

Development Policy

Lecture Note 3

Geography and Development

In macroeconomics class we considered several models of economic growth in the long run (neoclassical, endogenous and structuralist growth models). Today we extend the time frame even further as we think about growth and development over the millennia. In the beginning of his celebrated book *Guns, Germs and Steel*, Jared Diamond is asked the following question by Yali, a man he met in Papua New Guinea: "Why is it that you white people developed much cargo and brought it to New Guinea, but we black people had little cargo of our own?" By "cargo" Yali means wealth. He wants to know why the westerners who come to PNG are so wealthy, while he and his countrymen have very little. Diamond recalls that he was baffled by Yali's question. Diamond was an ornithologist and ecologist by training, not an economic historian. Still, he set out to answer the question, and in doing so he came up with an intriguing theory of the role of geography in long term development.

Why are the rich countries of the world concentrated in Europe and North America? Diamond immediately rejects any theory of inequality based on the innate capacities of races or ethnic groups. He has worked in PNG for many years and has discovered that people there have developed creative and sophisticated ways to survive under harsh living conditions. He has depended on local guides, without whom he could not survive in the jungle. He also rejects explanations based on culture. The answer to Yali's question cannot be found in the individual and group characteristics of people living in poor countries.

Instead, Diamond pursued a scientific approach to the problem. To study inequality, he decided to turn to history, and more specifically to a time before there was any economic inequality at all. Thirteen thousand years ago, humans were hunter-gatherers. There was no agriculture or industry. People found food in the wild and hunted animals for protein. This method of procuring subsistence was too haphazard to support a large, settled population. People were constantly on the move in search of food, and there are times when no food was available. However, in one part of the world, in the Fertile Crescent of the Middle East, hunter-gatherers had access to grasses like barley and wheat. They learned to cultivate these grains for food, to select grains with favorable qualities for planting in subsequent seasons. And they learned to store harvested grain so that they would have something to eat between harvests and in bad years. Humans began to form the first settled communities based on agriculture.

Other settled agricultural communities followed in China based on rice, the Americas (maize) and Africa (millet, sorghum and yams). People also farmed in Papua New Guinea, but the crops available to them like taro root were low in protein and spoiled quickly. Their crops could not support large, settled populations. People in PNG remained hunter gatherers, not for any fault of their own, but because they didn't have access to the right kinds of crops to farm.

The next stage of development came with the domestication of animals. Controlling the feeding and movement of animals meant that humans no longer had to hunt to survive. They could obtain a reliable supply of protein from meat and milk, and also warmth from animal hides. Eventually humans tied some of their domesticated animals to their ploughs as beasts of burden, which provided the most important source of non-human power until the industrial revolution in the 19th century. Different regions of the world were not equally endowed with mammals that could be successfully domesticated. Eurasia was most fortunate, with thirteen successfully domesticated mammals. Sub-Saharan Africa had none, and the Americas only one, the llama, which could be used as a pack animal but could not be harnessed to a plough.

Higher productivity agriculture and animal husbandry meant that humans could produce food more efficiently. This freed up time and energy to specialize in crafts like making metal tools. Over many thousands of years, and through trial and error, Eurasians developed the technologies to produce hard steel and form it into weapons and tools.

The ecology of the Fertile Crescent could not support the larger human communities that were living and farming there. The land was too dry and higher populations of people and animals led to deforestation and ecological collapse. Human communities living there had to move on. But they did not lose the advantages that they had gained in the Fertile Crescent, because they lived in a wide continent that stretched from east to west. There were many other places along the same latitude that could support the same plant and animal species that they had learned to use in the Fertile Crescent. They moved east towards India and west towards Egypt and Europe, where they established new settled communities, some which established themselves and thrived.

European civilization, with its high value crops, and its domesticated livestock, benefited from specialization and the division of labor. The invention of steel, and of guns, gave them tremendous advantages in battle. When the Spanish confronted the Incas and Aztecs of South America, even these sophisticated civilizations could not put up much resistance.

