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<b>Autor:</b>	Garnsey, Peter
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MOUNTAIN ECONOMIES IN SOUTHERN EUROPE  
or: Thoughts on the Early History, Continuity and  
Individuality of Mediterranean Upland Pastoralism

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by

Peter Garnsey

Introduction

The perspective of this paper is historical rather than ethnological. This is necessarily the case given my area of specialization (antiquity and early middle ages) and the relative paucity of information bearing on Mediterranean mountain societies before documentary evidence becomes available, in the middle ages or later. (This is not to say that medieval documents, consisting typically of the records of large, ecclesiastical landholdings (e.g. Wickham 1982; Rowland 1982), are of the stuff to produce studies comparable with E. Le Roy Ladurie's 'Montaillou'). However, students of antiquity no longer passively accept the deficiencies of the conventional source material, which is for the most part literary and city-oriented, issuing from a civilization centred on the lowlands, coasts and islands of the Mediterranean region. Archaeology through the utilization of new techniques such as carbon-dating, pollen analysis, zoo-archaeology and dendrochronology (Bottema 1974, Kuniholm and Striker 1983, Payne 1985) improved methods of field survey and excavation (Barker et al. 1978, Lloyd and Barker 1981), and, not least, methods, theories and information gleaned from the social and life sciences (cf. Halstead 1984), can now establish a firmer outline of the chronology and changing character of human and environmental development in the Mediterranean. In addition, historians and archaeologists are now learning to use modern or recent quantitative data for climatic behaviour and agricultural perfor-

mance to construct agroclimatological models of past Mediterranean societies (Garnsey et al. 1984). Also important is the development of ethnoarchaeology, the study of the archaeology created by modern or recent societies, of hunter-gatherers or nomadic or transhumant pastoralists, with a view to identifying and characterizing comparable societies in the past from the archaeological record (Barker, in press). Unfortunately the emergence of ethnoarchaeology is proceeding 'pari passu' with a diminution in quantity and quality of the raw material on which its progress depends - in the case that concerns us, the traditional mountain communities of the Mediterranean, which are fast declining under the impact of economic forces. The need to catch these societies before they disappear should be brought home to anthropologists, as well as to historians and archaeologists. Despite a few successful studies (Campbell 1964, Koster 1977, Ravis-Giordani 1983) this is an underexploited area of scholarship - in contrast with the study of Alpine, and in particular Andean mountain societies (e.g. Netting 1972, 1982, Rhoades and Thompson 1975, Murra 1975, Lehmann 1982), or for that matter, Mediterranean mountain society. In what follows I pursue certain broad themes relating to the historical development of man's interest in and exploitation of what was and still is, for most inhabitants of the Mediterranean, a peripheral and inhospitable world.

#### The Marginality of the Mountains

Strabo, a Greek geographer patronised by the emperor Augustus, wrote with distaste of the mountain peoples of the Iberian peninsula who lived on goat's meat, ate acorn bread for two thirds of the year, drank beer not wine, used butter not olive oil and exchanged by barter (Geography C 154).

Strabo reveals the prejudices - and some of the dietary preferences - of the cultured urban elite of Mediterranean antiquity. In the literature of antiquity mountains are the haunt of the uncivilized and savage, whether men or beasts. Civilization is centred on the 'polis' or 'civitas'; it does not

extend much beyond the lowlands, where in the main the permanent communities of the Greco-Roman world were to be found. When the Romans, the supreme conquering nation of the ancient world, extended their advance into the interior of the Iberian peninsula or the backblocks of France, for example, the prerequisite and symbol of their success was the abandonment by the conquered tribes of their hill-top refuges and their resettlement as communities of farmers in the plain, preferably within the territory and juridical and fiscal control of an urban centre.

