Big History
Global Coalition
CORPORATE SOCIAL RESPONSIBILITY WITH REAL GLOBAL IMPACT
Contacts

ANDREW MCKENNA
Executive Director, Big History Institute
Building W6A, Room 438
Macquarie University, NSW 2109, Australia
Telephone: +61 (2) 9850 8044
Mobile: +61 404 003 210
Email: andrew.mckenna@mq.edu.au

PROFESSOR DAVID WILKINSON
Deputy Vice-Chancellor (Corporate Engagement and Advancement)
The Chancellery, Building E11A
Macquarie University, NSW 2109, Australia
Telephone: +61 (2) 9850 7454
Mobile: +61 419 866149
Email: david.wilkinson@mq.edu.au

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Professor David Christian coined the term ‘Big History’ and taught the first course in Big History at Macquarie University in 1989, surveying the past on the largest possible scales, including those of biology and astronomy. Big History covers 13.8 billion years of history, from the Big Bang to today’s complex modern societies.

Big History gives you the view from the mountaintop, and shows how all the different knowledge landscapes fit together. It synthesises knowledge across the two main cultures of the sciences and the humanities, and the many disciplines they encompass. It gives us the framework to think and research in fundamentally new ways.

Big History encourages reflection and understanding not only on the history of our species, Homo sapiens, but also on possible future trajectories. While traditional intellectual paradigms, governance structures, and policy responses struggle to adapt to the demands of globalisation, Big History provides an innovative and integrated conceptual framework.

Big History is at an exciting tipping point. Initial support from Bill Gates for the Big History Project is demonstrating in English-speaking classrooms in the United States and Australia what we have always found at the undergraduate level – students love learning Big History. Six schools piloted Big History in 2012. Three years later, more than 600 schools are teaching Big History.

That same rate of growth would see 60,000 schools in the next three years – but that figure dramatically understates our ambition. It is now time to transform education for hundreds of millions of students around the world – providing Big History courses in multiple languages, implementing teacher training programs globally, and providing sustainable support structures.

Providing Big History to every student, in every school, in every country, requires us to fund and build a new global infrastructure. This is the purpose of the Big History Global Coalition – a select consortium of leading global corporations committed to corporate social responsibility as an opportunity to make a real global impact. This Coalition embraces the core values of Big History as values that underpin their strategic vision – values such as Employability, Excellence, Innovation, Sustainability, Citizenship, and Leadership.

Big History is a transformational opportunity in modern education, demonstrating to students in an innovative and engaging way that global technological progress, economic prosperity, and environmental sustainability are inextricably linked. The Big History Global Coalition is an opportunity for select global brands to proudly align with this vision, and build the intellectual and educational basis for a future for all.

“My favourite course of all time is called Big History, taught by David Christian. I wish everyone could take this course. ... When I came across his lectures a few years ago, he really blew me away ... it made me wish that I could have taken Big History when I was young.”

Bill Gates
A dream within reach

Big History is the attempt to understand, in a unified and interdisciplinary way, the history of the Cosmos, Earth, Life and Humanity. Big History is ambitious – it seeks understanding by bringing together and linking the knowledge available in many different scholarly disciplines.

A grand synthesis of knowledge has been an elusive dream for centuries. Enlightenment thinkers tried to link nature and history, as did Alexander von Humboldt in the 19th century. Just after World War One, HG Wells attempted a universal history in *The Outline of History*. But these and other, similar projects, were restricted by the limits of scientific knowledge in their time. Late in the 20th century, physicists such as Stephen Hawking grappled with the possibility of a ‘grand unified theory’, while Edward O Wilson used the term ‘consilience’ to explore prospects for unifying knowledge.

Today, progress within many different research fields means that it is at last possible to create an account of the past at multiple scales that is both unified and rigorous. Big History surveys the past at all possible timescales. In its search for understanding, Big History brings together insights from fields as diverse as astronomy, physics, geology, biology, climatology and archaeology.

“[Big History] unites natural history and human history in a single, grand, and intelligible narrative. This is a great achievement, analogous to the way in which Isaac Newton in the 17th century united the heavens and the earth under uniform laws of motion; it is even more closely comparable to Darwin’s 19th century achievement of unifying the human species and other forms of life within a single evolutionary process.”

