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Table of Contents

What is Big History Anyhow?
James Tierney 3

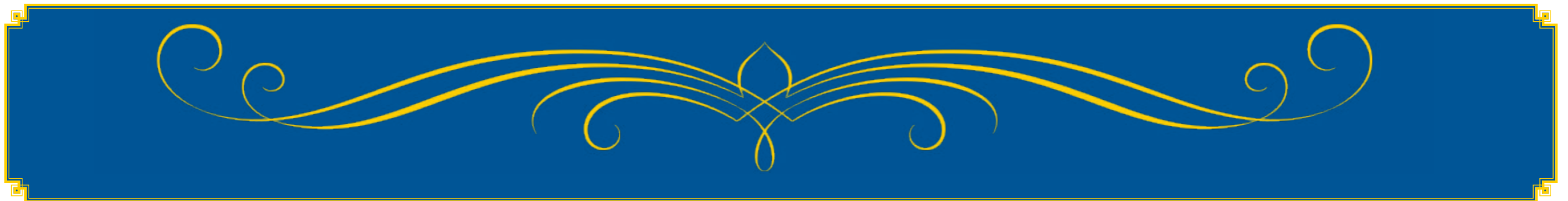
Nature, Ecology, and Society
Rashida Atthar 7

..... 15

..... 16

Big Basin, Bigger History:
Homeschoolers Learn Big History
in the Home of California's Coastal
Redwoods
Matthew J. Spence McConnell 13

From Big History to
Cosmic History
Ted Peters 17



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What is Big History Anyhow?

By James Tierney

*A*s I was getting ready to go to Amsterdam last year to present a paper on the work I had done for over forty years, at the third international conference on Big History, friends would ask, what is Big History anyhow? Often, after puzzled looks, as I would try to explain a new field which I had discovered and fell in love with, I would simply refer them to the paper I had written for the first conference, now published in an obscure Russian journal called “Evolution-A Big History Perspective”. In this earlier paper, I outline the two themes which I then felt and now continue to feel are central to what Big History has to say. In the first sentence of the abstract to that paper I give both a concise and comprehensive answer to the question. “The following work ties together the Big History components of collective learning and complexity building within the long term perspective of the evolution of the Universe and the shorter term perspective of human culture”. As it turns out, all change is a process of building from the simple to the more complex and building complexity is the observation that makes Big History so relevant as a discipline. Collective learning, on the other hand, is a bit less precise. I discovered it can be used as a verb to describe people collaborating in learning as we do in the many learning centers around the world or it can be used as a noun to describe the product of all that collaboration which is what I intended at the time. I visualize collective learning as a massive grid containing bytes of information that fit together like Legos to build categories that are then available to add to and change. The internet is the electronic component but the matrix is much broader than that and includes all learning both current and from previous generations. Some is accurate and very precise like a degree kelvin while some is speculation or even guesses like how and when were the continents of North and South America settled by humans. Unlike Legos, the matrix I envision is composed of bricks that don’t necessarily fit together because some of the information they contain may be inaccurate or unavailable at the moment but they are included in the structure in order to give future learners a complete context within which they may build their new learning. In this sense it is like a library which contains all previous thinking on a topic whether right or wrong, sort of like color coded correctly but without common structure. This thereby requires the new student to think more comprehensively which is necessary as complexity grows and as the pace accelerates. For some, this clarification simply produced more puzzled looks.

GAPS IN THE HISTORICAL RECORD

Unfortunately, the way we have recorded history fragments it by design. This fragmentation is made more extensive by the way we have structured academia. Some gaps are unavoidable. For example, we simply didn't know there were other galaxies in the sky besides our own until fairly recently. Therefore our view of the information brick called astronomy was vastly out of synch with reality as was the information brick called astrology and the one called physics as well as numerous other categories of information stored neatly in scholarly papers or in the heads of scholars champing at the bit to get out and enable the recognition of the wisdom of the author. But, no matter how much we tamper or wish to tamper with certain components of history like the evolution of galaxies, the natural history of that process will always prevail. Big History has both the function and the capacity to identify such gaps and encourage the numerous disciplines that could be involved to collaborate to rewrite the record where necessary and to insure that the implications for prospective iterations be as accurate and precise as possible.

Other gaps are not so obvious or simple to resolve. For example, the paper I presented at the conference in Amsterdam illustrated how child welfare, in which I had worked for over forty years, is one of many systems evolving culturally but differently than components like genes or galaxies. It is coevolving with many other related systems and in direct response to uncoordinated inputs from people like myself who are doing our best to make the system work for tens of thousands of children at risk. As far as I know, there is no metric to gauge whether what we are doing increases or reduces the risk to the children. Furthermore, as far as I know, there are no metrics to gauge the effectiveness of any forms of the cultural systems driving cultural evolution although there is growing agreement that cultural evolution is indeed, the major force driving who we are becoming. Now, unlike the natural forces driving the evolution of galaxies, the forces driving the evolution of human culture are being tinkered with by folks who have little appreciation of what they are doing and are likely to be unable to hear should someone who does have a better appreciation of the prospective consequences reach out to collaborate with them. For example, to use child welfare as an example again. A presidential report delivered in October of 2016 makes the observation that five or six children die each day in the child protective service system. It also makes no recommendation to reduce the number of deaths because it does not have adequate information as to what is causing them. The history of child welfare in this country if one uses the

termination of parental rights to parent by a government agency as a gauge, is only about a hundred years old. The first parents brought to court for neglecting the care of their children were brought under the laws to protect animals because there were no laws at the turn of the twentieth century to protect children. In that brief period, there are now 40,000 children waiting at any given time in protective care for an adoptive placement or one of the other forms of permanency that such children can hope for. So, if we consider child welfare as one of the cultural systems coevolving with other systems and genes as well, as I do, we are tinkering with the fundamental function of reproduction with little or no appreciation for the consequences for the species as a whole. More worrisome is the fact that some policy makers advocate for policy that may make it harder for parents who wish to care adequately for their children to be able to do so. For example, the governor of Maine and many other leaders, I suspect, advocates to reduce resources like TANF (Temporary Assistance for Needy Families), Medicaid and Food Stamps to parents who are likely to be at higher risk of neglecting their children because of their limited resources. Since such policies are probably a carryover from a Herbert Spencer social interpretation of Darwin that, as far I know, has never been tested as valid and the governor probably doesn't understand the Spenserian view he is taking of social welfare anyhow, we may have two components of government working at cross purposes. The point is that cultural evolution is enormously complicated and as far as I can tell, we don't know whether the variables and resources needed to make it work are anywhere near optimal. To be sure, child welfare is one of the more complicated systems evolving culturally as we move forward into the twenty first century but the pace at which the change is occurring appears to be increasing exponentially. How does Big History or any other discipline constructively step up to the challenges inherent in the pace and scope of the change in cultural evolution? One thing for certain is that culture as the driver leaves gaps in the historic record which Big History might help to identify and fill.

Joseph Henrich, Kevin Laland and Richard Prum have each written books in the past year stressing that culture is driving evolution in concert with natural selection. It is a process vastly more complex than anything Darwin and other theorists have imagined, could have imagined. Who we are becoming and the context within which that process is emerging is the collaborative learning David Christian talked about in “Maps of Time” and that I and others talk about in Big History.

The new dimension is the recognition that evolution is not evolving via natural selection or any other single mechanism, it is coevolving with numerous mechanisms including human culture as multiple driving forces. Interestingly, all three scholars Henrich, Laland and Prun see the hand of our species as a positive force as it, undoubtedly, can be but we also bring a certain frailty to the table. We tend to build systems that we convince ourselves are functional and valid without adequate measures to substantiate such judgements. Child welfare and particularly child protective services are an example of such systems and the Presidential Report of October 2016 calls our attention to some of the frailties of those systems but it also illustrates how easily such "learning" can get lost in the shuffle as good people do our best to try to come to grips with cultural dynamics that we can only speculate on and do not have adequate measures for.

