

# Stephen Jay Gould on “deep time”

“geology’s greatest contribution to human thought....[a discovery] so central, so sweet, and so provocative, that we cannot hope to match its importance again.”

From *Time’s Arrow, Time’s Cycle* (1987)

# GEORGII AGRICOLAE

## DE RE METALLICA LIBRI XII. QVI.

bus Officia, Instrumenta, Machinae, ac omnia demum ad Minerarum  
extractionem, non modo locute, sed et describuntur, sed & per  
effigies, his locis interius, ad usum Latino, Germanicisq; appo-  
sitis, in oculos ponuntur, ut clarius tradi non possint.

FRONTIS

DE ANIMANTIUM SYSTEMATIBUS Liber ab Antonio  
Cognitacorum Indicibus diversis, quo quod in opere tractatum est,  
pulchre demonstrantibus.



FRONTIS

BASILEAE M<sup>o</sup> D<sup>o</sup> LVI<sup>o</sup>

Com Privilegio Imperatoris in auro. 7.  
& Galliarum Regis ad Scoticam.



A—TWIG. B—TRENCH.

# Comparison of Werner's Neptunist Theory and Hutton's Plutonist Theory

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See: <http://bit.ly/kJLrQ8>

# Baron Georges Cuvier (1769-1832)



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# From Cuvier's *Le règne animal*, first published 1817



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# Cuvier's Animals

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See: <http://ecx.images-amazon.com/images/I/516MD0GJX4L. SS500 .jpg>

# Handaxes, from article in Archaeologia (written by John Frere), 1800







*Present state of the Temple of Serapis at Pozzuoli.*

*London, Published by John Murray, Albemarle-Street, 1830.*

PRINCIPLES  
OF  
GEOLOGY,

AN ATTEMPT TO EXPLAIN THE FORMER CHANGES  
OF THE EARTH'S SURFACE,

BY REFERENCE TO CAUSES NOW IN OPERATION.

BY  
CHARLES LYELL, Esq., F.R.S.

FELLOW SECRETARY TO THE GEOL. SOC., &c.

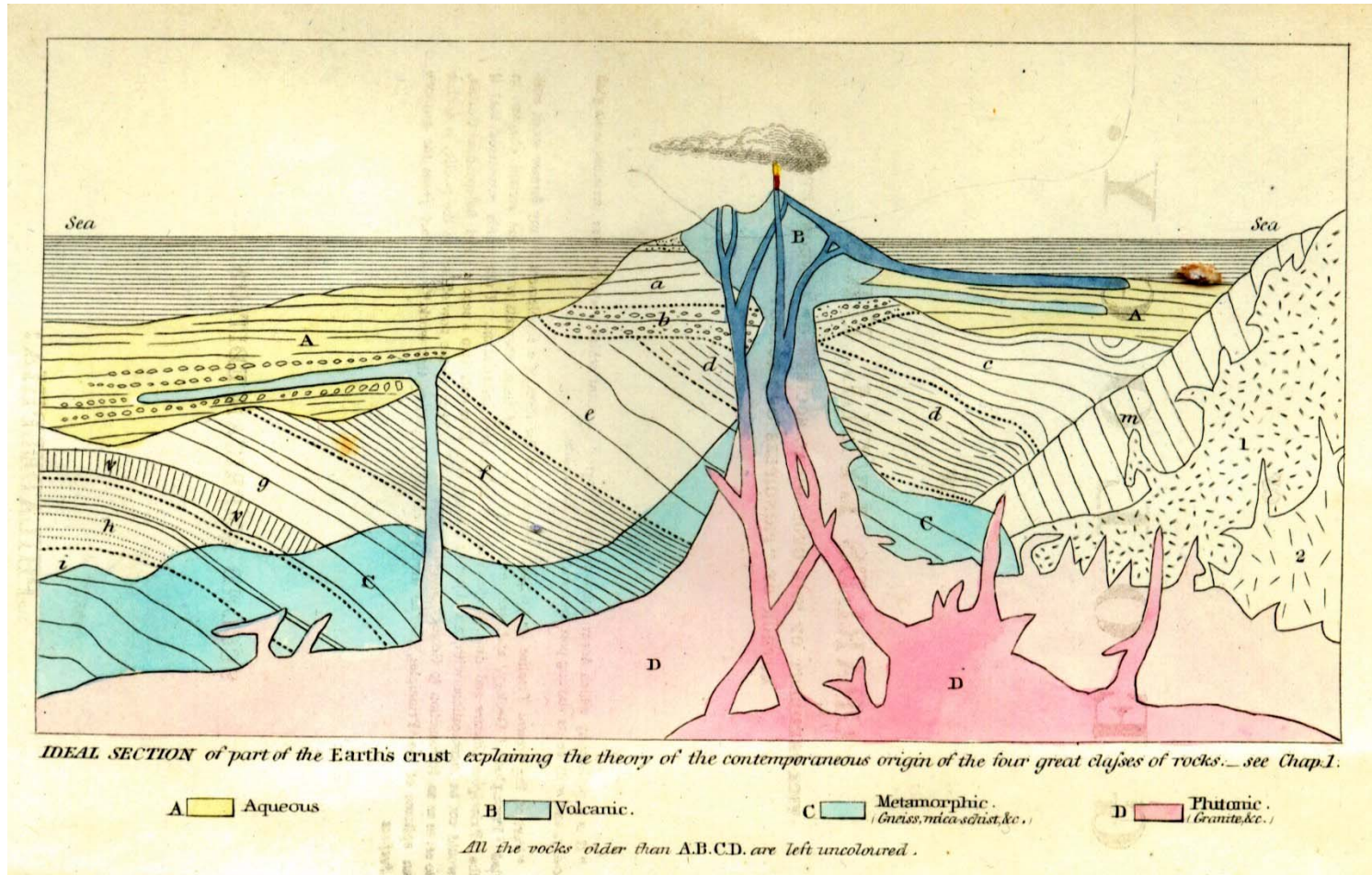
IN TWO VOLUMES.