William McNeill, Professor Emeritus of History at University of Chicago
Big History is not European history or American history, or Asian history. Nor is it just human history, because it embraces the sciences as well as the humanities. Big History is the first truly universal history for the modern era, a science-based origin story for humanity that links human history to the histories of the Earth and the Universe.

In the past, origin stories lay at the heart of education systems. Their absence from modern education over the last century and a half is anomalous. In the 21st century, this is increasingly problematic. It is leaving students without a compass or sketch map at precisely the moment when, powered by technological advance, they face a vast amount of information. One of the greatest challenges facing modern educators is to engage students across the curriculum and counter the sense of intellectual alienation that can arise when subjects are taught in disconnected silos. Big History courses play the educational role once played by traditional origin stories. They empower students intellectually by giving them an overview within which they can situate themselves, their home communities, and everything they know. Big History responds to the human need to understand “why is this important?” and provides students with a unifying narrative that imparts meaning to the breadth and diversity of subjects. Big History provides an overview of modern knowledge that does not replace, but complements, existing curricula.

“Contrary to popular misconceptions, children are not born with a fixed set of abilities with little room for improvement. Children are not born as a ‘maths person’, a ‘creative person’ or an ‘attentive person’. Children start their lives with considerable potential to develop these abilities, and whether they flourish or not depends on the learning contexts they are exposed to during childhood and adolescence.”

What the world needs now

The challenge of our time is clear. The United Nations Millennium Declaration notes that ‘nations and people have become increasingly interconnected and interdependent’ and calls for ‘broad and sustained efforts to create a shared future, based upon our common humanity in all its diversity’.

The first years of this century have shown how critical it is to advance such efforts. We have witnessed global terrorism, devastating famine, international conflict, widespread poverty, economic recession, financial instability, environmental disaster, and nuclear meltdown. The problems we face do not neatly fall into disciplines. They are complicated, complex, and connected. Solving these problems will require the intelligent responses, interdisciplinary interactions, and creative insight that Big History can inspire.

GLOBAL CITIZENSHIP

In Big History, humans are first encountered as a single species, and then only later do humans break into tribes and states. Big History provides the framework within which we can generate a sense of shared human history, as powerfully as the great national histories once generated national solidarities. Big History enables us to identify with the triumphs and tribulations of humanity as a whole.

SUSTAINABLE PROSPERITY

Big History provides the essential perspectives of scale, interdisciplinarity, and global thinking which are necessary to understand the distinctive features of the Anthropocene, the first era in four billion years in which a single species, our own, has dominated the biosphere. These perspectives need to become widely understood to enable leaders and citizens to successfully develop frameworks for sustainable prosperity within planetary boundaries.

“We live in an age of increasing specialisation, and for good reason. Humanity keeps learning more about each field of study – and as every specialty grows, it tends to split into subspecialties. That process happens over and over again, and it is necessary and desirable. However, there is also a growing need for specialisation to be supplemented by integration.

The reason is that no complex, nonlinear system can be adequately described by dividing it up into subsystems or various aspects defined beforehand. If those subsystems or those aspects, all in strong interaction with one another, are studied separately, even with great care, the results, when put together, do not give a useful picture of the whole. In that sense, there is profound truth in the old adage, the whole is more than the sum of its parts.”

Professor Murray Gell-Mann, Nobel Prize in Physics 1969
Every student, every school, every country

We are committed to bring Big History to all students. Big History Project is a sensational resource, but it is currently in English only. We plan a comprehensive translation process which would enable us to translate and support the resource in multiple languages – including Portuguese, Chinese, Arabic, French, German, Korean, Spanish, Turkish, and Hebrew – so we can take Big History to students everywhere.

We are planning a major global education training program to train teachers around the world how to best teach Big History, and provide professional development resources for teachers. In response to demand from primary (elementary) school teachers, we are scoping what a primary version of Big History may involve, so we can introduce Big History concepts at an earlier stage of education.

The concept of ‘collective learning’ is central to Big History. The moment when humans learned to pass knowledge from generation to generation was a threshold moment. No other species has ever acquired the ability to learn collectively. Collective learning is responsible for the staggering progress of our species.

As information and exchange networks grow, learning and innovation increase. Globalisation and information technology have supercharged this process. Big History is inherently global. It is education for the 21st century. Collective learning means that making Big History available to every student, in every school, in every country will be to the great benefit of us all.

