

From Hunting - Gathering to Food Production: A Brief Look on Impact of Early Man's Shift to Farming

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I. Introduction

Food has been one of man's foremost biological needs and obtaining food has always been his top priority. A study of world prehistory shows that man's transition from food gathering-hunting to food producing stage did not take place suddenly in any part of the world. It was more truly a process than an event. And, so far its positive significance in the history of mankind is concerned, it is not free from controversy. Although it provided subsistence bases for later civilizations it is hyperbolic to call it a giant step toward development or a revolution, etc. P. E. Smith remarks that the main significance of the development of food production lies in its consequences (Smith 1976: ix ; Chard 1969 : 183). It will be discussed in the following pages that not all the consequences of early man's shift from hunting-gathering to food-production were favorable for him.

The transition marks, in fact, a sharp contrast between the two phases of man's history, i. e., before and after the beginning of agriculture. These are two completely different pictures of man's relation with nature. Prior to the transition he was the part of the natural

world but later he began to get control over his environment. The whole history of man since then is the story of his deviation from nature. It will be relevant to deal first with the pre-transition hunting - gathering phase.

II. Food Gathering

Man has, in all circumstances, tried to adapt his environments. He has always managed to procure food from the surrounding resources and developed an adequate knowledge about the resources as well as the technical means to exploit them for his survival. Quite often he had to compete with other wild animals for food but he learned how to live in a symbiotic relationship with other competitors and the resources in varied environments. By late Pleistocenc man was well-adapted to this type of situation (Bender 1974 : 3). In other words, he was not always dependent on any one mode of food procuring on any particular region. This is so in today's gathering population as well. A modern survey of the hunting-gathering population shows the following mode of food procuring:-

Over 60° latitude	-	hunting
50°	"	fishing
below 50°	"	plant gathering

Using this analogy a picture of the Pleistocene hunter-gatherer population could probably be made. In any case, as far back in time one moves, the stronger would be man's relation with nature and the more stable will be the equilibrium between the consuming population and the food resources. So, although the name hunting and gathering suggests a somewhat mobile and even tougher way of life it was not always so. Man was in perfect equilibrium with nature which sustained him and other living beings. There have been some important studies on man's balanced relationship with nature in different parts of the world-relations that are not destroyed by human agencies through interference such as untimely and unnecessary exploitation of resources, or other forms of destruction that upsets the relationship. A brief discussion of such situation is given in the following section.

R. B. Lee's study of the Kung Bushmen of Botswana could be one appropriate example to see how a people can fully depend on resources other than agriculture with less strain and effort to get food. At least 60-80 per cent of the Bushmen's food comes from local vegetation equivalent to a cultivated diet like wheat, rice or maize in other societies. They have more than 80 edible food plants of different kinds and 54 game animals but they get their subsistence energy out of about 23 plants and 17 types of game. So, despite continuous expansion of the nearby settlers, the Bushmen live well above the starvation level with a technology equivalent to the stone age yet well below the carrying capacity of the contiguous range where they live. Natural and other calamities hardly affect their food supply. That is why Harlan thinks these natural systems are stable, permanent, reliable, and basic (1975 : 13). Besides that, the diet of the gathering people was found better than many cultivators in terms of caloric and nutritional content. They lacked chronic

disease and general health conditions were good (Lee 1979 : 37) After a careful recording of their subsistence activities Lee found that 2 1/2 days or 12-19 hours work was enough for a week's consumption i. e. an average of 3 hours of work every day.

Although heading toward extinction, the Kalahari Bushmen and the Eskimos are not the only people that live in nature and thus provide an analogy for the study of the pre-farming stage of man's life. Similar tribes still exist in Australia and some corners of South and Southeast Asia as well. In all the regions wherever they lived the significant features of their way of life and the physical environment which they lived in is fundamentally the same. That is, there exists a close relationship between man and his surrounding; man always tries to maintain balance between his need and the capacity of the resources. He is never starved as he does not interfere with the delicate balance out of his selfishness. He feels secure in his environment. That is exactly what was in the prehistoric age especially prior to the beginning of cultivation. Why, then, did man in some areas of the world deviate from the state of equilibrium with the environment or, what led him to undertake new types of subsistence in place of the old? These questions have generated disputes among scholars. But the question that concerns us here before making a comparison between the pre and post transitional phases is what actually is the nature of this transition and how did it take place or what its nature was. Ninety-nine per cent of the 2,000,000 years of his cultural history man has lived as a hunter-gatherer. The last 10,000 years have seen man making a shift from hunting-gathering stage to the domestication of plants and animals and ultimately a fullfledged cultivator of selected plants in selected areas. At one point of time he became able to use metals and produce energy, controlling natural sources

(Lee and DeVore 1979 : 3). That marks a great shift in the life of man. But was the shift a boon for him? A comparative study proves otherwise.

Scientific interest for the study of man's shift from the hunting-gathering stage to agricultural stage is not new. De Condolle in 1880's attempted studies of 245 cultivated plants in relation to their environment in different regions of the world. His approach was multidisciplinary. Roth continued the study but did not examine the archaeological data so important for arriving at any conclusion. He thought domestication of animals came first, then domestication of plants (Wright 1971 : 450). Binford suggested that climate changes caused the shift from hunting-gathering to food-production. V. G. Childe mentioned three stages of transition—

- a. plant collecting stage
- b. food plant experiment and stock breeding stage
- c. large scale production stage (1951 : 52).

