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3. MODERN LAND USE VERSUS THE PAST:

A CASE STUDY FROM CALABRIA

Albert J. Ammerman

Introduction

It has become common in the more recent literature on prehistory, at least in some quarters, to turn to the modern landscape as a guide to the past. The underlying assumption is that the landscape, acting an an environmental constraint, gives rise to a concurrence between prehistoric and contemporary modes of economic exploitation in a given area. By studying modern land use, it is believed, we can gain insight into land use in the remote past. An aim of this article will be to raise some questions about such an approach. A thesis to be developed here, as the title indicates, is that perhaps we are not paying enough attention to differences between modern and prehistoric land use. A case study involving the Acconia area of Calabria will be examined as a means of developing the argument. Survey work and excavations (Ammerman and Shaffer 1981; Ammerman 1985) have revealed dense patterns of neolithic occupation in the dune area at Acconia. There was, in fact, a twofold motivation for undertaking the mapping of modern land use at Acconia which is located on the Tyrrhenian coast of Calabria. In previous work (Ammerman and Bonardi 1981, 340), it was possible to show that there is a close relationship between the visibility of prehistoric sites on the land surface and the presence of so-called 'geomorphological' windows on the landscape. There was the further suggestion that the occurrence of such windows might, in turn, be associated in some cases with certain practices of modern land use. While the question of the role that modern land use may play in leading the way to the exposure of a prehistoric site (and over the long run in acting against the archaeological record as the site is subject to increasing disarticulation) is one of considerable interest, it is not the question that we intend to explore in this article. Rather we would like to turn to the other motivation as mentioned above: the issue of the extent to which the landscape, as we see it today, can be used as a means of making inferences about economies and settlement patterns in prehistory.

One of the things that may encourage us to think that the present offers a guide to the remote past is the persistence of what appear to be archaic ways of life. For example, one could still see '<u>contadini</u>' driving oxcarts on unpaved country roads at Acconia in the mid 1970s. When the student of prehistory encounters the man on the Acconia oxcart, it can occasion a slight weakening of the knees: such a scene

makes it possible in one's mind to travel back through centuries. However, when the same man is encountered in the corridors of a modern office building in Catanzaro where he has come to examine cadastral records related to the holdings of his family, the reverie is broken. Each plot of land on the landscape has, in fact, been carefully measured by the state, assigned an identifying number, and assessed a tax value to be paid each year by its owner. Behind what initially appears to be an archaic way of life, there is a fully modern one.

One of the limitations of much of the work that has been done by prehistorians on modern land use is its superficial character. There is a lack of characterisation in any detail of what one actually sees on the landscape. There are some notable exceptions such as the study on Melos by Wagstaff and Augustson (1982), who are incidentally geographers and not archaeologists, but in general prehistorians have tended to be in something of a hurry. At Acconia, we have tried to make a conscious effort to slow down and to develop a characterisation in greater depth, which has involved the field-by-field mapping of land use. It is worth adding here that when the strategy of slowing down and taking a more intensive approach to coverage was adopted as part of the original survey for prehistoric sites at Acconia (Ammerman 1985), it proved to be highly productive. The approach of taking a smaller area and examining it more closely has parallels with the strategy in social anthropology in which emphasis is placed upon what has been called 'dense description' (Geertz 1973). The hope in both cases is to draw large conclusions from small but very densely textured facts.

Some background on site catchment analysis needs to be introduced at this point, since it is an approach that has been employed in previous studies of land use in Italy (for example Barker 1975; Jarman and Webley 1975). Vita-Finzi and Higgs (1970) conducted the first site catchment study which was concerned with the economies of Natufian sites in the Mount Carmel area of Palestine. The basic idea, as elaborated by Higgs and Vita-Finzi (1972), is that a prehistoric site can be regarded as having a 'territory', which is defined as the area habitually exploited by its inhabitants. In order to understand how a group met its subsistence needs, it is useful to characterise the environment within such a territory. This is effectively done in terms of the classification of soils. Operationally, four radial transects of a fixed length or a specified travel time are made in cardinal directions from the site. The map that is produced in this way - how a full two dimensional map is obtained from four radial transects remains a trade secret - makes it possible to estimate the percentages of different soil types (arable, grazing and so forth) within the site territory and permits the analyst, in turn, to make 'an assessment of past and present economic potential of the site territory' (Higgs and Vita-Finzi 1972, 36). It is worth noting that the 'economy' of a site is

defined almost exclusively in terms of subsistence. This is a reductionist assumption that we shall return to below.