“It gives you a holistic understanding of both the science elements and the history elements, and I really love those two subjects. So for me it’s really exciting.”

Year 10 student, SCECGS Redlands, Cremorne, NSW, Australia

“Humans really want to see everything together. It’s like a part of you that needs to be filled – you need to have an understanding of how everything’s connected.”

Year 10 student, SCECGS Redlands, Cremorne, NSW, Australia

“Big History explains a lot of the questions which are at the core of all of us: why are we here, and how did it come to this?”

Sarah Trotter, teacher, SCECGS Redlands, Cremorne, NSW, Australia
Leadership through corporate social responsibility

Our plans to take Big History global offer an unprecedented corporate social responsibility opportunity. Big History is relevant to an incredibly broad cross-section of society — students and their parents — in every country. In India alone, there are 264 million school students. The Big History Global Coalition offers an impressive opportunity to align with core values, including:

- **Employability** — Big History improves graduate capabilities and teaches students to think critically, but also viscerally, to identify the basis on which they will accept a claim of knowledge. Is it on the basis of intuition, authority, logic, or evidence? This is a fundamental skill for future learning and employability.

- **Excellence** — Big History is cutting edge and is the result of a fundamental, innovative, and sustained research effort to search for the contours of a deep underlying unity to modern knowledge.

- **Innovation** — Big History provides a framework to think in new ways and address complex real-world challenges. The Big History concept of collective learning drives innovation.

- **Sustainability** — Big History crosses multiple disciplines, and sustainability solutions require multidisciplinary research efforts across the full range of natural sciences, social sciences, and humanities.

- **Citizenship** — Big History encourages active and engaged national and global citizenship by developing a sense of perspective, improving critical thinking skills, and demonstrating the links between disciplines to help make sense of the big picture.

- **Leadership** — requires an ability to see the big picture, to integrate diverse knowledge frameworks, and make sound decisions while exercising a degree of intuition, judgement and wisdom — all skills nurtured by Big History.

“Career success for the coming generation will depend on their ability to synthesise information and come up with new concepts and ideas. ... This innovative subject, enthusiastically promoted by Bill Gates, expands children’s minds by taking our history back to the beginning of the universe and looking for the origins of, and the connections between, everything.”

Tim Dodd, Australian Financial Review, on Big History
The Big History Global Coalition will leverage and amplify the impressive momentum which Big History has already generated globally. Since 2008, Professor David Christian has given more than 100 presentations internationally, from Montreal to Moscow, including closed symposiums at Harvard at the invitation of Al Gore, lectures at his own alma mater Oxford University, and the Tällberg Workshop at CERN. Christian has been a key speaker at events such as CLSA Investors Forum, Techonomy, Sydney Vivid Ideas festival, and THINK in Goa. Christian's Big History TED talk has millions of views and is listed as one of the 11 classic TED talks.

Big History has been embraced as an important global framework by the World Economic Forum (WEF). Presentations have included ‘Interdisciplinary Approaches to Solving 21st Century Challenges’ (Davos 2012), ‘Big History for Big Picture Thinking’ (Davos 2014), and ‘Big History, Big Decisions’ (Tianjin 2014). In 2015, the WEF Annual Meeting in Davos had four sessions devoted to Big History including three interdisciplinary ‘Big History, Big Future’ panels on cooperation, innovation, and global growth and stability.

In September 2015, Macquarie University is launching the world’s first Big History massive open online course (MOOC) on Coursera. Drawing on the expertise of 20 academics from across disciplines at Macquarie, this free innovative online course will provide an intellectual foundation for students preparing for study at universities around the world. We have shown how Big History can be taken to the world to advance the public understanding of the sciences and the humanities, and inspire the education of students. We are ready to bring together a Global Coalition and embark on our significant plans for growth.
Taking Big History to every student, in every school, in every country will be transformational for global education and development. While universities have long recognised the value of the research-teaching nexus, Big History is a pioneering and outstanding example of the research-teaching-outreach nexus. Curriculum renewal of Big History resources for current and future generations is a major priority which requires a sustainable long-term strategy.