Binford thinks while Childe's model based on environment-induced shifts was testable, Roth and De Condolle's models were untestable, hence idealistic. But, the environment theory also is not popular now (Alfred 1965 : 15-16). Jane Jacobs saw the transition through the ideas flowing from the city to the interiors whereas Carl Sauer ascribed it to the diffusory processes that took places in Southeast Asian tropics. Braidwood's theory is evolutionary. He outlines at least eight successive stages of transition as a continued process beginning from gathering and hunting to village farming community (Bender : 1975 : 25-26). He sees the change inherent in human nature, a proposition rejected by many.

Thus, the problem of transition is much

controversial. It is certain, however, that it suggests a phase in man's past when he brought about certain changes in the mode of his subsistence by moving gradually away from his long practiced hunting and gathering behavior and modifying the landscape. It marks a change in man's outlook too. This shift did not take place in a similar fashion or at the same time everywhere and the problem has not been fully explored and explained. In the Old World the transition began some ten thousand years ago and in the New World the sedentary agriculture began around 5000-1500 B. C. (Flannery 1972 : 223). But where it occurred, it proceeded nearly uninterrupted. West Asia, Mesoamerica and tropical Southeast Asia are regarded as the main centers where such a transition took place. Unlike the Old World, transition in the New World was not a sudden commitment, it was a gradual process leaving changes for reversion if need be (Chard 1969 : 185).

IV. Food production and its consequences

K. Flannery talks of the pre-food production Mesopotamia where man's way of life was conditioned by seasonal collecting in the broad spectrum (as the basic pattern of living). Both the New and Old World's have a long history of man's plant collecting phase before actually embarking on the agricultural phase (Flannery 1972 : 256-260). So far, man was following the courses of nature. But this stage of affairs did not last long in many parts of the world especially in the Old World where man found himself moving away from the stage of food collection. From a stage when he was participating in the natural environmental system of a particular region he moved to the next stage when he threw himself totally at the mercy of the system, to the degree that he could only

cultivate certain crop in one particular climatic Zone (Hole and Heizer, 1973 : 322). In fact, agriculture means man's interference in animal and plant reproduction and distribution system reaching its peak in ecologically oversimplified (and genetically vulnerable) monoculture (Smith 1976 : 12).

Once this dependency on few cultivated and domesticated plants increases it is not possible to depend on wild resources. Smith argues that this dependence necessitates the maintaining of the food producing economy and transformation of the traditional base of society, or might even change the physical environment (1976 : 17). Smith compares the situation with Galbraith's remark on man's becoming the servant of the machine he invented to serve him. Or, as Harlan says, it was plants that domesticated man (Harlan 1975 : 3).

Further change on the nature of dependency on cultivated food makes it impossible to revert back to a gathering economy. So, from the village farming communities grew the cities and the state. Several other attributes of modern civilization were firmly established and material progress was uninterrupted. But so far man's relation with his physical environment is concerned it was moving down hill, from where there was no return. Leslie White said the change was not a sudden idea but caused by the growth of population and the changing nature of climate when the hunting-gathering equilibrium did not work and a new improved technology had thus to be devised for the controlled growth of production (Wright 1971 : 459). A new relation between man and the plants was formed as man changed the natural environment into cultural landscape. Increased population and greater need for food induced more and quicker exploitation of available natural resources.

Cohen thinks that hunting-gathering mode of living is adequate only for small group of population. So the transition to agriculture was necessary to make an adjustment with the naturally growing population. The transition was a phase when man made experiments with the plants that responded favorably to his attention and tending and showed greater carrying capacity. He had to isolate these potential plants from the ancestral plants for morphological divergence, a technique man learned through experience (Rinods 1960 : 757). The number of the plants thus grew fewer all the time and the dependence on them was always risky.

It seems likely that agriculture was not the idea of one person or group of persons. It developed in a variety of ways in different parts of the world. But some of the consequences were far reaching and common for all mankind, everywhere. Barbara Bender in her book *Farming in Prehistory* discusses six important consequences of food production (Bender 1975 : 5-13). They are;—

- a) increase in the carrying capacity of the land,
- b) the development of sedentary societies,
- c) change in the structure of the society,
- d) craft specialization,
- e) surplus and leisure, and
- f) rise of civilization.

In other words, whatever we see around the modern civilization is primarily the result of man's shift to agricultural stage. Bender's list does not include several other drawbacks of the transition. It is clear that not all the consequences of food production were favorable for human society. They soon brought a lot of new pressures, deficiencies, and a chain of problems, more than man could ever handle; especially when food production moved farther

from the incipient level. Smith (1976) mentions the most significant consequences of food production as follows:-

- a) Increase in the numbers and density of the human population,
- b) Larger settlements, sedentism, and storage,
- c) Impact on physical environment,
- d) Technological innovation,
- e) Rise of political organization,
- f) Divisions of labour,
- g) Conflict and exchange,
- h) Cognitive systems and expressions (no arch. test done)
- i) Human health and biology,
- j) Redistribution of Races and Languages on the world map.

