

AGRICULTURAL TYPOLOGY : A THEORETICAL PERSPECTIVE

N. CHENDRAYUDU & Y. V. RAMANAIAH, Anantapur

Agriculture is one of the most complex and dynamic expressions of human primary economic activity performed and its structural, functional and development capacities depend upon the interaction of several attributes or elements. Obviously, this complex nature of agrarian system varies over both space and time. Hitherto, the recent agrotechnologies have brought about a revolutionary change in the scenario of agriculture, especially in developing countries like India. Above all, the present multidimensional and multi-variable agricultural spectrum has to be scientifically investigated for comprehensive understanding of the spatial organisation of agriculture. In this attempt, the most interesting research in the field of agricultural geography focuses on the systematic classification of agriculture by grouping the inter-related and inter-connected attributes of agriculture. In this perspective, agricultural typology is being identified as one of the most recent methodological tool and hence, it is devised for better understanding of the composite nature of agrarian landscape, the tendencies as well in the changing spatial organisation of agriculture at different hierarchical levels.

THE CONCEPTUAL FRAMEWORK OF AGRICULTURAL TYPOLOGY :

In the field of agricultural geography, the theme of spatial variation has often found itself expressed in attempts to sub-divide some

areas into a set of relatively homogeneous agricultural regions. The typology implicitly or explicitly aims at classifying the complex reality of agriculture, making it more comprehensible, a systematic or taxonomic concept. As far as typology is concerned, the agricultural type, is the end product of the summation, synthesization, integration and unification of mutually related distinctive inherent internal endogenous characteristic features of agriculture, namely, social, operational, production and structural attributes.

As far as typology is concerned, it is considered by some theories of classification as a special kind of classification, in which classes, i.e. types, are not established in advance, but identified in an aggregative way, by grouping individuals around certain cores or models, recognised as the most typical. Such groupings are not separated from one another by the tight limits, but their limits may overlap, making various transitional forms (Kostrowicki and Szyrmer, p. 9-10, 1992). Therefore, as compared with the other kinds of classifications, the typification is much closer to systematics or taxonomy, than to regionalisation. When comparing with the other systematics, typology is the closest to biological classification (Kostrowicki and Szyrmer, 1992), the type of agriculture, understood as a supreme notion focusing all the important properties of a given agriculture.

Typology is a supreme and overall concept. It covers all other concepts of agricultural classification, including such partial classifications as systems of land tenure, land use systems, orientations or combinations of crop growing and / or livestock breeding, farming systems, types of farming (Kostrowicki and Szyrmer, p.11, 1992). The scheme of typification has less theoretical frame and more taxonomic value since it is in full support of quantitative data at all scales i.e. from agricultural holding to global level.

Agricultural typology is a complex and dynamic concept, which involves the grouping of 28 variables of social, operational, production and structural attributes of agriculture and the changes that undergo therein. It is based on the assumption that "every agriculture as a whole is not a simple sum of activities or elements of which this notion consists, but a set of attributes interrelated with one another and with external natural and other conditions as well, in which a change of one component brings about a change in the remaining ones. The agriculture thus-understood may be recognised as a system complying with the system approach or the system theory (Kostrowicki, 1976). So far as the system approach is concerned, the concept of agricultural typology should be treated as a highly interrelated phenomena or a complex system (Mandal, p. 186, 1982). Romanaszczony (1981) has stated that typological studies approached dynamically and spatially, the type of agriculture is treated as a systematic notion, applied in agricultural research as an entity, i.e., it is a synthesis of properties describing agriculture as a heterogeneous production complex. An agricultural type is a dynamic notion because characteristics of agriculture change under the impact of transformations occurring in external conditions which initiate typological changes as an aftereffect. Therefore, any changes that occurs in physico-socio-

economic and techno-organisational as well as political policies certainly initiates change in the formation of agricultural types.