Before I give the impression that we humans are bumbling around doing nothing but creating systems that are working against our best interests, let me dispel that perception. In fact, our capacity to build systems that are able to coevolve with other systems that hadn't even been thought of at the time of building the initial component, is extraordinary. The internal combustion engine is my favorite example. The transactions between air, fuel, spark and compression that make it work have coevolved over a hundred years with other systems like steering, exhaust, suspension and guidance by humans to allow a vehicle to emerge that nearly any human can acquire and use to do extraordinary work. The reason we are able to use tools like the internal combustion engine to do such work is because we have the capacity to measure, with great accuracy, the transactions between the components of the systems. We know precisely how much compression there must be between the air and the fuel to make it function efficiently. Systems like child welfare require similar precise mixtures of components as well but we do not have the measures to define the precision.

The internal combustion engine is a fairly simplistic example of how cultural evolution of a tool enables extraordinary work to be accomplished when culture is the driving force but also obscures how easily such forces might stand in the way or at least make more difficult simple progress like how we might best raise up the kids. For example, male domination is a cultural force that makes us who we are. Just like the mixture of air and fuel in the internal combustion engine, male domination drives how we parent as well as numerous other behaviors that

are critical to getting the work of our species done but we do not have ways to measure how efficient that work is. Furthermore, male dominance has driven these behaviors for at least ten thousand years so we have no idea what the culture would be like had there been more equity between the genders or, more interestingly, in my opinion, a female dominated culture. The point is we have no way of knowing in what ways the forces driving evolution are to the advantage of our species or the overall interests of the planet. This is a cultural phenomenon just like the work done by the internal combustion engine but unlike that work there is practically no way to gauge whether the outcomes are good, bad or indifferent. Furthermore, can powerful organizations that are male dominated and act in secret like the Christian churches or the Free Masons let the observations of the negative effects of one gender domination be heard? One of the dilemmas within child welfare is that the proceedings are kept in secret supposedly to protect the child but that also protects the interests of the folks providing the services and therefore leaves the general public as well as even the professional community with only a piece of the information. The sociology information brick may be the right color but it doesn't fit structurally with the information brick called social work or the one called social welfare or any of the other information bricks in this component of cultural evolution. Does it matter? I think it does.

Unlike the gap in history left by not knowing there are other galaxies in the sky besides the Milky Way, not knowing that cultural evolution is now driving the process of who we are becoming is much less apparent. Huge numbers of people don't believe that natural selection is what drove that process prior to culture stepping up to coevolve with it and few if any have a good understanding of how that coevolution works or where it is taking us. So, if Big History has a role in identifying gaps in history, it would seem we would want to explore how culture has been driving that which used to be primarily driven by natural selection and Mother Nature.

We, in Big History, made a good start by having Johan Goudsblom as our keynote speaker at the conference in Amsterdam. His book, "Fire and Civilization" helps us understand how fire has been a key tool in human cultural evolution and helps us place that in time. Stone tools have dominated the story because they survive in the archeological record but fire has to be at least as significant in defining who we have become. And, to be sure, the story of wood tools has to be

as significant as the story of stone tools. So, there are many gaps in history that Big History can help articulate. My guess is that greater equity between the genders meant greater sharing prior to the last glaciation. What might that have meant in terms of parenting the children? To be sure, going forward as a species, we will have to do some things differently than we have in the past 23,000 years, especially the last ten thousand years. It would seem that a reasonable mission for Big History would be to help spell out those differences.

Let me summarize by reiterating that who we are becoming as a species and how we are impacting the planet is not the result of natural selection or any other single force but rather several mechanisms, including human culture, coevolving in tandem. Furthermore, we have no measures to gauge, with the precision necessary, the direction that cultural evolution is now taking us.

It is hard for me to tell from reading Henrich and Prum whether they see the significance of our lack of measures. They are so invested in stressing the positives of the role of cultural evolution that that emphasis may act to obscure my vision. Laland, on the other hand, seems to appreciate the need for measures. In his chapter on High Fidelity he recognizes the work of Magnus Enquist who modeled how the fidelity of cultural transmission and the mathematical function relating trait fidelity to longevity in the culture, is exponential in form. His subsequent work with Hannah Lewis strongly implies that transmission fidelity is the key factor affecting what Michael Tomasello refers to as “ratcheting” in human culture. Up until now we have been dependent on Eric Chaisson’s metrics to gauge the evolutionary process. This seems to work for cosmic evolution but I have a hard time applying it to cultural evolution which is now clearly the primary driver of who we are becoming.

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Nature, Ecology, and Society

By Rashida Atthar

The clearest way into the universe is through a forest wilderness.

— John Muir, Journals, July 1890.

The happiest country in the world is said to be Bhutan. It is ranked high in human development and is the first nation to achieve negative-carbon status. This is due in part to its policy of environmental protection and the planting of millions of trees. Bhutan's constitution makes it mandatory to maintain 60 per cent of its land in forest, and, whenever there is a significant celebration, like the birth of its queen's first child, trees are planted. It shows the strong link between forests and human well-being, and helps to explain its happiness index that is so high. Japan is also considered to have one of the healthiest populations in the world, and, for their part, they have developed what they call 'nature bathing' – *shinrin-yoku* – which involves spending time around trees, a custom that has even become part of their national health programme.

Writing this article in the midst of a bustling city like Mumbai, with all its environmental problems and ecological assaults, I derive solace from the remaining nature around me and hope for a greener future. The government, however, seeks to chip off bits of the rich and unique mixed, moist, deciduous forest within the city limits – under the forest, over the forest, beside the forest – all in the name of 'infrastructure development'. A lot of citizens are voicing their concern regarding the destruction of the ecology that will take place and ask whether such a heavy price needs to be paid for infrastructure. In addition, the ecologically sound lives of the Warlis tribal people in the only green belt of the city – around Aarey Road – is being taken over bit by bit in the name of development. Citizens are fighting a losing battle as authorities give clearance to the sacrifice of green cover. Just the sight of huge trees while driving through or walking along this green road is therapeutic for the population. The emotional and psychological significance of such stretches of greenery has been lost on those blindly looking only at infrastructure. Transformational consciousness is the key.



Plate 1: Sequoias at Yosemite National Park, established by John Muir and others in the Sierra Nevada Mountains of California. Photograph by Barry Rodrigue 2016.

But how does one defend against a whole body of governing officials and decision-makers, a section of the population, and vested interests pitted against highly conscious but powerless citizens? The only way is to have a critical mass of people and individuals who are connected to nature, have a passion for nature, and feel and understand that ecology and harmonious living is intrinsically linked to health and general well-being.

Although ancient cultures and books focused on trees and nature, and even described their impact on humans, such as how the fruits, flowers, bark and other vegetable parts can be used for medicinal purposes, very little is heard of this in the present policy disagreements. The *Quran*, for instance, has many chapters and verses about trees and their importance. Dr. M.I.H. Farooqi, in his *Plants of the Quran* (1989), discusses how its chapters and suras talk of the date palm, olive, grape, pomegranate, fig, cedar, tamarisk, tooth-brush tree, ginger, onion, garlic, lentils, cucumber, acacia, gourd, mustard, sweet basil and others, as well as fruits, leaves, vegetables, grain, fodder and agriculture in general, with the various events around them, and how the uses of the plants came about.

One example is the tooth brush tree, *Salvadora persica*, which is commonly called *miswak*, an important tree of Arabia. ‘In several Traditions, Prophet Hazrat Mohammad advised his followers to clean teeth daily with Miswak (tooth sticks). Once he has been quoted as saying “you shall clean your mouth, for this is a means of praising Allah”. He was so concerned about the oral hygiene that he repeatedly insisted his followers to use Miswak for cleaning teeth conscientiously.’¹

Maulana Wahiduddin Khan wrote in his book, *Islam and Peace* (1999), about Islam and the environment:

For a Muslim it is an act of charity to plant a tree or till a land where birds or people or animal come and eat of its fruits (al-Bazaar).