Europeans also developed writing systems based on Sumerian cuneiform that was invented five thousand years ago. All subsequent European and Middle Eastern languages are based on ancient cuneiform. The Chinese independently developed their

own writing system 3,500 years ago. The Mayans in southern Mexico also developed a system of writing, but it did not spread to the Incas and other American civilizations. According to Diamond, the reason that Mayan writing was not adopted by other American civilizations was that the Americas lie on a north-south axis. Agricultural technologies could not move easily between the different groups of in South and Central America because they inhabited different latitudes and hence different ecosystems. So they remained isolated from one another. Unlike Eurasia, the breakthrough of writing and reading did not spread because of geographical accident.

In addition to livestock, writing and steel, the Europeans also had another ally: disease. Europeans had built up resistance to diseases like smallpox and measles that they had originally come into contact with because they lived in close proximity to their domesticated animals. The indigenous people of the Americas did not have domesticated animals like the Europeans, and so they had not developed natural immunity to these diseases. When the Europeans came to the Americas they spread smallpox, which decimated the American population.

Europeans settled in latitudes that offered the temperate climates that they were used to, and where they could grow crops that they were familiar with. North America, Australia, Chile and South Africa were places that offered a Mediterranean-type climate. They seized land from the people that lived there, and brought diseases that thinned out the local populations. However, when they attempted to move into the tropics they found that their crops would not grow and their livestock would not survive. They were also defeated by diseases like malaria that they had never encountered before, and had no natural resistance to. They had more sophisticated technologies than the local people, but they were defeated by nature.

The failure to establish agrarian settlements did not discourage Europeans from colonizing tropical Africa, Asia and Latin America. They came for mineral wealth: for gold, silver, copper, and eventually oil. There were also tropical crops, cultivated by the local people, that were of value to Europeans. Crops like tea, coffee, sugar, rubber and spices were bought from local people, and later cultivated on plantations established by Europeans. But these exploitative patterns of economic relations did not generate wealth for the local people. These patterns have persisted even after independence. Income levels in the tropics have remained below those of the temperate latitudes.

These are the essential features of Jared Diamond's answer to Yali's question. The Fertile Crescent was unusually blessed with a rich array of crops and livestock, which helped Eurasians to develop productive agricultural technologies. Because Eurasia stretches on an East-West axis, these technologies could travel a long way and remain useable. Higher agricultural productivity enabled Eurasian societies to develop complex societies that were conducive to specialization, the division of labor and

technological change. Living in close proximity to their livestock, they developed immunity to diseases that wiped out large numbers of indigenous people in the Americas, Africa and Australia. With their writing systems, iron, steel, weapons and railroads, European civilizations seized control over other temperate zones, where they established settler communities, and the tropics.

What lessons can we take from Diamond's theory? First, differences in living standards are not related to different intellectual or physical capabilities. Nor are they related to culture. Yali's people are not poor because they are less intelligent or because their culture is not sufficiently "modern." They have adapted to the ecological conditions of their country, conditions that did not allow for a highly productivity agriculture, large, densely populated civilizations and the division of labor.

Second, Europe's advantages emerged over a very long period of time. Although we are often impatient with the slow pace of economic development, and the persistence of income gaps between rich and poor countries, we also need to recognize that these gaps have a long history. Narrowing them will take time, commitment and resources.

Third, disease has played a major role in holding back developing in the tropics, and controlling diseases like malaria is a prerequisite to sustained progress in incomes and living standards. In this regard Asian countries have performed much better than tropical Africa, which has had important economic effects. We will talk more about this later in the term.

Finally, geography is not destiny. Many tropical countries have achieved remarkable economic progress over the past fifty years. They have specialized in the production of agricultural commodities suited to their climates, and invested heavily in education and the acquisition of technology to build new industries. Countries that have not developed their agriculture or invested in knowledge and education have done less well. Diamond does not explain these differences in performance. In the next lecture, we will consider some alternative theories that explain these differences based on the characteristics of economic and political institutions.