The background of the slide is a reproduction of the painting "Starry Night over the Rhone" by Vincent van Gogh. The painting depicts a night scene of a river (the Rhone) in Arles, France. The sky is a deep, dark blue, filled with numerous bright, glowing stars and nebulae. The lights from buildings and street lamps along the riverbank are reflected in the water, creating a shimmering effect. In the foreground, two figures are walking along the riverbank, their forms rendered in dark, textured brushstrokes. The overall mood is serene and contemplative, capturing the beauty of a night sky over a city.

BIG HISTORY: EDUCATION & RESEARCH IN AN ERA OF GLOBAL CHALLENGES

DAVID CHRISTIAN

Macquarie University, Sydney

WCU Fellow, Ewha Womans University, Seoul

Van Gogh, "Starry Night over the Rhone"

September 1888, Arles

Musée d'Orsay, Paris

What knowledge will Daniel need when he grows up?

- He and his friends will face huge, complex, sometimes dangerous global challenges
 - Will they cope with global threats such as climate change, energy shortage, nuclear proliferation?
 - Will they learn how to work together across many different countries & cultures?
- They will need an understanding of
 - The sciences and the humanities
 - How things change at different time scales
 - Global processes and global relations



What sort of education will Daniel and his friends need?



I want to suggest an answer

- Daniel and his generation will need an education that includes **Big History**
 - A global story showing how everything fits together
 - A story linking cosmology, physics, biology, history ...
 - A map of modern knowledge, that will provide ...
 - A framework to help them understand their place in the cosmos and on this earth

Carina nebula 'star nursery' 2012

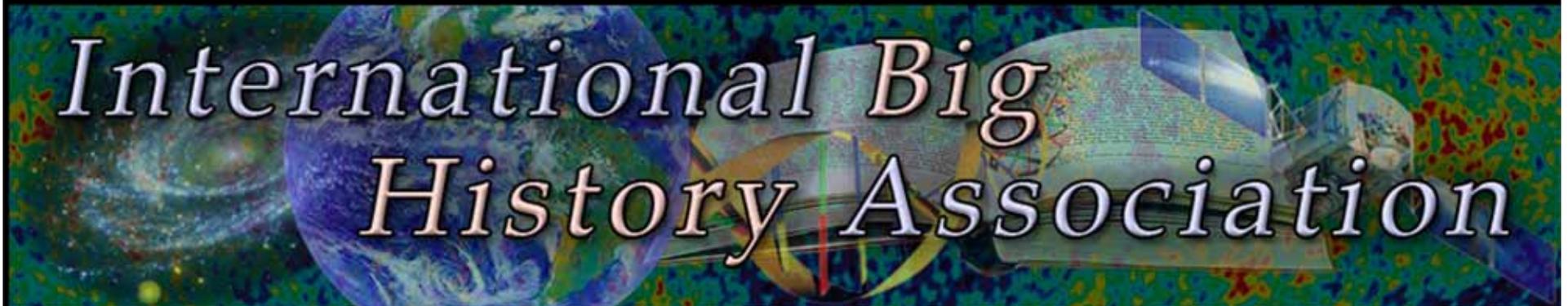
<http://www.bbc.co.uk/news/science-environment-16925085>

OUTLINE

- What is Big History?
- A 10-minute Course in Big History
- The Big History Project: Education for the 21st Century
- The Big History Institute: Research for the 21st Century

WHAT IS BIG HISTORY?

- *“Big History is the attempt to understand, in a unified, interdisciplinary way, the history of Cosmos, Earth, Life, and Humanity.”*
 - From the website of the recently established International Big History Association @ <http://ibhanet.org/>



MY DEFINITION



- *“A modern origin story, a unified history of the universe, the earth and humanity on the basis of modern scientific scholarship.”*
- Like all origin stories, big history is powerful because it helps you see how everything fits together ...

Like seeing our Earth from Space:



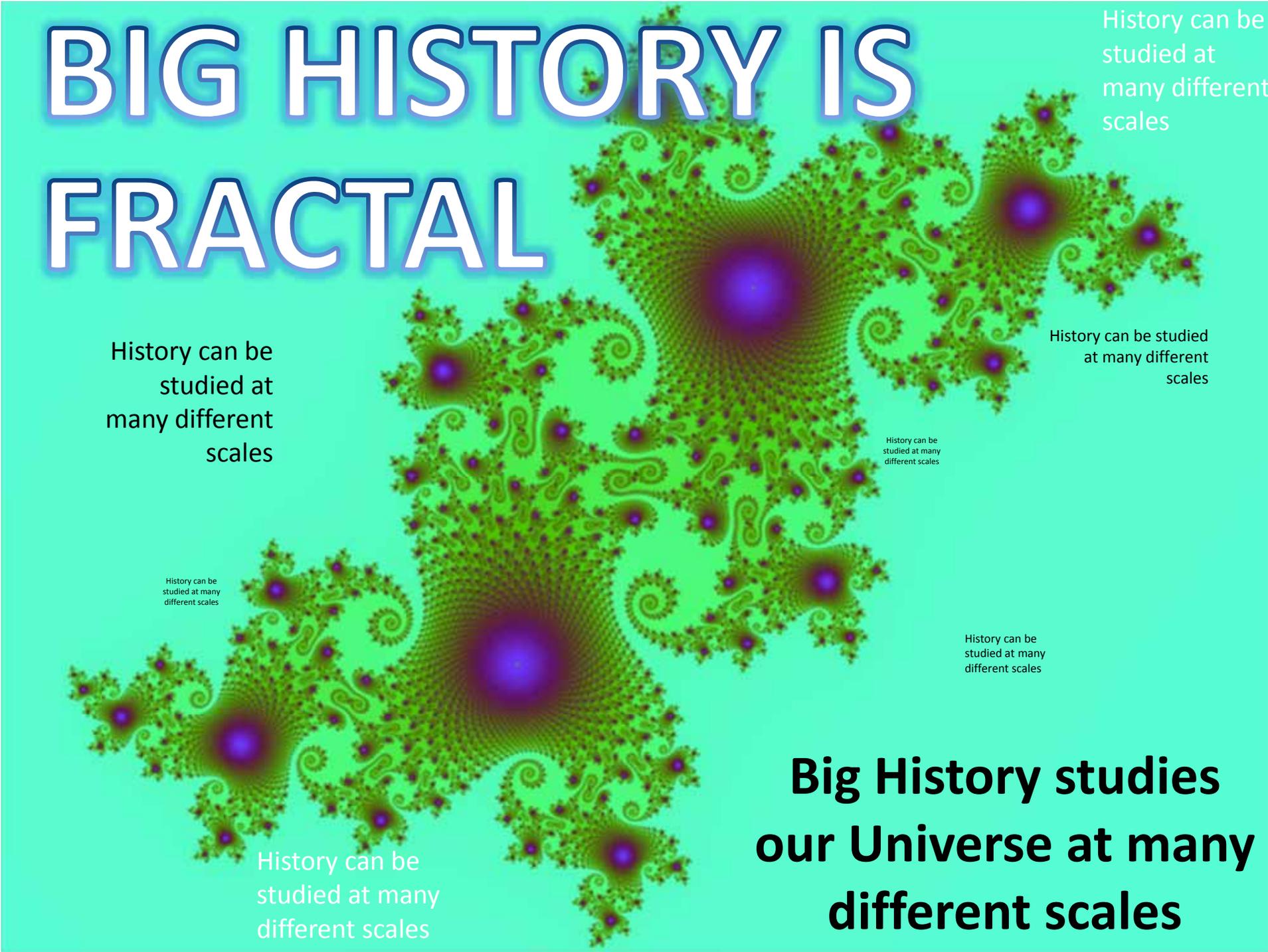
All astronauts and cosmonauts have shared a similar experience

Sultan Bin Salman al-Saud (the 1st Arab astronaut, who flew on the shuttle *Discovery*, 1985)

Text from Kevin Kelley, *Home Planet*

"The first day or so we all pointed to our countries. The third or fourth day we were pointing to our continents. By the fifth day we were aware of only one Earth."

BIG HISTORY IS FRACTAL



History can be studied at many different scales

Big History studies our Universe at many different scales

Our own Galaxy, the Milky Way, Over Piton de l'Eau, Reunion island

Image Credit & Copyright: Luc Perrot

OUTLINE

- What is Big History?
- **A 10-minute Course in Big History**
- The Big History Project: Education for the 21st Century
- The Big History Institute: Research for the 21st Century

A conceptual tool kit: Key Concepts of a Big History course

Four key ideas to help understand big history

1. Increasing Complexity

- The early universe was simple: then more complex things appeared, from stars to planets, to life, to us!

2. Goldilocks conditions

- New things appeared where conditions were *just right!*

3. Emergence

- These new things (e.g. life) had entirely new qualities

4. Thresholds

- They appeared quite suddenly at *threshold moments*

'EMERGENCE' & 'THRESHOLDS': How these themes shape Big History

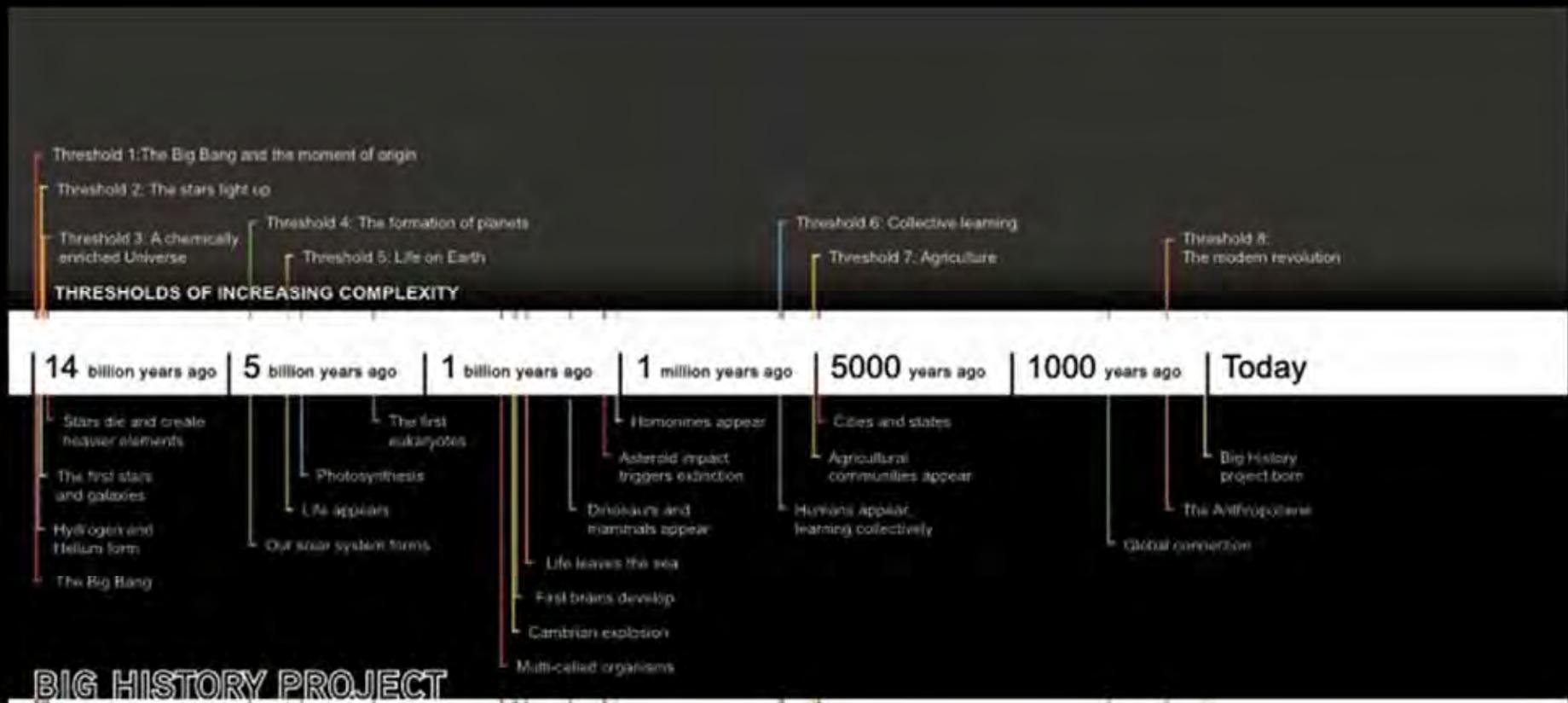
- **Complex** things appear
- They have new '**Emergent Qualities**'
- They appear only when the conditions are just right: **Goldilocks conditions**
- We call these moments '**Thresholds**'
 - Thresholds are doorways to something new