If a Muslim plants a tree or sows a field and men and beasts and birds eat from it, all of it is charity on his part. (Muslim).

Even looking after plants and trees is an act of Virtue. (Ibn ‘Asakir).²

These simple but significant lessons of the connection between harmonious

living and good deeds need to be emphasized in present times.

The Sustainable Lifestyle of the Warlis

The Warlis are Adivasis (indigenous people) and are considered to be descendants of the original inhabitants of India. Many reside in the northern part of Mumbai, the most numerous being those who call themselves the ‘King of the Jungle’. According to community-organizer Winin Pereira, the Warlis have survived for millennia in harmony with their environment and without oppressing others. Their culture incorporates the spiritual and the material – the living and the non-living – into one integral whole. They consider themselves part of living nature and hence nature is not exploitable. The Warlis were among the first ‘greens’. Nature was



Plate 2: Warlis house framework, Dahanu, Maharashtra, India. Photograph by Rashida Atthar, 2016.

personified as *Hirva* (green) and worshipped as the source of all wealth, since the forest provided most of their requirements. Nature’s produce were gifts of *Hirva*, rather than the fruits of their own labour or their possessions.³

The most familiar site for anyone who has visited a Warlis place of residence are their homes and the paintings on them. The Warlis have a simple and unique style of portraying their connection with nature and their activities of sowing, harvesting, music and dance. The homes are made from reeds of the Karvi plant, which have beautiful purple flowers that bloom every seven years. Their houses have insulation to keep the temperature inside cool during summer and warm during winter.

Their paintings use wet soil as a primary pigment to depict animals and plants, along with daily life activities, from agriculture to recreation. The larger paintings may also depict myths, fables or stories.

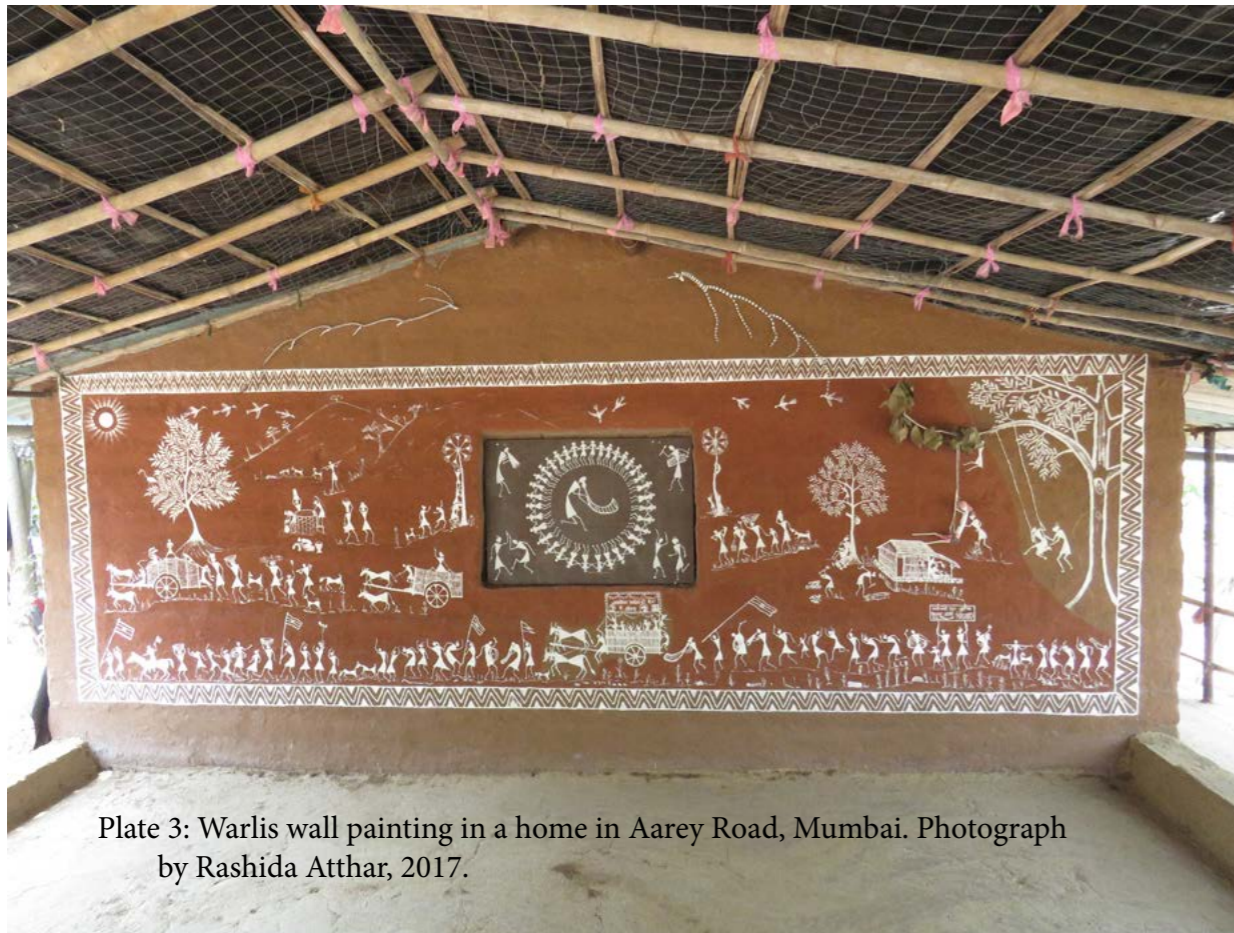


Plate 3: Warlis wall painting in a home in Aarey Road, Mumbai. Photograph by Rashida Atthar, 2017.

Considering the kind of collective distress and pain ecologically sensitive people undergo across the world, this bringing of more nature into the lives of children and adults is a most efficient way of coping with life and creating more balanced communities.

According to journalist Richard Louv: ‘Nature is often overlooked as a healing balm for the emotional hardships in a child’s life. You’ll likely never see a slick commercial for nature therapy, as you do for the latest antidepressant pharmaceuticals.’⁴ Louv reports on how environmental psychologists Nancy Wells and Gary Evans assessed the degree of nature in and around the homes of rural children in grades three to five. They found that those with more nature near their homes suffered less from behavioural conduct disorders, anxiety and depression than their peers who had less nature near their homes. Children with more nature near their homes also rated themselves higher than their peers on a global measure of self-worth: ‘Even in a rural setting with a relative abundance of green landscape, more [nature] appears to be better when it comes to bolstering children’s resilience against stress or adversity’.⁵

Louv, in his book, *The Nature Principle* (2011), well defines the transformative powers of the natural world and provides seven life-style changes that can reshape human existence. As he sees it, the more high-tech our lives become, the more nature we need to achieve natural balance. He coins the term ‘vitamin N’ (for nature), which leads to mind-body health, and describes a hybrid mind, where technology and nature-experience are used together to increase intelligence, creative thinking, and productivity. Likewise, human-nature social capital enriches and redefines community by including all living things, as with purposeful place, when natural history is as important as human history to regional and personal identity. He talks about biophilic design, which conserves watts and produces human energy. Most importantly, he describes how high-performing humans will conserve and create natural habitat and new economic potential where they live, learn, work, and play. All these together will form a singular force.

One of my earliest memories of learning in nature is how our English teacher used to take us to a small school garden for poetry classes. The thrill of learning in the open has etched pleasant memories and brought poetry alive for me, as when garden-designer Gertrude Jekyll wrote: ‘... a garden is a grand teacher. It teaches

patience and careful watchfulness; it teaches industry and thrift; above all it teaches entire trust.⁶

I have observed the seasonal variations in the forest of Mumbai over a period of years, and, since sustainable development and climate change education are my personal interests and fields of study, interacting with various groups, especially students, has been most fruitful. This has enabled me to bring together various fields of social sciences with botany and field studies, along with my forte of research methodology.

