

Introduction of Big History Education in Japanese High School

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This paper reports on the first big-history course at a Japanese high school. Aletheia Shonan High School is a private, co-educational institute in Chigasaki, Kanagawa, Japan. In April 2016, I introduced Big History in my World History class at Aletheia, and that class marks its sixth year as of 2021.¹

Backgrounds and Aims of Introducing Big History

There are two reasons that I decided to introduce big-history education in my school: 1) My dissatisfaction with world-history education in Japanese high schools and 2) The spread of online supplement classes in Japanese school education.

First, I became dissatisfied with the traditional way of teaching world history. In Japan, school textbooks are made by private publishers and then screened by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). There are several MEXT-certified world-history textbooks for high school, but all of them have traditional content focusing on political history. Usually, a world-history course is taught in a one-way fashion – from teacher to students – and lacks active interactions. In addition, world-history exams aim just to assess students memorization of important figures, events, and dates. I wanted to change traditional education away from such one-way teaching, political history, and memorization.

Second, in recent years, more and more Japanese schools have adopted information communication technology (ICT) for education, including my school. Aletheia introduced ICT in April 2016, so that students could watch online supplemental classes on tablets. These online classes are given by famous cram-school teachers through a service called Study Sapuri.² Aletheia students came to use ICT for study at home. Since it enabled them to learn the basic contents of textbooks on their own, I took the opportunity to create new educational materials that I had cherished for a long time.

In October 2015, the Japanese edition of David Christian's book, *This Fleeting World: A Short History of Humanity*, was published. I immediately read it and became convinced that this was exactly what the new world history education was all about. So, I proposed it as an introduction of Big History at our Aletheia social-studies meeting and incorporated it into my world history class for first-year high-school students (tenth grade) in April 2016.³ I decided to teach Big History at that grade level because the first-year students have more time than the third-year students, who are busy with study for university entrance exams. Also,

since our school is a private high school, it was easier for us to develop our own curriculum than public schools, which are more tightly managed by MEXT. These conditions gave me flexibility to develop my own unique class.

In this way, David Christian's book became a catalyst for combining these educational backgrounds, challenges, and conditions. It started big-history education in my school. Fortunately, about three years later, I welcomed Professor Christian to my big-history class, in collaboration with the *Big History and Liberal Arts* symposium at J.F. Oberlin University in Tokyo in November 2019. At Aletheia, he gave a special lecture titled, *Big History and Climate Change*, for my students.⁴

Next, in the process to introduce Big History into my world-history course, I set the following four goals.

1. To cover the entire history of the universe from its beginning to its end.
2. To understand that we are at the end of a series of miraculous events.
3. To emphasize connections between these events and our present.
4. To let students think on their own by asking many questions of them.

My big-history class covers the history of the universe from the Big Bang to the Big Freeze. Students learn that the universe has a history from its birth to its end, that we are living in the midst of this history, and that the history of the universe has just begun. By teaching history from the Big Bang to the appearance of humans first, I aim to make them understand that we would not have been born without the events that took place during pre-human history. So, it is very important to learn 'where we come from' in history class. I also provide world-history education in which protagonists are not just humans, by taking knowledge from natural-science disciplines, such as astrophysics, planetary science, geology, and palaeontology. These are what Goals 1 and 2 above aim to accomplish. Goals 3 and 4 aim to improve teaching methods. I try to break away from the traditional way of making students memorize historical facts, and instead to encourage them to think for themselves by asking questions. That, of course, involves reformation of memorization-centred exams, as I will explain later.

Outline of My Big History Class

I teach first-year high-school students for 50 minutes for each class, roughly two hours a week and fifty hours a year.