8 Main Thresholds

1. The Universe [**Cosmology**]: 13.7 Bys ago
2. The first Stars [**Astronomy**]: 13.5 Bys ago
3. Chemical elements [**Chemistry**]: from c. 13.5 Bys ago
4. Planets and our earth [**Geology**]: 4.5 Bys ago
5. Life [**Biology**]: c. 3.8 Bys ago
6. Human beings [**Anthropology**]: c. 200 Kys ago
7. Agriculture [**Archaeology**]: c. 10 Kys ago
8. Modern Society [**History**]: c. 200 Ys ago!

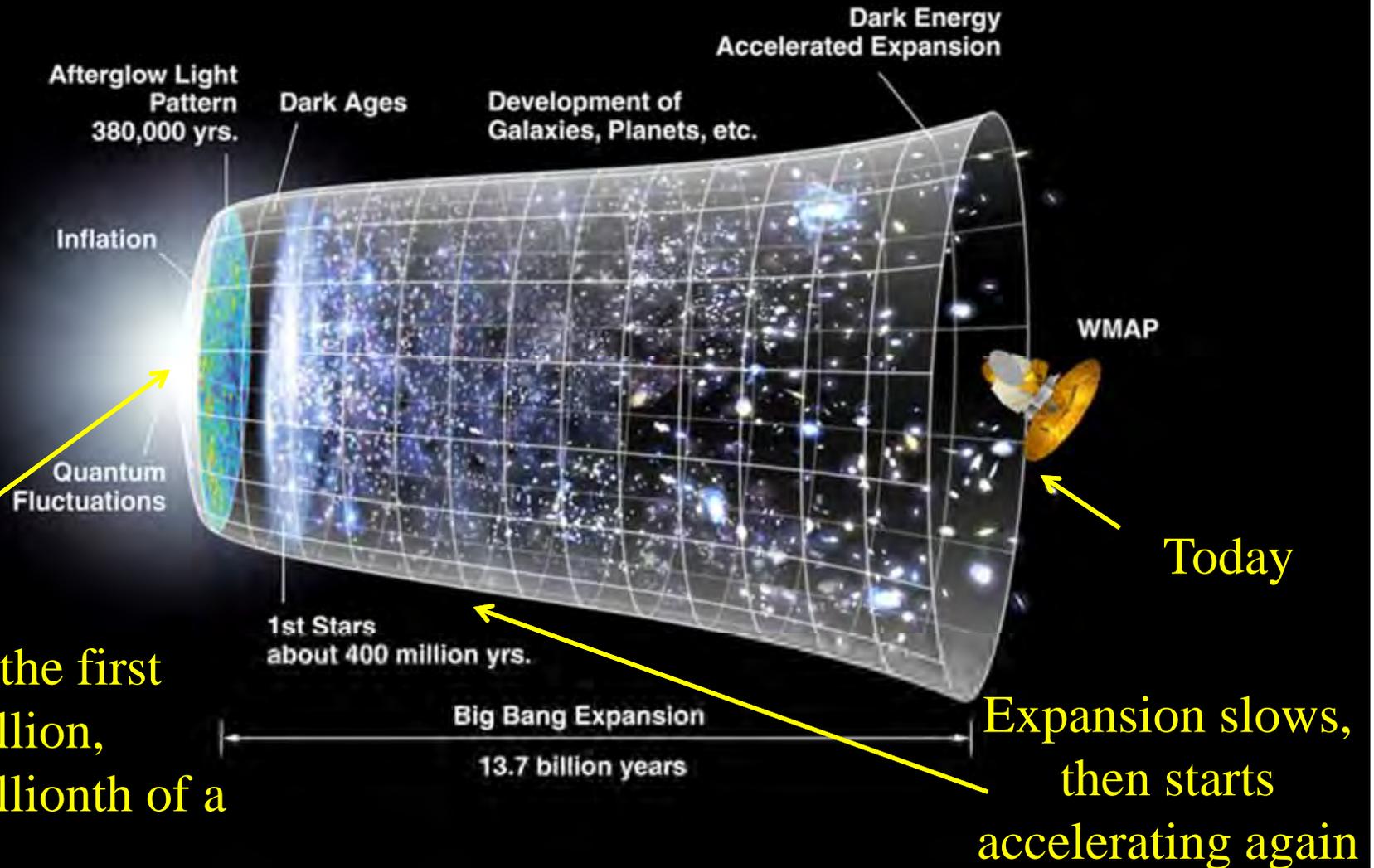
Equipped with these ideas, let's survey 13.7 billion years in 10 minutes!



To give you a feeling for the time scales, I'll divide all the dates by 1 billion. So imagine the Universe was created just 13 years ago.

FIRST THRESHOLD: Big Bang, Creation of Universe, 13.7 Billion years ago

(13 years ago on our imaginary scale)



Inflation: the first
billion, billion,
billion, billionth of a
second

Increasing Complexity: the basic story

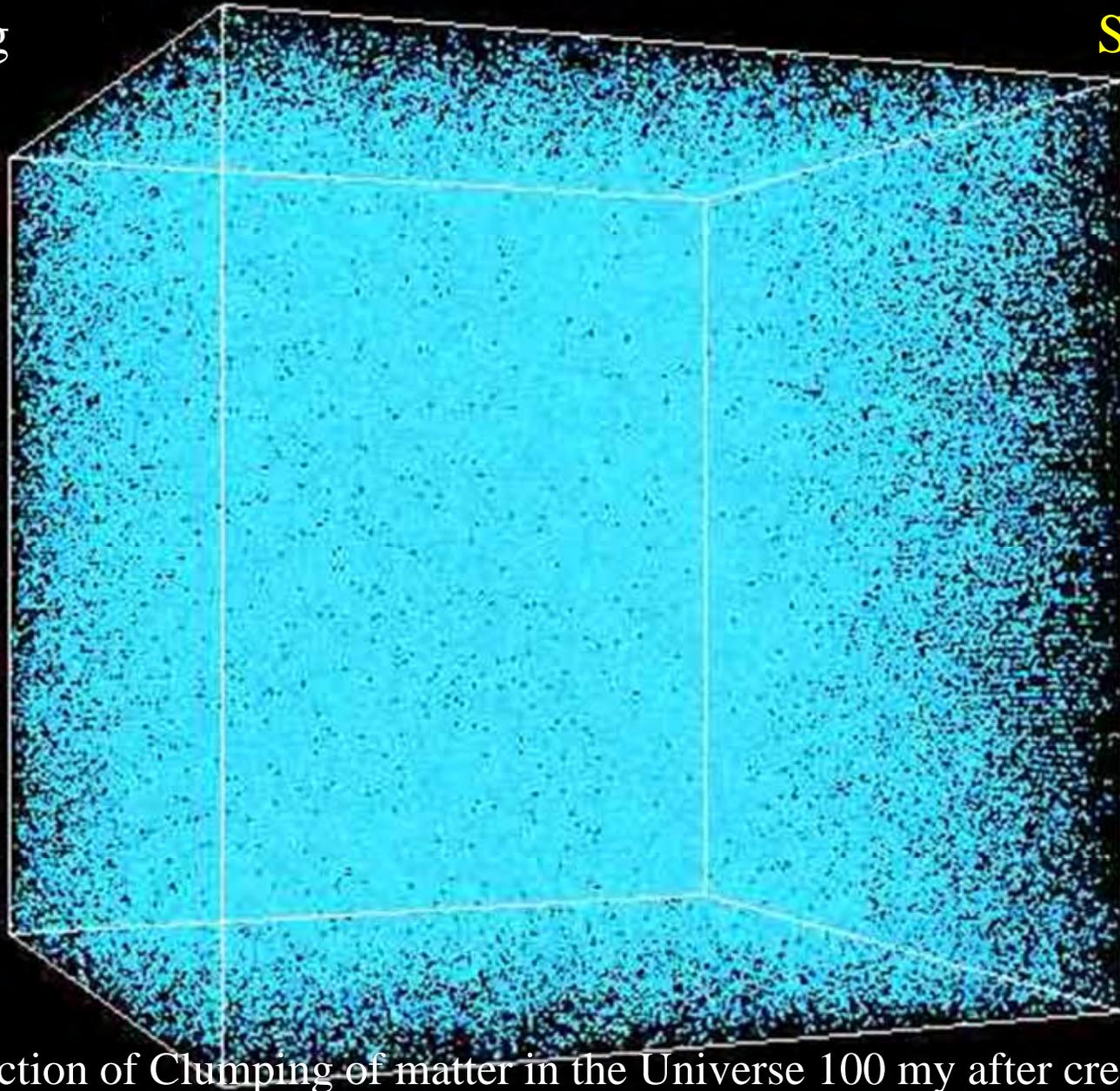
- The Universe began simple
 - Clouds of H & He atoms + photons of light + ‘dark’ energy & ‘dark’ matter
- No
 - Galaxies and Stars
 - Heavier chemical elements
 - Planets
 - Living Organisms
 - Human Societies
- Over 13.7 bys more complex things appeared
 - Most of the Universe remains simple today
 - But, where conditions are just right, e.g. on our earth
 - More and more complex things have emerged



