

# Agrarian Age: Teaching “Threshold Seven”

by Martin Anderson

My objective today is to sketch out some ideas about how to teach aspects of the Seventh Threshold, the Agricultural Revolution.<sup>1</sup> In particular, I will be discussing that period of the agricultural revolution which typically begins with the emergence of what is called civilization. So my timeframe is approximately 2500 BCE to 1800 CE. I want to discuss the period of civilization, not the invention of agriculture, so our period is when some humans became dependent on food produced by others, which allowed for more sophisticated divisions of labor, which in turn allowed for more complex social structures, what Big Historians call Agrarian Civilization. I use the phrase “some humans” because large numbers of humans remained in societies outside of agrarian civilizations, for example, foragers and pastoralists, and some had command of agriculture but did not develop civilizations based on large cities. We

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<sup>1</sup> This paper was first delivered as a presentation titled “Pedagogical Consideration in Teaching Threshold 7: The Agrarian Revolution” at the inaugural conference of the International Big History Association (IBHA) at Grand Valley State University in Grand Rapids, Michigan, August 2-5, 2012.

need to remember that today we are still in the agrarian age, we are still dependent on agriculture to produce enough food to feed earth's seven billion people. Finally, my comments are related to my experience teaching this period in a Big History course to freshmen at Dominican University of California.

Teaching this period of the agrarian revolution presents problems, because this period is usually taught in college as either a lower division Western Civilization or World History survey course and students have typically had the period taught to them in a traditional history class in high school. It is easy to lose sight that Big History offers different, though sometimes overlapping, approaches to the period. So I want to highlight the differences. The traditional history course includes seven approaches including Political and Diplomatic history; the Achievements of Civilization, especially in literature, art, and architecture; Intellectual history, which encompasses religion, philosophy, and the innovations leading towards the discovery of science; Economic history, which focuses on output, production, etc. of the various states; formation of the Nation/State and Nationalism, based primarily on the industrial/imperial states of Europe; and more recently, Social history which focuses on social organization and constructed identities and relationships based on class, gender, ethnicity and other forms of differentiation; and, finally, Cultural history which focuses on either symbol systems human create to produce meaning or on the behaviors of everyday life. Typical history survey textbooks either in college or high

school are a mishmash of these approaches and the impulse to try to tell these stories in some abbreviated form in a Big History course may be overwhelming. In addition, students are used to these approaches and may have difficulty understanding that Big History is taking different approaches.

Big Historians<sup>2</sup> have offered five approaches to the period of Agrarian Civilization: human impact on the biosphere (Christian, Brown, Benjamin 156), complexity (Spier), expanding networks (McNeill), collective learning (Christian), and energy flows (Chaisson). As Big Historians use evidence from traditional historical research in discussing their approaches, what is being discussed can become confusing. In teaching Big History, I suggest that the instructor stick with the Big History approaches and leave the typical historical approaches to the history survey classes. This will require the instructor to understand the differences and be able to articulate the differences to the students, especially when typical historical evidence is being used to support Big History approaches. I will discuss the impact on the

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<sup>2</sup> The key Big History texts that I consulted for this article are: Cynthia Stokes Brown. *Big History: From the Big Bang to Present*. New York: New Press, 2007; David Christian. *Maps of Time: An Introduction to Big History*. Berkeley: University of California Press, 2005; and David Christian, Cynthia Brown, and Craig Benjamin. *Big History: Between Nothing and Everything*. Preliminary Edition. Boston: McGraw-Hill, 2010.

biosphere approach so we can see how that story can be told without a retelling of the story of civilization. This approach is particularly useful and interesting for freshmen.

From 2500 BCE to 1800 CE, the story of Agrarian Civilizations is basically the story of agriculture, which can be broken down into five parts. The first is the story of major carbohydrates: wheat, millet, rice, maize, potato, and secondarily of oats, barley, and rye. The second is the story of our modern addictions: sugar, tea, coffee, chocolate, and tobacco, to which you can add the story of wine, beer, and distilled alcohol if you like. The third story is the story of linen, silk and cotton. The fourth story is the story of domesticated animals, particularly cattle, horses and sheep. The final story is the story of nitrogen. Behind these stories is the larger story of cultivation, which is the major impact on the biosphere during this period, that is, removing what grows naturally in its entirety and replacing it with cultivated crops. A secondary impact is the growth of cities, though in this period their actual size and area covered is relatively small.