Like biological classification, agricultural typology is hierarchical and aggregative (Kostrowicki and Szyrmer, p.10, 1992) in character. Because, agricultural types may be of various orders, ranging vertically from lower order to higher order (1st order, 2nd order and 3rd order types) and horizontally from the individual agricultural farm (agricultural holding), through several intermediate administrative units like villages, taluks, districts, states, provinces, countries, etc., to global agricultural types. Hill (P. 89, 1986) has stated that typology implicitly aims to be universal, in that it is designed to be applied at differing scales, from the country to the local region, and possibly even to the individual farm. He has opined that the application of typology at the country level would be virtually meaningless, though having the great advantage that aggregate data could be used. At micro-regional scale an agricultural holding is considered as the basic unit in agricultural typology, as it is the only real unit of operation. At the same time, however, despite all its deficiencies, it is permissible to use other units (administrative or whatever convenient) in macro-scale studies, and particularly when dealing with a large number of small-scale holdings for which no separate data are available (Kostrowicki, p. 17, 1970). In a vast country like India where the so-called village agriculture is witnessed with field plots belonging to too many number of small holdings, scattered and intermingled throughout a village territory. The aggregate data for agricultural holding are not available and also not being maintained in India. In such cases, some detailed sample studies are highly recommended to examine the differences in the development of different agricultural forms at micro-regional scale.

The agricultural type is defined as an end product essentially based on similarities between individuals of inherent attributes of agriculture. It is an empirical model to illustrate the overall picture of an agrarian landscape. The external conditions whether natural or exogenous, in which agriculture develops, could not be used as a basis of agricultural typology. The external or exogenous conditions, such as environment, location, transport and marketing, the effects of demand and supply on agricultural production, prices, political policies, etc., may certainly play an important role in the formation and development of agricultural types and their attributes, and hence, they are taken into account to explain why and how a particular type has emerged in a particular area and at a particular period. "Their study is therefore necessary for both understanding and interpreting the development and spatial distribution of various agricultural types" (Kostrowicki and Szyrmer, p.11, 1992).

In a series of studies on the spatial organisation of agriculture, typology is rather identified in the recent times as an innovative tool to understand the complex nature of agriculture. Because it being the end product of a long period of research and discussion, Roy (1986) has opined that "Agricultural typology, being a recent field of investigation in geographical learning, tries to manifest the status of manland participation projecting a composition and growth of an overall picture of arable landscape and agricultural system through classifiable innovations". This empirical tool sometimes may be subjected to some inherent weaknesses mainly the reliability of data. In some cases, it has been necessary to be subjective for lack of any published data. On the other hand, this recent methodological tool has to seek wide applicability and practical significance over the other studies of spatial organisation of agriculture.

RELATIONSHIP BETWEEN AN AGRICULTURAL TYPE AND AN AGRICULTURAL REGION :

The term 'type of agriculture' is the most comprehensive one and which is accepted with supreme notion in agricultural typology rather than the term 'system of agriculture'. Both the concepts 'Agricultural type' and 'Agricultural system' have had the common core of classifiable innovation which meant to classify a complicated reality of agriculture to make it more comprehensible. In this endeavor, both the words are understood as synonymous, but there is a clear difference in their conceptual statements and methodologies. The 'agricultural system' based on the Systems Theory is different from the agricultural type. According to Olmstead, (P. 31 1970) the systems approach of agriculture emphasizes that "the geography of agriculture is more than the geography of the crop and livestock products that result from agriculture and the geography of agriculture is concerned with agricultural or farming systems, and with the elements, operating units, functions, characteristics and inter connections of those systems, etc., Whereas agricultural type is more or less an established form of crop growing or livestock breeding, characterised by a set or association of certain distinctive individuals and not all. Kostrowicki (p. 19, 1970) has also opined that 'type' and 'system' should not be understood as synonymous. The term 'type of agriculture' is broader and if the term 'system of agriculture' is to be applied despite possible confusion, it should rather be used as a synthesizing notion of all functional aspects of agriculture, and understood as an assemblage of means and practices aimed at achieving agricultural production and maintaining soil fertility, irrespective of the social and production aspects of agriculture. Of course, the place of agricultural types or systems in the general theory of systems should

be always clarified.

Typology and regionalisation which are dominating and widely used concepts in agricultural geography are very often confused with each other. Bunge (1962) believes that classification (types) and regionalisation are synonymous and all sciences have them in their history of classification or taxonomic phase and geography hence is not exception at all. Though both the concepts are synthesized notions, they belong to two distinctive categories. A type is a systematic or taxonomic concept and its identification is essentially based on similarities between individuals. Since individuals characterised by similar attributes may occur repeatedly both in time and space, the same type can be identified in various territories and in various periods of time (Kostrowicki and Szyrmer, p.9, 1992). The spatial distribution of agricultural type do not necessarily form any continuous areas but usually are dispersed and intermingled with other types. In contrast, a region is a spatial or territorial concept. It is delimited on the basis of differences between areas, rather than on similarities between individuals. Hence, region is a contiguous portion of the earth surface extending within defined and determined limits and is characterised by a particular set of phenomena which are really related to and distinguished from the neighboring or bordering areas which impart its unique character. In the case of 'typology' agricultural holding is the real and basic unit of operation whereas in regionalisation that does not arise other than that of areal grouping of the agricultural phenomena.

