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KEY CONTROVERSY Explaining Agriculture

Scarre, Chris, ed. 2005 *The Human Past*. Thomas & Hudson.

The Oasis Theory

In 1936, Australian archaeologist V. Gordon Childe proposed one of the first coherent theories to explain the origins of agriculture. Like many later theories, this laid great emphasis on environmental change. Childe (1936) believed that at the end of the Pleistocene, a northward shift in the path of the Atlantic depressions (areas of low barometric pressure) from North Africa to Europe led to desiccation (extreme dryness) in countries that were always relatively dry. In the Sahara and Southwest Asia, grazing animals and their predators were forced to cluster around oases, where they came into contact with humans, and the result, Childe argued, was a symbiotic arrangement by which wild herbivores were allowed to graze stubble fields after the harvest, in turn becoming tame and accustomed to human contact. Selective culling by humans would subsequently have led to full domestication, by killing off intractable members in order to produce a docile herd, leading them to suitable pastures and water away from fields at the sowing season, and protecting them from wild predators.

The oasis theory suffers from two major shortcomings. First, it focuses very largely on animal domestication, and does not seek fully to explain the origins of plant cultivation, although stubble fields and fodder crops are an important part of Childe's model. In later writings, he argued that similar processes of environmental change and enforced proximity led to plant domestication and irrigation agriculture, but these arguments were less convincing. Second, the model was based on inadequate environmental information, which we now know to be

incorrect, for in North Africa and Southwest Asia, rainfall increased rather than decreased at the end of the Pleistocene.

Childe referred to the adoption of agriculture as the Neolithic Revolution, one of those key changes in prehistory that could be likened in their impact to the Industrial Revolution of 18th-century Britain. In his account, the Neolithic Revolution was followed a few thousand years later by the Urban Revolution [see box: *Cities, States, and Civilizations Defined and Explained*, pp. 196–97]. While it is true that both agriculture and urbanism brought profound social and economic change, the term “revolution” implies a sudden and dramatic transition that does not accurately characterize the varied nature of these changes in different parts of the world. It also underemphasizes the important changes that continued to take place between these “revolutions.”

The Hilly Flanks Hypothesis

Childe's hypothesis was very much an armchair theory. In the late 1940s, however, a group of American archaeologists, led by Robert Braidwood, set out a model of agricultural origins in Southwest Asia that they proceeded to test by fieldwork.

Braidwood believed that farming would have begun not on the lowland alluvial plains, but in the hilly flanks of the Fertile Crescent, which were the natural habitat zone for a cluster of potential domesticates – barley, emmer and einkorn wheat, sheep, goats, pigs, and cattle – and which lay between the hot, dry floodplain and the cold, damp mountains.

From 1948 to 1955 he and his team excavated at sites in Iraqi Kurdistan, in the foothills of the Zagros Mountains (Chapter

6). Alongside the archaeologists were botanists and faunal specialists, and environmentalists who studied soils and river courses to track changes in climate and vegetation over the relevant period (Braidwood and Howe 1960). Braidwood's conclusion was that the invention of farming depended on the development of human knowledge and skill, coupled with a particular suite of locally available plant and animal species: “The food-producing revolution seems to have occurred as the culmination of the ever-increasing cultural differentiation and specialization of human communities. Around 8000 BC the inhabitants of the hills around the Fertile Crescent had come to know their habitat so well that they were beginning to domesticate the plants and animals that they had been collecting and hunting” (Braidwood 1960, 134).

This work preceded the studies of hunter-gatherers undertaken in the 1960s, and assumed that agriculture was fundamentally desirable and that the principal obstacles to its development lay in human knowledge and skill. “Why did incipient food production not come earlier? Our only answer at the moment is that culture was not yet ready to achieve it” (Braidwood and Willey 1962, 342).

Today the theory still has many adherents, and recent research at sites such as Çayönü in the Taurus foothills has confirmed the key role of the “hilly flanks” of the Fertile Crescent in the origins of agriculture in Southwest Asia (Chapter 6).

Demographic Theories

From the later 1960s, most theories of agricultural origins looked for factors that would have forced hunter-gatherers to

abandon their existing lifestyles and adopt the more labor-intensive agriculture. The American archaeologist Lewis Binford (1968) maintained that environmental change coupled with sedentism was the principal cause.

Environmental changes at the end of the Pleistocene, he argued, encouraged the exploitation of highly seasonal resources in resource-rich areas, and in several parts of the world (including Southwest Asia) these areas were sufficiently productive to allow the development of sedentary communities. These sedentary populations experienced population growth, as the abandonment of nomadism relaxed traditional constraints on reproductive rates; infant births became more closely spaced and offspring more numerous. Population pressure then led to expansion into more marginal zones outside these original resource-rich areas. It was in these more marginal, semi-arid zones, Binford argued, that incipient cultivation was developed in response to new population pressure from expanding groups.

Although discussed primarily in the context of Southwest Asian agriculture, Binford's theory had the merit of considering patterns at the global scale: why had agriculture arisen not only in Southwest Asia but also in other regions of the world at around the end of the last Ice Age? In terms of explanation, however, the theory may be held simply to shift the burden of the debate from "why agriculture?" to "why sedentism?"

Evolution and Intentionality

Alongside environmental or demographic theories were several that emphasized agriculture as the result of long-term relationships between humans and their food sources. Thus the idea arose that agriculture

should be viewed as one type of evolutionary adaptation between humans and other species. American archaeologist David Rindos (1984) argued that domestication was an unintentional outcome of relationships between humans and plants, and that the process followed three stages. First was incidental domestication: human dispersal and protection of wild plants in the general environment. Second came specialized domestication: the creation of locales in which plants and humans influenced each other fairly intensively. Finally there arose agricultural domestication: the culmination of the co-evolutionary process, producing plants adapted to a special set of humanly created conditions.

But Rindos also denied human intentionality in this process, seeing it as an outcome of natural evolutionary forces: "People could not intentionally domesticate a crop. However, they could, and surely did, favor those individual plants that were most pleasing or useful to them" (Rindos 1984, 86). This down-playing of human intentions would not today be accepted by many archaeologists, but the perspective that humans were adapting to plants and animals as much as plants and animals were adapting to humans gives an additional insight into the domestication process.

The Feasting Hypothesis

Reacting to those theories that envisage human communities as unwilling adopters of agriculture are those that consider the social context in which cultivation may have been developed, and the social factors that may have made it attractive. Thus British archaeologist Barbara Bender (1978) and Canadian archaeologist Brian Hayden (1995) have emphasized the key role that food and

feasting play in social competition. In many societies, those wishing to achieve rank and status do so by throwing feasts that create lasting dependencies between themselves and other members of the community who are unable to reciprocate on the same scale. Hunting and gathering would have provided only limited opportunities for this kind of social emulation, as the availability of wild resources was finite. The adoption of cultivation, however, made it possible for ambitious individuals to produce increasing amounts of food, which they could deploy in their strategies of social competition. Thus, despite the harder work that agriculture entails, it may in some circumstances have been eagerly embraced.

None of these theories provides an adequate explanation for the origins of agriculture in every region. Climatic factors may have played a key role, but these varied in importance from case to case. The co-evolution of human subsistence strategies and plant and animal domesticates highlighted by Rindos and others provides a key perspective in the understanding of longer-term change, but it does not explain why agriculture developed in specific times and places. The recognition that hunting and gathering are normally more cost-efficient than incipient agriculture strongly suggests that population pressure must have been one of the most significant factors. At the same time, the impact of human decisions and desires must not be overlooked, and social strategies will undoubtedly have played a part in individual cases at the local scale.