Big History courses that are available for students around the world must be kept updated in light of new research. Our fantastic global teaching and outreach platforms must never be allowed to become the online equivalents of out-of-date textbooks. Serious academic researchers must be engaged in tracking relevant advances in many fields. For instance, since the launch of the Big History Project schools course, the discovery of the Higgs boson particle and the possible detection of gravitational waves highlight the speed at which science advances. A dedicated pedagogical research effort is required to evaluate how best to make this new knowledge accessible to students without sacrificing rigour or precision. The academic members of the Big History Institute drawn from universities around the world will provide this essential capacity.

Our plans include research fellowships attached to the Big History Institute open to applicants globally on a competitive basis. Research fellows will advance transdisciplinary research areas linked to Big History such as complexity, energy flows, and intelligence. These fellowships will provide critical career path development for the next generation of Big History academics. A Professorial Chair in Big History will provide global academic leadership and strong impetus to our global media, knowledge dissemination, and public thought leadership strategies.

“...This tremendous project can not only benefit high school students, but it can benefit graduates and researchers as well! I think any science researcher should know more about the history of science and the history of humanity. … I’m pleased to inform you that my colleagues in the University started to go through the wonderful thresholds, and I have found it of great use in my fields of interest: astrophysics, fundamental physics, and also nanoscience and nanotechnology.”

Zyad Shehata, undergraduate student, University of Science and Technology, Zewail City of Science and Technology, Egypt
Investment and return

The Big History Global Coalition will comprise four leading global corporations. Global Coalition members will be selected from separate and non-competing industrial sectors. This will enable each member to capitalise on, and brand their involvement with, this transformational global initiative.

The Big History Global Coalition will resonate with companies with significant global operations and a reputation for global innovation and leadership. A compelling opportunity exists for global brands with prominence across a wide cross-section of society including not only students and parents, but broader public, government, non-profit, and business constituencies.

Our sustainable long-term strategy is reflected in our funding plans. We will raise US$200 million from our Global Coalition members to implement our plans and endow the required ongoing support structures for a period of 25 years. The investment required from each Coalition member will be $50 million, comprised of a commitment of $10 million per year for five years. Effectively, a corporate social responsibility investment over 5 years will provide a unique strategic global profile over a minimum of 25 years.

Big History is a signature initiative for Macquarie University and advances key University strategic priorities including transformative learning, impactful research, internationalisation, and interdisciplinarity. With the strong support of the Vice-Chancellor and the University Executive, Big History is a major focus in Macquarie’s upcoming comprehensive philanthropic fundraising campaign.

We anticipate future contributions from individuals as principal donors ($1 million – $10 million) and major donors ($100,000 – $1 million) to further supplement our global Big History efforts.
ANDREW MCKENNA, EXECUTIVE DIRECTOR, BIG HISTORY INSTITUTE

Andrew McKenna coordinates Big History as an integrated and priority activity across the University, and leads the strategic growth and development of the Institute globally. He engages with businesses, governments, NGOs, and educational institutions around the world. Following experience at Gartner supervising projects across a broad IT research portfolio, McKenna founded an independent research firm and led complex corporate research projects in more than 70 countries. McKenna established a captive research operations centre in India and has been based for periods in Singapore, Hong Kong, Switzerland, France, Malta, and the United Kingdom. He is a member of Chatham House, the European Association for International Education, and ESOMAR. He has a Bachelor of Laws and Bachelor of Commerce from the University of New South Wales, and a Master of International Relations from Macquarie University, where he was awarded with the Vice-Chancellor’s Commendation for Academic Excellence. McKenna is a member of the Big History Steering Group at Macquarie University.

PROFESSOR DAVID WILKINSON, DEPUTY VICE-CHANCELLOR (CORPORATE ENGAGEMENT AND ADVANCEMENT), MACQUARIE UNIVERSITY

Professor David Wilkinson joined Macquarie University at the beginning of May 2013, prior to which he was head of Australia’s largest medical school at the University of Queensland. Wilkinson is highly respected internationally, as a medical practitioner, researcher, teacher and administrator. He grew up in the UK, trained in medicine there, and worked in rural Africa between 1987 and 1998. During this time, he established a major rural health research enterprise funded by international agencies including the World Health Organization. In 1994, he won a competitive National Institutes of Health Fellowship to study for a Masters degree in Epidemiology (MSc) at Columbia University, New York. His research in Africa generated three doctorates. Wilkinson later received multiple honours from the Royal College of Physicians (London) for his contributions to medicine during this decade. In 2012, he was awarded a prestigious National Senior Teaching Fellowship by the federal Office of Learning and Teaching. The Australian-American Fulbright Commission awarded him a Fulbright Senior Scholarship for 2013–2014. Wilkinson is a member of the Big History Steering Group at Macquarie University.