Probably the best known criticism of the traditional approach to site catchment work is that by Flannery (1976).[1] He is not content with drawing circles of essentially arbitrary radius around a site in order to demarcate its territory. As an alternative, he proposes a more empirical approach. The analyst should begin by looking at the remains of plants and animals recovered during the course of excavations at a site and then try to locate where they would have respectively come from on the landscape surrounding the site. The approach that Flannery advocates is illustrated by means of a case study from Mesoamerica. The real problem, of course, is that his approach requires just the kinds of information that site catchment analysis was meant to obviate in the first place. As a short cut to economic discourse in prehistory, a catchment analysis could be carried out at a site even when direct evidence on plant and animal exploitation was not available. In response to criticisms such as those of Flannery (1976) and Hodder and Orton 1976; Davidson 1981; Bintliff 1981) has stressed that site catchment analysis is only concerned with 'land potential'. But the more explicit statement of the objective of the analysis in terms of economic potential, if anything, only makes matters worse. Discussions of economic potential necessarily entail the use of economic models, which is another point we shall return to. Site catchment analysis makes the claim of being a technique or method of empirical analysis. In actuality, it is essentially a model in disguise.

Some Aspects of Modern Land Use at Acconia

The study of land use to be described here was conducted in the spring of 1980 and consisted of two main components.[2] The first was the mapping on a field-by-field basis of the crops grown in an area which covers some 7 km.^{2} at Acconia. The second involved the use of cadastral records in order to develop a map showing the owner of each field in the same area. An attempt will made to present only some of the main results of the study in the space that is available here. For purposes of recording in the field, we were fortunate to have at our disposal a series of aerial photographs in colour and at a scale of 1:5,000 that had been flown in the spring of 1977. On the photographs, resolution is such that field boundaries and even individual trees and vine rows can be clearly seen. The mosaic of crops shown in Fig. 3.1 includes more than three hundred fields that were individually mapped in 1980.

Seven main classes of land use are distinguished on the map.[3] The first three - fruit trees, olive trees and vines - are all crops of a more permanent nature in the sense that at least over the short term the same thing is produced in a field from one year to the next. The most important class of the three in economic terms would be fruit trees with citrus

Fig. 3.1. Map of the land use in the Acconia area of Calabria in 1980.

being predominant. Irrigation is required for this form of land use and it is only since the second world war that active interest in citrus production has been taken at Acconia. Olive groves represent a more traditional form of land use in the area. Some of the largest fields in Fig. 3.1 are those devoted to the production of olives. Such fields are usually owned by families that have had large holdings in the area for several generations. While there are many fields that are planted in vines, most of them are quite small in size. Much of the wine that is produced is intended for consumption at the household or local level. This would be in contrast with the first two classes where most of the production enters the national market. Together these three classes account for about one half of the land that is used for agricultural purposes at Acconia.

Horticulture, the fourth class, includes the cultivation of strawberries and a wide range of vegetables (peas, green beans, peppers and so forth). Substantial inputs of labour and capital are required for the production of strawberries, which represents potentially the most remunerative cash crop that can be raised on the dunes at Acconia. Strawberry fields which had reached 20 in number by 1980 are shown for this reason as a separate subdivision of horticulture on the map. The fifth and sixth classes, cereals and grazing, are again more traditional ones. Together their fields cover only about one third of the area on the map. The main cereal crop grown in the area is bread wheat. There were three major flocks of sheep and goats that had their folds within the mapped area in 1980.[4] It is also common for families at Acconia to keep one or two cattle for purposes of milk and meat. By 1980, oxen were no longer kept in any real number for purposes of traction. The seventh class includes all land that is not directly used for agricultural purposes: that is, quarries, roads and residences. The broad white band running from north to south through the map represents land occupied by the autostrada and the railway which runs parallel to it.

Table 3.1 gives a summary of the number of fields belonging to each class and the relative proportion of the mapped area that each one covers. On the whole, the pattern of land use appears to be a reasonably diversified one. No one crop dominates the picture. The three classes with the largest number of fields are respectively horticulture, cereals and fruit trees. In terms of the overall areas covered, the first three classes would be olive trees, grazing and fruit trees. The two most important classes in economic terms are horticulture and fruit trees. A point that also should be made here is that the quantities of fruits, vegetables and olive oil leaving the area for national and in some cases even international markets are many times those actually needed to feed the local population at Acconia.

It may be instructive to look at the production of cereals in somewhat greater detail, since this is an aspect

Table 3.1. Summary of the fields shown in Fig. 3.1.

