

THE MOUNTAINS OF THE MEDITERRANEAN WORLD

AN ENVIRONMENTAL HISTORY

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THE ARGUMENT: ECOLOGY, ECONOMY, SHELLS, AND SKELETONS

I have loved the Mediterranean with a passion, no doubt because I am a northerner like so many others in whose footsteps I have followed.

Fernand Braudel

The Mediterranean world has a special beauty to it. The stark light, the soaring mountains, the sparkling sea, and much else contribute to make landscapes that have long attracted people from afar. Dr. Johnson once said that the grand object of all travel is to see the shores of the Mediterranean. Apparently little has changed since the eighteenth century: today one-third of all international tourism in the world involves Mediterranean countries. But in fact a good deal has changed, including the landscapes themselves.

The beauty of the Mediterranean mountains is in a way a sad one. Skeletal mountains and shell villages dot the upland areas of the Mediterranean world, dominating the physical and social landscape. Rugged limestone ridges or smooth schist shoulders, bare of all but the scantiest vegetation, make the famous and apparently timeless vistas from Granada, Marrakesh, or (on a clear day) Athens. Between the ridges, usually situated so as to enjoy the Mediterranean sun, or perhaps a source of fresh water, lie quiet and moribund villages. They are shell villages, home only to the very old and sometimes the very young, but, perhaps with the brief exception of some summer weeks, home to no one in the prime of life. Both the mountains and the villages are usually picturesque. But their beauty is that of a still-life painting – *nature morte* as the French put it. They are dying villages and sterile mountains.

It has not always been so in the mountains of the Mediterranean, and indeed it is not yet so everywhere. Not very long ago, forests clothed the high slopes and hard-working peasants and shepherds, scraping an often difficult living from their surroundings, filled the villages. And in some corners, like the Rif, while the mountains are almost bare, the villages

are by no means empty. But they may well be soon. A mountain way of life is coming to an end there, as it has throughout the Christian Mediterranean world. In this book I will try to explain something of this way of life, now dead or dying, what it depended on, and how and why it has ended – or is ending.

Skeletal mountains and shell villages are the legacy of two slow changes: one is essentially ecological and the other economic. The modern physical and social landscape of Mediterranean mountain areas is a product of these two classes of change. Generally speaking, ecological processes have asserted themselves on the local level whereas economic ones have operated on a far vaster scale. That does not mean, however, that economic processes have been more important than ecological ones. Often it has been the other way around. In each village and landscape the combination has been unique. The only safe general conclusion is that both classes of event were important: both the topsoil erosion caused by the sudden collapse of a peasant's terrace, and the gradual development of a world-scale wheat market contributed to the demise of the mountain way of life.

Ecological and economic processes often combined, sometimes simply – as in the demand for timber to build the Suez Canal that denuded parts of the southern flank of the Taurus – and sometimes in devilishly complicated ways. In either case, for most of the Mediterranean mountain world, the changes that ended a way of life and left behind skeletal mountains and shell villages are comparatively recent, in most settings less than two hundred years old. This is not long in the history of the Mediterranean. Naturally peasant terraces collapsed time and again over millennia, and large-scale economic systems shifted too. But in the mountains the changes of the past two hundred years – in some places the past one hundred – have normally been greater than the slower, more modest ecological and economic shifts of earlier times. The recent ones will, I suspect, also prove more decisive: not mere fluctuations within a broad and resilient equilibrium, but a sea change.