VOL. I.

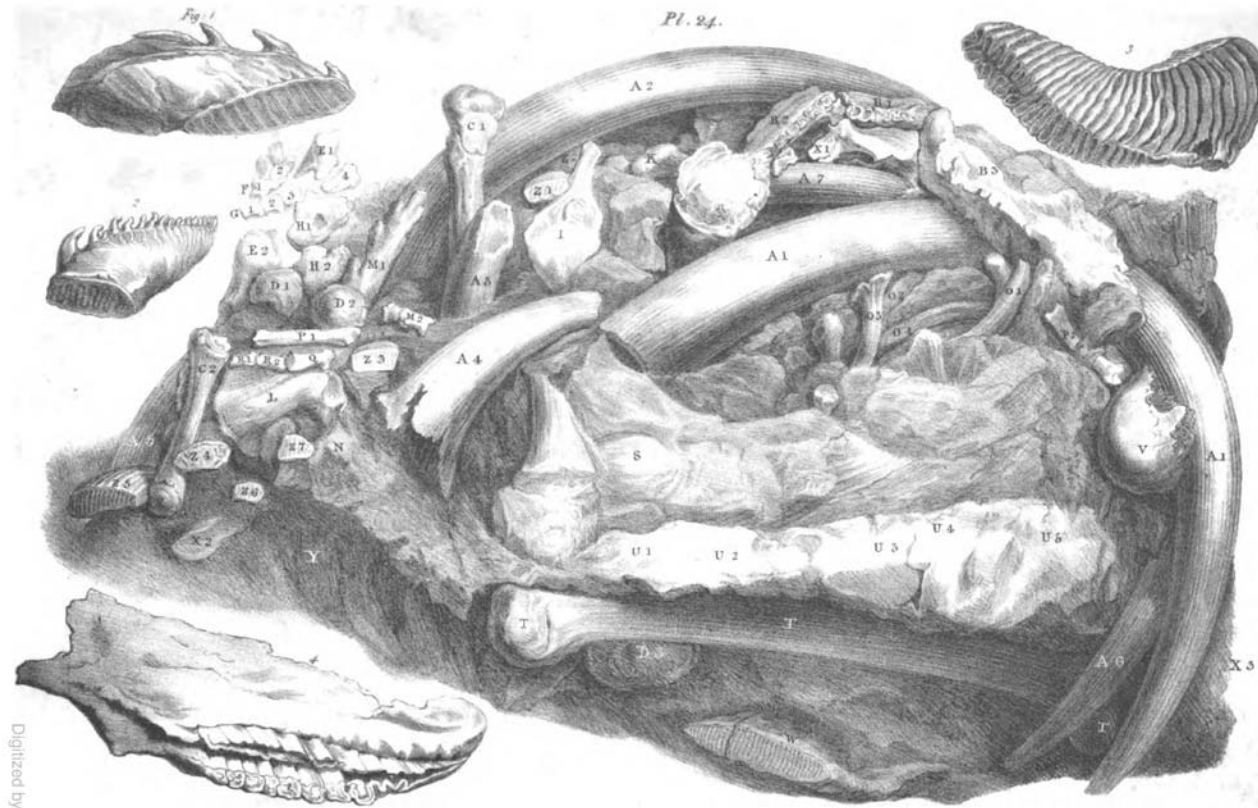
LONDON:  
JOHN MURRAY, ALBEMARLE-STREET.