Goods were exchanged with the inhabitants of the mountains. Strabo knew that the Carretanians on the Celtic side of the Pyrenees gained useful revenues from their excellent hams (C 162), that the Ligurians brought down to Genua flocks, hides, honey and timber, taking back olive oil and Italian wine, their own wine being harsh and flavoured with pitch; their preferred beverages, however, were milk and a drink made of barley (C 202). Strabo no doubt represents a general view when he states that the mountain peoples were forced into exchange relationships with the people of the plain because of the poverty of their own territory, and that their natural instinct was to plunder. The mountains were the home of brigands. In any case there is no hint in Strabo that the inhabitants of the plains were interested in any direct exploitation of the resources of the mountains. We note for example the detail that the Ligurian uplanders pastured their flocks in the coastal districts as well as in the mountains, but Strabo does not identify any plain-based pastoral industry which used the pastures of the Ligurian alps: Strabo, then, knew of the operation in Liguria of 'transhumance inverse', migration of livestock proceeding from a mountain base (a practice of modern Ligurian shepherds, cf. Lamboglia 1923) but not apparently of 'transhumance normale', migration initiating from the plain. Strabo, a most casual collector and dispenser of information, was less than well-informed on this score.

Still, the general impression that Strabo conveys, of the marginality of the mountains from an economic point of view, is largely correct. The Mediterranean peoples have traditionally been cereal consumers on a massive scale; in antiquity perhaps 65-75 % of their daily food energy requirements were provided by the annual cereal crop (cf. Foxhall and Forbes 1982). Seed crops can be grown at high elevations, up to perhaps 1500-1800 metres in Southern Europe - not however the preferred cereals of antiquity, the various primitive wheats and barleys. Potatoes and maize were unknown. But yields were low and variable, reflecting the relative unsuitability of the soils and the shortness of the growing season, which decreases as altitude increases - falling for example from around 170 days at 1000 m to around 95 days at 2000 m. (Baticle 1974, 83). Early farmers made use of lower slopes for the deep-rooted walnut, chestnut, vine, fig, and to a limited extent, that is, in frost-free zones, the olive. However, insofar as the peoples of the Mediterranean lowlands were interested in the economic exploitation of the mountains in the age before hydroelectricity, tourism and the cult of health, (if we leave aside minerals, in any case only sporadically present), it was summer pasture which attracted them. A characteristic feature of livestock raising in the Mediterranean region is transhumance, 'Transhumanz', 'yaylag' pastoralism (a Soviet anthropological term, where 'yaylag' is Turkish for summer highland pasture, Khazanov 1983, 23), defined as "l'oscillation annuelle du bétail entre deux zones de pâturage que séparent des espaces consacrés à des formes d'exploitation différentes" (Arbos 1922). In some specific historical contexts the pastoral industry has established a position of relative independence in relation to the agricultural economy. The mass of the population of the Mediterranean, however, has continued to depend for their subsistence on the products of agriculture. Agriculture in comparison with animal husbandry is both more efficient in furnishing man's calorific requirements, and more productive per unit area, given choice of area, that is, lowlands. A family of six must consume about 115 sheep of

carcass weight 20 kg or about 130 sheep of 15 kg if mutton is to be their main source of food energy (Dahl and Hjort 1976, 220); such a family would have to run about 360 live sheep and control a grazing area of about 3.6 km<sup>2</sup> (Halstead 1981, 314; 1984, 7.3). For a largely lowland population of limited land resources, pure pastoralism was no alternative to agriculture as a way of life.

Was there a Specifically Mediterranean Form of Pastoralism?

The best known and most conspicuous examples of Mediterranean transhumance in past history are perhaps the 'Mesta' of Castile, and the 'Dogana della Mena delle Pecore di Puglia'. The 'Mesta' ran for five and one half centuries from its establishment by the court in 1273 and involved at its height in the early sixteenth century the movement of four to five million sheep (Klein 1920). The 'Dogana' governed the movements of sheep (amounting to around five and one half million at its peak in the late seventeenth century) in the Central and Southern Apennines from its inauguration by Alfonso I of Aragon in 1447 until its abolition in 1806 (Di Cicco and Musti 1970-75, Sprengel 1971). In the Balkans it were the transhumant or semi-nomadic 'Vlachs' and 'Sarakatsani' who have attracted most attention among historians and anthropologists (Wiegand 1894, Wace and Thompson 1914, Campbell 1964, Hammond 1976, Winnifrith 1983).