Both type and region are hierarchical in character. Based on their similarities, individual types of lower order or grouped together into types of higher order, irrespective of their distribution on the earth's surface, while regions of lower order always form a territorial part of

regions of a higher order. (Kostrowicki, p.20, 1970). Irrespective of the differences and similarities in the concept and methodology of a 'type' and 'region' the typification of agriculture will constitute a good basis for agricultural regionalisation. Therefore, an agricultural regionalisation. Therefore, an agricultural typology is a complementary tool to agricultural regionalisation.

SCOPE AND SIGNIFICANCE OF TYPOLOGICAL STUDIES :

The IGU Commission on Agricultural Typology is intended to serve two purposes; first, to explore principles and criteria to develop techniques and methods of identifying types of agriculture; and second identify the types of agriculture as well as their transformation so as to identify the changes taking place in the spatial organisation of agriculture with a view to applying the obtained results to intelligent planning and/or for forecasting further agricultural developments (Jasbir Singh and Dhillon, P. 248, 1984). Therefore, the identification of agricultural types in the diversified agrarian system of a country like India is considered to be a primary importance in agricultural planning and development. Shajaat Ali (P. 158] 1986) has opined that not only from the academic point of view, but also from the point of economic development of a country, formulation of agricultural typology of both large and small countries, has tremendous implication in their economic and regional development planning.

Agricultural typology is treated as an important scientific tool for a better evaluation of the present use of natural resources and other inherent conditions of agricultural development various forms of agriculture and their future possible prospects as well. Identification of weaker, traditional and static regions on the basis of typification of agriculture is of

paramount importance for the implementation of suitable and effective regional agricultural development plans and programmes to achieve sustainable agricultural development. In a developing country like India where agriculture is the main economy, there is a tremendous urge for typological studies at microregional scale for regional agricultural development and economic planning. Kostrowicki (P.17, 1970) emphasized : "based on a better understanding of properties and achievements of the same or similar forms of agriculture - a better definition of directions of further agricultural development through the transformation of the present forms of agriculture into others, more effective one".

THE REVIEW ON AGRICULTURAL TYPOLOGICAL STUDIES :

Studies on agricultural typology have gained considerable importance in the last two decades, as is evident from the volume of scintillating researches made by scholars of different countries, who sought to identify the agricultural types of different hierarchical orders.

The Institute of Geography and Spatial Organisation of the Polish Academy of Sciences has done a marvellous and a commendable job in the field of agricultural typology. At the outset, realising the importance of typological studies for understanding the complex agricultural characteristics and the tendencies in the changing spatial organisation of agriculture, the Commission for Agricultural Typology under the Chairmanship of Jerzy Kostrowicki (Poland) was first established by the General Assembly of the International Geographical Union (IGU) at the meeting held during the xx International Geographical Congress in London, in July 1964. The main tasks of the Commission were (i) to establish the principles, criteria, methods and techniques of agricultural typology, (ii) to initiate, promote

and coordinate the regional studies aiming at identification of agricultural types of various orders based on criteria and methods recommended by the Commission, and (iii) to work out the typological and regional classification of world agriculture (Kostrowicki, P. 11, 1970).

The preliminary scheme of World types of agriculture based on a broad classification of the principles, criteria, methods and techniques of agricultural typology (Kostrowicki and Tyszkiewicz, 1970, 1979; Vanzetti, 1972; Reed, 1975; and Kostrowicki, 1977) was presented by the IGU Commission on Agricultural Typology to the IGU Regional Conference, held in Hungary in 1971 (Kostrowicki, 1971). The discussion at the 7th Commission meeting at Frontenay-aux-Roses, France, led to the elaboration of further improved version of the scheme of world types of agriculture which was published in 1976 (Kostrowicki, 1976). The results of the application of that version in several countries were presented and discussed at the 8th and last meeting of the Commission held in Odessa in 1976 (Kostrowicki and Tyszkiewicz, 1979).