Population and Ecology: Overshoot

After about 1800, earlier in some locales and much later in others, many mountain communities began to experience what ecologists colorfully refer to as *overshoot*. At roughly the same time, they felt the impact of what economists, less colorfully, refer to as market integration. Overshoot is a concept derived from population ecology.¹ When

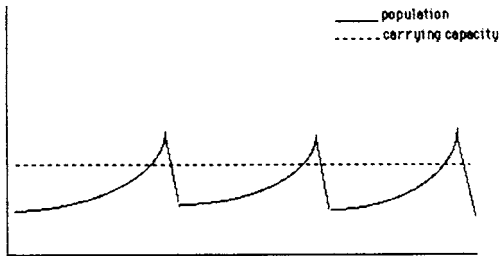
¹ Catton 1980; Hutchinson 1978.

a population has grown beyond the level that is sustainable with its given resources, it has overshoot. In the Mediterranean world, both in the uplands and the lowlands, population began to grow in the late eighteenth century, as it did in many other parts of the world. This trend was no simple recovery from famine or epidemic, but a basic change in demographic regime. In the lowlands this population pressure led to several changes that eventually produced higher living standards, although this result came slowly and haltingly, with much suffering along the way. In the uplands, such beneficial changes – say, the use of machines in agriculture – proved impossible to bring about,² and rapid population growth meant that people were faced with the prospect of lower standards of living. Their numbers had grown beyond the point that was sustainable given their resources, and their resources proved difficult to expand through technical means. Indeed very often their resources shrank, as upland peasants desperately cleared and farmed slopes that, they well knew, could not hold soil. In getting one or two years' needed crop, they undermined prospects for the future.

Among animal populations this overshoot usually means demographic catastrophe, normally through starvation. This pattern can occur among human beings, and some ecologists explain recent Ethiopian and Sahelian famines this way. But human affairs are much complicated by our capacity to adapt culturally and individually to our circumstances. Overshoot among a human population generally produces a desperate search for ways in which to expand the resource base, to enlarge the niche of that population, so as to avoid disaster. Sometimes overshoot and impending disaster can lead to technical revolutions that quickly expand usable resources, or to slow but sustained improvements in agriculture that avoid (or at least forestall) crisis.³ This is the story of rising population and rising agricultural productivity found in much of lowland Europe since 1750, in China, in Java, and in many places in between. It may be that those who made the earliest conversion from hunter and gatherer to cultivator and pastoralist did so in a desperate attempt to avoid the consequences of overshoot.⁴ Sometimes overshoot can lead to war and attempted conquest, as one community seeks to acquire the resources of another. It can also lead to emigration, as individuals seeking to solve their own problems accidentally mitigate or postpone the problem of their communities (unless too many go at once). In complex economies overshoot can inspire people to try to make a living in new ways, to exploit neglected niches through trade

² Mignon (1981, 207–14) explains this for the Alpujarras.

³ Boserup 1965; Geertz 1963. ⁴ M. Cohen 1989, 21–3.



1.1a. Constant carrying capacity and periodic overshoot.

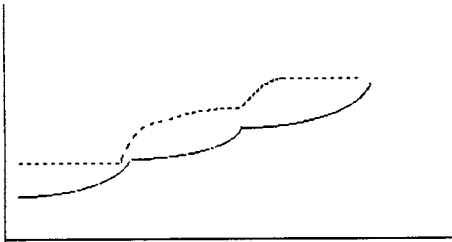
and manufacture. One way or another, overshoot must produce adaptations, changes in a group's way of life that either extend the resource base or permit more intensive exploitation of the existing one; otherwise, it will produce demographic disaster.

In the Mediterranean mountains overshoot promoted several adaptations, ranging from agricultural experimentation to specializations such as silk manufacture, military service, and brigandage – and to emigration. None of these adaptations were entirely new, of course. Overshoot did not produce them but merely drove far larger numbers to try them.

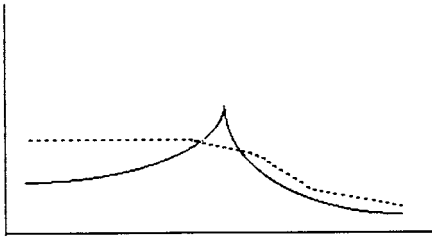
Perhaps reference to an abstract model (even in an introduction) will help clarify matters. When ecologists speak of carrying capacity they illustrate the concept with a simple graph that has two lines.⁵ One is straight (and usually dotted) and refers to a maximum sustainable population. The other represents population history, and it curves up and down. When it rises above the dotted line, it soon falls far below it. This is overshoot (Fig. 1.1a). This model is useful in the abstract and among animal populations may be fine as a first approximation to actual population dynamics. But it is too simple to be of use in reference to human populations. The difficulty is that the dotted line has a history too.

