

More about the Scattergram "Sedentary agriculture" * "Structural complexity"

In a discussion about the connection between traditional agricultural systems and structural complexity the role of sedentary forms of agriculture should not get confused with ATE, our indicator of agro-technical efficiency. There are a great number of structurally simple and small ethnic societies with low population density depending largely on agriculture. They usually are characterized by a semi-nomadic or semi-sedentary life style, complementing the food production by hunting and gathering. The point is: If the overall population density is low, even intensive agricultural production – often in gardens – usually is not associated with complex socio-political structures like class differentiation, administrative levels, large political units etc. As a result, the correlation between agriculture and structural complexity is close to zero.

In order to understand the functional links between socio-political complexity and the type of subsistence economy, the analysis has to be complemented by two variables: (1) the settlement pattern and (2) the type and intensity of animal husbandry. The correlations between the three elements are presented in table: 1

Table 1: Three Indicators of agricultural type

No.	Name of variable	Variablenumber	The variable stands for ...	1	2	3	4
1	(High) contribution of animal husbandry	21	... natural conditions limiting agriculture	—			
2	(High) contribution of agriculture	22	... non-extractive subsistence economy	-.50	—		
3	Settlement pattern: Sedentary vs. nomadic	23	... cultural type	-.53	.68	—	
4	Sociopolitical differentiaton (SPD)	12	... Power	.26	.11	.07	—

It is not surprising that the three variables of the production system (1-3) are significantly interrelated. More noteworthy is the fact that the two subsistence variables (1 and 2) and the settlement pattern (3) are only loosely correlated with structural complexity (SPD). Among the two types of subsistence production, the relevance of animal husbandry is even more correlated with SPD than agriculture's contribution. This result explains why agriculture is a weak predictor of SPD: Intensive sedentary agriculture seems to be a necessary but not sufficient condition for socio-political differentiation. High levels of SPD rarely occur without intensive agriculture. But many ethnic groups combine intensive agriculture with medium or low SPD. Such is often the case either in areas far away from old centers of civilization, or in areas with rigid ecological limits. Of course, these observations are valid under preindustrial conditions only.

The West Asian situation merits some further consideration because the culture of nomadic herders had and still has some influence upon the social and political structure of the region. Since agriculture was invented and the density of population increased accordingly during the last millenia, nomadic herding has developed into a highly specialised agricultural technique under difficult ecological conditions. It is found in areas with limited biomass production due to insufficient humidity, temperature or other factors relevant to plant life. Since cereals or tubers cannot be grown in such areas except in oases, human life to a great extent depends on roaming animals who can make use of the low-density vegetation.

By no means should nomadic herding be regarded as an exponent of an early evolutionary epoch. If any generalization is possible, it is that animal husbandry is a twin brother of an intensive, often irrigated, type of agriculture. Since ethnic groups often specialise on one or the other component in the overall system of subsistence production, the analysis of single ethnic groups does not suffice to reveal the inter-ethnic division of labour. The prevalence of intensive agriculture does not automatically exclude non-farm production. Instead nomadic herding is often related to farming, either within the same ethnic group or in a caste-like inter-ethnic division of labour. This is an atypical mode of production in several respects: On the one hand it constitutes an element of a highly complex agrarian and socio-political system. On the other hand the state building capacity (a sedentary form of power management) is both limited and fragile. The effect of this extensive type of cultural heritage is expected to differ substantially from the more sophisticated agro-technical systems which are combined with high socio-political complexity within a state framework of state organization.

Nomadic herding is an interesting indicator for other reasons as well. First, human adaptation to dry ecological conditions has created highly specialized cultural types, not only in West Asia and North Africa, but also in Mongolia and Inner Asia. Though, in the past, the proportion of people living in these wide areas was naturally limited, certain features of this cultural style had a deep impact on the history and culture of sedentary peoples from Europe to China. It also found a strong expression in the religion of Islam. Secondly, nomadic herding represents something like a "cultural bio-indicator". We may know nothing of the ecological conditions under which a population lives. But when nomadic herding is contributing substantially to the caloric intake of a group, certain parameters of their existence such as low population density, pronounced patrilineal lineages, slavery, polygyny, to mention just a few, will be more probable than others. As a result, the one-dimensional ATE-Index should be compared with the map on subsistence types from the ATLAS. Though the types also reflect intensity and productivity of agriculture, they differ more along qualitative criteria, e.g. sedentary versus nomadic production.