Class	No. of Fields	% of Area
Fruit Trees	54	16
Olive Trees	35	26
Vines	44	4
Horticulture	77	13
Cereals	68	10
Grazing	39	22
Other	--	9

Table 3.2. Size distribution of cereal fields in Fig. 3.1.

	Size in Hectares				
	< 0.4	0.5-1.4	1.5-2.4	>2.5	Total
On Dune	6	2	-	-	8
Off Dune	33	19	3	5	60

Table 3.3. Landownership on four Cadastral Maps at Acconia.

	Percentage of Area				
	Map 24	Map 32	Map 44	Map 45	Four Maps
Five Owners	95.8	95.2	70.2	65.9	79.4
Other Owners	0.0	3.6	0.5	31.4	11.2
Public Lands	4.2	1.2	29.3	2.7	9.4

of modern land use at Acconia that perhaps has more of a bearing upon neolithic studies than the others. One of the findings of some interest is that cereal crops are occasionally grown on the dunes at Acconia. A description of the dune soils is provided by Remmelzwaal (1985). The fields are usually quite small and yields tend to be modest by modern standards. Irrigation does not seem to be required in order to grow such crops on the dunes. In Table 3.2, the sizes of the cereal fields raised on the dune soils and on other soils (mainly the clayey soils of Pleistocene alluvial terraces) are given. Only two of the eight fields that were grown on the dunes in 1980 reached a size of more than 1 acre. In contrast, many more fields were raised off the dunes and a number of these covered much larger areas. It is worth adding that the crops planted on the dunes were grown essentially for household consumption. Such fields reveal that, if one is not particularly worried about high yields, the dune soils do not present an environmental impediment to the growth of the cereals. On the other hand, the dune soils are not really suitable, if one is interested in the market oriented production of cereals. This points up a dilemma when it comes to the classification of soils even within the contemporary framework at Acconia: terms such as 'arable' and 'non-arable' only take on meaning in the context of economic systems. The same dune soils can be classified as both arable and non-arable relative to different economic strategies that are being practised in the area today.

It is also useful to take a deeper look at the factors that determine what is grown where on the landscape. Environmental factors such as soils may represent only part of the story and perhaps not even the most important one for understanding the organization of modern land use at Acconia. One way of exploring this question is by looking at the ownership of land and how it influences decisions made with respect to land use. This can be undertaken through the study of cadastral maps and records. The cadastral maps which are drawn at a scale of 1:2,000 contain parcels of land whose identifying numbers can be linked with their respective owners. Without going into the details of how it is actually done, one can work out the pattern of ownership for a cadastral map as a whole and also trace the history of land transfers that have occurred in the recent past. There are several cadastral maps (foglios in the Comune di Curinga series) which fall within the mapped area shown in Fig. 3.1. In Table 3.3, the percentages of the land held by three classes of owners are given for four cadastral maps at Acconia. In each case, it can be seen that the bulk of the land is owned by five individuals with large holdings in the area. In all except one case, these individuals are traditional landowners whose families have passed the land from one generation to the next. Only a small proportion of the land is owned by other private individuals or by the state. The cadastral maps listed in Table 3.3 are located for the most part in the northeast corner of Fig. 3.1 where many fields of large size are observed. The economic

strategies followed by the large landowners here tend to be traditional and non-intensive. There is an emphasis on olive trees and grazing with the land being rented to shepherds in the latter case. The owners appear to be content with a safe and low return on their land. They indirectly create some opportunities for small scale, subsistence oriented strategies for making a living. Hence the small cereal fields occasionally grown on the dunes in this area. At the same time, the overall shortage of land as far as other individuals are concerned results in much more intensive strategies for using those areas not under the control of the five major owners. Hence the number of small fields in strawberries and other forms of horticulture along the central part of the southern edge of Fig. 3.1. The labour for such small scale, intensive operations is drawn largely from within the family. Still another economic strategy is represented in the southwest corner of Fig. 3.1. Here medium-sized tracts of land have been acquired by entrepreneurs during the last twenty years and have become part of much larger agro-business operations in the region. Foremen supervise the work of farm labourers who are paid a daily wage. The choice of crops to be grown in such fields is made with markets in northern and central Italy specifically in mind, where 'primizie' (first-fruits) command good prices. Full justice cannot be done in the limited space that is available here to the variety of economic strategies pursued at Acconia and the ways in which the various actors condition the decisions made by one another. But even this brief account should begin to suggest that what we see on the landscape today is not simply a passive tracking of the environment but rather is the complex expression of a wide range of economic, social and historical factors.

