From Natural Theology To Natural Selection

Darwin's influence on our society

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Outline

- Before Darwin
- What Darwin said
- Darwin's successors
- What Darwin displaced
- Conclusions and Evaluations

Distinction

- Darwin the man versus
 "Darwin": the Moses of biology
- "Darwin" is also a change of method:
 - dogmatic certainty out
 - critical doubt —in
- "Darwin": poster-boy of the anti-religious

The Zeitgeist before Darwin

Ussher: Creation 22 October 4004BC

Alexander Pope Essay on Man

"All are but parts of one stupendous whole, Whose body Nature is, and God the soul."

"... looks thro' Nature, up to Nature's God"

Scientists Who Believed in God

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Nicholas Copernicus (1473-1543)
 Sir Francis Bacon (1561-1627)
 Johannes Kepler (1571-1630)
   Galileo Galilei (1564-1642)
  Rene Descartes (1596-1650)
   Isaac Newton (1642-1727)
   Robert Boyle (1791-1867)
 Michael Faraday (1791-1867)
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Early Science

Explained the status quo in theistic or deistic terms

Started with the answer, then worked back.



The Astronomers Smooth as Clockwork



Copernicus, Kepler, Galileo, Newton

~1500

~1600

~1600

~1700

Orderly universe
"Cosmos" (Pythagoras)
Consistent Creator

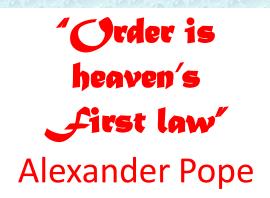
"I am thinking God's thoughts after him" Kepler

The Botanists

John Ray (1627-1705)

Wisdom of God in Creation:

 life designed by wise and benevolent deity



Linnaeus (1707-1778)

 invented a system of classifying organisms, plants and animals.

The Botanists

- William Paley (1741-1805)
- God = Creator and Master Gardener



- God = Cosmic Watchmaker
- Supports "The Great Chain of Being"

The Great Chain of Being Alexander Pope: Essay on Man

Vast chain of being! which from God began,

Natures aethereal, human, angel, man, Beast, bird, fish, insect, what no eye can see,

No glass can reach; from infinite to thee,

From thee to nothing.

The Great Chain of Being

- Aristotle: joins & separates transient, corrupt earth with/from the perfection of the heavens.
- Justification for social immobility
- Man, crown of the creation.
- Christians superior, the Church rules.

THE GEOLOGISTS Enter Challenges and Doubts

- Bishop Thomas Burnet (1635-1715)

 The Sacred Theory of The Earth
- Canal digging exposed rock strata, fossils. Things change!
- Change challenges The Great
 Chain

What is a "Species"?

"A group of plants or animals which is reproductively isolated from all others."

Boints of View

- 1. Declare that species are fixed ("conservatives")
- 2. Reconcile new knowledge with Biblical Tradition ("liberals")
- 3. Declare that fossils indicate that species have changed ("radicals")

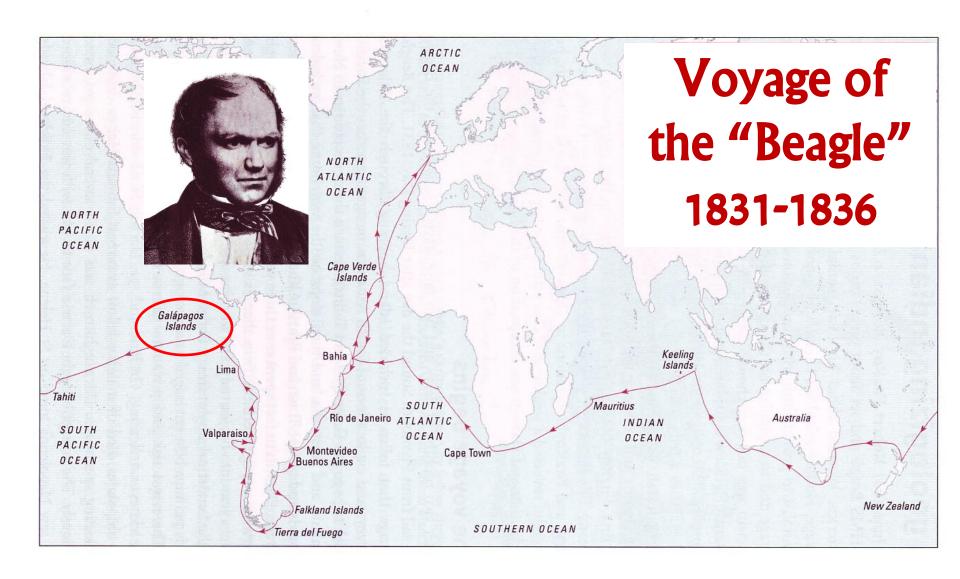
Who alters species?