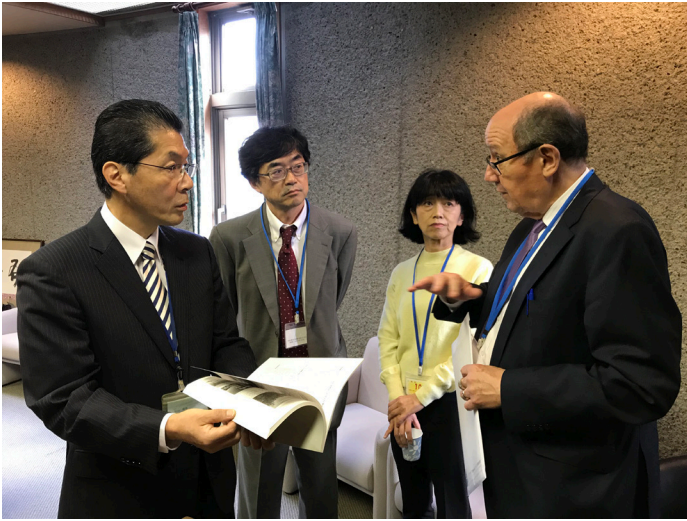


Image 1: David Christian's visit to Aletheia Shonan High School on 25 November 2019. From left to right: Kenji Ichikawa, Professor Hirofumi Katayama of J.F. Oberlin University, Tokyo, Japanese-Russian interpreter Kaoru Sakurai, and Professor David Christian of Macquarie University, Sydney (Australia). Photo: Nobuo Tsujimura.

The annual class schedule is as follows.

Basic Knowledge of World History

Part 1: Prehuman History

Big Bang, Birth of the Universe and Solar System
Birth and Evolution of Life
Era of Dinosaurs
Era of Mammals

Part 2: Era of Hunting and Gathering

Appearance of Humans
Life of Hunting and Gathering

Part 3: Era of Agriculture and Livestock

Emergence Farming and Civilization
Ancient Orient
Ancient Greece and Hellenism
Ancient Rome and Christianity
Ancient Civilizations of India and the Americas
Yellow River Civilization to the Han Dynasty
Post-Han Breakup to Song Dynasty
World of Pastoral Nomads
World of Maritime Peoples (Oceania)
Islamic World
Medieval Europe

Giant Empires of Asia
Modern Europe

Part 4: Era of Industry

Industrial and Civil Revolution
19th century
Imperialism and Nationalism
World War I and Russian Revolution
Versailles System and Washington System
World War II
Cold War

Part 5: Future History

The Future

There are five parts in total, with three parts of human history between Prehuman and The Future. Human history is divided into sections based on the livelihoods of humankind: hunting and gathering, agriculture and livestock farming, and industry. In addition, there are 27 more detailed units. Conventional world history tends to focus on the history of agrarian civilizations. Therefore, in Part 3, 'The World of Pastoral Nomads' and 'The World of Maritime Peoples (Oceania)' were set up as independent units to emphasize the role that both peoples played in world history.

I created the teaching materials, and they are shared with students on tablets. It takes two hours to teach one unit, in which I give a 1½ hour lecture with a projector. Using the remaining 30 minutes, students study and discuss questions from me in groups, and each group shares their answers on the projector. Finally, I wrap up the whole class.

Unit Questions to Have Students Actively Learn

To give students an opportunity to think for themselves, I set questions for students in each unit (unit questions). Some units have more than one question, making a total of thirty-six. Here I've selected seven of them, based on my four goals of Big History.

Earth History and our Relation to it

Question: If an asteroid had not hit the earth 66 million years ago, what would the rest of history have been like, and what would we be like today? Let's imagine!

Sample Answer: It is possible that the dinosaurs would not have become extinct, and that the age of dinosaurs would have continued to the present. As a result, if the age of mammals had not come, humans might not have arisen.

Intention of the Question: The question asks us to think about the fact that even events that took place before the ap-