For early evidence of a developed pastoral industry in Italy, we can go back to classical Roman times to Varro, a Roman senator, antiquarian, and composer of three books on 'Res Rusticae' in the mid-first century BC, that is, a generation before Strabo. Varro knew of rich Romans who owned transhumant flocks of sheep in Italy. Indeed he was one of them, sending a substantial flock, presumably all or most of the 800 sheep that are attributed to him the distance of around 250 km between the Tavoliere, the great plain of Puglia, and the mountains near Reate east of Rome. The origins of what has been called 'horizontal or Mediterranean' transhumance prac-

tised by Varro and his friends and in later ages by Roman emperors is much debated (Skydsgaard 1974, Pasquinucci 1979). Rome's conquest of Samnium had removed the main political barrier to the long-distance movement of livestock in Italy by the early third century BC. But there may not have been any substantial investment in long-distance transhumance for another century, that is to say, until suitable conditions for its development were created with the establishment of peace in Italy following the Carthaginian invasion and occupation of the South, the large-scale confiscation of land from Italian supporters of Hannibal that followed his retreat, and the enrichment of Roman magnates in the wars in Spain, the Eastern Mediterranean and North Africa. (Toynbee 1967, Brunt 1971, Frayn 1984). By this account, then, long-distance transhumant pastoralism 'took off' in Italy in the course of the second century BC, a century before the lifetime of Varro.

Some would give Italian long-distance transhumance a longer history. Not Franciosa, who in a lengthy treatment of the subject put forward the view that in the pre-Roman period political conditions, in particular territorial conflicts, made possible only a simple form of livestock raising in the Apennines, "quella stanziale con movimenti localizzati tra le vallate e i sovrincombenti rilievi montuosi" (Franciosa 1951 52). A recent, authoritative treatment, however, makes the following generalized statement in support of a pre-Roman origin for long-distance stock movement: "Tanto più che nella maggior parte delle aree annesse, l'economia pastorale aveva grande importanza e la transumanza doveva essere stata praticata da epoca pre- e protostorica, con spostamenti stagionali di raggio più o meno esteso, verosimilmente regolati in tempo di pace da accordi e consuetudini che permettevano alle comunità di pianura e di montagna di sfruttare i rispettivi pascoli complementari" (Pasquinucci 1979, 93-4). The evidence on which this statement is based is essentially archaeological: it consists of excavated artefacts and faunal samples and the implications of site locations. The presence of hill-top

sites, shrines to Hercules and statuettes of the same god, or for that matter 'fibulae' (clasps) in scattered sites of the Abruzzi and in the approaches to the mountains in proximity to drove roads, does point to their use for the passage of flocks (Barker 1973, 1975, La Regina 1970-71, 1975, di Niro 1977, Patterson 1984). However, it would be unwise to ascribe to pastoralism a continuous, trouble-free history. Franciosa's intuition concerning the instable political situation in pre-Roman times carries weight. One might add that the defeat of the main Samnite forces, and the colonization of key points in enemy territory such as Isernia and Benevento, are unlikely to have produced tranquility overnight in the conquered area. Again, caution is advisable in estimating the scale of pastoralism in the context of what was probably an underpopulated society practising a relatively primitive mixed farming economy. A statement such as the following needs to be tested in the light of the demographic and economic setting of the mountain communities concerned and their neighbours: "Che il carico di bestiame (sc. in età preromana) fosse consistente e richiedesse vaste estensioni pascolive, si può intuire anche dal fatto che lana e pelli erano indispensabili per l'abbigliamento e l'armamento" (Pasquinucci 1984).

In the Balkan peninsula also, the early history of transhumant pastoralism is obscure and controversial. Evidence is in fact notoriously thin even for the classical period of Greek history (Georgoudi 1976). This has not prevented scholars from surmising that pastoralism, transhumant or semi-nomadic, has been a constant feature of the Northwest Balkan peninsula throughout history - and prehistory; and even that the present-day shepherds are direct descendants of their presumed predecessors in pre-classical Greece (Hoeg 1925).

Whatever the truth about long-range transhumant pastoralism in the context of pre-Roman Italy, there is no difficulty in admitting the presence in this period of the kind of pastoralism envisaged by Franciosa (above), that is to say, a modest

form of transhumance which involved the movement of flocks over short distances from pastures in the plain to others on high ground, or vice versa. It is to be noted that its existence is explicitly accepted by Pasquinucci in the passage quoted above ("con spostamenti stagionali di raggio più o meno esteso"), if only in passing, while elsewhere brief reference is made to 'piccola' as opposed to 'grande' transhumance.

