How Earth Made Us—a masterly BBC documentary

Ognjen Markovic
21 April 2012

I have only just discovered *How Earth Made Us*—the 2010 documentary by the British Broadcasting Corporation(BBC). It is a visually and intellectually delightful production well worth watching. Its integrated approach brings knowledge accumulated by various branches of science into a comprehensive picture of our development as a species, easily comprehensible even to viewers with no scientific background, such as myself.

The documentary is a powerful validation of the materialist conception of history. The presenter—University of Plymouth professor and geologist Iain Stewart—tells us at the very beginning that our planet has immense power and has dominated us for most of our existence, yet it is rarely mentioned in our history books.

He then embarks on an epic journey through continents and millennia of human experience, detailing how our relationship with our planet has evolved from one of domination by nature to one with the possibility of rationally harvesting the power of nature, on a global scale, and making it serve our purpose.

The five-part series explores "the four great planetary forces that have shaped our history"—deep earth, water, wind and fire. Having stressed the degree of power our environment has over us, the documentary never falls into the trap of dismissing human agency altogether. On the contrary, the final, fifth part is dedicated to a planetary force "rivalling natural forces"—mankind.

Part one is about deep earth. Stewart explains how resources are plentiful, but can only be accessed at places close to the surface, where the land masses (tectonic plates) meet.

Humans have been drawn to these fault lines since the dawn of civilization. Eleven out of the 13 most important ancient civilizations built their cities, including Petra in modern-day Jordan and Bam in Iran, close to a plate boundary, where thanks to its special geological characteristics abundant supplies of underground water could be found.

Different minerals and metals are also brought up from deep earth and deposited at fault lines and that is how some 6,500 years ago in the Timna valley in the Negev desert, people found malachite, which, when heated up, produces copper—one of the first great scientific breakthroughs.

The huge advantages the metal provided led to the development of the first large-scale mining site. Later, around 5,000 years ago, bronze was made by adding tin to copper. And then, 3,000 years ago, by refining the smelting process further, iron was produced. "Metal tools became the foundation for human civilization," Stewart declares.

The most advanced early civilization was the Minoan on Crete, an island at the centre of the Mediterranean, and at the crossroads of many trading routes. The surplus from trading made them the first maritime superpower and the "great [historical] pivotal point where life switched from being dictated by the grim realities of survival, into something we could actually enjoy." However, the Minoans were destroyed when a volcano destroyed the nearby Santorini archipelago some 3,500 years ago, triggering a devastating tsunami.

This was the catch. Much of our history, Stewart explains, has centred on a bargain between us and the earth. The plate boundaries are rich in resources and for the same reason they are so dangerous. And although humans have only understood this in the last 50 years, it has made little difference to where we live—10 out of the 20 largest cities are next to major fault lines. A good example is California. For all the oil and gold that has made her rich, California has the San Andreas Fault to thank.

Stewart describes how "We don't *have* to suffer the price anymore. We cannot stop earthquakes, but if we really wanted to protect ourselves against the consequences, we could, because we have the technical know-how to keep every building standing, *if* we choose to. For the very first time in human history, that choice is ours."

The second part of the documentary on water explains how vital but elusive and unpredictable a resource it is. While "our fate is inextricably tied to water ... the problem is, water never stands still. It's always on the move, across the planet."

How all water on Earth is connected, and how decisive a role it has played in our history, is shown with the example of the Fertile Crescent (centred around modern day Iraq), some 12,000 years ago. Since the ice in the northern hemisphere was expanding at the time, it sucked in moisture from the atmosphere, leading to droughts in the Middle East. As a direct result of this, people were forced to adapt their lifestyles and "not to chase food, but to stay put and grow it," explains Stewart.

Having taken up agriculture, however, people needed a regular source of water to cultivate their crops. They were drawn to rivers but they "did more than supply a steady source of water. They changed the very character of the civilizations that grew up along them, influencing everything from politics to social organization," says Stewart. Ancient Egypt is used as a graphic example.