Before discussing cultivation, I want to deflate our opinion of Agrarian Civilization. If demographic increase is a measure of evolutionary success, Agrarian Civilization was not much of an advance. Human population increased from about 50 million in 2500 BCE to about 1 billion in 1800 CE. Considering that in 1800 a substantial number of humans were not in Agrarian Civilizations, the increase over 4,000 years does not seem a demographic miracle, especially as we now add a billion

people to the world population every twenty-five years or so. Agrarian Civilizations were also slow to bring land under their control. Only about 15% of the land controlled by modern states was controlled by Agrarian Civilizations in 1000, 25% in 1500 and 33% in 1800. These figures may be inflated if we dismiss the grandiose claims of Agrarian Civilizations and recognize that much of the territory they claimed to rule was at best nominally under their control. For example, in 1800, except for the east coast, North America was not under Agrarian Civilization. Except for the Caribbean, most of South and Central America was not, as Spain and Portugal exercised little control outside cities. Most of Sub-saharan Africa was not. Most of Central Asia and Siberia was not. Even the five vaunted centers of civilization had not fared well. Egypt, though still a center of agriculture, was not a major center of civilization in 1800. Mesopotamia, with the shift of power to Turkey and Persia, was also no longer a center of thick population or civilization. The Indus Valley civilization had long since collapsed and disappeared. In Mesoamerica, the Mayan civilization had returned to the jungle before Europeans arrived. Only China had sustained growth in its original area. To be sure, agriculture had spread out into South Asia, limited areas of Southeast Asia, and into Europe, though the collapse of the Roman Empire meant Agrarian Civilization had made only long, slow recovery. Much of Europe was still covered in forest. From one perspective the 4,000 years from 2500 BCE and 1800 CE did not see much change. Perceptive students recognize that the

story of civilization prior to the industrial revolution doesn't really seem to lead anywhere, except as a prelude to the industrial revolution. In his masterful *The Inheritance of Rome*, Chris Wickham criticized the tendency to see the medieval period as either the foundation of nationalism or modernity.<sup>3</sup> Currently Big History falls into the latter category, primarily focusing on the inventions and events of Agrarian Civilization that seem to imply the inevitable discovery of industrialization, the excitement of which leads to a certain impatience with the endless centuries until it appears, often the most lively debate is why industrialization didn't appear sooner.

In truth, the much-vaunted civilization brought by agriculture seems over-hyped. Peoples not under Agrarian Civilization certainly saw it that way, which may partially explain their often-dogged resistance to agriculture's even slow advance. Foragers, pastoralists, and those living only in small village groups almost always saw their way of life as superior to the wretched existence offered by civilization, at least 80% of whom were peasants held in various forms of bondage. Hobbes' short, nasty, and brutish life surely applied to the peasants, the last of whom we are trying to transform in modernizing China, India, and South America. Occasionally those who resisted civilization succeeded, sometimes in spectacular fashion, such as the Mongols.

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<sup>3</sup> Chris Wickham. *The Inheritance of Rome*. New York: Viking, 2009. Print. Pages 3, 11.

Rome's massive defensive border from Hadrian's Wall in Britain and then along the Rhine and Danube is a testament to civilization failing to defeat those not under agrarian civilization. We are reminded of the horrid people who lived beyond the Roman border in movies like *The Eagle* and *Gladiator*. The Great Wall, built by the Ming Emperors had the same intent: keep out the nomadic hordes. Each of these borders covered thousands of miles. The history of the United States is still somewhat taught as a zone of civilization with a long frontier outside of which was a Wild West. In short, in telling the story of agriculture, instead of simply reflexively promoting Agrarian Civilization as progress, we should ask ourselves about the impact of large scale agriculture on the biosphere. We will now return to our main story, the story of cultivation.