Similarly, for the Roman period, it would be a mistake to assert that long-distance transhumant pastoralism displaced earlier forms of animal husbandry, or that Varro and classical Romans knew and practised no other. For classical as for pre-classical Italy it is safe to postulate the coexistence of several patterns of animal husbandry. The enterprises of Roman aristocrats and emperors (Corbier 1983) are simply the most conspicuous, and it is not surprising that they have monopolised the attention of historians of antiquity, rather as the 'Mesta' and 'Dogana' have caught the eye of students of the medieval and early modern periods at the expense of smaller-scale pastoral movements. In the Biferno valley (Molise), the site of a recent extensive archaeological field survey, villagers at the valley head apparently drove their flocks a few miles into the lower valley in a descent of about 500 m. This same valley in its upper reaches is crossed by major north-south transhumant tracks joining Apulia and the Abruzzi (Barker and Lloyd 1981). The Roman writer Columella, whose 'De Re Rustica' in ten books appeared in the middle of the first century AD, that is, about one hundred years after Varro's work, actually manages to ignore transhumance movements altogether in describing what appears to be entirely a farm-based animal husbandry. Varro himself gives most of his attention to the raising of stock at or near the farm. He does advise the pasturing of cattle "in wooded land" ("in nemoribus"), adding "and those which spend the winter along the coast are driven in summer into the leafy mountains" (2.2.8); and he observes that mules, a speciality of his home district Reate, "are driven into the mountains in summer" (2.8.5). But it is not to

be supposed that in either case the destination of the animals was distant rather than local upland ranges. Meanwhile in the case of sheep, Varro contrasts the flocks of the home farm ('villatici greges') with those who use the "glades and woody pastures" ('saltus et silvestres loci') (2.2.8), self-evidently not a description of high mountains. Similarly, herdsmen are divided into those who work the 'calles' (latin for tracks, 'tratturi'), and those who come back to the farm every day (2.10.1). The 'calles' in question need not be the long-distance 'tratturi'.

In sum, there is a case for saying that a form of long-distance transhumance developed in the Mediterranean which was distinctive to the region, and that it evolved, in Italy anyway, when an elite possessed the resources in cash and in land to run sizeable flocks between properties in their possession or under their control. Varro certainly owned land around Reate; presumably it was for this reason that his sheep travelled all the way to the Reatine mountains instead of pasturing, for a fee in some equally suitable terrain further south and closer to their base, which was Apulia (2 pref. 6). It does not follow, however, that this was the typical Mediterranean form of pastoralism. To this extent the terminological distinction sometimes employed between 'horizontal or Mediterranean' and 'vertical or Alpine' transhumance is a barrier to understanding. When scholars refer to the former, they evidently have in mind the seasonal movement of livestock, typically sheep but also goats, over long distances. But we have identified another form of stock movement, namely short-range transhumance, which is equally 'Mediterranean' and more accurately described as 'vertical' than 'horizontal'. In any case, 'horizontal' must be shorthand for 'vertical plus horizontal'. However far the flock travels along range-roads to reach the seasonal pastures, winter or summer, that are their destination, the 'raison d'être' of such stock migration is 'vertical' movement between lower and higher ecological zones. To add to the confusion, there are writers who choose

not to refer to the 'vertical' movement of livestock in an Alpine setting (monticazione, alpeggio, alpinage) as 'transhumance'. Blache in his classic "L'homme et la montagne" claims that transhumance in France is practised only in the southern part of the Alpine chain and the Pyrenees; the North French Alps and Switzerland are excluded, because there is no migration from plain (or 'Mittelland') to mountains, which are left to the 'montagnards' and inhabitants of the valleys to exploit (Blache 1933). Blache was apparently unaware of a pattern of sheep-raising which established itself in Switzerland subsequent to the First World War, involving the transport of the flock in summer from the Mittelland to the mountains. Gubler-Gross, in his recent dissertation on transhumance in modern Switzerland, focusses almost entirely on this phenomenon, to the exclusion, in the manner of Blache, of the traditional seasonal movement of cattle between valley and lower mountain slope and upland meadow (Gubler-Gross 1962). Yet the Alpine districts were turning away from cereal cultivation towards extensive livestock raising, involving cattle, from the eleventh century, in a development which took five or more centuries to complete (Bergier 1983, 8). There are other apparent illogicalities in the literature of pastoralism; one is the refusal in some quarters to apply the label 'pastoralism' to any system of animal husbandry in which agricultural activities are a not negligible element (Delano Smith 1979, 239). In our case, there is a need to apply a less restrictive definition of transhumance, one which for example takes in short-range as well as long-range stock movements and can therefore embrace animals other than small ruminants.