STRUCTURE AT VERY LARGE SCALES

100 MY after
the Big Bang

Not much
structure

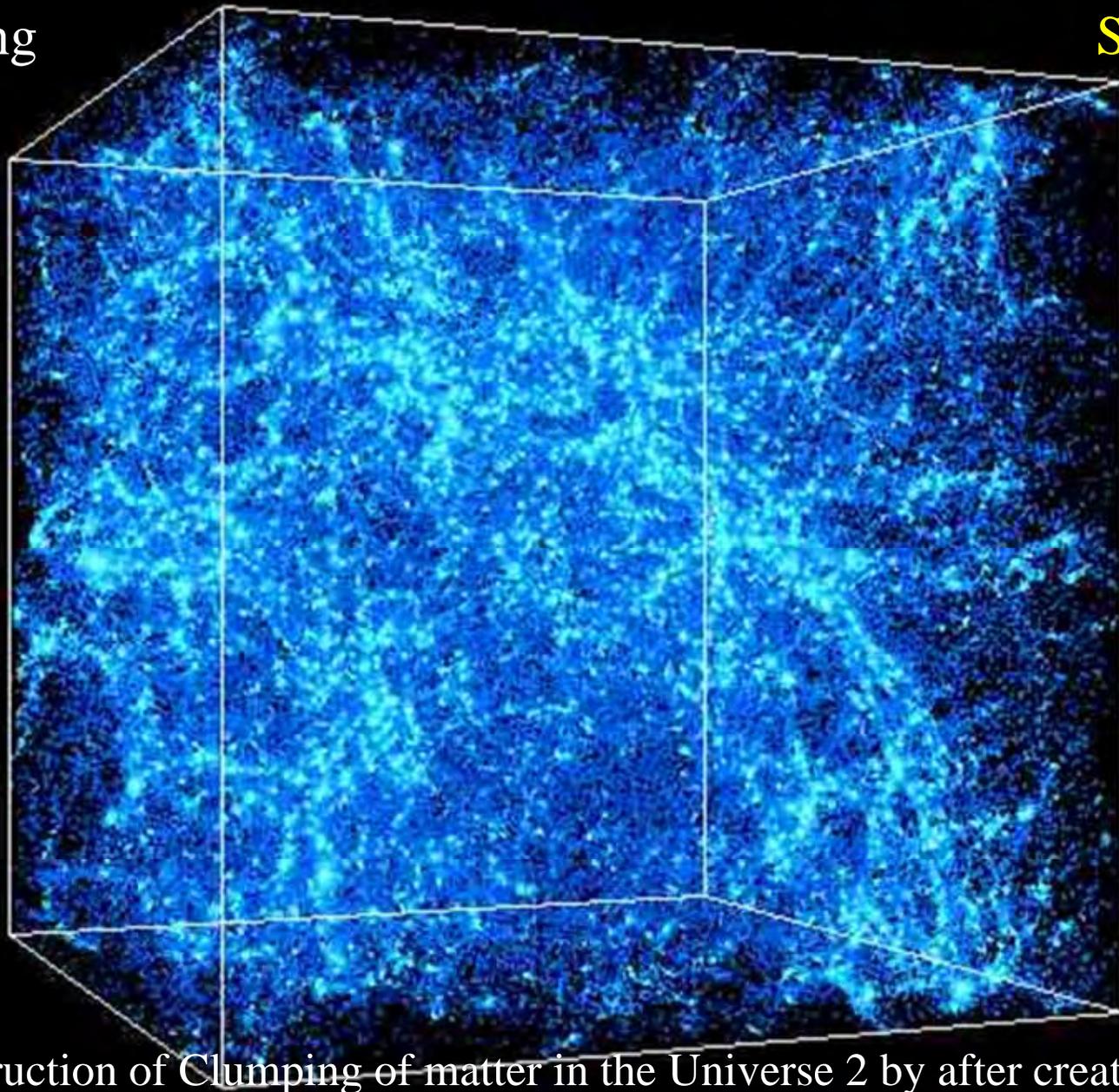


Reconstruction of Clumping of matter in the Universe 100 my after creation
Andrey Kravtsov, Univ. of Chicago, and Anatoly Klypin, N. Mexico St. University

2 Bill. Ys. after
the Big Bang

STRUCTURE AT VERY LARGE SCALES

More
structure

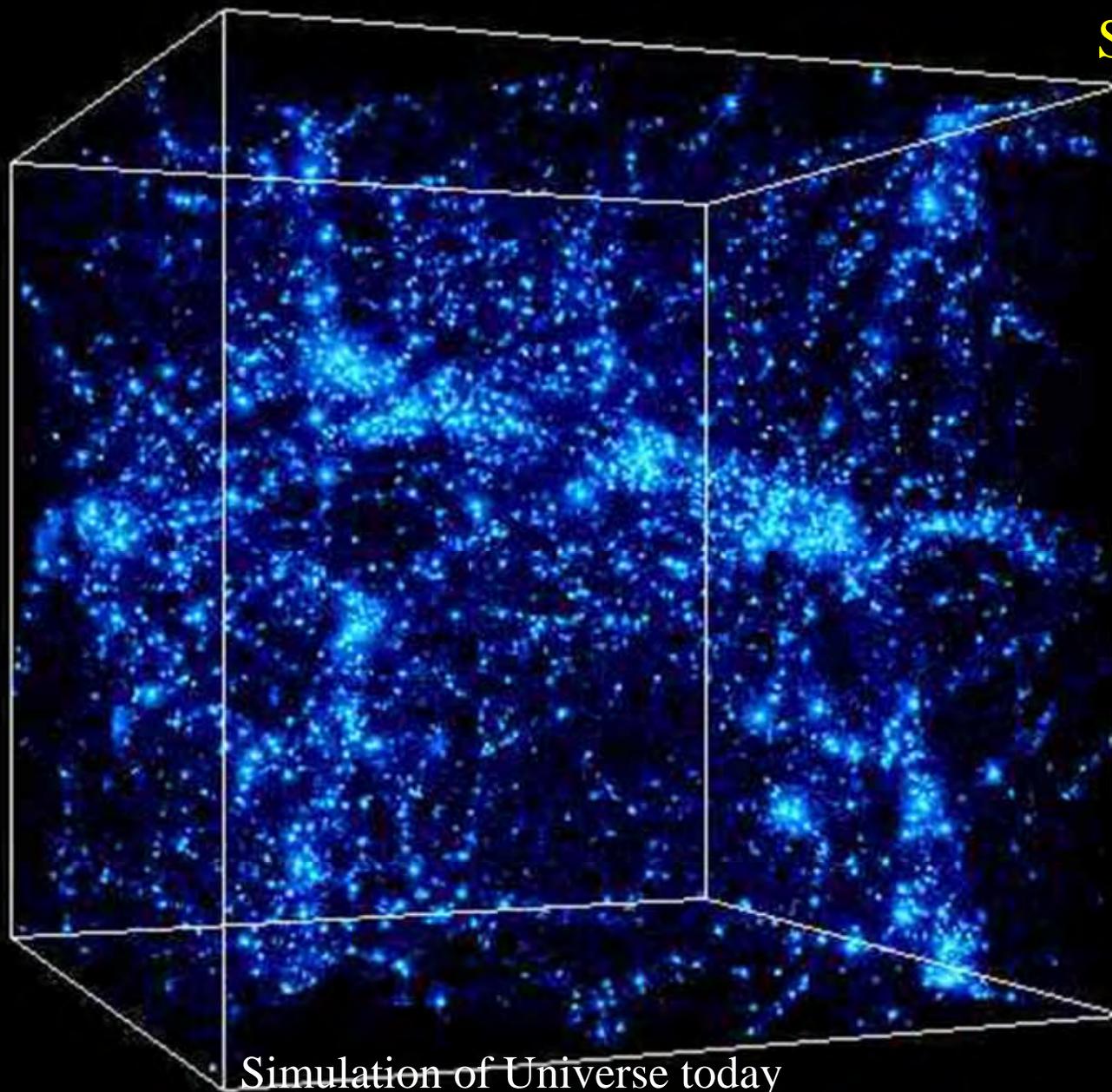


Reconstruction of Clumping of matter in the Universe 2 by after creation
Andrey Kravtsov, Univ. of Chicago, and Anatoly Klypin, N. Mexico St. University

The Universe
Today

**STRUCTURE AT VERY LARGE
SCALES**

Lots of
structure



Simulation of Universe today

Andrey Kravtsov, Univ. of Chicago, and Anatoly Klypin, N. Mexico St. University

STEPS TO GREATER COMPLEXITY



Threshold 2: Creation of Stars

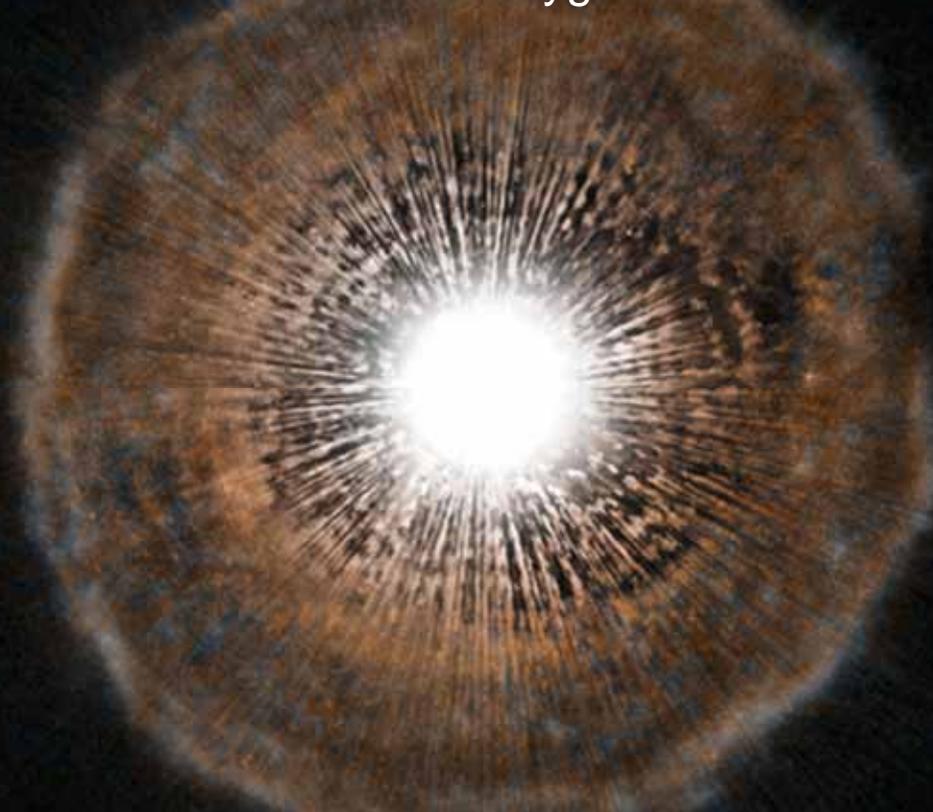
1ST STARS FROM C. 200 MYS AFTER THE BIG BANG