Image 2: My big-history class



Image 5: Students using tablets



Image 3: Lecture with a projector

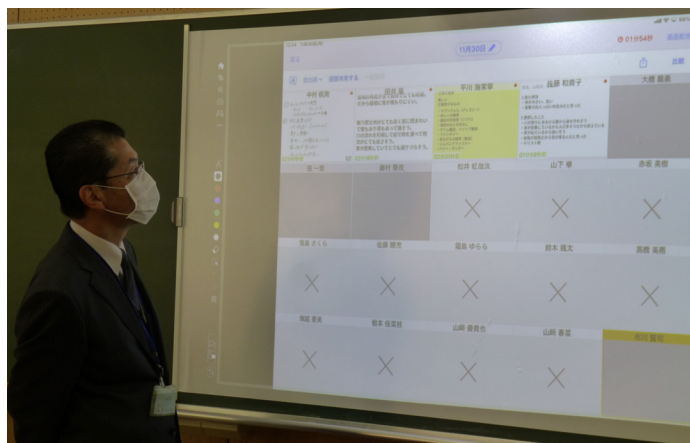


Image 6: Answers submitted from each group



Image 4: Study and discussion in groups



Image 7: Giving feedback about answers

pearance of humans have a deep connection with the people who live today. And it is a question that makes us think that the very fact that we are alive today is extraordinary. 66 million years ago, off the coast of the Yucatan Peninsula in Mexico, an asteroid 10 to 15 kilometres in diameter hit the earth at an extremely high speed of 20 to 30 kilometres per second. The energy generated by this impact was one billion times greater than that of the Hiroshima atomic bomb, and equivalent to a magnitude 11 earthquake. Such an event occurs only once every 500 million to 1 billion years in our solar system. This event marked the end of the age of dinosaurs and the beginning of the age of mammals, and we are on the cusp of that. The asteroid impact itself was an astounding event, but students will learn from this question that we are alive today because of it.

Formation of Civilization and Happiness of Individuals

Question: Through agriculture and livestock farming, the world's population has grown from 6 million to 7.7 billion (2019). While the population has increased, how has each person's life changed? How did life in Catalhoyuk compare to that of hunters and gathers? Let's think about it!

Sample Answer: Ancient cities were unsanitary, and disease spread because of the dense population. Since food was supplied by agriculture, there was a high possibility of starvation if there was a crop failure due to bad weather. Staple foods such as wheat and rice were introduced, but this led to uneven nutrition. The working hours of agriculture were longer than those of hunting and gathering, and people had to work in the same position more often, so they suffered from back pain.

Intention of the question: The emergence of agriculture and the formation of civilization are considered to be one of the major revolutions in world history. However, the question asks students to think about whether each person became happy. The question asks students to think about the issue of 'happiness' by comparing it to the hunting and gathering era studied earlier.

History of Horses

Question: The picture is of the City of London Mounted Police passing Buckingham Palace in London, England. As represented by the word 'horsepower,' let's think about the capabilities of horses and the role they have played in human history. The history of the world has been changed by people riding horses. Take a look at picture, paying attention to the following: (1) Look at the difference in size between the human body and the horse's body. Imagine the courage and fear of the first person who rode a horse. (2)

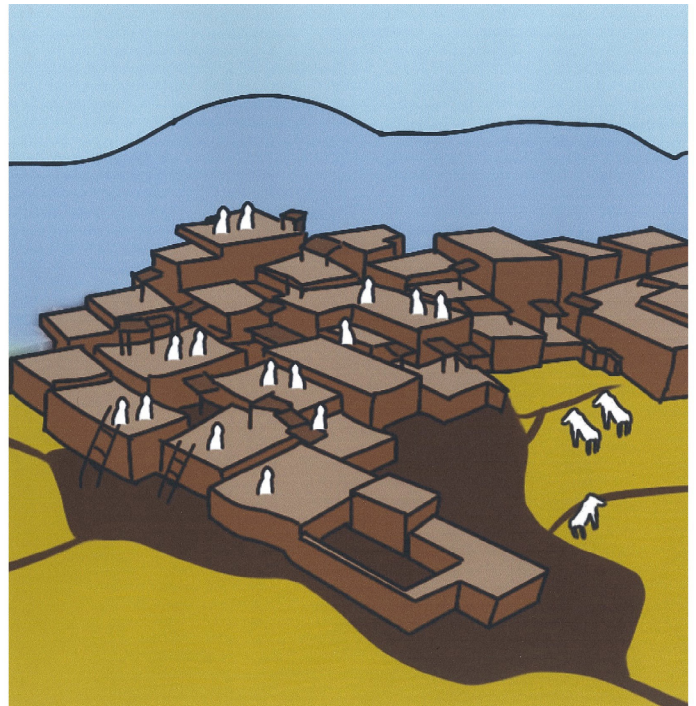


Image 8: Sketch of Catalhoyuk. Image by Aletheia Shonan High School's Cartoon Research Club.