One by-product of the adoption of a single model with two-dimensional variations, would be the restoration of the concept of 'verticality' to the central position that it must occupy in the analysis of any pastoral system which utilizes mountains. One can then proceed to draw distinctions between Mediterranean and Alpine (and Andean) verticality. The essential difference between Mediterranean and Alpine pastoral

movements becomes clear if we ask why they were undertaken. Briefly, Central and Southern Italians, and other Mediterranean peoples, take their sheep to the mountains when, and because, there is no more food for them on the parched plains. Alpine farmers, on the other hand, drive their cattle to the high grasslands in the same, somewhat abbreviated, summer season, in order to free the lower fields for the production of forage crops and hay for consumption by the cattle after their autumn return and stabling. Meanwhile, in parallel with transhumant pasturing, some of the middle and high grasslands are set aside for haymaking, since high altitude grass is thought to be beneficial to the animals. Haymaking is not generally feasible in the Mediterranean uplands.

#### Climatic Determinism - and its Limits

Having accepted the coexistence of different forms of pastoralism in the Mediterranean, we should next recognize the possibility of discontinuities in the historical development of pastoralism. The case for continuity is normally put in terms of the climatic and ecological constraints on man's existence and survival in a Mediterranean setting. The argument is a traditional one; it has been accepted without question by generations of scholars. The picture of historical reality which it implies has been challenged and the primacy of social, economic and political factors asserted only recently (Lewthwaite 1981, 1984). In Andean scholarship the converse has occurred: Murra's explanation of verticality in terms of superstructural factors (verticality is seen as essentially a mechanism of control) (Murra 1975) is being countered by rival explanations emphasizing the environmental constraints on production in mountain zones (Guillet 1981, 1983).

The case for environmental constraints on man's operations in the Mediterranean region can be put simply. In the Mediterranean, plant growth is inhibited by cold especially in the uplands (the lowlands generally experience a mild winter) and by aridity. Spring growth can represent as much as 85 % of the

growth of the year, as has been demonstrated in stations in the 'Murge' in South Italy and the 'los Pedroches' plateau north of the Sierra Morena in Spain (Baticle 1974, 26). Outside the (untypical) irrigated meadows and marshes, the (typical) summer drought dries up the natural pastures of the lowlands and forces the livestock into the mountains, where the snows have melted to expose fresh pastures. The seasonal movement of stock is confined in large part to the smaller ruminants, especially sheep, often the goat, occasionally the pig. Sheep and goats are light and mobile, can cope with steep and rough terrain, and can live off the poorer pastures, the 'maquis' and 'garriga', which are common on Mediterranean slopes and uplands.

This, the conventional picture of Mediterranean pastoralism, needs to be refined to make allowance for regional variations in climatic and vegetational conditions, which affect for example the length and severity of the summer drought. Its main weakness, however, is its limited usefulness as a tool to explain the shape that animal husbandry has taken in the Mediterranean throughout history. For example, it would be quite mistaken to seek to explain the phenomenon of the aragonese 'Dogana' or for that matter the quantitatively much less significant enterprises of classical Romans with reference to a supposed iron law of climate and geography. Blache writes: "Aux origines de la transhumance on trouve moins l'ingéniosité humaine que les lois de la nature vivante" (Blache, 1933). For Franciosa, transhumance is "una consequenza del clima... con una causalità puramente geografica" (Franciosa 1951, 11, cfr. 17). This is at best a halftruth - as in fact Franciosa appears to concede later when he states that transhumance represents "un adattamento costruttivo alle condizioni fisiche... e non meno a quelle sociali e igieniche (di instabilità, di insicurezza, di malaria)" (p. 51). Transhumance was not "naturale", "un fenomeno geografico": it was man-made, the product of social, economic and political conditions specific to particular historical periods.