MDCCCXXX.

# Frontispiece, Lyell's Principles of Geology



# From William Buckland, Reliquiae Diluvianae, (1823)



MASS OF TUSKS, TEETH AND BONES FOUND AT THIEDE NEAR BRUNSWICK.

- |  |   |                              |  |   |
|--|---|------------------------------|--|---|
| A 1,2,3,4,5,6,7 Tusks of <i>M.</i>           | E 2 Lower Part of the same Bone             | I 1 Hip Bone of <i>M.</i>    | Q 1 Metatarsus of <i>H.</i>                    | W 1/2 Half of the Lower Jaw with Teeth of <i>M.</i> |
| B 1,2 Lower Jaw of <i>R.</i>                 | F 1,2 Vertebrae of the Back of <i>R.</i>    | M 1 Horn of <i>S.</i>        | R 1,2 Molar Teeth from Upper Jaw of <i>H.</i>  | X 1,2,3 Shoulder Blades of <i>M.</i>                |
| B 3 Upper Jaw of <i>R.</i>                   | G 1,2,3,4 Toe Bones of <i>M.</i>            | M 2 Middle Part of the same. | S Part of Pelvis of <i>M.</i>                  | Y Vertebrae of the Back of <i>M.</i>                |
| C 1 Thigh Bone of <i>M.</i>                  | H 1 First Vertebra of the neck of <i>M.</i> | N Lower Jaw of <i>R.</i>     | T Humerus of <i>M.</i> which measures 6.8, &c. | Z 1,2,3,4,5,6,7 Molar Teeth of <i>M.</i>            |
| C 2 Thigh Bone of <i>R.</i>                  | H 2 Second Vertebra of the same.            | O 1,2,3,4 Ribs of <i>M.</i>  | may be considered the Scale for the root.      | 1, 2, 3 Teeth of Upper Jaw of <i>M.</i>             |
| D 1,2,3 Head Part of Thigh Bone of <i>M.</i> | I Lower Jaw of <i>M.</i>                    | P 1 Tibia of <i>H.</i>       | U 1,2,3,4,5 Cervical Vertebrae of <i>M.</i>    | 3 Teeth of Lower Jaw of <i>M.</i>                   |
| F 1 Upper Part of Humerus of <i>M.</i>       | K Patella of <i>M.</i>                      | F 2 Tibia of <i>S.</i>       | V Part of a Skull of <i>M.</i>                 | 4 Upper Jaw of <i>R.</i>                            |



# Kent's Cavern

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See: [http://farm6.static.flickr.com/5004/5380642570\\_4eef72fcef.jpg](http://farm6.static.flickr.com/5004/5380642570_4eef72fcef.jpg)

# Neandertal skull (left) Homo sapiens (right)

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See: <http://bit.ly/jSWLge>

# Neandertal skull (left) Homo sapiens (right)

Image removed due to copyright restrictions.

See:

[http://anthro.palomar.edu/homo2/images/Neandertal\\_modern\\_human\\_skulls.gif](http://anthro.palomar.edu/homo2/images/Neandertal_modern_human_skulls.gif)