How high is the horse's back from the ground? How high are the eyes of the policeman on top of a horse from the ground? What does the world look like from up there? (3) What kind of things do horses carry? What role have horses played as a source of power?

Sample Answer: (1) We know that horses are much larger than humans. The first human to ride a horse must have been quite scared. (2) The horse's back is as tall as a human being, and, since the human is riding on top of the horse, they are high above the ground. Compared to people who walk or run on the ground, we can see the world from a much higher perspective. (3) Horses carried not only people and goods, but also information. Horses were not only used for transportation, but also for agricultural work, so it is safe to say that civilization would not have been possible without them. At that time, the fastest and most powerful power source was a horse.

Intention of the Question: The question is to make us think that humans are not the only 'heroes' of world history. The purpose of the question is to make students think about the role that horses also played in world history, such as the impact that pastoral nomadic states had and the fact

that horses were the greatest source of power until the Industrial Revolution.

Taxes

Question: *Jizya* is a personal tax and *kharaj* is a land tax. In ancient China, there was a personal tax and a land tax. Today, Japan also has a personal tax and a land tax. Why do we impose taxes on people and land? Let's think about the reasons!

Sample Answer: The government needs to ensure that it collects taxes from the people, and, if taxes are not collected properly, such as through tax evasion, the government will not be able to function. What should be taxed to prevent tax evasion? The answer is: something that cannot be hidden. There are two things that you cannot hide: yourself

and your land. For these reasons, the basic items of taxation are people and land.

Intention of the Question: The question is to make students think about why taxes exist. The fact that taxes consist of a personal tax and a land tax is not only practiced all over the world, but they were practiced in ancient times and are still practiced today. So, there must be a fundamental reason why these types of taxes are used. This leads us to think more deeply about the structure of human society and its maintenance.

Thinking Deeply about History

Question: The history of humankind that we have studied so far has been the history of the agrarian peoples. However, not all of humanity has been agrarian. Pastoral, nomadic peoples have also had a great impact on world



Image 9: The City of London Mounted Police (Public Domain)

history. But for some reason, textbooks do not cover much about them. Let's think about the reason why their number of pages in the textbook is so small.

Sample Answer: It is because pastoral nomads lived in tents and were on the move, so was difficult to preserve their remains.

Intention of the Question: This question asks students not only to understand the contents of the textbook, but also to think about the conditions under which history is written in the textbook. Current world history is centered on agricultural civilization and consists of archaeology (artefacts) and historiography (documents). Even though the pastoral nomads played a major role in world history, the pages about them in textbooks is limited because of the lack of archaeological sites and historical documents about them. The same can be said for maritime peoples and other minority groups. We discuss with the students the mechanisms and limitations of this kind of historical study.

The Age of Discovery

Question: Voyages in olden days had a lot of risks, and the people returning safely was few.

Sample Answer: A cause of the crews' sickness and death was scurvy, due to a lack of vitamin C from fruits and vegetables, due to long voyages without a refrigerator. There were also diseases caused by poor sanitary conditions. If a ship was wrecked, many people immediately died. In those days, spices were very expensive in Europe, so if one returned home with a full cargo of spices, they could become wealthy. On the other hand, there were not many people who volunteered to become seafarers because they were afraid to go into the unknown. Many seafarers were criminals who had been pardoned.

Intention of the Question: Students learn how the Age of Discovery was an extension of the Christian Reconquista that lasted for 800 years in the Iberian Peninsula, and I explain the Europeanization of the world that followed. These questions help students learn about the efforts and hardships of people involved in the Age of Discovery, as well as the context of global European expansion. They also consider vitamin sources and cargo preservation in the context of collective knowledge.