This is particularly true in the case of extensive pastoralism, or long-range transhumance. One requirement for its institution, or expansion, is the economic and political weakness of local agriculture often following a period of warfare, as in classical Rome and medieval Spain; another is the existence of an outlet for the products of pastoralism, in antiquity and the Middle Ages principally wool, in the modern period more commonly cheese and meat. The size of the industry was determined above all by the strength and stability of market demand. In the last hundred years, the fortunes of Sardinian pastoralism have been closely related to the fluctuating demand for Sardinian cheese in Italy and other countries, including North America; while Roquefort sustains Corsican pastoralism at its relatively high level of significance. The estimates (or assumptions) of scholars of antiquity concerning the size and importance of Italian transhumance in the Republican and Imperial period are invariably exaggerated because they are not based on a realistic assessment of the size of the market, and on an understanding of the economy of extensive pastoralism in general. 'Mesta' and 'Dogana', which responded to a Europe-wide demand for wool for textiles, would have far outstripped the pastoral industry of the classical Roman period.

In the second place, political conditions affected the health of the pastoral industry. The end of the Roman Empire may have ushered in a period of uncertainty for pastoralism in the Apennines (Wickham 1982, 50, 1983, 34), although the organizational capacity of Lombardian or Frankish governments is not to be discounted altogether. In the same period insecurity in Sardinia and Corsica, because it was concentrated in the littoral and lowland areas, had the paradoxical effect of stimulating pastoralism in the less vulnerable interior of those islands in the Early Middle Ages (Lewthwaite 1984). At the other extreme, 'Mesta' and 'Dogana' were implemented by powerful political authorities, which, spurred on by the prospect of lucrative tax revenues, were able to control the

economy of extensive regions in Spain and Italy, respectively. The parallel with Andean verticality as interpreted by Murra does not need stressing (Murra 1975, D'Altroy and Earle 1985, 189). In classical Rome, pastoral enterprises were regulated but not institutionalized: a less elaborate apparatus of control and a less dirigist ideology combined with strictly limited marketing possibilities to produce a smaller scale pastoral industry.

#### The Creation of Mountain Pasture

We have been considering the role that man has himself played in shaping the historical development of pastoralism. But this has an aspect thus far untreated. The physical environment imposes constraints on human behaviour. Yet man has shown himself capable of transforming his natural surroundings. In particular, the geographical conditions under which long-distance transhumance could flourish are in some important respects man-made.

Transhumance by definition involves stock movements between two sets of seasonal pastures, in the plain and in the mountains. But we need to ask what pasture was available in the mountains.

Natural grassland is relatively rare in the Mediterranean. This is not because the mountains are everywhere too low. It is true that we are dealing with mountains that rarely top 3000 m, mere anthills from the perspective of an Andean or Himalayan phenomenon of 'Massenerhebung', the compression of zones of climate and vegetation on small mountains relative to altitude, compared with the interior of big mountain ranges. The natural upper limit of woodland in South Greek mountains, for example, is about 1800-1900 m, as is indicated by relict trees in cliffs. Thus on Parnassus and Cretan Ida a zone of 500-600 m separates treeline from (more or less permanent) snowline. If natural grassland is rare in Greece, the reason is not so much the lack of altitude as the hard limestone and

marble rock which inhibits the formation of suitable soils (O. Rackham, pers. comm.).

However, man has lowered the treeline and created an artificial, pseudo-alpine meadow. The pastures thus formed are frequently low in mineral and protein content and also very liable to the summer drought, which in the traditional model of transhumant pastoralism, is a feature of the lowlands (Baticle 1974). The irregularity of the mountain climate in Sardinia means that insofar as transhumance takes place (and most sheep are not transhumant), the flocks are driven not up to escape the summer drought but down to avoid the winter cold (Le Lannou 1941).

The deforestation which created the middle-altitude pastures is usually attributed to organized pastoralism. "In Spain after the Reconquest, deforestation became the accepted policy of the pastoralists, especially after 1273 when the Mesta of Castile was established, first along the drove roads, and then in the pastures... With their Spanish experience, the Aragonese did the same thing in Southern Italy after 1300" (Houston 1954, 114). "Trees were not tolerated on or near the grazing lands because, it was held, their roots absorbed too much moisture from the soil and so reduced the grass cover. Whole forests were cut down by or as a result of Dogana pressures" (Delano Smith 1979, 246). Clearance of high woodland is thought to have accelerated markedly in the nineteenth century. We read that it was in this period that half the woods that covered the slopes of the Gran Sasso and other high mountains in the Abruzzi were destroyed (Franciosa 1951, 71).