- An agent (e.g. God)
- Organisms by striving (Lamarck)
- Natural Selection (Darwin)
- To unroll is to "evolve"

Discuss

Does <u>order</u> mean <u>design</u>?

Darwin's Big Field Trip



The "Bombshell" of 1859

- Published reluctantly
- 20 years after the Beagle trip

THE ORIGIN OF SPECIES

BY MEANS OF NATURAL SELECTION,

OR THE

PRESERVATION OF PAVOURED RACES IN THE STRUGGLE FOR LIFE.

BY CHARLES DARWIN, M.A.,

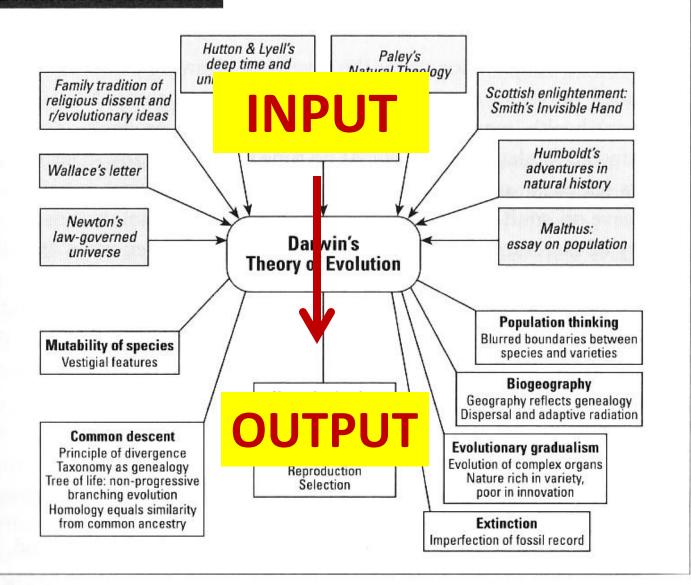
PERSON OF THE BOYAL, GROUNDINGS, LEXINAN, ETC., SCIENCE; AUTHOR OF "ADDRESS OF RESIDENCE DURING St. N. S. BEAULI'S VOYAGE DOUGH WORLD."

LONDON:

JOHN MURRAY, ALBEMARLE STREET. 1850.

The right of Propolation is represed.

DARWIN'S THEORY





EVOLUTION & Dummies



- Individuals within a species each have a subtly different genetic makeup.
- By that some are better equipped to compete for survival and for mates.
- Circumstances define 'winners' and 'losers'.
- This is <u>natural selection</u>
- neither design nor chance.

Darwin's significant contribution

Lamarck was nearly right.



Mutability of species:

• Lamarck **☑** Darwin **☑**

Natural processes:

Lamarck ☑ Darwin ☑
 Random Differences significant:



Recent Example

Biston bitularia moth populations

- Pre-Industrial revolution, 95%
 <u>white</u>: camouflaged on white lichen.
- Industrial revolution produced sootcovered lichen.
- Black moths were better camouflaged. Now 95% <u>black</u>.

Recent Example

Contemporary Samoan population

- high prevalence of overweight
- In the history of settlement there was a low level of genetic variation.
- 'thrifty genes' = adaptive advantage in poor food conditions
- rapid fat growth = increased survival

Artificial & Sexual Selection

- Additional to natural selection
- Human breeding management in plants and animals
- Darwin used this as a template
- Sexual: males fight, winner takes all.

What Darwin Displaced

- Static earth replaced by processes
- The Great Chain of Being: replaced by "Tree of Life" (Later "Web of Life")
- Design replaced by natural order.
- Agendas in nature ("teleology") replaced by a muddle-along randomness.

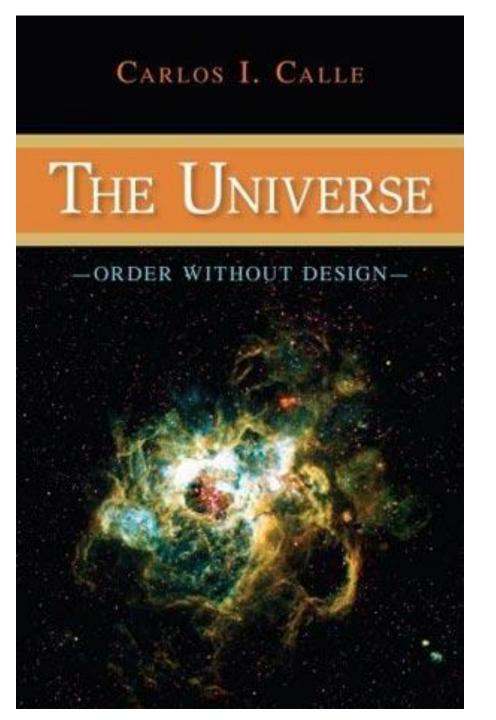
Don Cupitt

"A new empty mechanical universe is replacing the old religious cosmology."