To demonstrate the consequences of humans in command of agriculture, I'd have students imagine an outside exercise. They would need to think of a nearby area, not gardened, where weeds and bushes seem in control. I'd then have them think of a 9' x 9' part of that area and imagine removing every single plant, including the roots. This is cultivation, the base of agriculture, reducing land to dirt in preparation to plant. Hopefully, students would understand that cultivation without machines is a lot of hard work. You can also inquire if any students have grown up on farms or worked on farms. There are still a few, and their experience can reinforce the discussion. You

can also inquire if any of them have been to county fairs and visited the agricultural exhibits.

You can ask them how they feel when viewing a plowed field. They likely have a good feeling, because they are trained to see cultivation as aesthetically beautiful, calming order. We would not ask ourselves if any of the plants, animals, or insects we removed had any value, because agrarian civilization saw food as more important and it was not in command of science. You can ask the students if they agree that the food we could plant in our plot is more important than the things we had to destroy to prepare the land for planting. Some might claim the things we destroyed may have scientific value. However, during the age of Agrarian Civilization, humans did not think that way as they did not command science. The point needs to be emphasized. Humans during this period did not have command of science, at best humans acquired local, practical knowledge.

Next I would have the students think about water. It is likely our plot is not near a natural source. We would have to build an irrigation system, perhaps quite an extensive one to water our plants. Many civilizations during this period practiced hydro-agriculture, artificial water supply. At their height many of these systems were engineering marvels of the world. Most like those of the Khmer empire, Mayan empire, Grand Canal in China, and in Mesopotamia, eventually fell into disuse. This would raise questions about the weather. The students could research annual rainfall

in the area, when it falls, and which crops will grow in the area based on temperatures. Hopefully, they will discover the limitations placed on agriculture by climate and geographical location. You can discuss the difference between arable and non-arable land and how much arable land earth has.

Our next problem would be the soil. Again, as we don't command science, we don't really know how soil works, we certainly don't understand that what we plant can be removing nutrients so that eventually the soil will not be able to support plant life. We will solve that problem by clearing another field. In fact, rotating fields, leaving 1/3 fallow, planting beans or clover are all still heralded in world history texts as major advancements in civilization. Each of these is just a method of returning nutrients to the soil as is fertilizing with manure.

Hopefully, students would get the point that agriculture poses several problems for success, and they would recognize that the solution to problems was often just clear more land. From an impact on the biosphere point of view, they could ask themselves about the negative aspects of agriculture such as deforestation, soil erosion, depletion, extinctions, flooding, and less unknown consequences such as adding carbon dioxide to the atmosphere by removing trees, perhaps triggering a minor ice age. This is agrarian civilization's impact on the biosphere, the slow, relentless conversion of arable land, and through feats of engineering some non-arable land, into cultivated land without concern for the consequences.

Another aspect of this story is the obstacles to agrarian civilization. I suggest these 4,000 years may be seen as a state of war by Agrarian Civilizations on wild plants, wild animals (savage beasts, pests, vermin), insects, and humans not in Agrarian Civilization, while at the same time being at the mercy of disease, natural disasters, and the climate. In the case of wild plants, wild animals, insects, and human not in Agrarian Civilization, these were wars of extermination, the goal was to remove these obstacles as threats to cultivated land. John Locke viewed property, the protection of which he argued was the main goal of government, as the application of labor to the natural world and converting it into valuable, cultivated land that produced crops for food and surplus.

What did humans in Agrarian Civilization fear? Dark jungles and forests, where unknown or fearsome creatures dwelled. The heroes of Agrarian Civilization killed wolves as in Little Red Riding Hood and Peter and the Wolf. Useful images for the course are those depicting the original ranges of wild animals like lions, wolves, and bears. People in Agrarian Civilization also hated rodents: rats, mice, rabbits, prairie dogs and the like, because they ate grain, especially stored grain. They called them vermin, pests. Heroes like the Pied Piper cleaned out a city by leading hundreds of rats out to drown. Think of the efforts we make to keep mice out of our houses, our belief that they are dirty, carry diseases, and will eat our food. Because people in Agrarian Civilization didn't understand soil erosion and depletion, and couldn't

control the climate, disease, or natural disasters, they were always on the verge of famine. They also didn't understand insects, why they exploded in population darkening the skies in their numbers, completely consuming crops in their path, leaving us facing starvation. They also disliked humans outside Agrarian Civilization; those people often comfortably inhabited the non-cultivated world and stood in the way of clearing it. When not trading with Agrarian Civilization, these people raided it. They also challenged civilization's thin hold, leading some to abandon the benefits of Agrarian Civilization. To negate these people, people in Agrarian Civilization called land not under Agrarian Civilization *terra nullus*, empty land.