Carrying capacity can rise or fall, sometimes suddenly. It may rise as a population acquires new skills or technology (Fig. 1.1b), bringing opportunity and growth, and forestalling the pangs of population pressure. These are happy times in a community's history. But the dotted line may curve cruelly downward as well (Fig. 1.1c), if skills are lost or resources depleted.

⁵ Ellen (1982, 41–6) reviews the pitfalls of carrying capacity in the context of a fine discussion of the great questions of human geography.



1.1b. Carrying capacity rising in response to population pressure: overshoot is avoided (or forestalled).



1.1c. Carrying capacity falling as a result of overshoot. This situation most closely approximates the modern environmental history of the mountains of the Mediterranean.

The mountain people of the Mediterranean world have experienced both expansions and contractions of their local niche. For example, after the sixteenth century, American food crops, notably maize and the potato, arrived in the region, making mountain survival much easier; the dotted line ascended. But more recently, as I will argue at some length, deforestation and soil erosion have reduced the productivity of mountain lands; the dotted line turned downward. That both carrying capacity and actual population can change over time does not invalidate the ideas of carrying capacity and overshoot. These notions, while harder to apply confidently, retain their importance. They are, I think, essential to understanding the pressures under which mountain people lived and live.

In gentle environments the dotted line, over the long haul, has climbed with each practical application of human ingenuity. But in difficult environments, history is less open-ended and constraints are far more important. As a rule, gentler environments have felt the pinch of population pressure less often, because the landscapes are less subject

to degradation (a downturn of the dotted line) and they are more receptive to technical improvements (upturns in the dotted line). Human breeding behavior being what it is, many landscapes at many times have felt population pressure. But more marginal ones, less flexible ones, have felt it more often and have found fewer answers.

Furthermore, gentle environments can be more resilient than marginal ones. Human effect on ecosystems is of two sorts: temporary perturbations and permanent changes. A fire, a poisoning, an episode of deforestation – these will be temporary perturbations in many parts of the world, and after the event flora and fauna will slowly tend toward whatever condition current climate and soils encourage. Permanent changes normally require ongoing human action, say agriculture or city life. But in marginal environments temporary perturbations are often not so temporary. Recuperation is slow and scars last long.

The ecological fragility of the Mediterranean lands, and especially their mountains, adds yet another complication to the delightfully simple abstraction of carrying capacity and overshoot. It makes these lands especially vulnerable to deterioration from population pressure. But in addition, it has made them vulnerable to population fluctuation and even to underpopulation. This curious claim requires some explanation.

Like marginal environments everywhere, say the desert edge or the moist tropical forest, the Mediterranean mountains have a finite carrying capacity, a maximum threshold population, which changes with levels of technology and productivity. But they also have a minimum threshold, a population level beneath which labor shortage prevents agriculture in all but the garden spots. Mountain agriculture needs many hands and backs, because few labor-saving devices apply, and terraces and irrigation ditches require constant surveillance and maintenance. If the available supply of hands and backs falls beneath a certain minimum, terraces and irrigation cannot be maintained, agriculture becomes notably less productive, and the survival of one and all is imperiled: undershoot. This has often happened in Mediterranean Europe, and has combined with damaged community morale – the feeling that no one is going to stay so let's not be left behind – to provoke mass emigration. Emigration can be a bit like soil erosion: it might begin with a tolerable trickle, but can pass a threshold where morale (like the soil's integrity) is punctured, whereafter it accelerates uncontrollably.