Our Sun photographed in ultra-violet

THRESHOLD 3: New Elements created in Dying Stars

FROM C. 200 MYS AFTER THE BIG BANG

Death of a Carbon star, c. 1500 light years away in the 'Giraffe' constellation.
The star is the size of a pixel at the centre; it's in its red giant stage ejecting huge
clouds of oxygen and carbon



<http://www.newscientist.com/blogs/shortsharpscience/2012/07/hubble-witnesses-death-throes.html?DCMP=OTC-rss&nsref=online-news>

THE PERIODIC TABLE

Elements up to
Iron (No. 26)

STAGE 1

1 H	2 He
--------	---------

← Hydrogen (1 proton) Helium (2 protons) →

STAGE 2

Iron (26 protons)

3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne																										
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar																										
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr																										
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe																										
55 Cs	56 Ba	57-70 Lu	71 Hf	72 Ta	73 W	74 Re	75 Os	76 Ir	77 Pt	78 Au	79 Hg	80 Tl	81 Pb	82 Bi	83 Po	84 At	85 Rn																										
87 Fr	88 Ra	89-102 Lr	103 Rf	104 Db	105 Sg	106 Bh	107 Hs	108 Mt	109 Uun	110 Uuu	111 Uub	112 Uub	114 Uuq	116 Uuh																													
		<table border="1"> <tr> <td>57 La</td> <td>58 Ce</td> <td>59 Pr</td> <td>60 Nd</td> <td>61 Pm</td> <td>62 Sm</td> <td>63 Eu</td> <td>64 Gd</td> <td>65 Tb</td> <td>66 Dy</td> <td>67 Ho</td> <td>68 Er</td> <td>69 Tm</td> <td>70 Yb</td> </tr> <tr> <td>89 Ac</td> <td>90 Th</td> <td>91 Pa</td> <td>92 U</td> <td>93 Np</td> <td>94 Pu</td> <td>95 Am</td> <td>96 Cm</td> <td>97 Bk</td> <td>98 Cf</td> <td>99 Es</td> <td>100 Fm</td> <td>101 Md</td> <td>102 No</td> </tr> </table>														57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No
57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb																														
89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No																														

STAGE 3

Uranium
(92 protons)

Gold (79 protons)

- Nonmetals
- Alkali metals
- Alkaline earth metals
- Other metals
- Halogens
- Actinides
- Lanthanide series

THRESHOLD 4: Creation of the Solar System

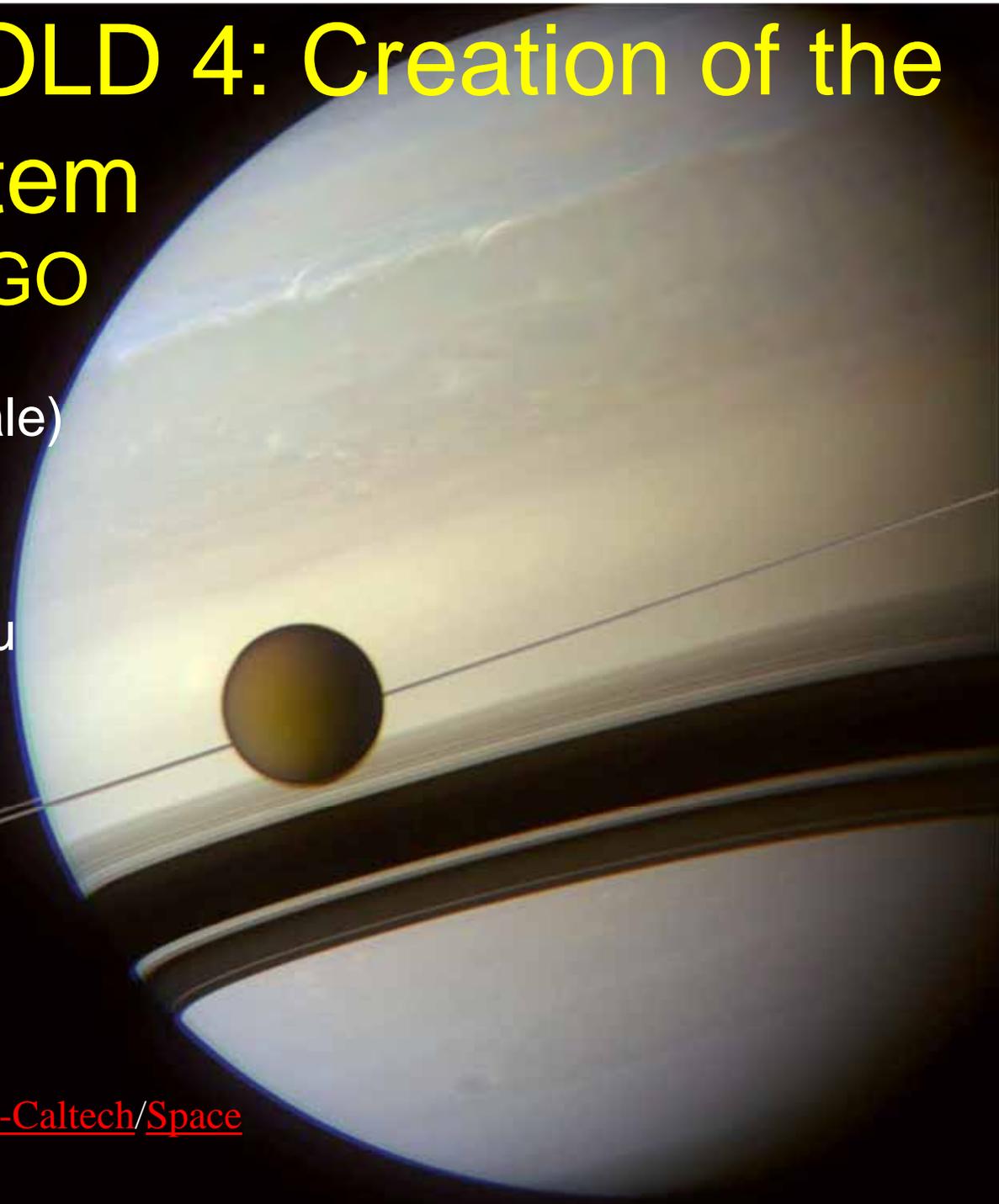
C. 4.5 BYS AGO

(4 ¼ Years ago,
imaginary time scale)

In a Universe with
more elements you
can make more
interesting things

Titan orbiting Saturn
photographed by
the Cassini satellite

Image Credit: [NASA/JPL-Caltech/Space Science Institute](#)/[J. Major](#)



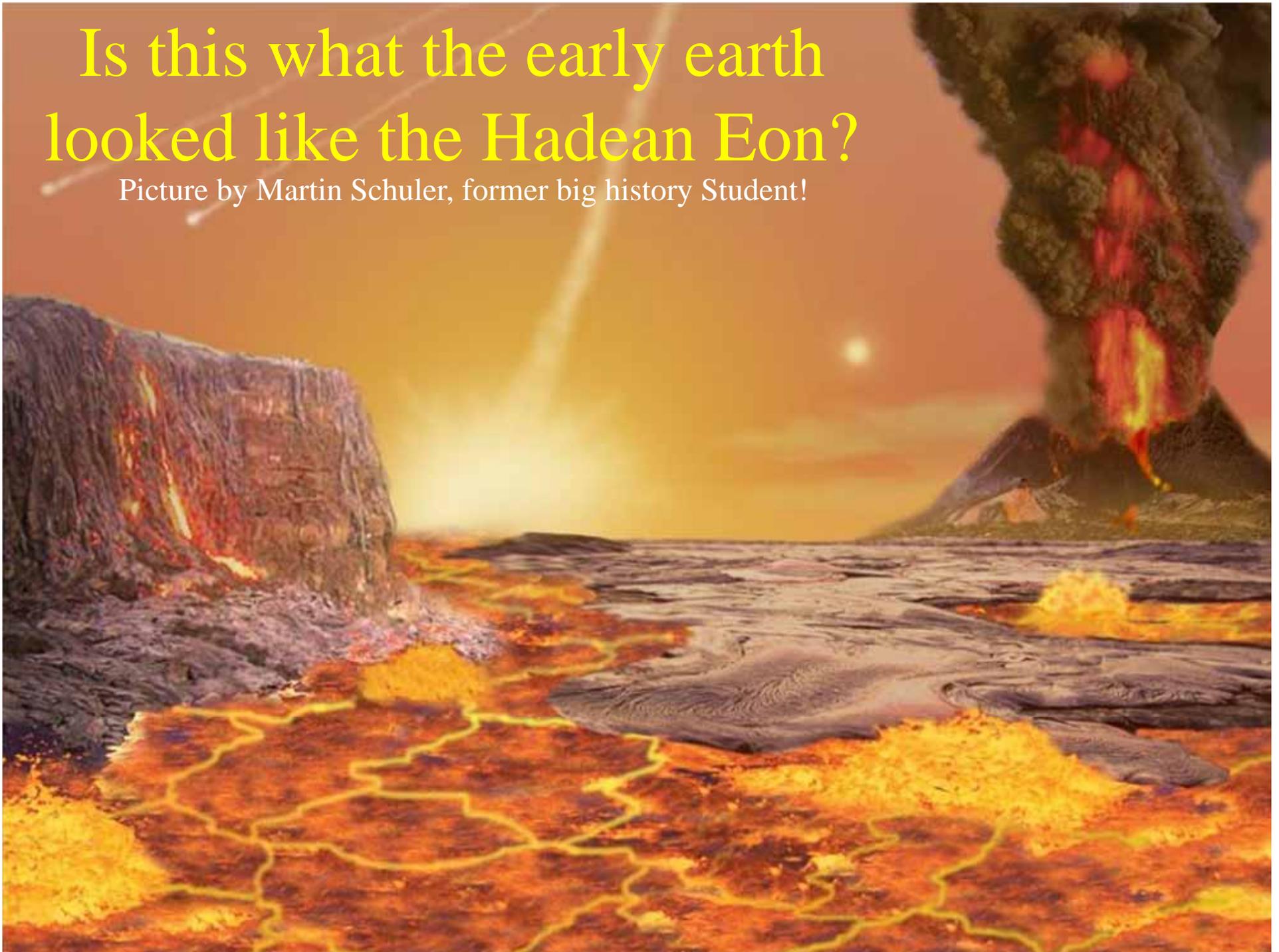
Saturn from the Cassini satellite

What's this?