Based on the guidelines, principles and methods suggested by IGU Commission on Agricultural Typology, the Institute of Geography and Spatial Organisation, Polish Academy of Science conducted a series of typological studies covering the whole of Poland and neighboring countries (Kostrowicki, Szczesny, Tyszkiewicz, Szczesny Stola, Matusik, Biegajlo, Kulikowski Szyrmer etc.). In order to study the transformation of the types of agriculture of Poland, typological study is made in 1970-1976-1983 on intensive level taking into account the individual farming.

The pioneering work, in this direction has been done by Kostrowicki and his team in the preparation of typology of European agriculture

based on the material collected for the types of agricultural map of Europe. The final draft of the map was finished in April 1983 and presented in 1984 to the xxv International Geographical Congress in Paris. Many scholars from various countries contributed to the elaboration of typological map of Europe. They are Jacqueline Bonnamour, Chantal Gillette (France) B. Dumortier (Ireland); A. Thormodsæther (Norway); Olof Janson (Sweden); K.M. Jensen (Denmark); Berado Cori (Italy); A. Gatzoyannis (Greece); G. I. Gorbunova (U.S.S.R.); B. Galczynska, R. Kulikowski, W. Stola, R. Szczesny and W. Tyszkiewicz (Polish Geographers from the Institute of Geography).

Many other scholars have also made signal contributions to typological studies of different countries in the world. Szczesny (1986) has attempted to study the agricultural typology of the Alpine areas of Austria and Switzerland; Tyszkiewicz (1986) attempted typological study on Swedish agriculture; Hill (1986) on Malasian Region; Shajaat Ali (1986) on typology of Bangladesh; Kampp (1986) on types of farming in Denmark; Agboola (1973) on typology of Nigeria, Enyedi (1964) on Hungarian agriculture; Galczynska (1984) on Bulgaria; Gregor (1975) attempted to study typology of different parts of U.S.A., Nordgard (1977) on types and regions of Norwegian agriculture; Pulyarkin's (1979) of typological study of agriculture in developing countries; Rikkinen (1983) on Finland; Scott's (1983) study of the typology of Australian agriculture and Troughton (1979) on typology of Canada

are important. Reed's (1975) work on Agricultural Typology and Land Use; and Venzetti's (1975) work on Agricultural Typology and Land Utilisation are praiseworthy publications on typological studies.

In India, substantial work has not been on agricultural typology. Albeit, a few geographers have made signal contributions on typological studies. In this endeavor, Vijaya Ram Singh (1975) has attempted to study agricultural typology of India which yielded the general types of agriculture at State level. His edited volume "Perspectives in Agricultural Typology" (1986) is a commendable attempt towards typological studies. L.R. Singh (1975), Jasbir Singh (1983) and Roy (1986) have also attempted to study the typology of agriculture of India at macroregional scale. The other geographers of India who have attempted to study the typology of agriculture are Sharma (1983) typology of Rajasthan; Panda (1979) - typology of Madhya Pradesh, Lal (1986) - typology of Central India and Khatri (1989) - typological analysis of the tribal region of Southern Rajasthan etc., From the above works, it is clear that most of the works have been done at macro-regional scale and subsequently awaiting a wide application of typological technique at micro-regional scale by taking individual farm holding as the basic unit of study in agricultural geographical research in India. This vacuum has to be filled up in future investigations in the field of agricultural geography for the sake of scientific agriculture planning.

REFERENCES

- Agbola, S. A. (1973) : Agricultural typology of Nigeria : Problems and prospects, (in) *Agricultural Typology and Land Use* by Reeds L. G., (ed). Hamilton, Ontario.
- Enyedi, G. (1964) : *Geographical Types of the Hungarian Agriculture* (in) Applied Geography in Hungary, Ed. Budapest. Ed. Budapest.
- Galczynska, B. (1984) : Agricultural Typology of Bulgaria *Geographia Polonica* 50, 169-178.
- Gupta, N.L. and Khatri, L.C. (1989) : Agricultural Typological Analysis: A case study of the Tribal Region of

