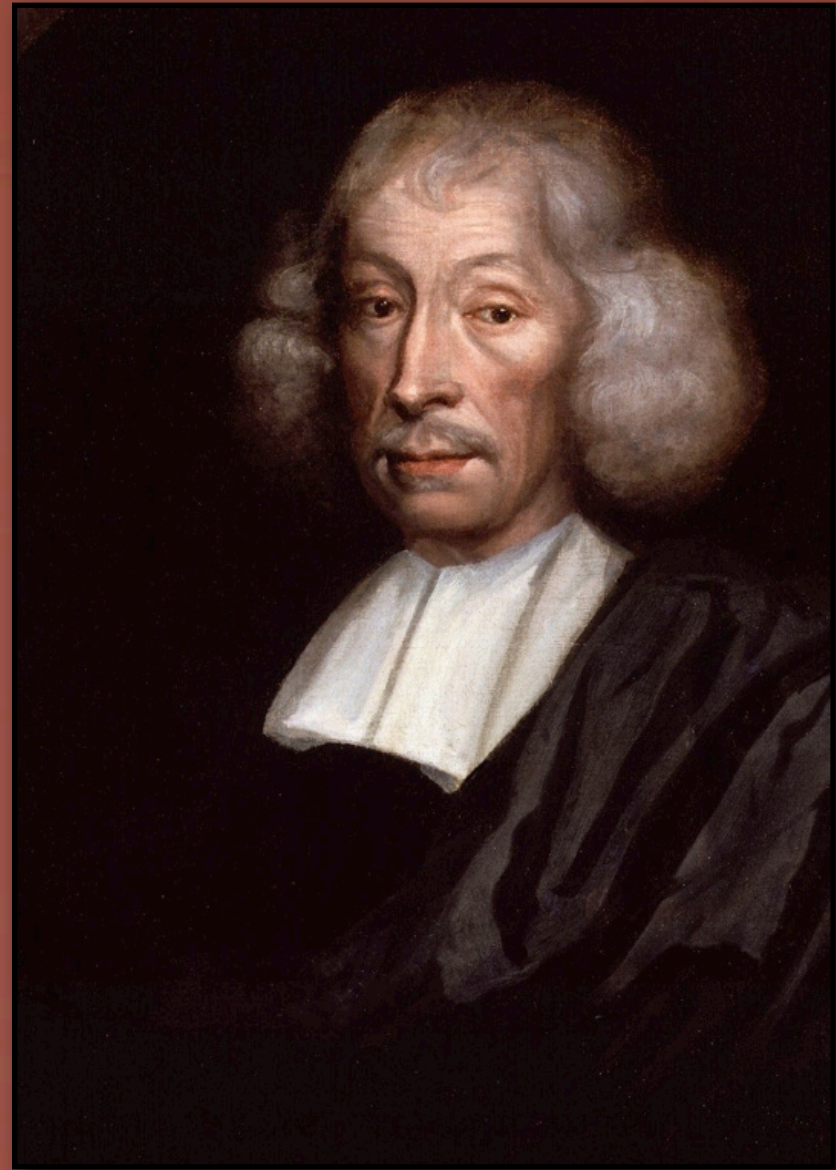
V I Z.

The Heavenly Bodies, Elements, Meteors,  
Fossils, Vegetables, Animals, (Beasts, Birds,  
Fishes, and Insects) more particularly in the  
Body of the Earth, its Figure, Motion, and  
Consistency, and in the admirable Structure  
of the Bodies of Man, and other Animals,  
as also in their Generation, &c.

By **J O H N R A Y**,  
Fellow of the *Royal Society*.

*The Second Edition, very much enlarged.*

L O N D O N:  
Printed for *Samuel Smith*, at the *Princes Arms*  
in *St. Paul's Church-yard*. 1 6 9 2.



Are all taxonomies  
arbitrary?











# Humans in the *Systema Naturae*



Ordo I.