The forest in Mumbai is a southern, moist, deciduous type. A majority of the canopy trees shed their leaves in winter, but other trees, like *Bombax ceiba* (red



Plate 4: Harvester ant architecture. Bombay Natural History Society (BNHS) land of the Conservation Education Centre on the south-west side of Sanjay Gandhi National Park (SGNP), Rashida Atthar, 2013.

silk cotton tree), *Bridelia retusa* (asan) and *Anogeissus latifolia* (dhawda) shed their leaves at varying times. Summer sees some plants flowering and fruiting, while the monsoon transforms the forest with its very first showers. Herbs and wild flowers of various hues and colours sprout and fade away, only to be replaced by more fascinating ones. The forest comes alive, the streams provide rich aquatic life, and the forest appears in its true full colours.⁷

Biologist Rachel Carson wrote from her personal experience of raising her nephew on the coast of Maine: ‘If a child is to keep alive his inborn sense of wonder ... he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement, and mystery of the world we live in.’⁸ Taking walks with school children has been particularly rejuvenating for me. Most children are adventurous and some really want to see a leopard, which are very few in number and are only found deep in the forest. The pond discoveries during monsoon is another sought-after activity, with toads and frogs, larvae and other creepy-crawly creatures fascinating the children. It’s also the best way to teach the carbon cycle and the water cycle and how ecosystems are interrelated. The keenness with which kids sight a praying mantis, or various bugs and spiders – the silk cotton bug is amazing ... once kids get into an observation mode, they touch, feel, hear and are totally immersed in the moment!

My principal research area, since 1997, has been sustainable development. In 2015, such work got a major boost due to the United Nations’ adoption of Sustainable Development Goals.⁹ For its part, Big History looks at the evolution of the cosmos, Earth, life and humanity from 13.8 billion years back and ahead to the future. It’s fascinating to draw the connections between these time perspectives, going to and fro. If one looks at the evolution of a barren land into a forest, it starts like life in the early stages of Earth’s history, from very primitive algae and fungi on rocks, and advances to the slow introduction of nitrogen-fixing plants. The early plants then lead to more fertile soil, which in turn enables more diversity, until an ecosystem of interdependent plants life is established and a balanced biotic and abiotic ecosystem results. This is akin to the ideal or goldilocks condition for each of the eight thresholds of Big History.¹⁰

Our life as we know it is under threat by human-made climate change. As environmentalist Al Gore describes, the very thin layer of atmosphere that enabled



Plate 5: Students learning about wildflowers with Rashida Atthar (centre). BNHS land, Conservation Education Centre, south-west part of SGNP. Student photograph, 2012.

Earth's surface temperature of -15°C for life to flourish has been ‘... spewed with 110 million tons of man-made global warming pollution in the atmosphere every 24 hours.’¹¹ This goal integrates Sustainable Development Goal no. 13 (to combat climate change and its impact) with Big History, as does goal no. 16 (for building peace and strong institutions) so, irrespective of government changes at country levels, our world as a whole moves towards sustainable growth and we as a species can survive after all!

Life under the sea is also vital for human survival as anthropologist Barry Rodrigue describes: ‘... it is not so widely known that phytoplankton in the world's

oceans provide half of the world's oxygen, and that climate change and pollution are rapidly killing off these marine populations.’¹² *Homo sapiens* cannot survive without oxygen! Geologist Nigel Hughes writes: ‘As extinction rates now match those of previous mass extinctions, we are in the midst of a sixth mass extinction, but this one is ultimately induced by a biological change – our own action – not by an external physical cause.’¹³ How we deal with climate change, the most serious of twelve ‘civilization extincutors’ listed by Global Challenge Foundation, will determine our future.¹⁴

There is overwhelming agreement by scientists around the world about human-made climate change and the rise in global temperature. Despite this, a harmonious existence is possible for us and the planet – if we reconnect with sustainable lifestyles of those who always followed them and if we adopt practices and implement sustainable goals for transformative consciousness.

Rashida Atthar is a social scientist who is deeply involved with her work on nature and ecology. After graduating in psychology and sociology from St. Xavier's College, Mumbai (India), she pursued an MSW and took employment with an international NGO in the field of health care. Her advanced research certificate is in the area of development, a specialty for which she has produced papers on sustainability, communication, and global NGOs for national and international conferences. Rashida has also presented papers in the field of botany, based on her observations and study of the Mumbai forest. Her work blends theory, practice, and research. At present, she is conducting workshops along with educational and awareness programmes about the environment and climate change, with an emphasis on the science and solutions to their problems. She can be contacted on email at <atthar.rashida@gmail.com>.

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**Big Basin, Bigger History:
Homeschoolers Learn Big History in the
Home of California's Coastal Redwoods**

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In Central Coastal California where the San Lorenzo River meets the Monterey Bay the city of Santa Cruz and nearby towns are home to a thriving homeschool community. Many public and Charter Schools in Santa Cruz county offer independent study programs for homeschool students and non-profit organizations like the Discovery Learning Center (DLC) of Santa Cruz also provide supplemental learning opportunities. The DLC offers courses for students from pre-K through High School in everything from learning the Korean language to building robots with recycled metals, and now Big History has been added to that list by local educator Heddi Craft.

If the continuing spread of Big History in American public schools tempts us to overlook the potential for growth in the homeschool community, Heddi's class should prove otherwise. Heddi has taught Big History twice at the Discovery Learning Center in the past 3 years, but she discovered the subject earlier, around the time that the Big History Project first made its curriculum available for teachers online. As a credentialed K through 8 teacher and a homeschooler of her own children Heddi knew she wanted to bring Big History to the classroom. Big History's claim testing and demonstration of the deep relationships and synergies between apparently disparate disciplines appealed to Heddi, but it was the fact that Big History addresses "the evolution of our understanding" that she found especially exciting. "Even more so than understanding these thresholds," Heddi explains, "Understanding what we are doing right now and that it can still be subject to revision is an important fact for helping kids understand both science and history. It's something I think that every student in the United States should have."

From September through May Heddi's class met for one hour once per week. Students were ages 13 and up and were not required to be homeschool students, but many were. Heddi had taught World History before, but was interested to see how the big picture of the history of the whole universe could help students frame the rest of their curriculum in a broader context. Knowing that she would be learning along with her students Heddi approached the curriculum intending to act as a facilitator for conversation and exploration rather than an authority figure. Students were required to do a majority of their work outside of class, including weekly readings, Big History Project curriculum homework assignments, and online or in person group work. Class time was reserved almost exclusively for large group games (like jeopardy style knowledge quizzes), projects and discussion. Discussions

could sometimes become heated. Her class took claim testing ideas to heart and she encouraged them to frame differences of opinion in a constructive way. Heddi remembers that one particularly energetic and passionate conversation developed concerning the human rights documents students had been studying. The catch? Heddi asked the group to agree on a human rights document for the future citizens of Mars.

Heddi quickly discovered that the harsh environment of Mars prompted her students to make important changes in the emphasis of their new human rights document. "The kids came up with ideas that I hadn't even thought of planning the project," she admits. "One was, 'Everybody will always have the right to oxygen, you can't cut off someone's oxygen!'" Another interesting development in the class discussion was the idea that even minor theft should be an extremely punishable offense due to the limited nature of environmental resources.

Although she is currently taking a well-deserved break from her foray into teaching the history of everything, Heddi plans on returning to teach Big History at the Discovery Learning Center in Santa Cruz for the 2019-2020 school year (she also admits she might be convinced to come back sooner by popular demand). In the meantime, Heddi would like to encourage anyone considering teaching Big History to do what she did: Attend a free regional cluster meeting on teaching Big History (or, if unavailable, avail yourself of the free online teacher training at bighistoryproject.com), and join the Big History Project Yammer group to get involved with the community!