PROFESSOR S BRUCE DOWTON, THE VICE-CHANCELLOR AND PRESIDENT, MACQUARIE UNIVERSITY

Professor S Bruce Dowton is the Vice-Chancellor of Macquarie University. He is a paediatrician, clinical geneticist, molecular biologist, researcher and academic, and has served as a senior medical executive at a range of universities, healthcare institutions and consulting organisations. Most notably, he served as a paediatrician at the Massachusetts General Hospital for Children, and as Clinical Professor of Paediatrics at Harvard Medical School. Dowton joined the University in September 2012. He led a highly consultative process to establish a long-term strategic framework for the University, re-focusing the organisation’s core activities of teaching and research around a concept of ‘a university of service and engagement’. The document resulting from this process, Our University: A Framing of Futures, emboldens the University’s long-term vision and priorities. Dowton’s highly engaging personal style has since become a hallmark of his Vice-Chancellorship.

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PROFESSOR SHERMAN YOUNG, PRO VICE-CHANCELLOR (LEARNING AND TEACHING), MACQUARIE UNIVERSITY

Professor Sherman Young is Macquarie University’s Pro Vice-Chancellor (Learning and Teaching) and a Professor in the Department of Media, Music, Communication and Cultural Studies, where he teaches and researches in the area of new media theory and production. He is the author of *The Book is Dead: Long Live the Book* and co-author of *Media Convergence* and *Beyond 2.0: The Future of Music* – all of which analyse the impact of new media technologies. Young has a Bachelor of Science in Design from the University of New South Wales; a Master of Arts in Media, Technology and Law from Macquarie University; and a PhD in Media and Cultural Studies from the University of Queensland. Prior to becoming an academic, Young ran a multimedia production company building interactive media for a range of corporate and publishing clients. He is a member of the Big History Steering Group at Macquarie University.

PROFESSOR DAVID CHRISTIAN, DIRECTOR, BIG HISTORY INSTITUTE

Professor David Christian (DPhil Oxford, 1974) is by training a historian of Russia and the Soviet Union, but since the 1980s he has been interested in World History on very large scales. He taught at Macquarie University in Sydney from 1975 to 2000 before taking a position at San Diego State University in 2001. He returned to Macquarie University in January 2009. Christian is a member of the Australian Academy of the Humanities and the Royal Holland Society of Sciences and Humanities, and a member of the editorial boards of the *Journal of Global History* and the *The Cambridge World History*. Christian is the author of *Maps of Time: An Introduction to Big History*, a pioneering example of Big History scholarship which won the World History Association Prize in 2005. With colleagues, he recently published *Big History: Between Nothing and Everything*, the first college textbook on Big History. Christian is a Distinguished Professor of History at Macquarie University, founder with Bill Gates of the Big History Project (bighistoryproject.com), Director of the Big History Institute (bighistoryinstitute.org), and a member of the Big History Steering Group at Macquarie University.

TRACY SULLIVAN, EDUCATION LEADER, BIG HISTORY INSTITUTE

Tracy Sullivan leads the international uptake of Big History in schools around the world and the professional development of teachers globally. Trained as a secondary history teacher, Sullivan taught in Australian classrooms before moving to the tertiary sector lecturing in history education at the University of New South Wales and the University of Sydney. A former Churchill Fellow and Westfield Premiers Teachers Scholar, Sullivan has a Master of Arts in Modern History and is currently completing a PhD in Education, exploring the impact of Big History as a vehicle for interdisciplinarity at the secondary level. Sullivan is a member of the Big History Steering Group at Macquarie University.

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Taking Big History to the World

Big History offers students a powerful connecting framework for knowledge and future learning, providing critical on-ramps to subjects across the sciences and humanities.

When we founded Big History Project our goal was to get Big History taught to as many students around the world as possible. Working in collaboration with Macquarie University Big History Institute we will be able to take an important next step to achieve this objective.

