



Reconstructing Historical Communities by Computer

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The 1st century A.D. seems to have brought little change in the pattern, but an intensification of the use of the land is tokened by an increase of sites attributable to the 2d and 3d centuries. A string of new sites along the older river alluvium to the east of Interamna is particularly noteworthy. This period is followed by one for which there is at present no evidence whatsoever: the lack of sites producing pottery attributable to the 4th to 6th centuries is total. This is perhaps the most puzzling feature of current results, and efforts must be concentrated on deciding whether this gap denotes considerable depopulation of the area (despite the existence of at least one 5th-century inscription from Interamna itself, suggesting the survival of a local aristocracy somewhere) or testifies to social changes which rendered the majority of rural inhabitants incapable of purchasing the finer types of imported pottery which are most easily recognized.

Present evidence also shows a total lack of recognizable sites of early medieval date. This is, however, less surprising, since insecurity might well have driven the valley inhabitants back to occupy more defensible points even before the phenomenon of regular *incastellamento*, usually dated to the 9th century. Special

efforts next season will be made to visit specific sites mentioned in documents of the Mt. Cassino archives and to examine areas which might have attracted settlement in times of insecurity. Some of the side valleys are known to have served as places of refuge as late as World War II. Attention will also be given to the establishment of criteria for the dating of the local types of coarse pottery, a tradition which unfortunately seems to have changed little over the centuries.

It has already become clear that this region is one in which the pattern of rural settlement is particularly susceptible to the changes brought about by the presence or absence of a central authority strong enough to create peaceful conditions. At the same time, the absence of 4th-century evidence suggests that this was not necessarily the only factor involved. It will be necessary to extend the survey over a still greater variety of landform types in order to estimate the role of topography and soil conditions. Both the recovery and the analysis of the evidence (including the medieval documentary sources) present a number of challenges, and the results appear likely to offer an important contribution to our appreciation of regional variations within the Italian peninsula.

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Recent work by anthropologists on villages in Japan, China, Switzerland, Sicily, and elsewhere has shown the way in which series of historical data often enable us to answer questions previously beyond the reach of anthropology. A current project financed by the Social Science Research Council (U.K.) and located in the Department of Social Anthropology at Cambridge University is attempting similar work. The records consist of all the surviving documents for a parish in Essex (population 1,000) and one in Cumbria (population approx. 2,500) over the period 1400–1750. Wills, parish registers, manor court rolls, and ecclesiastical and civil court records survive in great quantities. Their quality and nature have been described in a recent work by Macfarlane, Harrison, and Jardine (1978). This book explains the method by which these records are broken down into items and reassembled manually, making it possible to ask a large range of questions of the great mass of material. Alongside the manual analysis, we have been designing a computerized system for dealing with the data. We have developed a system for putting in uncoded and unstructured complex data in their original form and word order. The system represents the semantic structure of the source document as a network each node of which is associated with source text and represented by one of a number of categories. The 14 categories we use have been found to be complete for our purposes and reflect our interests, but they are not necessarily those that would be required by others with differing interests. The links in the network have no information associated with them; they represent only the directions of the relations between nodes. A system of nested brackets around elements of the text breaks the data down into this structure. The text within each bracket is associated with a particular node, while the bracket shape refers to the direction of the link.

The material in this form is stored within a relational database which has been specifically developed for the project. In conjunction with this we have a specially designed query

language which provides a procedure-oriented interface. This system is both powerful and portable and, by use of relational algebra, will allow complex queries to be asked of the data. We considered it important to have a language which would allow the user to write complex and sophisticated queries without necessarily having a great knowledge of computing. We also found that the development of this powerful language was a prerequisite for any attempt to link records within the computer. In the next two years we hope to evaluate and further refine the language and query the data. We also hope to attempt at least partial automatic record linkage. Documentation of this will also be undertaken during this period. Eventually we hope to interface the system to one of the standard statistical packages such as SPSS. We hope thus to create a data-processing package for the social sciences which will enable historians and anthropologists to avoid the constraints of numerical coding and fixed format input characteristic of other packages.

It is clear that one cannot wait for the completion of a project such as this before one starts to ask or answer questions. We have therefore begun to interrogate what is perhaps the most complete set of documents ever assembled about two small places over such a long period. With this material we are in a position to test many of the general theories concerning the nature of the supposed transition from feudalism to capitalism of the first industrial nation. We are able to test Marxist and other models of social change. The preliminary results have been very surprising. They suggest that the framework which has been developed during the last 40 years by sociologists and historians and, to a certain extent, anthropologists to explain the transition to the "modern" world is both crude and, in many respects, mistaken. This suggestion has been developed at some length in the first substantive product of our research, Macfarlane's (1978) *The Origins of English Individualism*, which challenges the views not only of Marx, Weber, and other major sociologists, but also of many of the leading contemporary historians. Not only does it suggest that many of the central features of sociological thought are incorrect, but it calls into question a number of the grander speculations of anthropologists (for example, those of Louis Dumont in *Homo hierarchicus* and *From Mandeville to Marx*) based on inaccurate historical accounts.

The surprising results come from making a minute analysis of landowning patterns, rates of social and geographical mobility, and the size and structure of the household. The discrepant-

cies between predictions and the results of detailed analysis of the material reinforce and expand recent work in historical demography. This work has challenged many of the largely unexamined assumptions about the past, particularly in relation to the nature of the family and marriage. It appears that Englishmen at least as early as the 15th century were far more mobile, individualistic, and market-oriented than we hitherto supposed. In fact, it is difficult to find any real resemblances to the traditional peasant societies described by anthropologists for other parts of the world as far back as the detailed English records go, that is, to the 13th century. These are conclusions which one cannot base entirely on the local records which are being examined in this project, but without the very detailed analysis of many thousands of interactions and transactions shown by overlapping documents it would have been impossible to arrive at them. It is clear that in order to interpret the material which is currently being computerized, a far better predictive framework will have to be devised. It will also be

useful to have other sets of data from other civilizations, held in a similar data structure, with which to compare our material. Only then will it finally be possible to decide how deviant the English case is. At the present all we know is that there is a strong presumption that the English had ceased being a "peasantry" at least 200 years too early for conventional accounts. England's premature industrialization and "modernization" and the odd effects of English colonization in various parts of the world, including New England, are partly explained by this anomaly.

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