No spirits, no meaning, no purpose, no values."

Choices

- Creationism:
 denial of scientific conclusions
- Intelligent Design: <u>misappropriation</u> of scientific conclusions
- Acceptance that the scientific conclusions are "about right"
- Dogmatic Evolutionism.

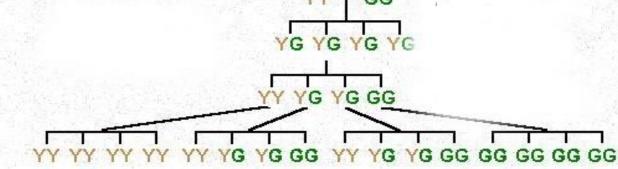


Discuss

- Does Nature just muddle along?
- What happened to "Nature and Nature's God"?

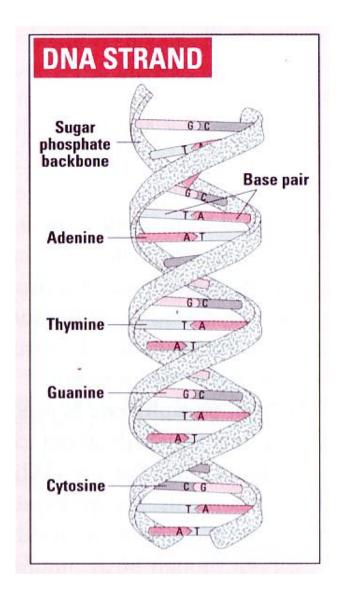
What Came After Darwin How Parents Determine Offspring

- Darwin: "blend characteristics"
- Mendel: "shuffle characteristics"
- Mendel published 1866, not noticed until :



What Came After Darwin

- How genes mix'n'match
- Crick & Watson
 1953 "The
 Double Helix"

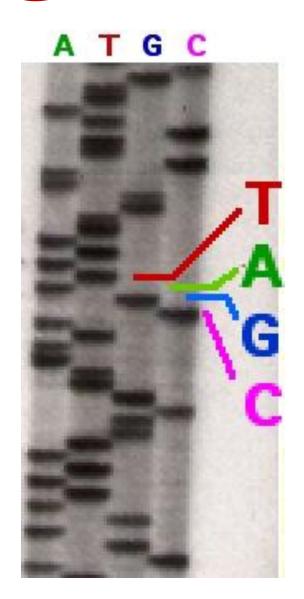




Full Genome Sequencing

May soon become commercial

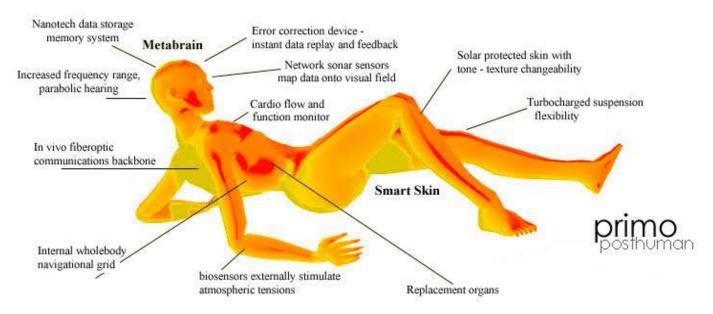
Basis for eugenic?



"Darwin" opens the way to augmenting the human

- 1. Restore function: spectacles
- 2. Extra function: performance drugs
- 3. Modify genome: e.g. Fix diseases
- 4. Transhuman: biology + technology

The Engineered Human Transhumans Technological advances well beyond mere prosthetics



Discuss

- What happens now to asthetics? Religion?
- How could pity have emerged by this route?
- How should we live in the light of Darwin?

But Why Does Bother?



Appendix

From "Essay on Man" by Alexander Pope

Say first, of God above, or man below,
What can we reason, but from what we know?
Of man, what see we but his station here,
From which to reason, or to which refer?
Thro' worlds unnumber'd tho' the God be known,

'Tis ours to trace him only in our own.

He, who thro' vast immensity can pierce,

See worlds on worlds compose one universe,

Observe how system into system runs,

What other planets circle other suns,

What vary'd being peoples every star,

May tell why heav'n has made us as we are.

From "Dover Beach" by Matthew Arnold

Ah, love, let us be true
To one another! for the world, which seems
To lie before us like a land of dreams,
So various, so beautiful, so new,
Hath really neither joy, nor love, nor light,
Nor certitude, nor peace, nor help for pain;
And we are here as on a darkling plain
Swept with confused alarms of struggle and
flight,

Where ignorant armies clash by night.

In using these two pieces, I was trying to show the contrast between the deistic confidence represented by Pope and the 'loss of faith' shown by Arnold who is saying that, if you want "joy ... Love ... Light ... Certitude ... Peace ... help for pain, then you have to *make* them. The natural order, however aweinspiring, cannot provide them.