If you would like more information about the Discovery Learning Center and their classes you can visit their website at: www.dlcsantacruz.org

Please email any comments to the author of this article at: mcon1mj@gmail.com

IBHA conference July 26 - 29, 2018

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From Big History to Cosmic History by Adding the Subjectivity-Transcendence Axis

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ABSTRACT: Even though Big History (BH) has successfully folded World History into Natural History, its method risks falling into a reductionist or materialist ideology we might label, *scientism*. BH's windows remain closed to a fundamental human phenomenon, namely, the subjective experience of transcendent reality. *Cosmic History*, which augments BH, opens the big historian and the history student to treating human subjectivity, consciousness, and selfhood as ontologically basic and worthy of historical reporting and investigating. Further, by reporting on historical figures crossing the *Axial Threshold* who distinguished between intra-cosmic and supra-cosmic reality, the question of transcendence can be asked and historical answers critically examined. Seers in China, India, and the Middle East posited the existence of a transcendent moral order that defined all of us as belonging to a single universal human race. Despite the plurality of religious symbol systems, each is oriented toward an ultimate reality that surpasses its own history and attempts to grasp--or be grasped by--the unifying if not mystical power of this reality. This raises the question: can we reduce the concept of a universal humanity to brain functions bequeathed to us by our evolutionary inheritance? Or might we appeal rather to the axial insight regarding a transcendent and ultimate reality?

KEY TERMS: Big History; Cosmic History; Evolution; Neuroscience; Reductionism; Religion; Diversity; Axial Age.

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One of the rightly celebrated breakthroughs in higher education has been the introduction of Big History into university curricula. By nesting World History within Natural History, big historians can search for factors within nature that have affected the course of human events and human self-understanding. Big History expands the mind and inspires the soul by assigning to us earthlings a role in the magnificent cosmic drama that began 13.8 billion years ago. Our role as responsible *Homo sapiens* takes on moral valence when we realize our responsibility to care for the fecund health of the planet on which we live.

Despite these laudable achievements, I note that an explanatory gap has opened up within the Big History worldview. It is a gap between historical reports of a transcendent divine reality and the big historian's attempt to provide a strictly secular explanation based in large part on evolutionary theory. The result is that a significant historically retrievable phenomenon has not been sufficiently accounted for by the big historians, namely, the Axial Breakthrough (Bellah 2011, 2012; Jaspers; Voegelin; Peters 2017a,b). By *Axial Breakthrough* or *Axial Threshold* I refer to events shocking the human psyche that occurred in different parts of the world during the first millennium before the common era. After the rise of city-states and during the early stages of empire, a transcendental insight dawned on certain individuals in China, India, and the Middle East. This transcendental insight shed new light on the human condition in the recorded ruminations of Confucius, Lao Tzu, the Upanishadic Brahmins, the Buddha, Zoroaster, the Hebrew prophets, and Plato. Whether theists or non-theists, these thinkers cultivated belief in a transcendent moral order and a transcendent ground for human reasoning that is trans-tribal and universal in scope. In some instances this breakthrough became the basis upon which whole cultures were constructed with local ethnic identities placed within a growing sense that there exists a single universal humanity. This ancient history gradually morphed over two and a half millennia into contemporary beliefs in universal human dignity complemented with respect for ethnic and religious diversity. In order to study the Axial Age, the student must graduate from Big History and take up Cosmic History.

I am electing the term, *Cosmic History*, to include the content of Big History along with the God-question. I choose this term for two reasons. First, scholars can distinguish two forms of pre-modern human consciousness, the intra-cosmic and the supra-cosmic. The divine figures in the myths of hunter-gatherers, early agricultural communities, and some city-state societies were intra-cosmic, part of the world order. For axial seers, however, the divine reality became transcendent,

supra-cosmic. The term, *Cosmic History*, opens the door to this historical retrieval.

Second, *Cosmic History*, critically re-evaluates the world picture painted for us by contemporary cosmologists, astrophysicists, evolutionary biologists, astrobiologists, and other scientists. Rather than accept as given what non-scientists are told by scientists, the cosmic historian poses an ideology-critique of the scientific worldview in light of the question of transcendence.

The key to this critique is the observation that both the scientific worldview and that of big historians who depend on it are unable to explain a most important daily reality, namely, human subjectivity. For us in the modern world, historical meaning and even history itself reside in human subjectivity. In subjective consciousness we find a door opening to transcendental awareness. Cosmic History puts both subjectivity and transcendental awareness back into the cosmos.

In what follows I wish to demonstrate the difficulty contemporary scientific discourse confronts when attending to human subjective consciousness. Then, I will turn to Big History proper, demonstrating how its windows are unnecessarily closed to the transcendental breeze that could be blowing through (Peters 2017a; 2017b).

Big historian Lowell Gustafson invites such interaction. “Our over-arching narrative has many gaps and questions. Much remains to investigate and ponder, share and debate” (Gustafson, 2017, 2). Perhaps pondering the subjectivity gap will open us to a more comprehensive grasp of reality and a transcendental grounding for the concept of universal humanity.

My subjective consciousness: who took it away?

Why do we find traditional history departments lodged among the Humanities in today’s universities? Why isn’t history considered a science? Here is the answer: the historian must attend to first person human subjectivity, whereas the scientist can restrict research to third person objective data. The historian risks losing his or her mind when taking scientific vows uncritically. Let me illustrate by looking briefly at the current controversy over the relationship between the mind and the brain.

“The mind...is the brain,” writes philosopher Daniel Dennett (Dennett, 107). Laboratory brain researchers don’t say this. But philosophers and psychologists do. What this particular philosopher has done prematurely is to fill in a gap, an

explanatory gap not yet bridged by actual scientific data. What appears to be non-material, our mind, is actually material after all. Thus says the scientist or, better, the reductionist materialist. When fishing in the scientific pond, the historian might catch a form of materialism that will lead to a loss of mind.

How did we get here? Let’s ask a historian of human thought. This challenging intellectual conundrum was ineluctably posed by the split between subject and object inherited from René Descartes by modern scientific researchers and the philosophers who rely on such science. Empirical research has produced libraries of new knowledge leading to objective explanations. We can only applaud and thank the last four centuries of scientists for their accomplishments. Nevertheless, human subjectivity and first person consciousness do not fit this research model. A gap has opened up between the achievements of objective science and our subjective experience. “For no matter how deeply we probe into the physical structure of neurons and the chemical transactions which occur when they fire, no matter how much objective information we come to acquire, we still seem to be left with something that we cannot explain, namely, why and how such-and-such objective, physical changes, whatever they might be, generate so-and-so subjective feeling, or any subjective feeling at all,” writes Michael Tye for the *Stanford Encyclopedia of Philosophy* (Tye, 2013; see: Chalmers; Clark). Third person explanations simply cannot account for first person experiences.¹ And, if transcendental awareness appears primarily in subjective experience, then it is not touched on by empirical explanation. At least to date.

How might we bridge the gap? A few insiders to neuroscience and many outsiders rush in to fill the gap prematurely with reductionist and materialist conclusions. Reductionists contend that objective explanations will eventually reduce subjective experience to that of a delusion. Dan Jones writes a virtual obituary for the human mind in the *New Scientist*. “Neuroscientists increasingly describe our behaviour as the result of a chain of cause and effect, in which one physical brain state or pattern of neural activity inexorably leads to the next, culminating in a particular action or decision. With little space for free choice in

¹ “If inwardness is coextensive with life, a purely mechanistic account of life, i.e., one in outward terms alone, cannot be sufficient. The subjective phenomena defy quantification and accordingly cannot even have outward equivalents substituted for them” (Jonas, 58).

this chain of causation, the conscious, deliberating self seems to be a fiction” (Jones 32). Physicist Stephen Hawking, also an outsider to laboratory brain science, slams the door shut on the consciousness closet. “Recent experiments in neuroscience support the view that it is our physical brain, following the known laws of science, that determines our actions, and not some agency that exists outside those laws.... It is hard to imagine how free will can operate if our behavior is determined by physical law, so it seems that we are no more than biological machines and that free will is just an illusion” (Hawking, 2010,32). In short, for the reductionist materialist, the vary capacity of our subjective consciousness to posit the existence of anything does not exist.

