Hello, we've been talking about the agriculture revolution, arguably the most significant transition in all of human history. I'd like to think a little bit more about that with you today by considering two questions in particular. Firstly, why do big historians make this argument that this transition to farming is so important? All right. Why does agriculture matter so much? And secondly, how do we explain this transition? Why would humans abandon a life way that had worked so well for so long, for a quarter of a million years, for something that was a lot riskier, at least early on? So the first question, why does it matter? Let's go back to the situation, say, 12,000 years ago in the Paleolithic. We've seen that humans have migrated all over the planet, that they're all pursuing foraging life ways. These looked different depending on the different environments that people are living in, but essentially it's the same way of making a living. Humans are living in small communities because foragers have to keep their population small. So collective learning is going on, but on a pretty low level. So change seemed somewhat slow, almost imperceptible to us today. But then something changes. Farming technologies begin to appear in different parts of the planet. And this quite quickly gives humans access to more resources, our populations increase, population densities in particular increase, so villages appear for the first time. Some of these become large towns and then enormous cities with millions of residents. So collective learning begins to happen at a much faster pace and much larger scale. And this means we get more technological dynamism, greater population growth. This means that those regions that adopt farming get a sort of head start on those regions that don't. And when the world zones later reconnect, those farming regions, if you like, quite quickly come to dominate those parts of the world that never adopted farming or adopted farming quite late. So the adoption of agriculture helps explain so much of what happened in world history and really to explain the geopolitical situation on the planet to this very day. The second question concerns how we explain this, and theorists have pondered this for about 50 or 60 years now. The most obvious answer would be that somebody invented farming, somebody just got sick of wandering the landscaping, being nomadic and foraging and hunting and said, "Why don't we just stay in one place and start to domesticate plants and animals." Now, this idea makes a lot of sense, it's very intuitive, but it doesn't really work because, you know, that farming appeared independently in a number of regions around the world that were completely isolated from each other. There's no possible way that farmers in the Americas, for example, could have copied this idea from farmers in Afro-Eurasia because the Americas were completely sealed off by this stage. We also know that not everybody wanted to be a farmer. We're aware of many hunter gatherer groups who lived in areas where farming was going on but quite clearly made the decision not to adopt farming because it appeared a lot more hard work and a lot more stressful. So that argument just doesn't work. Instead, we explain farming through a series of five steps in which human intentional decision-making actually played a very small role. The first of these steps was that humans were already pre-adapted to make this transition. Our ancestors had survived for an enormous amount of time through living with nature. They understood how animals and plants worked. They understood which plants had a regular breeding cycle, which animals were docile and could be herded and so on. The second step is that a number of species were also pre-adapted to make this transition. If you think about the 200,000 or so higher plants on the planet, as biologists identify them, only a hundred or so of these plants have proven themselves suitable for domestication. You could name some of them, of course: wheats and corns and rice and vegetables and fruits and nuts and so on. Furthermore, of the 148 or so species of land mammals, only about 14 have proven themselves pre-adapted, if you like, or suitable for domestication. Again, cattle, sheep, goats, pigs, you could name some of these. The third step is that in certain parts of the world, humans were becoming more sedentary. They were abandoning nomadic life ways and settling down in regions of local abundance. At the end of the last Ice Age as the ice sheets retreated and warmer weather conditions appeared, it became possible for foragers to stay in one place. They weren't farming, of course. They were still foraging and hunting and gathering, but they were able to settle in these regions of local abundance such as the Biblical Gardens of Eden, which appeared in the sort of Fertile Crescent of Southwest Asia. Now, the minute people stayed in one place, populations began to increase. You might remember that hunter gatherers had to keep natural controls on their populations to sustain themselves in these small communities. The minute we stay in one place, we no longer have to practice infanticide or senilicide, that is, killing off unwanted babies or unwanted older folks. So populations begin to increase and this builds population pressure on these communities. Many of these regions where farming appears are also natural funnels for migration. So you've got these twin problems of increasingly large populations, more and more people coming in. It becomes impossible to sustain yourselves through hunter gathering. These humans had become trapped in the fourth step, the trap of sedentism. Inadvertently by choosing to stay in one place, they've trapped themselves through increasing population pressure into having to find some new way of survival, and this leads directly to the only option, which is farming. Now, this five-step model works everywhere on Earth where farming appears, certainly in the Fertile Crescent of Southwest Asia, along the Nile Valley in Egypt, along the Huang He and Yangtze River Valleys in China, the Indus Valley in Pakistan today, Mesoamerica, North America, South America. It appears to
be the model that explains this extraordinary transition that sets human history spiraling along a whole new course of more dramatic change, intensive population growth, more and more technological innovation. The agriculture revolution drives humans along a path that leads directly to the complexity of the modern world.