Overpopulation normally led to desperate and reckless land clearing and accelerated soil erosion. Underpopulation normally led to terrace collapse, field abandonment, destruction of irrigation works. In *either*

event landscape suffered, topsoil – sometimes all soil – was lost, and the potential for vegetation recovery reduced. Once human communities had established themselves in the mountains, either overpopulation or underpopulation could lead to landscape degradation, even desertification.

In gentler environments, such as northwestern Europe or eastern North America, such tight constraints have never existed. Land clearing for agriculture has led to only modest erosion, neither enough to prevent the return of forest to abandoned lands, nor enough to prevent the reestablishment of stable ecosystems that retain some utility for humankind. Underpopulation cannot exist in these lands, and overpopulation comes, if at all, only at a much higher threshold, because of the suitability of level landscapes to agricultural innovations. But the Mediterranean, like other fragile ecosystems, was fundamentally different: once villages existed, they could function in a sustainable way only within a fairly narrow band of population density. If human numbers rose too high or dipped too low, the landscape suffered, chiefly through soil erosion. When this happened, the narrow band tightened, as the impoverished soils could support slightly fewer people at the maximum, yet needed slightly more labor to be productive. The range of suitable population shrank, making fluctuation in one or another direction all the more dangerous.

Until quite recently population levels have *normally* fluctuated in every human community, in an irregular rhythm defined by famine, disease, and war. Of late, population almost everywhere seems only to rise, but this is a recent trend, not characteristic of much of human experience (and probably not destined to endure much longer). In level places, or rugged places without aggressive rainfall, population fluctuation has had limited durable impact upon landscapes. Vegetation might change, it might even come and go, but as long as soils did not wash away, vegetation could return, and farming might return if people needed it. But in marginal environments this resilience does not exist, and population fluctuation outside of a certain band has had a downward ratchet effect on the productive potential of landscapes, making overshoot – or undershoot – all the more likely. In effect, human communities in marginal environments live under a death sentence, which can be stayed only through careful husbandry of the land. In the mountains of the Mediterranean, other forces have helped to prevent an indefinite stay of execution.

Market Integration

Market integration is generally a good thing for people who have a comparative advantage in the production of one or many goods and services. It means that one can sell more of one's specialty. But it is very bad indeed for people who have no comparative advantage in anything except their labor power, and who find that whatever they can produce, others can produce better or more cheaply. For those who have few things to sell, and for whose goods demand is unpredictable, joining a market system adds to the uncontrollable elements to which one's fate is hostage: weather, war and politics, and now prices as well. For Mediterranean mountain peasants in the nineteenth and early twentieth centuries, as for African and South American peasants since 1950, this has often been a change for the worse, because added economic insecurity outweighs the importance of possible new wealth obtained through the market. In the case of Mediterranean mountain villagers, market integration proved a mixed blessing, but in the end, it was corrosive of the mountain way of life.

Most mountain villagers had never been entirely cut off from the currents of economic life on the plains or even on the seas. Many worked as seasonal laborers, in agriculture, construction, or warfare in the plains below. Women as well as men often walked for days to find seasonal work on the farms of Thessaly or the Basilicata coasts. This was greatly to their advantage, as it meant they knew something of the world beyond, and how to exploit its niches. It made them more adaptable than they could otherwise have been. So when their villages came in closer and steadier contact with the outside world, some of these mountain folk took advantage of it, changing their lives for the better. But all had to change their lives, for better or for worse.

Like overshoot, market integration was a gradual process. While most Mediterranean mountain villages were never fully isolated from the economies of the plains, neither are they yet entirely integrated into larger markets. A fair amount of subsistence production still goes on. But by and large a big change took place between 1800 and 1950, a slow evolutionary change with revolutionary consequences. The technology of transport and the organization of markets improved to the point where outside goods, even agricultural ones of high bulk and low value, could be imported into mountain villages. And mountain folk could sell whatever goods or services in which they might enjoy comparative advantage. Usually, however, these were not their principal products, most of which were foods that the plains – or distant but now economically closer America – produced better. So villagers had to

adapt to offer things for which outsiders would pay: timber, silk, honey, and, most often, labor services.