## PRIMATES.

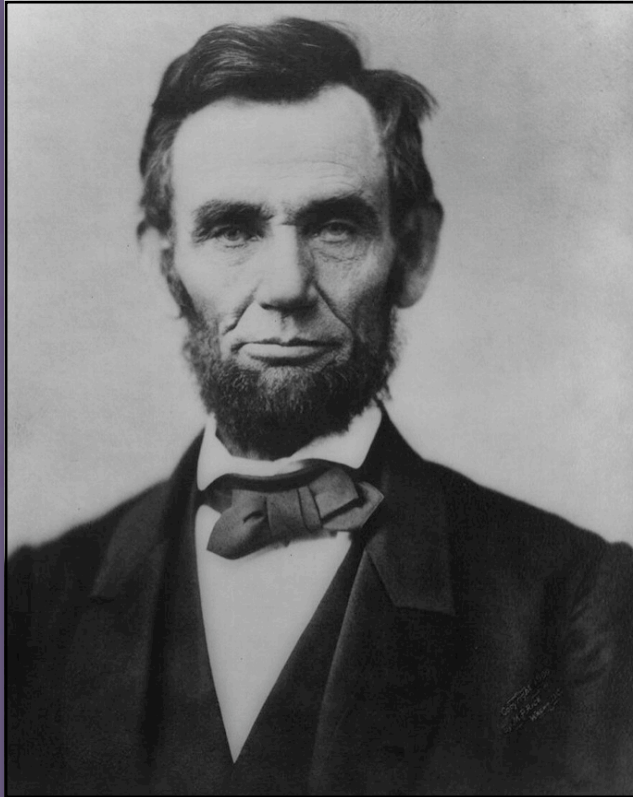
Dentes primores superiores IV paralleli.  
Mammæ pectorales, binæ.