Was antiquity too a period of significant tree-clearance in the mountains? Woods can be cut down (or burned) more than once; they come back when pastoralism is in retreat. For this reason wildwood is on the increase in the Mediterranean mountains today. It is thus in theory possible that deforestation was carried out to the same extent in Italy in the Roman

period as in the High Middle Ages - although the probability of this seems slim in view of the relatively small scale of Roman pastoralism. In the Balkans the problem is rather different: we know that Greece was well-wooded in antiquity, especially in the Pindus range in the Northwest - this is confirmed by the palynological evidence, where it is available in sufficient quantity and quality (Bottema 1974; Halstead 1981, 1984). And as we saw we have virtually no information about uplands pastoralism in ancient Greece. But it would be rash to state that woodland cover in antiquity was such as to preclude transhumance altogether. This means among other things that the continuous existence of pastoral transhumance in the Greek mountains cannot be ruled out, even if we are not inclined to accept particular continuity theories, such as those that find the origins of today's 'Sarakatsani' in antiquity (Hoeg 1925), or ascribe the emergence of Doric and Northwest Greek dialects to the infiltration into settled early archaic Greek communities of transhumant or nomadic shepherds established in the Greek mountains (Kirsten 1983).

### Conclusion

Geographical facts do not account for long-range transhumance, or even for the existence of a pastoral industry at all. They rather govern the form, or more accurately, forms, that pastoralism can take in a Mediterranean setting, whether as a partner with agriculture and arboriculture in the mixed farm characteristic of the traditional peasant economy, or as a semi-independent, relatively specialized industry operating over an extended area, or as something in between. Of these two 'pure' forms the first has strong grounds for being considered indigenous to the Mediterranean region and a more or less permanent feature of the landscape. In it the pastoral element is underdeveloped and engaged in a symbiotic association with the other sectors. It is also mixed in character, involving bovines for traction, swine for meat and ovicaprides for clothing and milk products - not normally for meat, for sheep are less efficient converters of plant food into meat

than pigs and have other uses. The fodder shortage of the summer months when vegetational growth ceases varies in scale and severity with local climatic conditions. It is met, or alleviated, by the combination of several remedies. The first is the use of stubble, fallow and wasteland for grazing, typically by sheep, which in the process return manure to the soil. Sheep manure is both qualitatively superior and ample - a modern sheep is capable of producing 500 kg of manure p.a. (Baticle 1974, 34) - and in some contexts has been regarded as the sheep's main asset. The second food resource for animals in the lean season is arboreal. An observer of Umbrian agriculture at the turn of the eighteenth century describes the careful exploitation by the peasants of foliage as well as all kinds of vegetable growth: "Le paysan met à profit toute l'herbe qu'il peut faucher sur le bord des fossées, toutes les feuilles qu'il peut arracher à la vigne ou aux peupliers, toutes les plantes parasites qu'il peut trier entre ses blés et toute la paille qu'il peut hacher et mêler aux fourrages vertes; il va souvent jusqu'à dépouiller en automne les arbres fruitiers de leurs feuilles, et même les figuiers, malgré l'acréte de leur sève; il réussit enfin par cet esprit d'économie, s'il a peu de bêtes en proportion de son terrain, à en avoir beaucoup et beaucoup de fumier en proportion de son fourrage" (Desplanques 1969, 419). But we should also bear in mind traditional forms of woodland exploitation, in particular the acorn-hog economy of Southwest Iberia or Umbria, or the chestnut-hog economy of the Tyrrhenian islands (Parsons 1962, Desplanques 1969, 420, Lewthwaite 1982), Umbria, the Tyrrhenian islands, and most notably the South West region of the Iberian peninsula (Desplanques 1969 420, Lewthwaite 1982, Parsons 1962). Thirdly, the broken nature of much of the landscape, particularly in the Balkan and Italian peninsulas, makes the local movement of livestock between different ecological zones desirable and feasible. Long-range transhumance in contrast is inconvenient, expensive and detrimental to agriculture in that it deprives the lowland soils of a valuable fertilizer. Its emergence is associated with historical

change, whether social and demographic, or in respect of the shape or structure of political authority, or in the level and nature of consumer demand for its products. Similar factors have engineered its recent rapid decline and will set the limits of its future development.

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