If this is the case, then any Big History account replete with human meaning should not exist either. Meaningful history would be only one more illusion. Without granting ontological status to the subjectivity of the historian, there could be no history and no meaning. In short, the big historian cannot function without subjectivity, yet there seems to be no room for subjectivity in objective science.

Two German philosophers are currently battling it out. Attacking human subjectivity from the reductionist army is Thomas Metzinger. “Subjective experience is a biological data format, a highly specific mode of presenting information about the world by letting it appear as if it were an Ego’s knowledge. But, no such things as selves exist in this world” (Metzinger, 2009, 8). The self along with the mind can be reduced to biochemical activity in the brain; thereby, making our conscious sense of self-groundedness delusional. Battling from the other direction is Otfried Höffe. “The actual insights of brain research offer in any event no dogmatic neuro-biologism according to which mind and consciousness *merely* emerge as natural events and according to which the social nature of humanity occurs exclusively on the basis of biological nature” (Höffe, 249). For either the big historian or the cosmic historian to assume that their favorite army has already won this battle might be premature. At least at the level of hypothesis, the view that human subjectivity is the locus of authentic knowledge deserves continued consideration, in my opinion.

In brief, an explanatory gap has opened up in the modern worldview between the scientific framework and the Humanities. History has been slotted in the Humanities departments of universities for good reason: questions of meaning must take into account human subjectivity. To move history from the Humanities

to the natural sciences must reckon with a possible loss of meaning.

The cosmic historian should insist on a self-broadening when incorporating scientific method into historical accounts. Without such broadening, we will prematurely filter out the ontological status of consciousness, mind, and selfhood. Along with this loss, we will also lose the knowledge claims made by conscious persons, including claims about transcendent reality.

Can evolution provide historical meaning?

This gap also separates natural meaninglessness from historical meaningfulness. If big historians view both natural and human history through reductionist lenses, this will blind them to thresholds where transcendent meaning engages history.

The Big History movement in higher education incorporates the history of human civilizations into a larger story of nature where evolution in both its biological and cosmic form is the protagonist. According to the International Big History Association, Big History “seeks to understand the integrated history of the Cosmos, Earth, Life, and Humanity, using the best available empirical evidence and scholarly methods” (IBHA). Or, Big History is “the attempt to construct a united account of the past at all scales from those of human history to those of cosmology; the modern scientific equivalent of traditional origin stories” (Christian, 2014, 307). Or, according to the late Robert Bellah, history and prehistory can be described together. “History goes all the way back and any distinction between history and prehistory is arbitrary. That means that biological history--that is, evolution--is part of the human story all the way through” (Bellah, 2011, ix). The concept of evolution unites what were previously separate: natural history and human history (Peters, 2017b, 47-64; 283-300).

Building on a Darwinian foundation, big historians are constructing a metanarrative to explain everything from the Big Bang to our own era on Earth. “Fifty years ago, the suggestion that Darwinism might make some contribution to philosophical understanding would have been greeted somewhat like a bad smell at a vicarage tea party,” writes philosopher of science Michael Ruse. But today evolution’s explanatory province has expanded to include “both the theory of knowledge (epistemology) and the theory of morality (ethics)” (Ruse, 28). Darwin’s biological theory is now on sale as a comprehensive explanation for everything, and

big historians are buying. For today's big historians, evolutionary philosophy now explains the entire history of the cosmos inclusive of human history, knowledge, and ethics. The concept of evolution is no longer limited to explaining speciation, as it was for its founder, Charles Darwin. Now, it allegedly explains everything.

This should be worrisome. Like interpreters of neuroscience, big historians should feel the severity of the explanatory gap. Up until this point, we have lived with two histories: natural history and human history. Classically, we know that natural history is without *telos*, purpose or direction; thereby making it meaningless or valueless. In contrast, because human history includes the story of human subjectivity, the meaning of history becomes central to every endeavor to reconstruct the past. In short, we confront a gap between pre-human meaninglessness and human meaningfulness. The big historian's self-assignment is to put the two together. This is laudable. But, just what will bridge the two? The big historian's misleading answer: evolution. The natural history of the evolution of species on planet Earth has become the big historian's bridge over the gap between physical history prior to the arrival of human consciousness and human history which records the adventures of human consciousness. But, is this bridge sturdy enough? I don't think so.

Whose history is Big History?

Will the conflation of nature's evolutionary history with human history have meaning? With the question of history's meaning in mind, we must pose a postmodern question: who's history is Big History? A paradoxical metanarrative among the deconstructionist postmodernists is that there is no metanarrative. There is no value-neutral or meaning-neutral stance, say these postmodernists (Lyotard, 19). Therefore, every metanarrative is perspectival whether its projectors recognize their perspective or not. Every metanarrative comes from some place and reflects somebody's social location, tradition, and vested interests. Every metanarrative is the product of somebody's subjective consciousness.

Big History is a metanarrative. It must be if it is to be big. It must be if it is to be history. Now, I approve of such a metanarrative. I do not belong to the skeptical school of deconstructionist postmodernism. Yet, the question remains: whose

subjective perspective determines the meaning of Big History? What is the vested interest of the big historian? What might be the ideology through which the big historian will interpret the cosmic and human past?

Our culture, like every coherent and enduring culture, requires a metanarrative if it is to enjoy meaning, if it is to understand itself. Yet, if big historians adopt a strictly scientific perspective without incorporating the subjective dimensions of our distinctive human reality, it will be difficult to acknowledge the perspective of the big historian and even more difficult to appreciate the history of human subjectivity which makes historical meaning possible. If big historians incorporate the materialism and reductionism we see in neurophilosophy into their method, then certain voices will be silenced: the voices of consciousness, mind, self, and God.

Is there an evolutionary force?

Let's look at an example of the difficulty. According to big historian Ken Gilbert, our human civilization today is the product of "an evolutionary force in nature analogous to the force of gravity" (Gilbert, 142). This is curious. Physicists know only four forces: gravity, electromagnetism, the strong nuclear force, and the weak nuclear force. Biology adds no forces to these four. Evolution obeys the same four forces that non-living physical entities obey. But, Gilbert invents a new force--*an evolutionary force*--allegedly found in biology; and then he retroactively moves it back behind biological evolution so that now it applies to pre-biotic cosmic evolution. And he moves it forward to apply to human cultural evolution. All things pre-human and human now find one convenient explanation: evolution. Gilbert's enthusiasm for evolution might be tolerable; but his rewriting the science textbooks in order to ground all that happens in Big History in an imaginary evolutionary force is nothing but fiction. Or, more precisely, ideology. Because it is dressed in scientific apparel, the otherwise nude ideology is covered over.

There is a name for this ideology: *scientism*. When the scientific gaze turns science into scientism--that is, when science becomes a worldview or ideology--then, the door opens to nihilism. The nihilism built into scientism finds a dramatic

voice in evolutionary biologist Jacques Monod: “The ancient covenant is in pieces: man at last knows that he is alone in the unfeeling immensity of the universe, out of which he has emerged only by chance. Neither his destiny nor his duty have been written down” (Monod, 167). If one tries to construct a worldview framed solely by science and then interpret Big History through the lenses of this worldview, nihilism is the logical consequence.

Most laboratory scientists rebel at the thought that their work might become co-opted by a nihilistic ideology. “By *scientism* I mean the absurdly reductionist belief that all truth can be learned and all reality described through science (never defined) and only through science,” writes geochemist Rustum Roy (Roy, 836; see: Peters, 2017b, 265-282). My concern here is that if Big History becomes the metanarrative of scientism, the reductionist or materialist perspective may obliterate a decisive chapter in the cultural story, namely, the axial breakthrough to transcendence and the meaningfulness of history.