Is this what the early earth looked like the Hadean Eon?

Picture by Martin Schuler, former big history Student!





Threshold 5: LIFE

from c. 3.8 Bys ago

(3 ½ ys ago, imaginary
time scale)

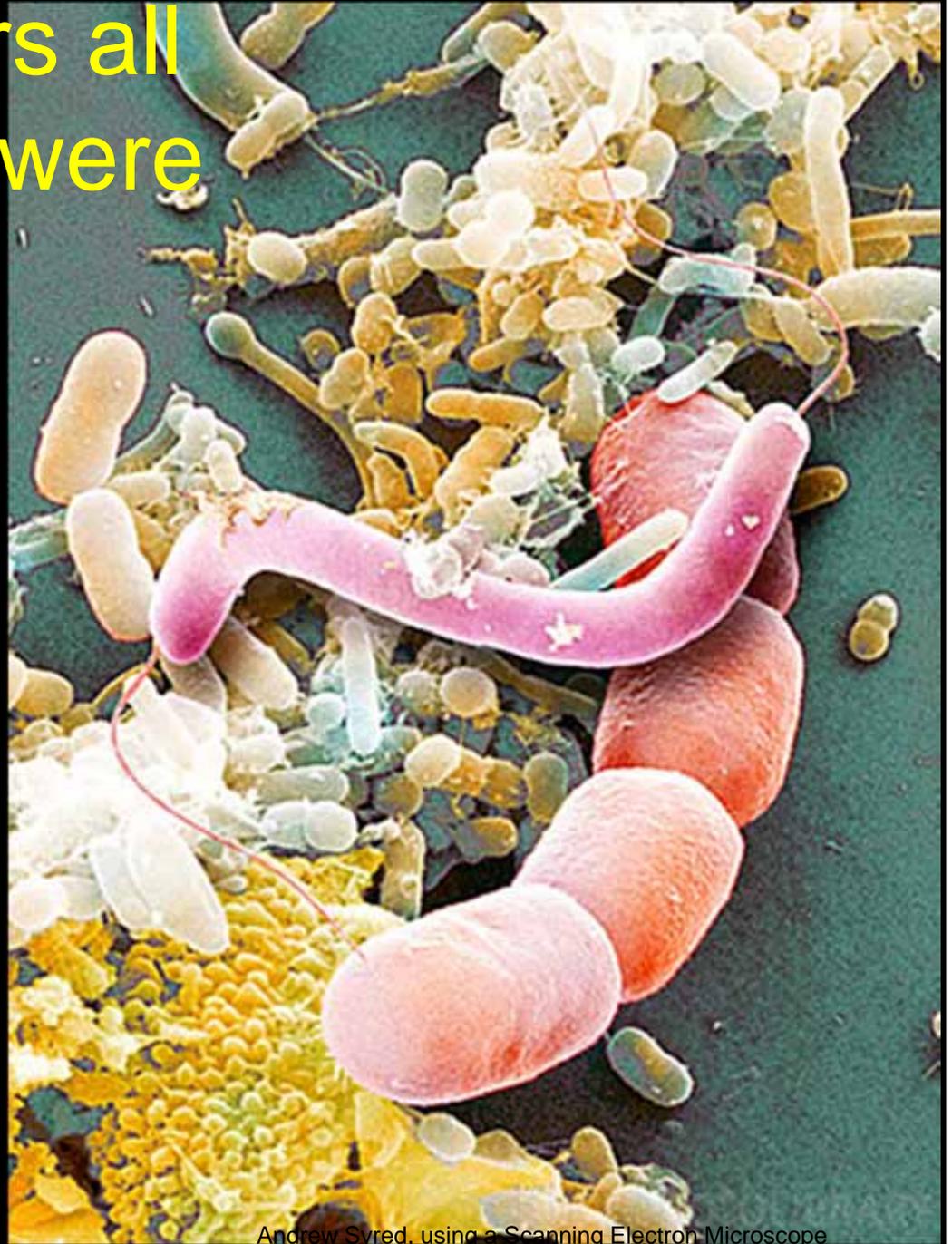
Common Tern photographed at Sandy Point in
West Haven, CT. This is a courtship food pass

SPL Reference Number:

Z848/124

Credit: Jim Zipp

For 2 billion years all living organisms were single cells



Andrew Syred, using a Scanning Electron Microscope

590-570 MYS AGO

1st Multi-cellular life?

by Martin Schuler

(7 months ago, imaginary time scale)



Vertebrates from c. 400 Mys ago

(4 ½ months ago,
imaginary time scale)



Coloured X-ray of *Xenopus laevis*,
the African clawed frog

DINOSAURS DESTROYED BY AN ASTEROID

c. 65 Million Years Ago

(3 weeks ago, imaginary time scale)



With dinosaurs
gone,
mammals
flourish

CHIMPS

Mother & Child



THRESHOLD 6: *Homo sapiens*: from c. 200,000 years ago

(1 ½ hours ago, imaginary time scale)



- Probably the oldest fossil remains of our species
- Found in 2003
- At Omo in Ethiopia, in the African rift valley
- Dated to c. 195,000 BP
- Compare with modern human skull (right)