- Southern Rajasthan, Annals of the *National Association of Geographers*, Vol. IX, No. 1, 41-48.
- Hill, R.D. (1986) : The Malaysian Region and the World Typology of Agriculture, (in) *Perspectives in Agricultural Typology* by Singh, V. R. and Singh, N.K.(eds.), Star Distributors, Varanasi, 89-112.
- Jasbir Singh, (1983) : A Typology of Agricultural : The Indian Experience. *Geographic Polonica*, 46, 49-70.
- Jasbir Singh and Dhillon, S. S. (1984): *Agricultural Geography*, Tata McGraw-Hill, New Delhi.
- Kampp, A. H. (1986) : Types of farming in Denmark, (in) *Perspectives in Agricultural Typology* by Singh, V. R. and Singh, N. K. (eds.), Star Distributors, Varanasi, 218-229.
- Kostrowicki, J. (1970) : Types of Agricultural in Poland. A Preliminary Attempt at a typological classification, (in) *Essays on Agricultural Typology and Land Utilization* by Kostrowicki, J. and Tyszkiewicz, W. (eds.), Geographia, Polonica, 19, 99-110.
- Kostrowicki, J. (1973) : The Typology of World Agriculture. A Preliminary Scheme, (in) *Agricultural Typology and Land use* By Reeds, L.G. (ed.) MC Master University, Hamilton, Ontario.
- Kostrowicki, J. (1982) : The Types of Agriculture Map of Europe. *Geographia Polonica* 48, 79-92.
- Kostrowicki, J. and szymmer, H. (1992) : *Agricultural Typology Guidelines*, Polish Academy of Sciences, Institute of Geography and Spatial Organisation *Warszawa*.
- Kulikowski, R. (1989) : Changing Spatial Patterns of Polish Agriculture, *Rural Systems*, Vol. VII, No. 1, 39-56.
- Lal, M. (1986), *Agro-Types* in Central India, Star Distributor, Varanasi.
- Mandal, R. B. (1982) : *Land Utilisation : Theory and Practice*. Concept Publishers, New Delhi.
- Mohammad, N. (ed.) (1981) : *Perspective in Agricultural Geography*, concept Publishers, New Delhi.
- Norgard, A. (1977) : Types and Regions of Norwegian Agriculture. *Norsk Geogr. Ridsskrift*, 31, 15-26.
- Olmsted, O. (1970) : The Phenomena, Functioning Units and System of Agriculture (in) *Essays on Agricultural Typology and Land Utilization*, by Kostrowicki, J. and Tyszkiewicz, W. (eds.), Geographia Polonica, 19, 31-42.
- Panda, B.P. (1979) : Agricultural Types in Madhya Pradesh, *Geographical Polonic*, 40, 133-150.
- Pulyarkin, V.A. (1979) : Typological Study of Agriculture in Developing Countries, *Geographica Polonica*, 40, 11-16.
- Reeds, L. G. (1975) : *Agricultural Typology and Land Use*, Hamilton, Ontario.
- Rikkinen, K. (1971) : Typology of Farms in Central Finland, *Fennia*, 106.
- Roy, B.K. (1986) : Agricultural Typology in India- Some Issues, (in) *Perspectives in Agricultural Typology* by Singh, V. R. and Singh, N.K. (eds.), Star Distributors, Varanasi, 148-157.
- Scott, P. (1983) : The typology of Australian Agriculture, *Geographia Polonica*, 46, 7-20.
- Shajaat Ali, A.M. (1986) : Agricultural Typology of Banladesh, (in) *Perspectives in agricultural Typology* Singh, V.R. and Singh, N.K. (eds.), Star Distributors, Varanasi, 158-173.
- Sharma, B.L. (1983) : A Typological Analysis of Agriculture in the Rajasthan State, *Geographia Polonica*, 46, 71-77.
- Singh, L. R. (1975) : Agricultural Typology in India Methods and Techniques, (in) *Agricultural Typology in and Land Utilisation* by Venzetti, C. (ed.) Verona, 311-326.
- Stola, W. (1970) : Procedure of Agricultural Typology. The Case of Poniidzic, Central Poland, *Geographia Polonica*, 19, 111-118.
- Vanzetti, C. (1972) : *Agricultural Typology and Land Utilization* Center for Agricultural Geography, Verona.

ADDRESS OF THE AUTHOR

1. Dr. N. Chendrayudu
&

2. Dr. Y.V. Ramanaiah
Department of Geography,
S.K. University, Anantapur - 515 003 (A.P.)