Nihilism is inescapable when one eliminates first person human consciousness from what counts as a scientific explanation. This is because all meaning--including the meaning of nature--is tied to human consciousness. Once human consciousness has been reduced to neuronal firings or reproductive fitness, all meaning disappears from the objective domain. To have meaning, one must afford ontological respect to the consciousness of human selves.

The axial chapter in the human story precipitated a deep enhancement in human subjectivity, the very subjectivity which eventually made the writing of meaningful history possible. Therefore, any historical account which does not include the history of subjectivity as its object would not be genuine history; it would amount to a mere agglomeration of natural facts strung together. In addition, any history which does not acknowledge the meaning structure presumed by the historian telling the historical story would disguise his or her subjective perspective; and this would imply, *de facto*, a form of nihilism. In short, I recommend that big historians pause to assess the impact and import of the axial threshold on the very subjectivity that makes possible their reconstruction of natural and human history. But to do so, they may have to forsake their scientism, materialism, and reductionism.

Can appeal to an evolutionary force explain religion?

Now it's time to use the dreaded “R” word, *religion*. What is religion?

If a big historian were to attempt to explain the history of human religion by appeal to this alleged evolutionary force, what might that explanation look like? Certainly, the big historian would not accept as data what religious people say about themselves. No personal testimony would be acceptable. Whatever meaning religious people find in their subjectivity would have to be reinterpreted in light of some form of evolutionary theory.

Perhaps the big historian might decide to borrow an already existing treatment of religion from within an evolutionary paradigm, that of Harvard's Edward O. Wilson. Wilson's version of Darwinian evolution exploits the selfish gene theory to explain speciation as well as everything else. “The individual organism is only the vehicle [of genes], part of an elaborate device to preserve and spread them....The organism is only DNA's way of making more DNA” (Wilson, 1975, 3). Reproductive fitness is driven by gene replication, according to Wilson's sociobiology. Now, how might this variant on the theory of evolution illuminate religion?²

According to Wilson's version of Big History, “at some point in Late Paleolithic times, people began to reflect on their own mortality,” wondering what happened to their relatives after death. “The departed still lived, and regularly rejoined the living--in dreams” (Wilson, 2012, 264). Dreams and visions and hallucinations were mistakenly thought to be revelatory; so religious authority and doctrines grew. Creation myths developed, assuring “the believers that they are paramount in the sight of God. Religious faith offers the psychological security that uniquely comes from belonging to a group” (Wilson, 2012, 266). “Perhaps it [shared belief in God] is no more than a tribe united by a creation myth. If the latter, religious faith is better interpreted as an unseen trap unavoidable during the biological history of our species....Humankind deserves better” (Wilson, 2012, 267). Religion may have evolved to enhance the reproductive fitness of an individual

2 I contend that Wilson's sociobiology departs from the Darwinian model. For today's sociobiologist it is gene *replication* that drives evolution, whereas for Darwin and the neo-Darwinian synthesis it is its heritable *variation acted on by natural selection* which drives evolution.

tribe, but Wilson still believes religion was an evolutionary mistake. The human race deserves better. What might be better? Science, of course.

Wilson is not *describing*; he's *prescribing*. On the one hand, descriptively, evolution explains the origin of religion. On the other hand, prescriptively, Wilson says evolution made a mistake with religion. But, of course, evolution did not make a mistake by evolving science. The religious worldview was "conceived in ignorance of most of the real world" (Wilson, 2012, 291). Our religious ancestors were ignorant and produced creation myths out of their ignorance; but today Wilson, like other big historians, will produce creation stories based upon knowledge, scientific knowledge, which will dispel this ignorance.

Now, I ask: is this an adequate framework for explaining religion in human history? No. Such an explanation simply cannot illuminate what happened during the axial period that placed archaic city-state religion on the doorstep of modernity. Therefore, I recommend that big historians avoid evolutionary reductionism and attend directly to the historical evidence.

Crossing the axial threshold with its new grasp of the cosmos

Might there be a post-axial vision of what religion is? Or, can be?

A century ago mathematician and philosopher Alfred North Whitehead offered a definition we might try on for size. "Religion is the vision of something which stands beyond, behind, and within, the passing flux of immediate things; something which is real, and yet waiting to be realised; something which is a remote possibility, and yet the greatest of present facts; something that gives meaning to all that passes, and yet eludes apprehension; something whose possession is the final good, and yet is beyond all reach; something which is the ultimate ideal, and the hopeless quest" (Whitehead, 238). Religion, according to Whitehead, sees beyond. What he is describing could not have come into human consciousness if the axial breakthrough were not an earlier chapter in our human story.

If we retrieve the twenty-five hundred year old axial insight, we will find ourselves confronting mystical experience. As mystical, the axial experience was extra-linguistic, yet it impacted linguistically formulated descriptions of it. These formulations were context-dependent, to be sure; yet each original context-

dependent formulation contributed independently to the growth of diverse religious traditions. Thus, paradoxically, the mystical insight attests to a single ultimate reality while the diversity of religious traditions augurs our inescapable need for culture-specific symbol systems for apprehending the ultimate. We moderns live with both respect for cultural diversity and respect for a single universal humanity.

Critically, we must ask: can we trust religious claims? Might axial insights and religious diversity be reducible to one and only one principle, namely, reproductive fitness in evolution? Even though it appears that human seers have gained insight from a transcendental source such as God, we must critically ask: is this a delusion fopped off on human consciousness by the selfish gene? Is human consciousness and transcendental awareness nothing but an epiphenomenon: ephemeral, delusional, and misleading? Those who want to reduce axial religion to an evolutionary explanation would say, yes.

But, no, is the answer offered by philosopher of religion, John Hick, for whom the axial insight persists in human awareness. "All the great world faiths affirm, in their different ways, the indescribable nature of the ultimate" (Hick, 164). Hindus especially feel a mission to maintain and recast this axial insight. "Truth may be one, but we will need many paths to it--with diversity, tolerance, and dialogue--if we seek to grasp its entirety....This is the real idolatry--taking one's immediate perspectival knowledge for the whole" (Kasturi, 37).

The label for this affirmative view is *pluralism*. "Polycentric pluralism would hold that the religions are completely distinct and unrelated, each worshipping or otherwise responding to its own Ultimate, and with its own path to its own expected end." (Hick, 156). Behind all culturally-specific religious language lies an ineffable transcendent reality; and this ground of all being conditions human existence even while it itself remains unconditioned. This is one of the many claims lifted up by contemporary human consciousness, a claim dismissed *a priori* by a method that seeks to reduce the very consciousness that raises this claim to physical and chemical processes.

I speak frequently of the axial threshold as if it marked a eureka moment. This could mean that the axial insight is less the product of a gradual morphology and more a response to an external stimulus. Instead of a human discovery of the transcendent, it might have been the transcendent which initiated the encounter. It

appears that human consciousness was shocked during the axial period, shocked by a reality beyond daily understanding or comprehension.

The coiner of the term, *axial age*, was German philosopher of history, Karl Jaspers. “What is new about this age, in all three areas of the world [China, India, Eurasia], is that man becomes conscious of Being as a whole, of himself and his limitations. He experiences the terror of the world and his own powerlessness. He asks radical questions. Face to face with the void he strives for liberation and redemption. By consciously recognizing his limits he sets himself the highest goals. He experiences absoluteness in the depths of selfhood and in the lucidity of transcendence” (Jaspers, 2). Having crossed the axial threshold, human consciousness now asks: is this world all there is? Is there more? Is there an ultimate reality which transcends this one?

Might these questions have been a response to a stimulus, the entrance of the transcended into the mundane Or, to ask it another way: might the axial insight be the human response to a revelation of the ineffable God? Certainly a Muslim a thousand years after the axial threshold would answer in the affirmative. “God! There is no God but Him, Living, Self-sufficient. Slumber cannot seize Him, nor sleep. To Him belongs all in the heavens and on the earth...His Throne extends over the heavens and earth, which He preserves untiringly” (Qu’ran, 2:255).