Then the programme explores water at another stage of its natural cycle—rain. Stewart explains how monsoons in Asia, which

last for only three months, leave virtually no rain for the rest of the year, making a steady supply of food and water difficult. The Khmer civilization's ability to harvest its power and succeed in building the largest pre-industrial city, Angkor, is another riveting story.

The next topic discussed is wind, —an all-planetary force that has "built fortunes and brought ruin... [and is] one of the most powerful and least understood forces on Earth," says Stewart. Wind shapes the climate of entire continents over thousands of years. That Australia is barren and agriculture never took off and that central China, on the other hand is fertile and rich are in large part due to atmospheric circulation of wind.

Stewart explains how 500 years ago a pivotal discovery about wind patterns transformed the world. Noticing how the wind always blew away from the coast of West Africa, Christopher Columbus followed it, seeking a shorter route to the riches of Asia and discovering a new continent, precipitating global trade. According to Stewart, "The fate of nations now depended on where they lay in relation to the winds." The huge droughts lasting for decades in the Americas, caused by the El Niño climate pattern in around 1300, contributed to the weakening and collapse of many early civilizations there.

The fourth element is fire. "Fire was the weapon that began our conquest of the planet," Stewart states. Early humans learned how to control it around 1.5 million years ago to provide warmth, light, protection against predators, more varied food and the ability to quickly clear large areas of land. The greatest breakthrough in our use of fire came some 6,000 years ago with the use of charcoal, which burns at a much higher temperature than wood and enabled metal smelting, giving us tools and weapons.

By the late 16th century people began to run out of wood to make charcoal and they turned to the carbon of the earth's past—coal. But "the planet was fickle with its favours" states Stewart.

Britain was fortunate in having an abundance of coal. When the easily accessible surface seams became exhausted and deeper mining was hampered by flooding, engineers came up with a solution—the steam engine. Although designed specifically for pumping water out of mines, it quickly found other uses.

Like Britain, China too was poised on the edge of an industrial revolution. However, its coal reserves were far away from the coastal cities where it was needed, transport by land was unfeasible, and the Yellow River impassable. Stewart says this was a fundamental reason why Britain was transformed and China was not.

Then another kind of buried carbon, oil, was discovered. Stewart ponders the "big question"—"why a few lucky places ended up with huge oil fields, but others didn't. I don't think it's an exaggeration to say that the answer to that puzzle has shaped the global geopolitics of our age. It's probably the most powerful way the earth has influenced human history."

The final part of *How Earth Made Us* concerns mankind. Stewart explains how "we are changing the surface of the planet more than all the forces of nature put together" and discusses the problem of global warming.

Asking "what does that mean for our future?," he answers "science has given us an understanding of how the planet works, that allows us to protect ourselves against earth's unpredictable nature... we can now take control of our impact on the planet's natural processes... it's a big challenge which involves global cooperation... if we put our minds to it... we are now a geological force to rival the earth's natural forces. The ultimate test will be how well we use that power. As a species, we like to think that we're special. Well, this is our chance to prove it."

Throughout the series, Stewart's narration inspires and captivates. His sense of wonder, his enchantment with his subject matter—nature—is sincere and has a powerful effect. He is also witty and amusing. Talking of diamonds "apparently" worth millions, he says, "I've always loved the idea that the ultimate in glitz was to adorn ourselves in tiny pieces of the earth's interior. Geological bling."

On the visual side, the imagery is stunning. Satellite shots and zoom-ins, underground, underwater and aerial camera work are all combined with warm, intimate close-ups of humans and their daily lives, creating a breathtaking collage.

One of the most welcome features of the whole programme is its constant appeal to human universality and an optimism and confidence that we can rise to the challenge and overcome the difficulties ahead. Differences between countries are shown to be much more a result of random natural conditions, rather than supposed national character.

Stewart is clear that all of the natural forces we are up against are working on a global scale and our answer, if it is to be effective, also has to be coordinated globally. Whether this can be accomplished within the framework of our present socioeconomic system and its reactionary prejudices is not addressed here. Even the documentary had to make a concession to irrational and unscientific prejudices when appearing in the US market—where it is called "How The Earth Changed History" instead.

Whether or not Professor Stewart and the BBC intended this, *How Earth Made Us* makes a powerful case for putting human needs before profit.