IV. Conclusion

Man's shift from hunting-gathering to food production was not a planned event and it has never been able to cope with some of the problems it has created. It has been argued that the shift was an answer to the growing population pressure felt by man (Patterson 1973: 50). But when many food collectors still live above the starvation level with less effort to procure food, agriculture has not fed the population well despite the use of ever growing technology. It has, in fact, caused series damages to the natural vegetation by killing plants in thousands through bio-chemical elements. The domesticated plants have gone through several artificial genetic changes and made fully dependent on man before they yield. This, on the other hand, has changed the natural ecosystem which has been made less diverse and much specialized (Patterson 1973: 50). This has diminished the adaptability of the system. Productivity can be increased only if its homogeneity is maintained and the climatic, physical conditions remain favorable. Man's fate thus hangs in a delicate balance. The carrying

capacity of land does not increase to the extent human population increases, whereas during the pre-agricultural time man always lived below the carrying capacity of his resources. Why, then, is the food producing a significant event in the history of mankind ?

As discussed above, this event has both good and bad aspects. Some of the consequences mentioned by Bender (1975) and Smith (1976) and quoted in the preceding sections can be considered its positive consequences. It has also been mentioned that the transition was a process and had it not occurred in the village of Jerico or Jarmo in eighth millenium B. C. it would take place in the Tehuacan Valley or the northern Chinese hills. Since man had not invented any effective control measures, population would gradually grow up, so the changes that took place with the transition would take place at any time in history.

With the rise of civilization, state, government, technology and leisure, several problems grew up also and they loomed large in the life of man. As his food resource narrowed to a handful of plants and animals his health conditions were deteriorated and challenged by several deficiencies and diseases that were unknown in the pre-agricultural society. Continuous destruction of natural vegetation changed the face of the landscape all over the world and culminated into serious geo-physical problems.

So, turning to the question once again, man's transition from food gathering-hunting stage to the producing stage is characterized by-

- a) an irreversible process of imbalanced relationship between man and his physical environment,

- b) selective improvement of few genetically changed but nutritionally insufficient sources of food,
- c) material support for the growth of cities and civilization, and,
- d) Increase of man's susceptibility to a host of psycho-physical ailments never known to him before. Considering the role of agriculture in the foundation and development of civilization the transition from hunting-gathering to farming is certainly a most significant landmark in the history of mankind.

Lastly, there is one more point that should be taken into consideration while making an assessment of man's transition to food production. Had not man taken a turn toward a new life-style marked by a change in the method of food procuring (economic) activities and continued to stay in perfect balance with natural conditions, progress would have remained static. There would have been no considerable growth in human population and no change in technology and/or culture. With the stereotyped mode of food producing human culture would not have evolved out of the Stone Age. So the move, no matter whatever may have initiated it, had to have certainly an epoch-making impact in human history.

Epilogue

The whole article has been of a more general description. But what is the picture of our part of the world in terms of food production? And more specifically, when did man here shift to food producing phase from the earlier hunting and gathering phase? It is a question hardly raised by our archaeologists. I venture a few sentences as an epilogue for this purpose as it is the most crucial topic to understand the evolution of civilization in this part of the world.

Regarding food producing in the Indian subcontinent, Indian archaeologist Vishnu Mitre's theory is that the earliest phase of agriculture developed in the Indus Valley-Baluch area with plants derived from West Asia. He also thinks pearl millet, sorghum, ragi, sesame, date palm, peas, etc. could be India's original contribution to beginning of farming (1977 : 586-87). Chronologically, agricultural technique in the region seems to have come through the Iranian Plaina sometime during the millenium B. C. Mitre's postulation could be considered convincing in the sense that the Indus Valley area was fertile then and the rise of this civilization was the result of the rise of farming in and around the area and trade that extended far beyond the valley. The village farming communities lying around the cities sustained the city civilization whereas some of them had earlier coalesced into it.

In the context of Nepal, however, the question raised above remains in the dark, unanswered. The Aryans who entered India through Sind and Punjab areas advanced toward the Gangetic Plains in search of fertile land, because they had already developed agriculture as important vocation. It is only my humble hunch that some of the non-Aryans and even Aryans displaced or voluntarily wandering entered Nepal terai, hills and valleys, and lived with the native communities who were practicing hunting-gathering and animal husbandry. The new migrant groups probably brought crude farming skill along with them and began employing it here. This happened long before the coming of the Kiratis in the political scene of Nepal. The Kirata period then could be called semi-agricultural phase when people living in the valleys and the river plains practised farming and domestication of animals whereas people living uphill practised hunting and gathering. The coming of the Lichhavis to Nepal marks the advanced stage of farming with

canals, varieties of edibles—cereals, plants, vegetables and spices. It then certainly took a long time to arrive this stage of evolution. A research in this evolutionary history or this specific aspect of Nepalese prehistory only can furnish with the link between phases of Nepalese civilizations and it is time our archaeologists make venture on that.

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