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Agricultural origins and early development

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Part I
Origins
1. Before the long sixteenth century
Agricultural origins and early development

E. N. Anderson

Countless theories of agricultural origin exist. Graeme Barker (2006: 383) gives an alphabetical list, with dozens of theories, mostly improbable or vague (see also Bayliss-Smith 2007: 133–34; Cohen 2009; Denham and White 2007; Denham et al 2007.)

Agriculture arose in approximately seven places. The earliest was in the Near East, around 9000–10000 BCE. Agriculture in China was almost as early, where millets (Setaria italica, Panicum miliaceum) in the north and rice in the center-south appear to have been domesticated separately by 8000 BCE. The New World had agriculture in Mexico, Peru and the lowland tropics by 5000 BCE or earlier. These appear to be three separate agricultural origins, although they may be connected. New Guinea invented agriculture independently, perhaps by 6000 BCE. The earliest North American agriculture north of Mexico appears in the Mississippi Valley around 2500 BCE; it involves native plants of the area and has no discernable connection with Mexican domestication. It may or may not be a separate event.

The earliest cultivated plants were usually grains. In Mexico, however, early cultigens included squash, gourds and chillies. In South America, tubers were early—potatoes in the mountains, manioc and others in the lowlands. New Guinea’s earliest agriculture was probably based on local yams and taro.

As R. S. MacNeish pointed out long ago (MacNeish 1991), the early centers of agriculture show common traits. They are mountainous or hilly, with complex interweaving of ecological zones. They are warm-temperate or tropical-alpine in climate. They have an enormous variety of plants and usually, fertile soil. Most are in areas with sharply seasonal rain; this puts a premium on producing much food in the rainy season and storing for the dry. All are at the centers of huge land masses, at or near points where great trade routes meet, thus maximizing opportunities for trade and information. Typically, different forms of early agriculture arose in these areas as part of wide regional development. Areas that were otherwise similar but existed as isolated cul-de-sacs never developed agriculture.

Many theories of agriculture are based on the assumption that people needed more food due to population increase and the death of Pleistocene megafauna (Cohen 1977), drought (Childe 1954), or some other reason. However, Carl Sauer (1952) pointed out that agriculture required time and effort to develop. Thousands of years were required to develop really productive agriculture (Barker 2006; Willcox 2007; Zeder 2008; Zeder et al 2007). People were generally well nourished at the time agriculture was invented, but became less and less so as they became more dependent on staple crops (mostly mere starch) (Cohen and Armelagos 1984). Agriculture
also led to diseases caught from domestic animals and to water pollution—though it also permitted civilization, sciences and the flowering of the arts.

Agriculture came well after the extinction of the megafauna, and developed in areas that were not dependent on hunting. Agriculture developed and flourished with the rapid rebound of plant resources after the Ice Ages. Agriculture was perhaps a response to more plant availability. It developed only in areas where highly diversified foraging and plant use already existed, and where some degree of sedentary life had developed.

The only theories that fit the facts involve trade, communication or spatial translocation of crops. Perhaps crops were moved from drying areas to moister ones (Childe 1954). Perhaps they were brought nearer the house to protect them from raiders and to make them more available for trade. In New Guinea, for instance, it was dangerous to go far from the village, so intensive agriculture developed (see Brown 1972; Meggitt 1977). Trade with nonagricultural neighbors was clearly important everywhere.

The regions of initial invention dominated intensification and innovation for millennia. In some cases, speakers of languages from those regions expanded their populations and moved outward, carrying agriculture with them and thus spreading the practice (Bellwood and Renfrew 2002). Other groups picked up agriculture from their neighbors. How much of agricultural spread was due to migration, and how much to borrowing, remains controversial.

New crops accumulated: protein sources, flavorings, medicines, spices, perfumes, and industrial and fiber crops. Animals (starting with dogs) were domesticated. The evidence fits a model of development more often for trade and luxury than necessity. Drug plants were soon domesticated; by far the most widely cultivated crop in the pre-Columbian Americas was tobacco. Ester Boserup’s theory (1965) of intensification driven by necessity is not widely applicable to such developments.

References

Boserup, Ester (1965), The Conditions of Agricultural Growth, Chicago, IL: Aldine.
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