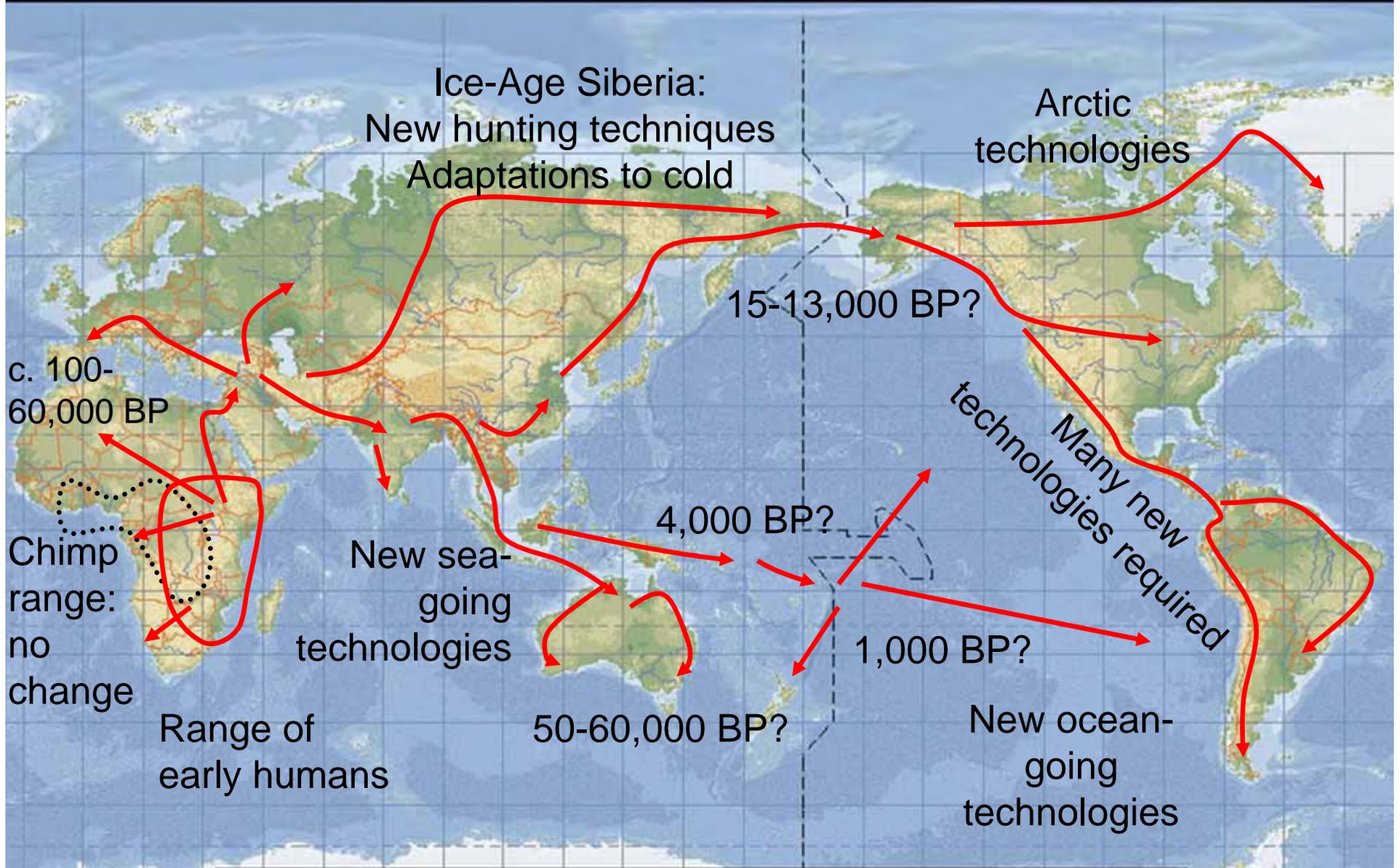


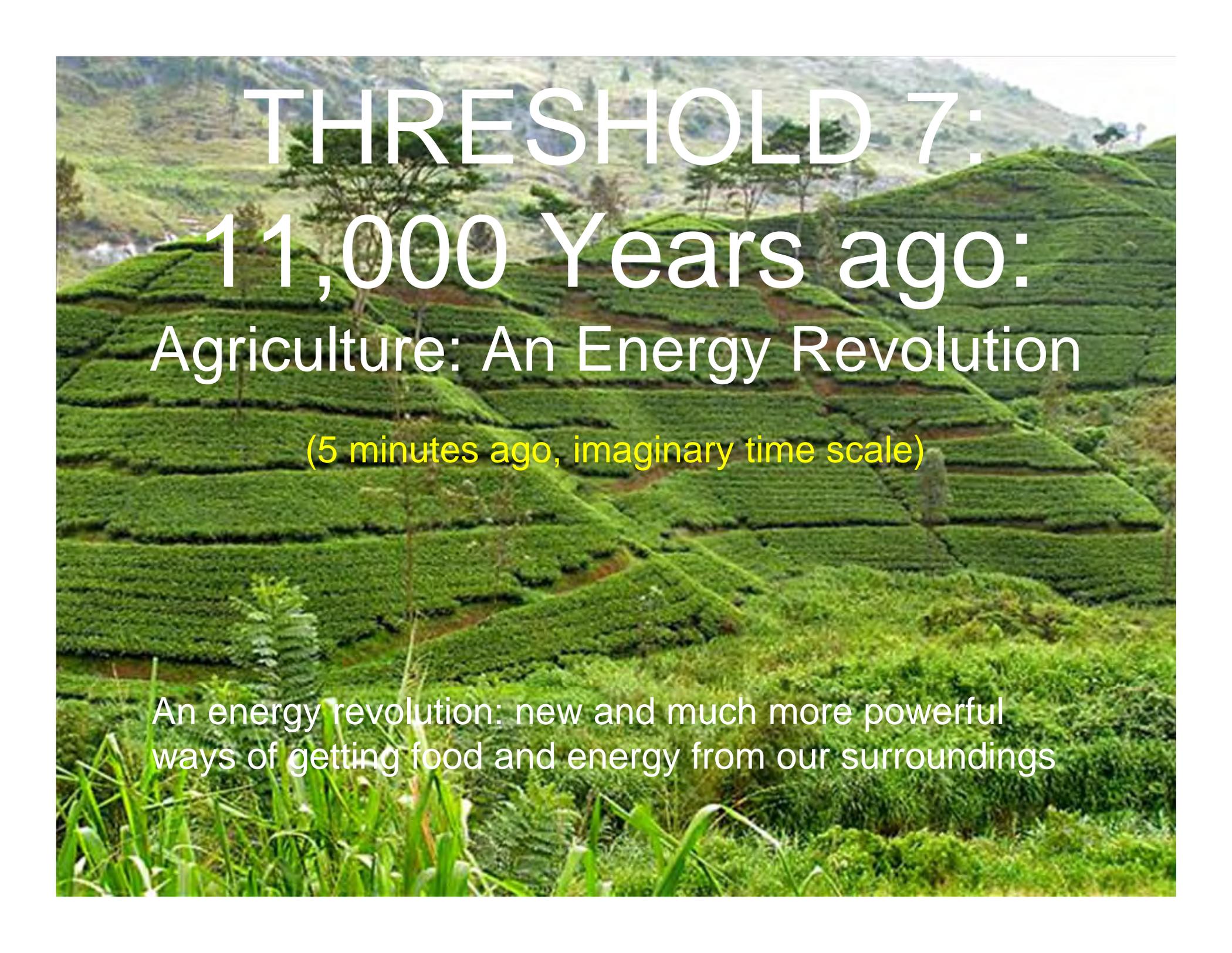
WHAT MAKES HUMANS SO DIFFERENT?

Collective Learning

- A new, faster, more powerful way of learning:
 - The first species in 4 billion years that can communicate so efficiently
 - That individuals can share what they learn
 - So the whole species can accumulate more and more information
 - Until we have become the most powerful species on the planet

Collective Learning at work: Innovation in the Paleolithic Era





THRESHOLD 7: 11,000 Years ago: Agriculture: An Energy Revolution

(5 minutes ago, imaginary time scale)

An energy revolution: new and much more powerful
ways of getting food and energy from our surroundings

AGRICULTURAL SOCIETIES & THEIR MONUMENTS

Ahu of Rapa Nui & the Milky Way

Image Credit & Copyright: [Manel Soria](#)



Threshold 7: Agrarian Civilizations: 5,000 Ys ago

(2 ½ minutes ago, imaginary time scale)



THRESHOLD 8: Today's World: 200 Ys ago

(5 seconds ago, imaginary time scale)

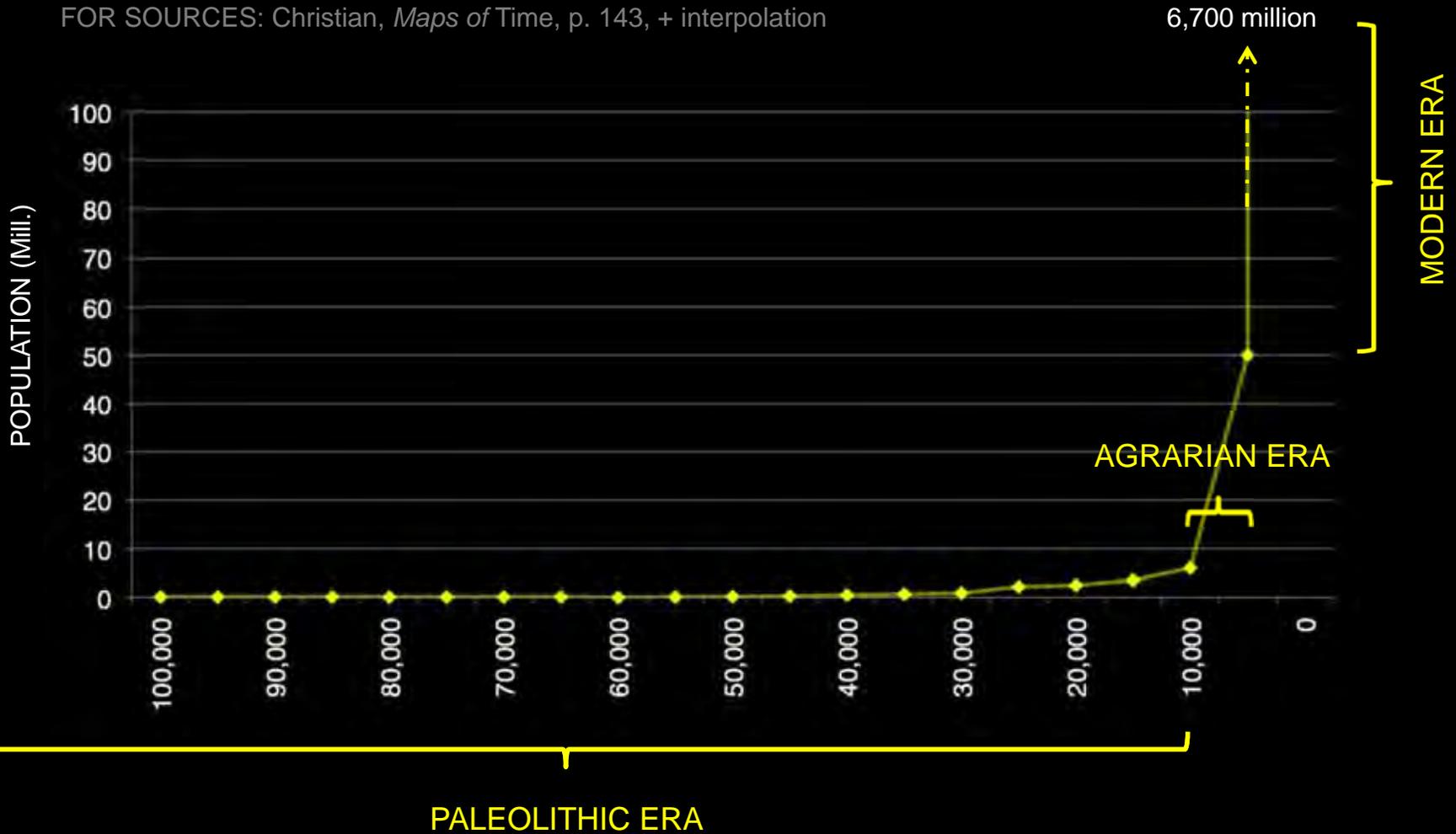


A species that can manipulate an entire biosphere

ACCELERATION IN INNOVATION

100,000 BP (MILLIONS)

FOR SOURCES: Christian, *Maps of Time*, p. 143, + interpolation



INCREASING HUMAN
CONTROL OF
ENERGY

c. **230,000** CALS/
PERSON



Congratulations!

- You've completed the 10 minute big history course!



The Orion Nebula M42

Just 1,500 light years away,
glowing gas surrounds newly
formed young stars

OUTLINE

- What is Big History?
- A 10-minute Course in Big History
- The Big History Project: Education for the 21st Century
- The Big History Institute: Research for the 21st Century

Image Credit: [NASA](#), [ESA](#), M. Robberto ([STScI/ESA](#)) et al.

TEACHING BIG HISTORY:

The story of the Big History Project

- In 2008, Bill Gates listened to lectures I had done on big history
 - He loved big history, saying: “it put everything together”
 - He called me ...



He proposed we work together to create a **free, on-line big history course** for high school students & independent learners

- Home
- Big History Overview
- Course Structure
- Curriculum and Standards
- Content Samples
- Pilot Program
- Resources



Big History: An Introduction to Everything

Imagine exploring 13.7B years from before the Big Bang to modernity. Big history reveals common themes and patterns that help students better understand people, civilizations and the world we live in.

Big history takes a big perspective evolving study in independent disciplines to a holistic view of our inter-related universe. Before you know it, physics, chemistry, biology, ancient civilizations, and contemporary human history suddenly fit together.

The Big History Project was founded by Bill Gates and David Christian and seeks to bring our shared history to life for high school students.

Watch David Christian in action at TED:

TED Ideas worth spreading



Hear why Bill Gates calls it his "favorite course of all time".



PRINT

EMAIL SHARE

THE BIG HISTORY PROJECT WEB SITE

A student of Big History
explains why it is so important
<http://www.bighistoryproject.com/>

THE BIG HISTORY PROJECT SYLLABUS WEB SITE

<https://course.bighistoryproject.com>

TEACHER CONSOLE > SYLLABUS >

VIEW THE COURSE | DAVID DAVID CHRISTIAN@MQ.EDU.AU > | HELP >

EXPAND ALL CONTENT >

THRESHOLDS OF INCREASING COMPLEXITY

THRESHOLD 1
THE BIG BANG

THRESHOLD 2
THE STARS LIGHT UP

THRESHOLD 3
NEW CHEMICAL ELEMENTS

THRESHOLD 4
EARTH & THE SOLAR SYSTEM

THRESHOLD 5
LIFE

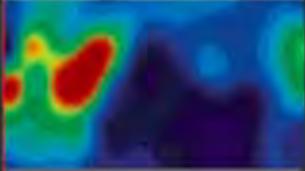
THRESHOLD 6
COLLECTIVE LEARNING

WHAT IS BIG HISTORY? 1



HOW IS THIS COURSE DIFFERENT FROM OTHERS?

2 THE BIG BANG



HOW HAS OUR UNDERSTANDING OF THE UNIVERSE EVOLVED?

3 STARS & ELEMENTS



HOW DID STARS EMERGE AND WHAT DID THEY GIVE US?

4 OUR SOLAR SYSTEM & EARTH



HOW DID THE SUN AND THE PLANETS FORM?

5 LIFE



HOW DO WE DEFINE LIFE AND WHAT DO WE KNOW ABOUT IT?

6 EARLY HUMANS



HOW DO OUR ANCESTORS EVOLVE?