Industrial Revolution and Schools

Question: The Industrial Revolution gave birth to factories, where production was carried out by engines and machines, replacing human power, animal power, and manual

<i>Voyager</i>	<i>Size of Fleet on Departure</i>	<i>Size of Fleet on Return</i>
Columbus	Three ships, 90 crew members August 1492	One ship, 40 crew members March 1493
Vasco da Gama	Four ships, 170 crew members July 1497	Two ships, 44 crew members July 1499
Magellan	Five ships, 265 crew members September 1519	One ship, 18 crew members September 1522

Table 1: This information shows that the average chance of survival was less than 20 %. Although Magellan’s voyage was only three years, less than one in ten people survived. Would you be willing to participate? What was the cause of death? And why did they risk their lives to participate? Table from Aletheia Shonan High School’s Big History / World History Course.

labour. Schools have a role to play in training factory workers. What are the lessons that schools teach for workers to succeed in factories?⁵

Sample Answer: Factory workers need to be on the job before the machines start. For this reason, tardiness is strictly prohibited, and punctuality, even a five-minute head start, are considered important. If one person is late, the factory will not be able to move efficiently. It is also required for everyone to wear the same uniform (work clothes) for better cohesion. Being on time and wearing a uniform properly is taught in school. In other words, schools trained factory discipline.

Intention of the Question: This is a question to make students understand that what they learn in history class has an impact on their school life today. The basics of school life, such as being punctual and wearing a proper uniform, are the things that students dislike the most. However, these questions will help them understand that there is a historical background for these things.

At the end of each unit, students separate into groups, do research on unit questions, and exchange opinions for deeper learning. In contrast to lecture-style classes, where students learn knowledge from the teacher in a one-way manner, group-learning is an output of research, discussion among students, and summary of their opinions. In this way, the program is a balance between input learning and output learning in each unit.

Exams for Students to Explain Rather Memorize

In E.H. Carr’s book, *What is History?*, there is a passage that says that history is an unending dialogue between the present and the past. From this, I believe that the protagonists of history are those of us who are alive today, and that his-

tory is about us explaining the events of the past in our own words, from the perspective of modern people. History is not a memorization of key words, but an explanation by modern people. Based on this understanding of history, my tests ask students to give a one-to-two-line explanation. In our school, tests are held five times a year, and each 50-minute test consists of 20 questions. There will be a total of 100 questions per year. Here, I share five questions and sample answers for them, as well as the intention of each question.

What Photosynthesis has Brought About

Question: Cyanobacteria use sunlight for photosynthesis, and the increase in oxygen is considered to be a major event in the history of the Earth. Explain what happened as a result.

Sample Answer: The decrease in carbon dioxide, which has a greenhouse effect, caused the Earth to become colder, and eventually the entire planet froze. Oxygen dissolved in the ocean and combined with iron, causing iron-oxide to precipitate and accumulate on the seafloor, forming a striped iron-ore layer.

Intention of the Question: The oxygen on the Earth did not originally exist, but it was created as a result of the growth of cyanobacteria, 2.7 billion years ago, and their photosynthesis over the next 500 million years. The newly generated oxygen was poisonous for much life and caused a major event called the ‘oxygen holocaust’ in the history of the Earth. However, as a result of this, we are able to breathe in oxygen and extract iron-ore from the surface of the Earth. This is a question to see if students understand the above.

The Use of Fire and Enlargement of the Brain

Question: We know that *Homo erectus* used fire. As a chain of results, they were able to eventually increase their brain size. Explain this connection between the increase in the size of their brain and use of fire.

Sample Answer: Because cooking meat over a fire improved digestion and increased leisure time, and gathering the family around the fire developed communication skills.

Intention of the Question: This question is about the relationship between fire and humans. The diagram below is the one I use in class. It shows that *Homo erectus* became almost the same as us, *Homo sapiens*, by making stone tools, running, and using fire. This is a question to see if you understand the whole picture.

Definition of Slaves and Slavery

Question: The following sentence is translated from Article 199 of the Babylonian Code of Hammurabi. ‘Whoever blinds or breaks the bones of another’s slave may pay half of the slave’s value.’ In other words, there was a price for slaves. Explain why slaves have a price and give a brief definition of a slave.