### I. HOMO nosce Te ipsum.

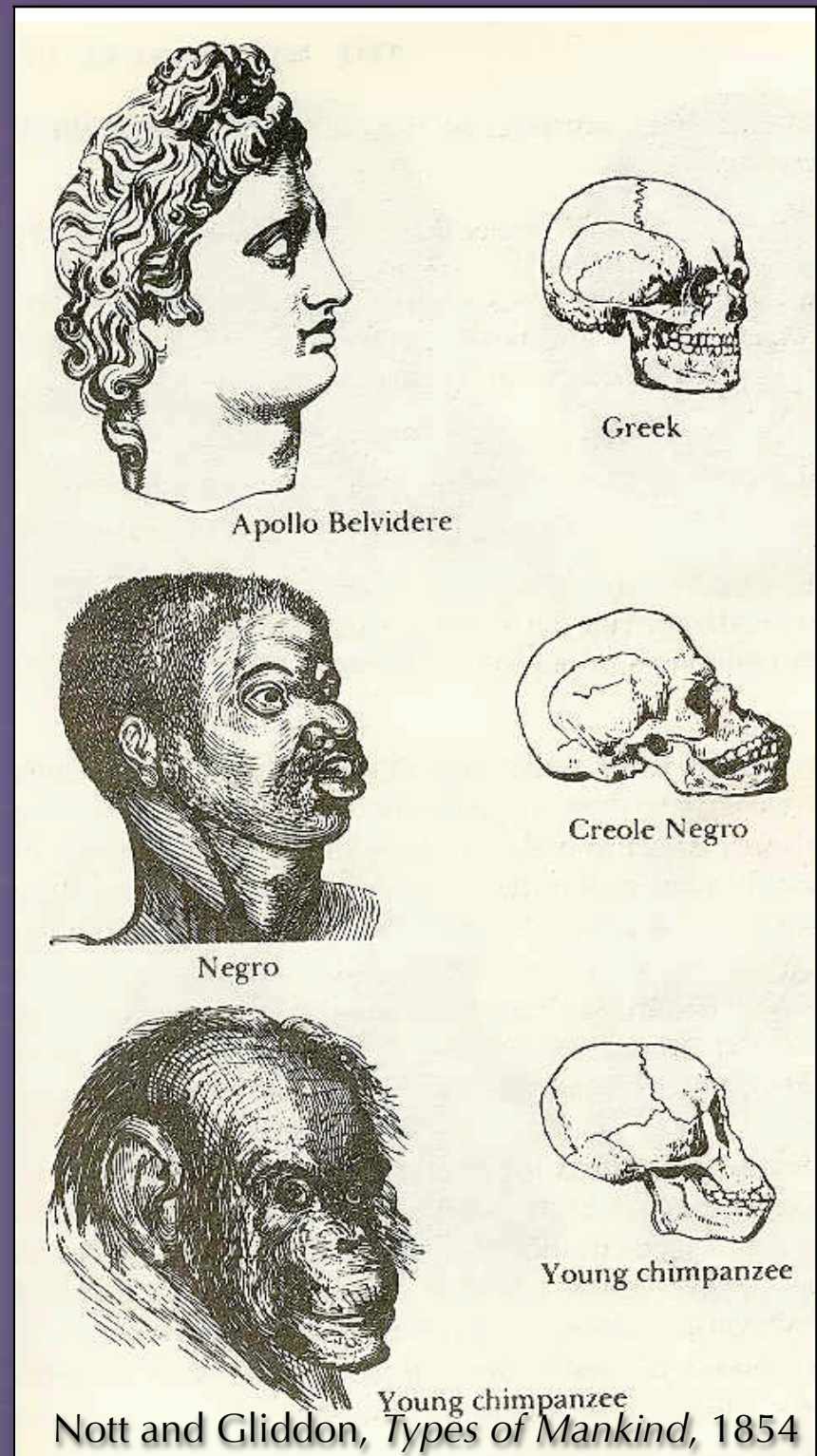
1. H. diurnus. (\*) *vagans cultura, loco.*
    - a. H. rufus, cholericus, rectus.
    - β. H. albus, sanguineus torolus.
    - γ. H. luridus, melancholicus rigidus.
    - δ. H. niger, phlegmaticus, laxus.
    - ε. H. monstruosus solo (a), vel arte (b. c.)
      - a. *Alpini parvi, agiles, timidi: Patagonici magni, seges.*
      - b. *Monorchides ut minus fertiles: Hottentotti.*  
*Junceæ puellæ abdomine attenuato: Europææ.*
      - c. *Macrocephali capite conico. Chineses.*  
*Plagioccephali capite antice compresso. Canadenses.*
  2. Homo nocturnus. Ourang Outang *Bont. jav. 84. t. 84.*  
*Genus Trogloditæ seu Ourang Outang ab Homine vero diffi-*  
*ctum, adhibita quamvis omni attentione, obtinere non potui, nisi as-*  
*serem notam lubricam, in aliis generibus non constantem. Nec Den-*  
*tes lanarii minime a reliquis remoti; nec Nymphae callæ, quibus*  
*carent Simiæ, hunc ad Simias reducere admittebant. Inquirant ar-*  
*teptæ in vivo, qua ratione, modo nota aliqua existant, ab Hominis*  
*genere separari queat, nam inter Simias versantem oportet esse Si-*  
*miliam. Apollodor.*
- Americanus.  
Europæus.  
Asiaticus.  
Afer.



# Classification, Hierarchy, Racism



“There is a physical difference between the white and black races which I believe will forever forbid the two races living together on terms of social and political equality ... I as much as any other man am in favor of having the superior position assigned to the white race.” -- Abraham Lincoln, 1858



Apollo Belvidere



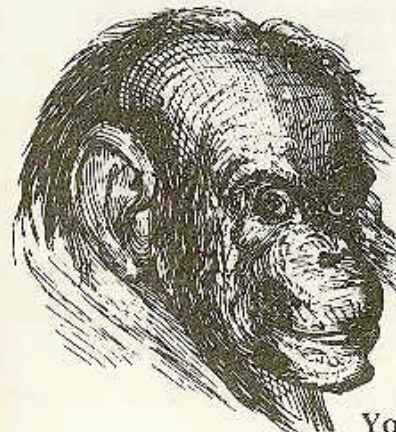
Greek



Negro



Creole Negro



Young chimpanzee



Young chimpanzee

Nott and Gliddon, *Types of Mankind*, 1854





MUSEI  
WORMIANI  
HISTORIA  
LUGD. BATAVORUM  
EX OFFICINA ELSEVIRIANA  
*A. J. J. 1688.*

ANIMALIUM PARTES  
CONCHILIATA

SALIA  
TERRA  
RADICES



MIT OpenCourseWare  
<http://ocw.mit.edu>

STS.003 The Rise of Modern Science  
Fall 2010

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.