THE BIG HISTORY PROJECT SYLLABUS WEB SITE

<https://course.bighistoryproject.com>

TEACHER CONSOLE > SYLLABUS -

VIEW THE COURSE | DAVID.DAVID.CHRISTIAN@MQ.EDU.AU - | HELP -

COLLAPSE ALL CONTENT -

WHAT IS BIG HISTORY? 1	THE BIG BANG 2	STARS & ELEMENTS 3	OUR SOLAR SYSTEM & EARTH 4	LIFE 5	EARLY HUMANS 6
HOW IS THIS COURSE DIFFERENT FROM OTHERS?	HOW HAS OUR UNDERSTANDING OF THE UNIVERSE EVOLVED?	HOW DID COSMOS EMERGE AND WHAT DID THEY GIVE US?	HOW DO THE SUN AND THE PLANETS FORM?	HOW DID WE BECOME LIFE AND WHAT DID WE GIVE US?	HOW DID OUR ANCESTORS EVOLVE AND WHY?
What is big history? -	How do we decide what to believe? -	How were stars formed? -	How did Earth form? -	What is life? -	THIS UNIT IS STILL UNDER CONSTRUCTION
Through the lens of big history -	How did our view of the Universe change? -	What did stars give us? -	What was the young Earth like? -	How did life begin and change? -	How did our ancestors evolve?
Complexity -	What emerged from the Big Bang? -	Threshold 2 -	Threshold 4 -	How do Earth and life interact? -	What makes humans different?
Scale -	Information & knowledge -	Structure in the Universe -	Formations -	Threshold 5 -	How did the first humans live?
Origin stories -	Changing views -	A closer look at stars -	Earth and the atmosphere -	Biology -	Threshold 6 -
Investigation 1 -	Perspectives on cosmology -	Threshold 3 -	Geology -	Evolution -	Human origins
	Astronomy -	Chemistry and the elements -	Deep time -	DNA -	Primates
	Threshold 1 -	The periodic table -	Plate tectonics -	The biosphere -	Collective learning
	Exploring the Big Bang -	Investigation 3 -		Mass extinction -	Migrations and ancestry
	More on astrophysics -			Biodiversity -	Early human lifeways
	Investigation 2 -			Life elsewhere -	
				Investigation 5 -	

THE BIG HISTORY PROJECT SYLLABUS WEB SITE

TEACHER CONSOLE > SYLLABUS > UNIT 1

VIEW THE COURSE | DAVID.DAVID.CHRISTIAN@MQ.EDU.AU | HELP

1

What is big history?

Where did everything come from? How did we get to where we are now? Where do humans fit in? Where are things heading?

These are questions that origin stories of different cultures have addressed for thousands of years. Big history attempts to answer them by examining the entire past of the Universe using the best available ideas from disciplines such as astronomy, chemistry, biology, and history.

Throughout the course, you'll explore different scales of time and space and view human history from new angles. You'll learn what we know and what we don't, consider our place in the Universe, and develop your own ideas for what the future may hold.

What is big history?



What is big history?
An introduction to big history

Notebook 
Transcript 

Through the lens of big history



The History of Everything
A TED talk covering the Universe's 13.7 billion year history in 16 minutes

One Student of Big History 
The Big History 

Complexity



Complexity & Thresholds
An introduction to the concept of increasing complexity

Thresholds of Increasing Complexity 

FORMAL GOALS

Creating a **free online syllabus on big history** for Year 9 students & independent learners:

- “We aim to make big history broadly available in classrooms and online – reaching anyone curious about how it all fits together.”
- **Basic structure of 10 units**
 - Each assuming 10 hours of class time
 - Structured & sequenced for independent learners
- **Diverse on-line resources**
 - Short (7-10 minute) introductory lectures
 - Links to other resources (with explanations/guidance)
 - Timelines (many interactive)
 - Visual resources/Interactive videos/downloadable essays
 - Assessment exercises, ... and much more

WHERE ARE WE NOW?

Big History Project Timeline



BIG HISTORY PROJECT

Building the Web Site

Trials in Schools over 2 years

Revised web site

The course goes public!
mid 2013

BIG HISTORY PROJECT TIMELINE: Where next?



- Building on the achievements of the Big History Project in 2013-14
- We need to
 - Build big history country by country, school by school
 - To create a new form of education linking students across the world

A TIPPING POINT?



- My hope: Big History will take off in country after country
- Energizing and connecting already existing syllabi



“Have we hit a tipping point yet?”

THE POWER OF BIG HISTORY EDUCATION

- I believe we are at a tipping point because
- Every teacher of big history knows that it energizes and empowers students
- Of all ability levels

Making an impact

- Narrara High School, North of Sydney



Making an impact



- Narrara High School, North of Sydney

Making an impact

- Narrara High School, North of Sydney



Why is big history powerful?

It helps students achieve deep understanding

- Deep Understanding ...
- Arises when we suddenly see how one part of the puzzle ...
- Fits in with the rest!



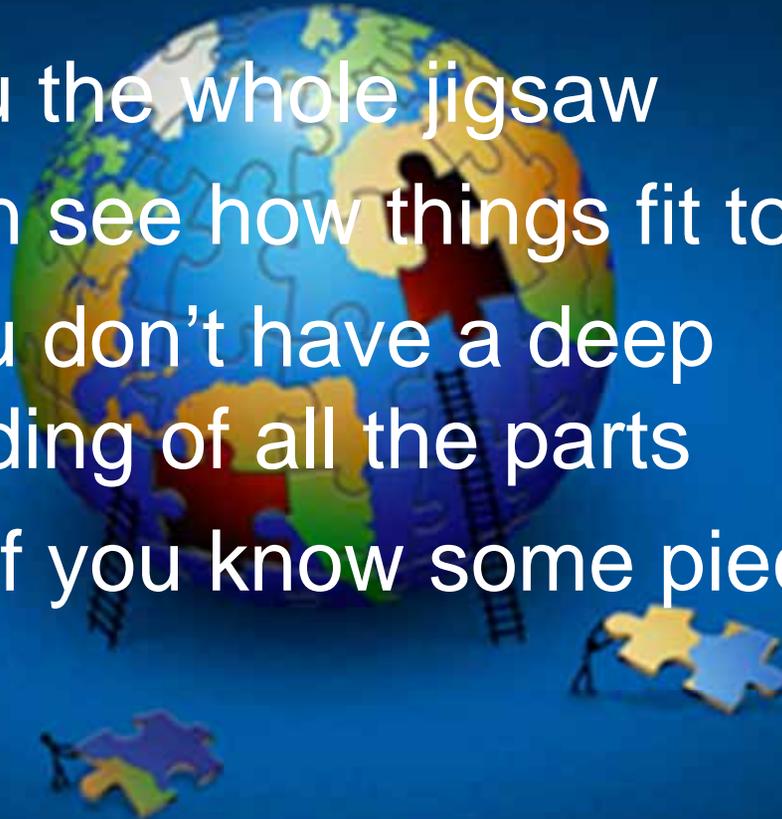
Modern Education

- Teaches you pieces of the puzzle ...
maths, history, biology ...
- Creating the terrifying feeling that there
are endless pieces and the puzzle goes
on for ever ...

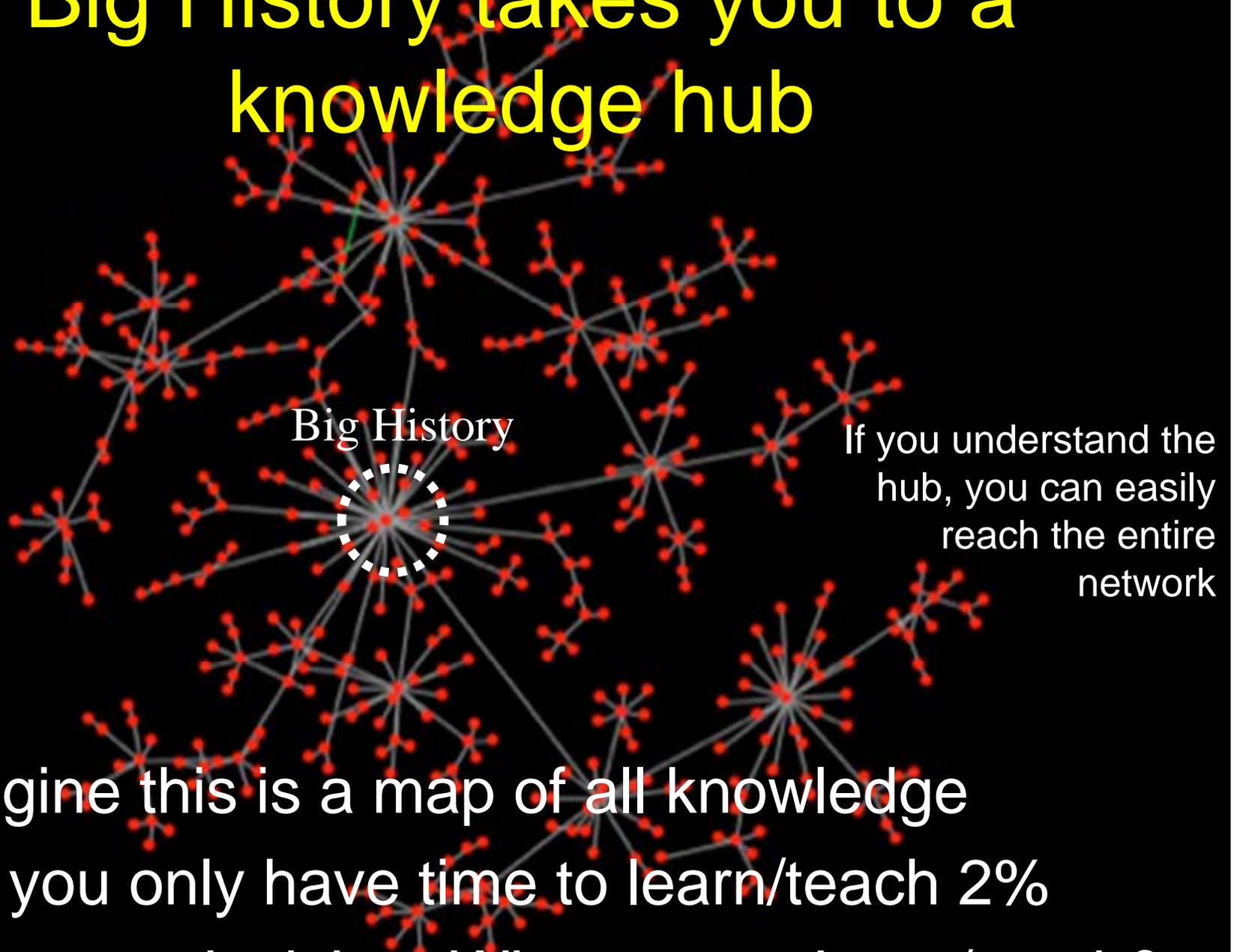


Big History

- Shows you the whole jigsaw
- So you can see how things fit together
- Even if you don't have a deep understanding of all the parts
- And even if you know some pieces are missing



Big History takes you to a knowledge hub



- Imagine this is a map of all knowledge
- But you only have time to learn/teach 2%
- Important decision: What part to learn/teach?