27 April 1859  
Gravel pit at Abbeville, France

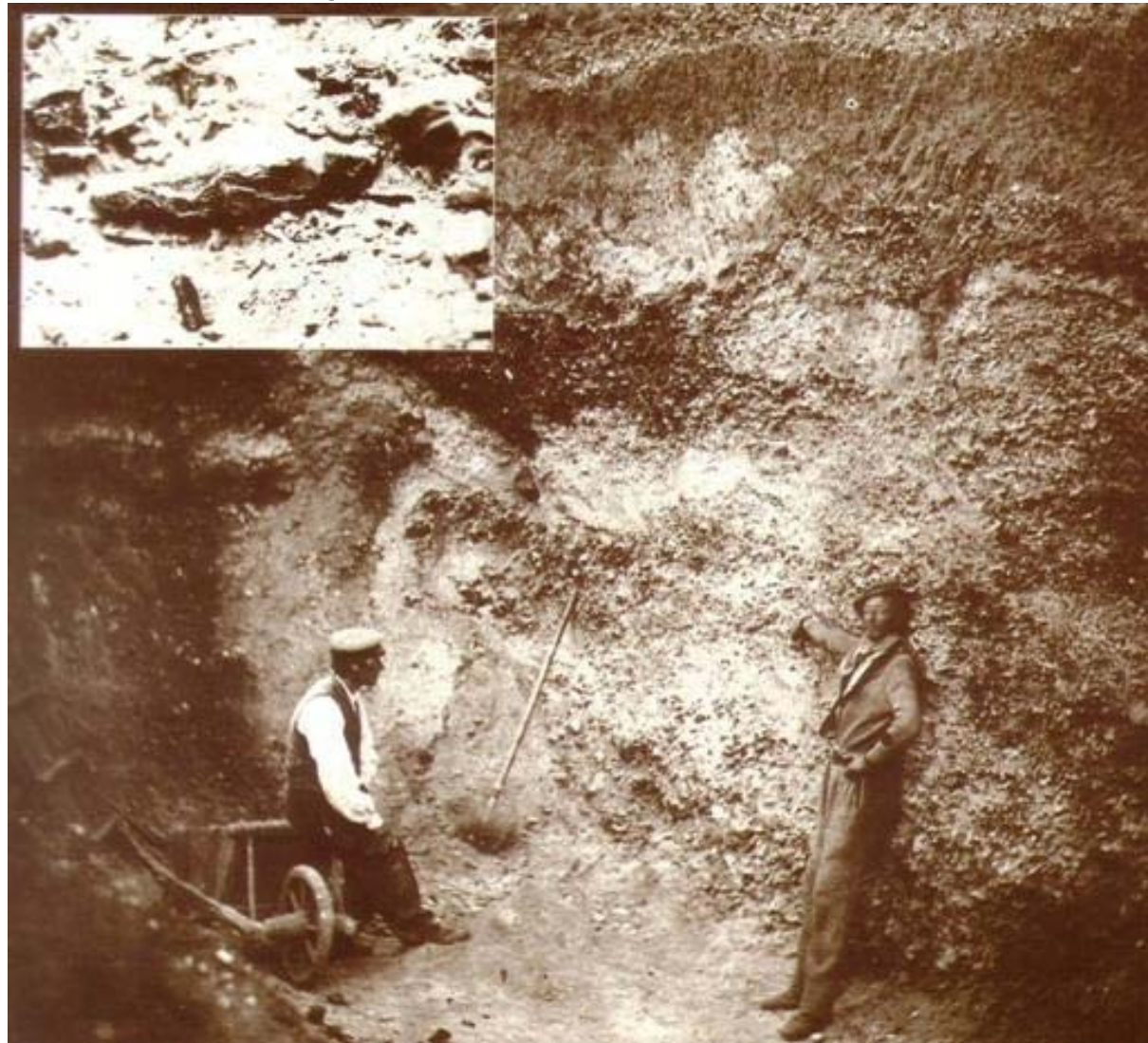




Image of Neandertal skull from  
Huxley's *Man's Place in Nature*, Vol. 7  
(1863)



# Artist Conceptions of Neandertal

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See: <http://custance.org/old/evol/3ch3/fig11.jpg>

# Artist Conceptions of Neandertal

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See: [http://frankfrazetta.org/images/frank\\_frazetta\\_neanderthal.jpg](http://frankfrazetta.org/images/frank_frazetta_neanderthal.jpg)

# La Madeleine Art Objects

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See: <http://www.donsmaps.com/madeleine.html>

# Les Eyzies, Dordogne region, southern France

- Railroad line put through 1868
- In blasting a rock shelter: 4 skeletons found (tall, large brained, long-headed)
- Formal burial with pierced shells and other ornaments
- Called Cro-Magnon after the shelter
- Neandertal skeletons also found in that area

# Abri de Cro-Magnon

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See: [http://www.megalithic.co.uk/a558/a312/gallery/France/Aquitaine/aP5190370\\_Cro\\_Magnon.JPG](http://www.megalithic.co.uk/a558/a312/gallery/France/Aquitaine/aP5190370_Cro_Magnon.JPG)

# Skull, found 1868 in Abri de Cro-Magnon, Les Eyzies

Image removed due to copyright restrictions.

See: <http://www.mos.org/evolution/fossils/photos/cro-magnon.jpg>

# From John Lubbock, *Prehistoric Times* (1865)





# From Lubbock, *Prehistoric Times*



# Kent's Cavern today

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See:

<http://www.kents-cavern.co.uk/>

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STS.007 Technology in History  
Fall 2010

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