The axial birth of universal justice and universal humanity

Critical thinking in human consciousness is the twin sister of the axial insight. Both were born together. Subjective awareness of a transcendent moral order provides leverage for human subjectivity to critique all that appears to be real. “Man becomes conscious of Being as a whole, of himself and his powerlessness. He asks radical questions. Face to face with the void he strives for liberation and redemption. By consciously recognizing his limits he sets himself the highest goals. He experiences absoluteness in the depths of selfhood and in the lucidity of transcendence. In this age were born the fundamental categories within which we still think today” (Jaspers, 2).

It takes a philosophical apprehension of a transcendent reality in order eventually to ground what we moderns deem to be universal: justice, equality, dignity, rights, and planetary responsibility. Only when grasped by what is really

real can we let go of our vested interests or myopic tribalisms to embrace universal values which transcend what is local, parochial, or private. We are in a position to see the relationship of the part to the whole. “In *speculative thought* he [the axial seer] lifts himself up towards Being itself, which is apprehended without duality in the disappearance of subject and object, in the coincidence of opposites. That which is experienced in the loftiest flights of the spirit is a coming-to-oneself within Being, or as *unio mystica* as becoming one with the Godhead” (Jaspers, 3).

For the ancient Hebrews in Israel, God was responsible for this transcendent moral order. This revelation took the form of the Torah or divine Law. Our moral obligations became identified with ultimate reality, with God, according to biblical scholar Walter Brueggemann. “God is *an agent of judgment and restoration... ultimate accountability* and such *emergence of relational (covenantal) good* in biblical tradition are credited to an active, willful agency who is known by name, whose name attests to the personal, relational dimension of ultimate reality” (Brueggemann, 49, Brueggemann’s italics).

Now, to be clear, I am not suggesting that human morality was given birth for the first time by an axial mother. More prosaic evolutionary explanations of a much earlier rise of moral awareness suffice. It seems obvious that as human intelligence increased in evolutionary history, so did the intellectual power to discriminate between better and worse future scenarios. It is easy to surmise how standards such as better vs. worse or right vs. wrong would arise early in the *Homo sapien* story. And such moral standards were no doubt adaptive. Darwin himself predicted this: “Any animal whatever, endowed with well-marked social instincts... would inevitably acquire a moral sense or conscience” (Darwin, 98). Richard Joyce dubs this *native moralism*, the position that “morally assessing aspects of one’s environment (and oneself) enhanced the reproductive fitness of our ancestors” (Joyce, 464). Such gradualist hypotheses seem quite plausible.

Nevertheless, the leap in being taking place when crossing the axial threshold goes beyond this more primitive moral notion. Because of the transcendental leap, objective and universal principles could emerge. Over against the oneness of divinity the entire world could now be seen as a unity, as an ecumenic or comprehensive unity. This new insight revealed an ideal, namely, the universal human race. Even though no one even today can empirically demonstrate that a single universal human race exists, this idea presented itself to human

consciousness as a transcendent ideal and as an ethical standard for moral deliberation.

I must stress how important in the human story was the birth of the concept of a *Universal Humanum*. “The understanding of a universal humanity originates in the experience of transcendence; and the ineffable kinship of men under God revealed in the experience can immanently be expressed only through a myth of descent from a common mother or father” (Voegelin, 3:107). It took a mystical experience with a heavenly reality for us on Earth to realize our extra-tribal unity, our universal *humanum*. We do not experience the universal *humanum* on a daily basis, yet it has become the moral order of the universe as we moderns view it. For this we can thank the axial insight.

On the one hand, axial seers were grasped by the transcendent, sometimes thought of in divine terms. On the other hand, by measuring the empirical world of daily life over against the envisioned ideal, our ancestors could construct ethical norms that reflected a universal and timeless moral order. “The theoretical breakthrough in each axial case led to the possibility of universal ethics, the reassertion of fundamental human equality, and the necessity of respect for all humans, indeed for all sentient beings. And yet in each case these assertions came out of living communities whose religious practices defined who they were and whose stories were essential to their identities” (Bellah, 2011, 606).

David Christian, among the big historians, wants to construct a single universal history for all humans (Christian, 2017). For Doctor Christian to accomplish this, I suggest, he will need to cross the axial threshold and to mine its subjective insight into the transcendent order of justice. Only then can he arrive at a grounded vision of a *Universal Humanum*.

The Axial Age and the Modern Age

Crossing the axial threshold in the ancient world made approaching the modern threshold possible. It would be self-demolishing if today’s big historian would look back and eliminate the axial threshold from our remembered and precedent-setting history. This would be like a tree branch severing its relationship to its trunk and roots.

It is curious that in his haste to explain the phenomenon of religion in objective or biological terms that sociobiologist Wilson limits his description to tribalism and bigotry. That is all religion is: tribalism and bigotry. Wilson feels he can renounce tribalism and bigotry because he himself takes a universalistic and unprejudiced perspective. But, he fails to footnote axial religion. Like a scientific paper which neglects to give credit to previous research, Wilson neglects to give credit to the very religious insight that makes possible his criticism of tribalism and bigotry.

In part, today’s axial thinking is constructive, perhaps re-constructive. The material out of which we construct our picture of the axial era is the surviving symbols, liturgies, and belief systems of the living religious traditions. Some of our religious traditions bear into the modern world the axial insight; and they continue to inspire segments of our emerging global society with high ideals and hope for the future. Any foreseeable planetary society will be constructed out of a plurality of religious symbol systems, each of which individually points to a universal transcendent reality and the accompanying hint that we must think ethically in terms of a single universal human race.

Conclusion

Cosmic History opens windows in Big History to allow the fresh breeze of human subjectivity to blow through. The story of human subjectivity here includes an important historical event, namely, the crossing of the axial threshold twenty-five centuries ago. Without attention given to the presence of transcendence in human consciousness, Big History risks locking itself in a stuffy room with objectivism, materialism, and scientism.

In this article I have argued that reliance upon evolutionary theory by the big historian need not eliminate *a priori* from its purview the axial chapter in the human story. Nor need evolutionary theory eliminate at the level of assumption the existence of God or the human experience with transcendent reality. Evolutionary theory can be made compatible with theism as well as other forms of religious belief. The key is this: evolutionary theory should stick to its original purpose, namely, to explain speciation in biology. Charles Darwin titled his principal book of 1859, *The Origin of Species*, because he had discovered how variation in inheritance

and natural selection could explain speciation. This theory did not purport to explain other things such as the origin of life, the origin of the universe, the origin of religion, or the origin of reductionist materialism. The big historian should avoid the temptation to ask evolutionary science to explain anything beyond speciation.

Claims made by axial prophets to have experienced a shock in their subjective consciousness due to the presence of the divine are simply not the subject matter of Darwinian evolution, or any other science, for that matter. For the big historian to subordinate everything happening in big history to a fictional “evolutionary force” is to promulgate an ideology of scientism or materialism. Evolutionary theory without materialistic reductionism can still function as a fertile research program without interfering with other truths present in the human psyche.

“The message has always been twofold,” writes biologist Francisco J. Ayala, “(1) evolution is good science and (2) there need not be contradiction between evolution and religious beliefs” (Ayala, 2007, 5). Ayala offers my conclusion: “Yes, one can believe in both evolution and God....evolution is not the enemy of religion but, rather, its friend” (Ayala, 2010, 82-83; see Peters, 2006; 2017a,b).

Big historians have provided our generation with an eco-sensitive vehicle for driving through the incalculable accumulation of information about both natural and human history. For this, big historians deserve our gratitude. Nevertheless, they are driving with a faulty GPS. By putting objectivist science behind the steering wheel, the big historian is not permitted to follow roads leading toward the depth of human consciousness let alone transcendental awareness. Cosmic history, in contrast, attempts to expand the map to include the human subject right along with all other objective knowledge.

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