Despite the success of Agrarian Civilization, it was subject to diseases, plague, typhoid, cholera, malaria, and plant diseases like blights. Periodically these swept away great swaths of people. It was also subject to climate change. People faced famine if the rains didn't come, or came in too great of volume, or at the wrong time. Periodic famines carried away great swaths of people as well. Volcanoes and earthquakes also wiped out cities. Pompeii, Port Royal, and Lisbon are notable examples.

Examining some particular crops is useful in explaining Agrarian Civilization. For example, the potato. Now a virtually inescapable part of our diet, the potato, in a form we would hardly recognize, evolved in South America. Peoples of the Andes first learned how to cultivate it. As a staple it has many virtues, you can literally live on potatoes, and it is healthier than a grain based diet. In addition, it is easier to grow and

much easier to store. It was brought to Europe in the 1500s by the Spanish, but did not gain much immediate traction. First, it is a nightshade; its leaves are a poison. Second, in Europe tubers were animal food. You showed your barnyard origins by eating potatoes. Slowly, potatoes began to supplement peasant diets in time of famine. Only in the eighteenth century did it become acceptable food for the lower orders as it seemed to solve periodic grain based famine. Enlightened despots like Frederick the Great encouraged its growth. It took off in Ireland, more slowly in England, where by the nineteenth century, baked potato sellers were common on the streets of London. Some recipes appear in the nineteenth century. Unfortunately, Ireland became so dependent on the potato, it replaced nearly all other crops, so when the potato blight struck in the mid-nineteenth century upwards of a million people died of starvation or hunger related illness. Between that and the immigration it caused, Ireland has never recovered its pre-famine population.

Of our common foods, the potato chip was invented in Saratoga Springs, New York, in the nineteenth century and French fries in France around 1870. Shortly thereafter, the British matched fried potatoes with fried fish for the first fast food: fish and chips. Europeans spread the potato with them in their world empires. Cross-breeding in Los Angeles produced the Russet potato in the late nineteenth century. After World War II, potatoes become the basis of the fast food industry in America that is now conquering the globe. Thousands of acres are devoted to growing

potatoes. Why is the potato a death sentence for modern man? Well, unlike Irish peasants, we don't burn off hundreds of calories a day in heavy labor. In addition, they mainly baked potatoes; today, the calories are increased dramatically by frying them in fat or if we eat them baked we slather them in sour cream or butter. Yet given the size of the potato industry and the now ingrained cultural aspect of potatoes, it is unlikely that efforts to curtail or modify our consumption of potatoes will change in the near future.

I want to look at another example: sugar. Sugar cane, or sucrose, was apparently first domesticated in New Guinea around 8000 BCE. The first use was more or less as sugar juice. Around 500 CE is when we have the first evidence of sugar making, that is, reducing the sugar juice to crystals. By 1000 sugar was grown in small amounts in the Middle East and North Africa. The Crusaders reintroduced it to Europe. Initially, it was seen as a spice, like other spices from the Middle East and Asia. There was virtually no sugar in the European diet until the 17<sup>th</sup> century. Today, Western Europeans and North Americans consume about 130 pounds of sugar, and its substitute, High Fructose Corn Syrup, per year. Slowly from about 1100 when Crusaders took over Islamic sugar plantations in the Middle East until 1500 sugar made its way into the European diet. Sugar got its main boost with the discovery of the Americas in the 1500s, when sugar plantations established on islands in the Atlantic were expanded to the Caribbean and the coast of Brazil. Demand expanded

with supply and as Europeans solved the labor problem with slaves from Africa, sugar plantations took over the Caribbean and much of Brazil. Sugar plantations meant annihilating the indigenous Taino and Carib peoples and cutting down all the native vegetation, wiping out who knows what number of native plants, animals, and insects. As we can see, focusing on the impacts of agriculture can raise a lot of interesting questions for students, without the need to discuss the various civilizations involved per se.