Galaxy M101

c. 170,000 Lt. Ys across, almost 2 X as big as the Milky Way

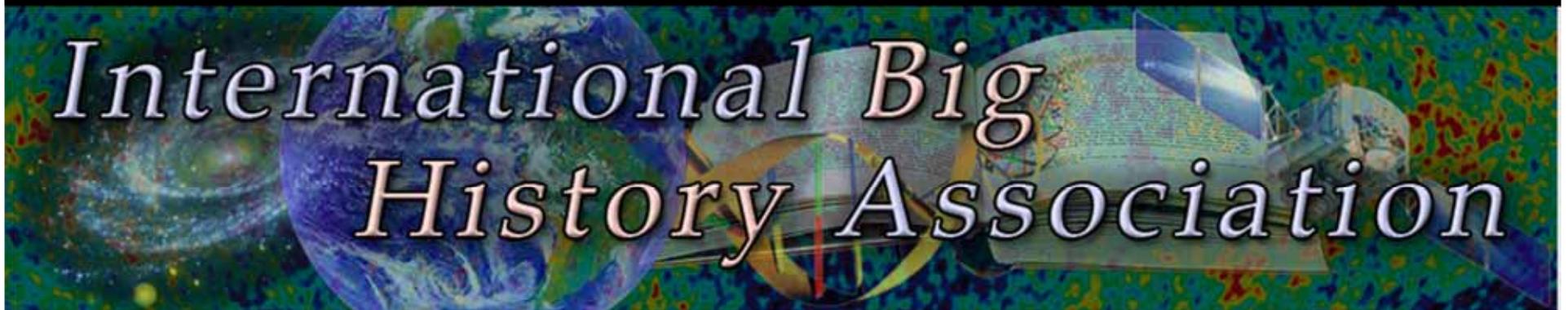
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How can Big History Support Cutting-Edge Research?

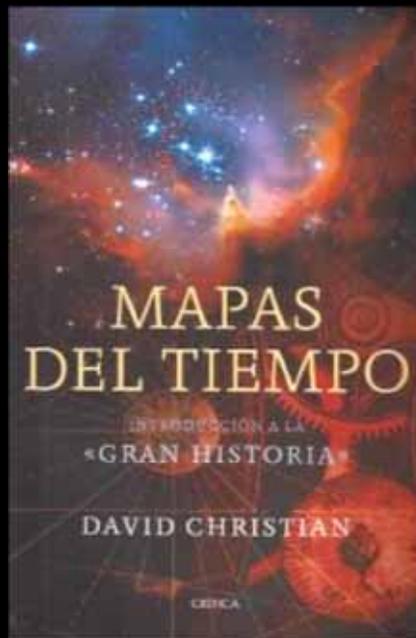
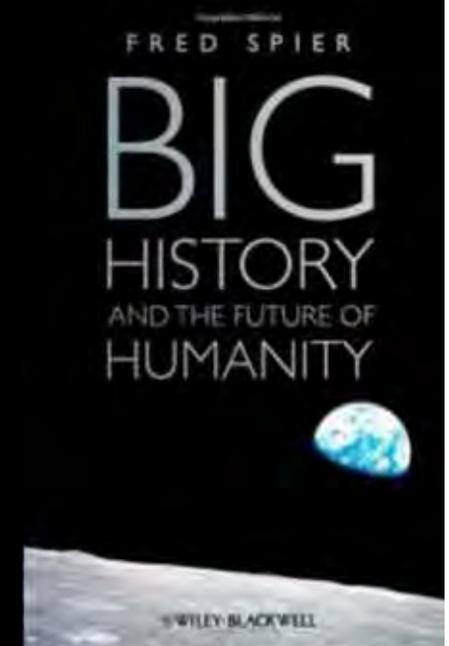
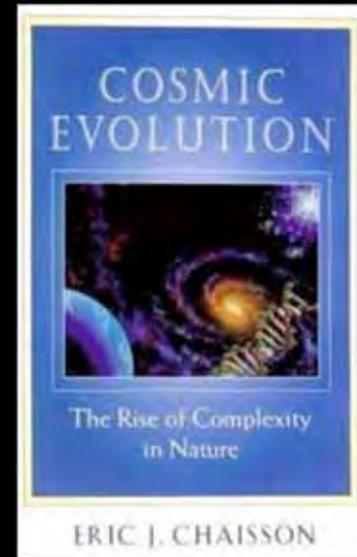
Big History is emerging as a research field

- August 2010: Foundation of the “International Big History Association”
- Its website is <http://ibhanet.org/>
- First conference, Aug 2012, Grand Rapids, USA

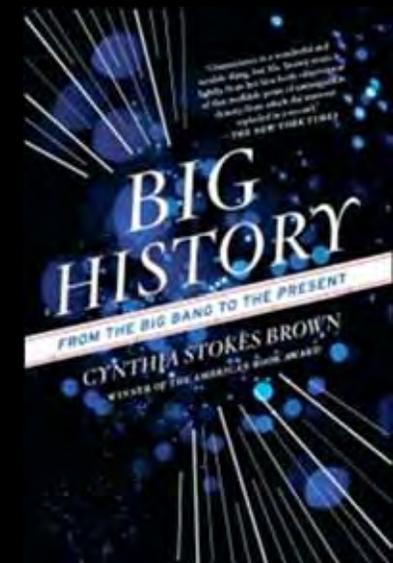


AN EMERGING SCHOLARLY LITERATURE

Some books on Big History



Spanish translation



Tackling a serious research problem



- A TSUNAMI OF INFORMATION:
 - In 2012, a mobile phone can access more information than was in all the world's libraries in 1950
 - Educators & Researchers cope by breaking knowledge into 'disciplines', 'sub-disciplines' & 'sub-sub-disciplines'
- RESULT? Good Research but ... lots of siloes
 - Experts know their own silo
 - Educators teach, silo by silo
 - Students despair, feeling there's no end to the siloes
 - They have no overview and no intellectual compass



WHAT'S WRONG WITH SILOES?

They block the view & limit understanding



BEYOND THE SILOES, EXTRAORDINARY SYNERGIES



Saul Perlmutter

- Big Bang Cosmology brought together the science of the very big and the very small
- My experiences at Davos: Nobel prize winners fascinated by big history:
 - **Saul Perlmutter**: Cosmology & Big History
 - **Murray Gell-Mann**: Is there a 'quantum level' in human history?
- **Walter Alvarez**: teaches big history
 - Proved that an asteroid wiped out the dinosaurs. What if it had missed earth?



Murray Gell-Mann



WALTER ALVAREZ

MACQUARIE'S BIG HISTORY INSTITUTE

- A global hub for Big History Research
- Created early 2012: We plan ...
 - Conferences & Research projects on trans-disciplinary topics such as:
 - The relationship between complexity, energy flows, and entropy
 - Universal mechanisms of change such as 'Universal Darwinism'
 - 'Information', learning and 'collective learning' in different domains
 - The future of human society in 'the Age of the Anthropocene'
 - Big History and its place in the evolution of human knowledge
- In-service courses for teachers, journalists, executives, politicians
- Undergraduate and post-Graduate courses

The Institute & The World

- **Work with Industry, Government, and Non-Government Organisations**
 - Key Drivers: thought leadership, fundamental research, sustainability, and corporate social responsibility
 - Collaboration and partnership opportunities – global, regional, national
- **Advance interdisciplinary research**
 - Essential because real world problems cut across many disciplines
 - Critical to innovation in a knowledge economy
- **Advance a major breakthrough in modern education**
 - 21st century education – a unifying narrative, giving the big picture
 - Research & development of school courses, teacher training, university courses, executive courses

Macquarie University Big History Institute

- If you want to help develop Big History Research or Teaching in your country, or if you would like to discuss what Big History could mean for your research, thought leadership, or CSR initiative, please talk with me or my colleague, Andrew McKenna
- Contact details on the next side ...

Big History Institute

www.bighistoryinstitute.org

For further information please contact:

Andrew McKenna

Head of Partnerships & Development, Faculty of Arts

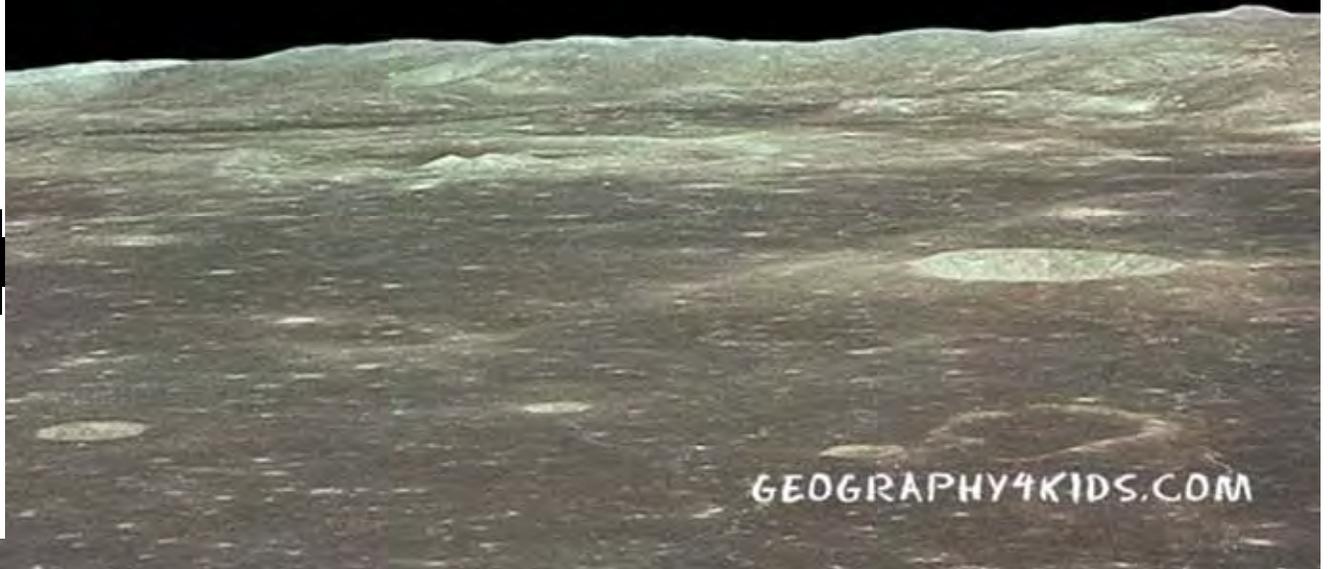
andrew.mckenna@mq.edu.au

To End: One student's response to big history



"When I was first asked to consider my role in the universe four months ago...I do not think I fully realized there was even a living community around me, never mind an Earth full of other humans and an entire universe beyond...But after this long, incredible voyage of exploration...I have a newfound sense of what the universe is. I have learned...that we are all part of the Global Future, and I can make a difference in my life as well as the lives of others.... My role is now to change my ways and respect this beautiful planet that granted us life, and to get others to join me. "

My Hope: Big History can inspire students, scholars and scientists throughout the world!



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THANK YOU FOR YOUR
ATTENTION!