Discussion

What conclusions can we draw from this exercise in 'dense description' at Acconia? What are we to make, for example, of the traditional approach to site catchment analysis in light of what is seen in Fig. 3.1 and the various tables presented above? Which elements among the various ones that we can observe on the landscape at Acconia today provide the best 'guide' when it comes to trying to make inferences about neolithic land use?

The closer that one looks at modern land use, the less it would seem to offer an appropriate guide, on the whole, to land use in the remote past. If we have to single out one element that perhaps deserves greater attention, the man on the Acconia oxcart would be a good candidate. He is the person who aroused our interest in the first place and who hinted that the remote past might somehow have survived into the present. Such persons make up a very minor component of the overall pattern of land use at Acconia today. In returning to the man on the Acconia oxcart, we may want to put aside some of our romantic notions about him. We have to resist the temptation of seeing him as an expression of a

primordial form of adaptation to the local environment. His existence is conditioned in significant ways by a set of larger social and economic realities. It represents one way of coping with a changing economic world which he has little control over. Moreover, this way of coping - that is, striving to be as self-sufficient as possible in terms of ones subsistence - is not likely to survive for many years in the future. Where insights can be gained is not so much in observing how he or other members of his family perform specific activities but in developing a sense of how things happen and how they are organized at the household level. Since households presumably comprise one of the main building blocks in the study of neolithic economies and settlement patterns and we still know comparatively little about such units, studies at this level may be rewarding.

One of the striking things at Acconia is the small size in spatial terms of the land worked by a household following a subsistence strategy. As mentioned above, this is in part something that is imposed by the pattern of landownership in the area. If more land were available, a household would no doubt make use of it. At the same time, the small size of household operations at Acconia may caution us against the assumption that a neolithic household had to have a substantial 'territory' in order to meet its subsistence needs. The question of scale in the operation of a household is perhaps the most important one for the study of neolithic economics at the present time. Part of the importance of the household stems from its serving as the immediate framework within which decisions are made when it comes to such things as where a given crop is actually to be planted or which animal is to be slaughtered. It is at the heart of decisions that are made about subsistence. By examining contemporary households, we can also gain a better idea of how non-subsistence activities such as the building and maintenance of houses and other facilities enter into the overall economic life of a household. It is worth recalling a point made by Finley (1973, 17) with reference to economics as a field of inquiry among the ancient Greeks: namely, that even as late as the time of Aristotle, it was still thought of largely in terms of the management of things at the household level. It was from oikos, the Greek word for household, that economics originally took its name. The study of neolithic economics perhaps stands to gain from a return to household concerns.

When seen in their worst light, traditional forms of site catchment analysis can be regarded in some ways as visionary exercises. They are visionary in the sense that the analyst essentially tries to look through rather than at what is actually growing on the landscape and to make a classification of soils whose aim is to indicate what should be (as opposed to what is or what once was) raised there. In effect, the analyst is projecting his own ideas about land use back out onto the landscape through the classification of soils. The whole business ends up hinging upon the interpretation of soils without direct reference to

either the spatial array of the crops grown in an area today or that of those crops grown at an earlier time. Thus, complex issues of classification that one might expect to be rampant in catchment studies do not arise. The absence of classificatory tension is not a sign of analytical health but belies it. As we have seen at Acconia, one would be hard pressed to make a homogeneous classification of soils that would be entirely meaningful with reference to contemporary land use practices in the area. Attempts can be made but the resulting maps are likely to be unsatisfactory in light of what we know. The problem here is that one cannot go very far on the basis of a soil map alone (however good it may be), if one is seriously interested in the study of modern land use at Acconia. Other kinds of factors have to be taken actively into account. In the case of the catchment analyst, there is no serious interest in explaining patterns of modern land use. Fundamental problems and limitations in dealing with the modern landscape on its own do not come to light. Instead, the analyst has probably already figured out how the dune soils at Acconia should be classified for the Stentinello period in the 5th millennium B.C. and moved on to study another area.

Site catchment analysis can be seen in a more favourable light as an attempt to model prehistoric land use. In the late 1960s, there was a broad interest among archaeologists in Britain and the United States in the relationship between a site and its surrounding environment. But the treatment of this theme tended to be impressionistic and idiosyncratic. What was needed was a more formal and consistent approach. Site catchment work represented a positive step in this direction. The plunge was taken in proposing a model of the use of space around a prehistoric site which contained a geometry and some quantification. Unfortunately, the model was presented as an empirical analysis. This has impeded an awareness of the limitations of the geometry and quantification of the original model and the development of second and third generation models to take its place.