Finally I'd like to discuss tea. Tea was originally cultivated in China and India, where it was not taken with sugar. It was introduced to England by the Portuguese bride of Charles II, Catherine de Braganza, in the mid 1600s. She brought the Portuguese colony of Bombay to the English as part of her dowry. She introduced it as a temperance measure, because the English at the time drank wine, beer or ale so were drunk all the time. It was soon wedded to sugar, which was used as a sweetener, creating, in essence, the world's first soft drink. Together tea and sugar actually improved the meager diet of the lower classes by adding calories. Tea and sugar were the rage in England by the eighteenth century, leading to the height of the Atlantic slave trade and eventually the smuggling of opium to China. Great acres of land were cleared in the Caribbean to grow sugar, in China to grow tea for export, and in India to grow opium to pay for the tea. Millions of Africans were enslaved, tens of thousands of Chinese addicted, and countless numbers of Indian peasants coerced

into not growing food so they could grow opium for export. However, Jane Austen's heroines could offer guests polite afternoon tea.

By teaching the histories of food, not only do we link the age of Agrarian Civilizations back to earlier themes of Big History, evolution, climate, plate tectonics, and chemicals, we can show the impact on the biosphere, which is the destruction necessary to cultivate land. Today there is considerable work by historians on food, along with histories of plagues, and natural disasters, which dogged the Agrarian Civilizations. The questionable achievements of Agrarian Civilizations, 4,000 years of human history judged at 1800, are disguised by science and the industrial revolution, much of which was devoted to an even greater agricultural revolution, increasing crop yields in particular by solving the soil depletion problem through fertilizer, controlling diseases through medicines, insects and rodents through chemical warfare, wild animals through mass reduction of their numbers facilitated by breechloading rifles, wild plants through tractors, and adjusting for climate by even more spectacular feats of hydro-engineering. Today, except for artificially caused distribution problems, we can comfortably feed our seven billion people, but many of our sustainability questions relate to agriculture but few of us understand our dependence upon it or what would happen if there was another regional collapse in either cultivation itself or the distribution system similar to the Irish potato famine.

Few historians have speculated what would have happened if science and industry had not occurred. They may very well have saved Agrarian Civilization. Undoubtedly it would have lumbered slowly on, increasing the amount of land under its control, attended with local collapses, but whether it would ever have threatened the planet as a whole is doubtful. Nevertheless, perhaps the most sobering thought posed by the 4,000 years of history of Agrarian Civilization is its length of time. Contemplate, if you will, our faith in technology and science, the idea, that our salvation, the next technological revolution, lies, not just ahead, as first century Christians were convinced about the Second Coming, but 4,000 years in the future, 4,000 years where burning fossils fuels are it, while we slowly accumulate the clues to the next revolution, assuming it exists. Four thousand years of Agrarian Civilization did a lot of damage to the biosphere, but, though many individual civilizations did collapse, it did not threaten catastrophic planet wide collapse. I'm not sure there are 4,000 years on the fossil fuel clock.<sup>4</sup>

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<sup>4</sup> A variety of texts were consulted in the examination of agricultures through time. The most notable are:

Bernstein, William J., *A Splendid Exchange, How Trade Shaped the World*. New York: Grove Press, 2008; Mintz, Sidney. *Sweetness and Power, The Place of Sugar in Modern History*. New York: Penguin, 1985; Rimas, Andrew and Evan Fraser. *Beef, The Untold Story of How Milk, Meat, and Muscle Shaped the World*. New York: Harper, 2008; Williams, Ian. *Rum, A Social and Sociable History*. New York: Nation Books,

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2005; Zuckerman, Larry. *Potato, How the Humble Spud Rescued the Western World*. New York: North Point Press, 1998.