Sample answer: Slaves were supplied as prisoners of war, treated as livestock, and sold as commodities in slave markets ... so they had a price.

Intention of the Question: This question asks what a ‘slave’ is. In class, I show how slaves were discussed in the

Code of Hammurabi almost 4000 years ago and that they also existed in the 19th century of the modern era. For example, the U.S. Civil War was a war about slavery. This shows that slaves have existed throughout almost all periods of history and that it has not been long since slavery was banned.

War in Medieval Europe

Question: For what personal reason did lords and knights wage war in medieval Europe?

Sample answer: Since lords and knights held landed estates, their main purpose was to get additional feudal lands from the king, by providing service in the king’s wars.

Intention of the Question: This question asks what it meant to be rich and happy for lords and knights in medieval Europe. The question also tries to assess if the students understand that the meaning of war differs, depending on the historical period. In class, I relate how the samurai tradition continued in Japan from the Kamakura to Edo period. It too was a long era of feudal society.

Round Table Conference

Question: Explain the purpose of a round-table conference, as opposed one at a square table.

Sample answer: A round table shows that there is no distinction between upper and lower seats, and that it is a conference of equals.

Intention of the Question: We use the term ‘round table conference’ casually in class, but the concept of round ta-

Homo erectus ⇒ We can see that they are almost the same as modern humans

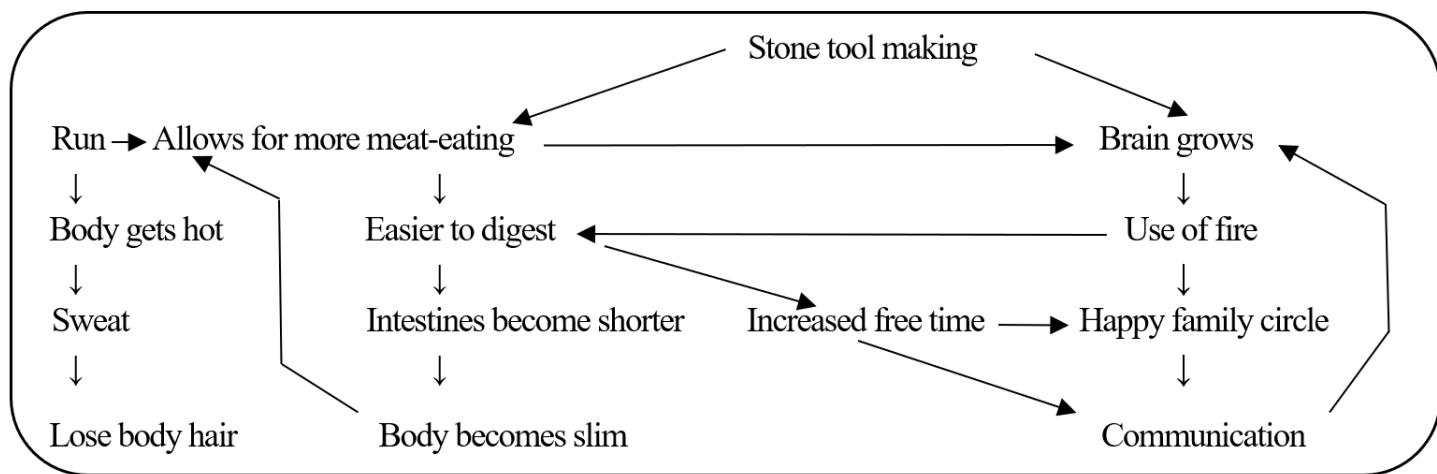


Table 2: Comparison of *Homo erectus* and *Homo sapiens*. Table from Aletheia Shonan High School’s Big History / World History Course.

bles is also used in our daily lives. This question judges if students understand the deeper meaning of a round table.

Just as I ask a lot of questions from students in class, my exams aim to make students not memorize keywords, but instead to describe why things happened the way they did and how they happened. The ideal and goal of learning history is not just to understand the background, causes, contents, results and effects as independent issues, but also to be able to grasp the whole picture and explain it in one's own words. Students are required to notice the intents of the questions and answer them by summarizing their thoughts in one sentence or two. These are exams to test their critical thinking skills.