As mentioned in the introduction, more recent catchment work has explicitly stated its purpose in terms of economic potential. No claim is made with regard to how the land was actually used at the time when the site was occupied, although this would seem to be something that the prehistorian or historian would eventually want to know and even to compare with various assessments of land potential. In any case, a point that needs to be made here is that questions of economic potential can only be discussed meaningfully in the wider context of economic systems and models. To take an example from our own time, the economic potential of an oil field, as all those who watch a soap opera about a major city in Texas on television each week know full well, is not given by the number of barrels in the ground listed in a geologist's report. The potential of the oil field is formulated in terms of models. The argument can be made that models play no less of a role when it comes to the analysis of earlier economies and that model building

is, in fact, essential to the discovery of alternative ways of seeing a problem.

An example from Acconia may help to illustrate this point. In the traditional site catchment model, there is almost an exclusive emphasis on subsistence which is translated into a preoccupation with the fertility of soils. At Acconia, there are dense patterns of neolithic occupation in dune areas and the dune soils were presumably being used for the cultivation of cereal crops, even though the soils do not have a particularly high fertility. On the other hand, one of the clear advantages that the dune soils may have offered the neolithic farmer would have been the ease with which they can be worked. Soil productivity may not have been the leading concern. It is a concern of market oriented systems of agriculture that has been projected back upon neolithic economics. It may even be possible to suggest that the apparent preference for dune soils at Acconia has less to do with their immediate exploitation for subsistence purposes and more to do with other kinds of economic activities such as house construction and the building opens and fences, where the dune soils would offer clear advantages over other soils in the area. The suggestion being made here is that we have to put more than subsistence into our models of neolithic economics.

In trying to develop a new generation of catchment models, attention will have to be paid to a wider range of factors or variables. These would include: (a) a comprehensive knowledge of the settlement patterns in an area, (b) information on how the environment in prehistoric times may have differed from the landscape that we see today, (c) some idea of the number of people who lived at a given settlement and the level of population density in an area, and (d) some idea of how the economics of production and consumption work at the household level. Other factors could be listed but these four already represent a tall order. Perhaps the single most difficult one concerns the question of population levels. These are notoriously difficult to estimate in prehistory. Nevertheless, population sizes have major implications for the treatment of geometry in a new generation of models. If there is only one household that is occupied at any one time at a settlement, it's requirements in terms of economic space will be quite different, for example, than the case where seven households are present at the same time. What considerations of this kind imply for the study of prehistoric land use is either that one waits patiently for the kinds of information needed to build models (in other words, the study of land use or land potential or whatever it is called is not an opening stratagem in the study of prehistoric economies) or that one acknowledges the nature of models as hypothetical constructs and makes a tentative start (in other words, discourse is conducted in an open manner with a range of alternatives being explored). In both cases, we are in for a marathon and modern land use, if it has any message to give us, would intimate that things are probably much more complex than we initially imagine.

Notes

1. For other commentaries on site catchment analysis and a review of the literature, see Hodder and Orton (1976, 231-236) and Roper (1979).

2. The research done at Acconia was supported by a grant from the National Science Foundation (BNS-79-06187). For their participation in the actual mapping of land use, gratitude is expressed to J. Ingraham and R. Stromberg. Studies of modern land use were also conducted at Acconia in 1979 and 1981,

3. For purposes of making a map of the whole area that is readable (i,e., that does not contain too many different classes), only the main crop grown in a given field is indicated in Fig. 3.1. While intercropping is not generally practised in the larger olive groves, there are many cases where more than one thing is raised in a field. There is a wide range in the different combinations that can occur together: from strawberries grown under orange trees to lupines grown under olive trees. The system of olive production used on the dunes at Acconia involves the land surface being in a ploughed state for much of the year.

4. Sheep and goats tend to be herded together in 'promiscuous' flocks at Acconia. The three flocks with folds in the mapped area each consisted of at least one hundred animals. It is worth noting that these flocks are kept in the area throughout the year; transhumance is not employed in many of the coastal areas of Calabria today.

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Summary

The paper proposes alternative methods of examining the potential of Site Catchment Analysis in the landscape of Curinga, Calabria. Through an examination of modern field boundaries, crops and environmental constraints, criteria for new catchment models are considered.

Riassunto

Sono propositi metodi alternativi per l'esaminare del potenziale di Site Catchment Analysis nel a paesaggi di Curinga, Calabria. Sono valentati i criteri per i nuovi modelli di site catchemnt transmise un'examinatione dei limit moderni dei campi e dei cottritoni ambienti.