Taking Big History to the world will be a catalyst for unlocking the intellectual potential of students across the globe. Students in Africa, Asia, Australia, Europe, and the Americas will be inspired by the tremendous common story we share, and the potential and promise of our common future.

Big History is a transformational opportunity in modern education. We encourage your support.

Yours sincerely

Bill Gates, co-founder, Big History Project

David Christian, co-founder, Big History Project
Next step

The Big History Global Coalition is an opportunity to transform the future of our world by transforming education for every student, in every school, in every country.

The Big History Global Coalition is corporate social responsibility with real global impact. It is a unique proposition for select corporations to globally define their strategic vision and values.

Let's talk. We look forward to providing further details to you in a confidential discussion.

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“Education is the most powerful weapon which you can use to change the world.”

Nelson Mandela
Increasing complexity is one of big history’s main themes. That’s because throughout the Universe’s long history, more and more complex things have appeared in some surprising ways. Each new form built upon existing ones when conditions were just right: We call these events “thresholds of increasing complexity.” You can find many of them throughout history. In this course we identify eight major ones. These cards explain the basics of each.

**THRESHOLDS OF INCREASING COMPLEXITY**

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<thead>
<tr>
<th>Threshold</th>
<th>Event</th>
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<tbody>
<tr>
<td>1</td>
<td>The Big Bang</td>
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<tr>
<td>2</td>
<td>Stars Light Up</td>
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<td>3</td>
<td>New Chemical Elements</td>
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<td>4</td>
<td>Earth &amp; The Solar System</td>
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<td>5</td>
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<td>6</td>
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<td>7</td>
<td>Agriculture</td>
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<td>8</td>
<td>The Modern Revolution</td>
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**INGREDIENTS**

All new forms of complexity build upon previous forms. This section identifies the main components that had to exist at a particular threshold in order to create something entirely new.

**GOLDILOCKS CONDITIONS**

Having the right ingredients isn’t enough to create new forms of complexity. Conditions also need to be “just right” to trigger the change. This section identifies what those conditions were.

**NEW COMPLEXITY**

Each threshold results in entirely new things that are more complex than anything before. This section identifies what those are. They’ll always have more diverse components that, when arranged in precise ways, contain “emergent” properties unlike any others in existence.
The Big Bang remains a mystery in many ways. We have a lot of evidence for what happened just after the event but can only guess what existed before it, if anything, and what conditions made it possible. Even so, we know the Big Bang is an important threshold because it created time, space, and the “building blocks” for everything in the known Universe.

Before stars existed, the Universe was relatively cool and uniform. The first stars formed within huge clouds of gas that were the building blocks of galaxies, galaxy clusters, and superclusters. Stars were an important new form of complexity because they introduced long-lasting “hot spots” where even more complex things could develop.
The Universe was a relatively simple place until the first stars aged and died. You couldn’t make much with just hydrogen and helium. Dying stars were another story. They created the extremely high temperatures necessary to fuse nuclei and create new chemical elements. All had distinct properties and provided the raw material for a nearly infinite number of new possibilities.

Even after millions of supernovae exploded to create new elements, most of the Universe still consisted of hydrogen, helium, and empty space. Planets, which formed from leftover debris around newborn stars, contained much greater chemical complexity than anything else in the Universe. On rocky planets like our Earth, even more remarkable things could happen.
The appearance of life on Earth marked a major arrival: organisms with the capacity to harness energy and materials from their environments to adapt to changing conditions and reproduce themselves. This introduced a new level of creativity, diversity, and complexity to the Universe.

Many creatures can learn. Some can share what they learn. Only humans can share ideas so efficiently that we learn collectively as a species. We are uniquely powerful because we use symbolic language to store and circulate information that would otherwise disappear when individuals die. This enables us to manipulate and react to our environments like no other species on the planet.
Up until about 11,000 years ago, humans—who had spread throughout the world—survived by foraging for food. Everything changed when certain groups of humans began to farm. Populations exploded. Societies became more diverse. Collective learning accelerated.

Over a mere 200,000 years, humans have developed a complex and versatile exchange network. Today we are 7 billion people interacting as one interconnected global community. This society is so powerful that it impacts the fate of the entire biosphere. We have yet to experience the full implications of crossing this most recent threshold.