Student Feedback

On 22 February 2019, the last day of my Big History class for the school year, I reviewed the whole big history in 22 minutes as a summary.⁶ After that, I asked my students to write their comments for the course, and I share four of them:

We should be grateful for the fact that we are alive now, remember that it is a miracle that we are alive, and cherish every day of our lives. The human being has come this far after repeating mass extinction and evolution many times, and there is a possibility that another mass extinction will occur, but I would like to do everything I can until then. We should do our best to prevent mass extinctions caused by humans.

I thought that I must be grateful for all of history, starting with the Big Bang, the birth of living things, evolution with extinction, and as a result, now, I am alive. Everything that happens from now on will somehow be connected to me, so I want to tackle things seriously.

When I think again that such a big world began with a single event called the Big Bang, I realize that the fact that we exist (and are alive) now is a miracle that happened by chance. We are life-forms that began with the miraculous story of the Big Bang, and our current existence itself is a miracle. I want to live every day with this in the back of my mind. I can't stop thinking about the events that have taken place in the universe up until today, and what it is that makes us exist. Laughter!

In today's class, I realized that the existence of the Earth is a miracle, and that my own existence is also a series of miracles. And once I learned about the process, I found it strange that I am still alive. I also thought that I would like to live my life by comparing the past with the present and with learning how things have changed.

'Miracle' and 'grateful' were the key words that caught my attention in their comments. It was a great joy for me too, as the class instructor, to see that they feel that we are kept alive as an extension of the accumulation of various miracles, that our very existence is a miracle, and that they wanted to be grateful for their very existence when they learned about it. The students' comments that they were able to understand that we live in the universe and the history of the universe, and that they were able to understand the connection between the events of the past and our present, showed that I had achieved my goals of Big History.

A Future Challenge

Finally, I would like to point out a challenge that I am currently facing. I have not yet been able to smoothly tell a big-history narrative from the beginning to the end of the universe.

My big-history class consists of five periods (shown in a table below). The first two periods, prehuman history and the era of hunting / gathering are covered by natural science. On the other hand, the next two eras, agriculture / livestock and the era of industry are still taught through conventional world history. Future history is again covered by astrophysics.

In other words, my big-history class is sandwiched between traditional world history and natural science. I believe that one of the main features of Big History is that it mobilizes all the disciplines, including the humanities, social sciences, and natural sciences. But the world-history part of my big-history class remains a collection of histories of states driven by elites and centred on politics as before. Can we incorporate more knowledge of natural science into conventional world history? Can we better connect the different periods in Big History?

I believe that development of big-history pedagogy demands a change in world-history education.

Periodization	Disciplines	Research Domains
Prehuman History	astrophysics palaeontology	natural science
Era of Hunting / Gathering	anthropology	
Era of Agriculture / Livestock Farming	world history	humanities
Era of Industry		social science
Future History	astrophysics	natural science

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Endnotes

1. This paper is based on Ichikawa 2019-b. From 1949 to 2021, world history and Japanese history were taught separately in Japanese high schools. In 2022, these two subjects were partly integrated into a single subject called 歴史総合 [Rekishi Sōgō], or Modern History United in English. This new course focused on modern history of the world, including Japan. Because I taught Big History through the former world history subject, this nationwide reformation of history education ended my big-history class described here. Instead, since the 2022 school year, I have taught Big History for six third-year students who don't take a world history exam as part of university entrance exams.

2. Study Sapuri <<https://studysapuri.jp/>> means 'study supplements.' It is an educational service run in Japan by Recruit Company, which provides a wide range of online classes for junior-high-school students to review their courses and for high school students to study for entrance exams to university.

3. In Japan, elementary school educates children from the first grade to the sixth grade; junior high school from the seventh grade to the ninth grade; and high school from the tenth grade to the twelfth grade.

4. See the following video: Chikuma Shobo 2020. Another big historian Nobuo Tsujimura interpreted this lecture.

5. Toffler 1980.

6. Ichikawa 2019-a.