Sometimes distant changes in demand opened up whole new opportunities for mountain villagers, although they often reaped only a small share of the benefits. When nineteenth-century urbanization, and in particular urban sanitation efforts, raised the market price of lead everywhere, villagers around the Sierra de Gádor in southeastern Spain found they could get work digging lead out of the mountains. They did so prodigiously, temporarily making theirs the world's largest lead mining region. Catalan and English companies made great sums from this, while tens of thousands of Spanish peasants made modest livings from it.

Lead mining in the Sierra de Gádor is a poor example of market integration and its effects on mountain villages in that it rose and fell rather quickly between 1830 and 1860. Most other cases proved more enduring. But it is an excellent example of an important feature of this integration because it was ecologically very destructive, deforesting thousands of hectares of Almería and Granada. This region now contains the starkest desert in Europe. (Parts of Almería so resemble the American southwest that Spanish spaghetti Westerns are filmed there.) In general, the economic processes in which mountain villages enjoyed comparative advantage – herding, logging, and charcoal making, for example – were potentially or necessarily destructive of vegetation and soils: they were hard to sustain indefinitely and could easily deepen the ecological difficulties villagers had already begun to encounter. As population growth threatened villages with overshoot, the new directions their economies were beginning to take often reduced the resource base just at a time when villagers needed to expand it.

Market integration meant that distant demand could be concentrated on a relatively small producing area. This can often have an ecological effect roughly analogous to the focusing of the sun's rays on a single point, as children do with a magnifying glass in order to set a leaf on fire. When, in the late nineteenth and early twentieth centuries, the world demand for ivory – for piano keys, billiard balls, and combs – focused on East Africa, where lived millions of elephants with the soft ivory tusk best for carving, the result for the elephants was catastrophic. Africans, Arabs, and eventually Europeans quickly and severely depleted a population, which, for various reasons, has never recovered. Much the same thing happened to the beavers of northern New England between 1620 and 1700 when beaver fur came into fashion in western Europe. The beaver here has recovered a bit better than East African elephants. Similarly, but on a far larger scale, in the sixteenth and seventeenth centuries the Andean silver mountain of Potosí was systematically

connected to Europe and East Asia, and legions of miners soon exhausted the silver veins while their fellows stripped the surrounding vegetation for fuel. The silver, of course, has never recovered. In this sad case concentrated demand also rapidly depleted the surrounding human population, and it too has never recovered. The history of the Andes contains two other curious examples of ecological degradation produced by the impact of market integration. When European agriculture began to use large quantities of Peruvian guano in the nineteenth century, Andean highlanders could no longer afford their customary fertilizer. Their solution was to raise more sheep in their mountains. They now have the fertilizer they need for their fields, but at the cost of overgrazed slopes and hydrological disorder.⁶ More recently the eastern face of the Peruvian Andes has responded to the vigorous North American demand for cocaine by deforesting tracts and vastly expanding the cultivation of coca. As cultivated today (some evidence suggests it once was grown only on terraces), coca permits very rapid erosion.⁷

Similar ecological disturbances resulted from distant demand concentrated into small zones in the Mediterranean mountains. Timber demand inspired a German company to deforest the Sila uplands in Calabria around the turn of the century. The presence of Russian, French, and British garrisons on the Ionian Islands from 1797 to 1863 helped cause a great expansion of flocks in Epirus, leading to overgrazing and deforestation. More recently, the strong demand for marijuana in western Europe has led to its widespread production in the Moroccan Rif, with unfortunate and complex ecological consequences detailed in Chapter 7. In other places, at other times, and in other ways concentrated demand from afar proved ecologically destructive in Mediterranean mountain areas. And where it did not, improved trade links often brought local mountain production into devastating competition from more efficient lowland producers, obliging mountain people to adapt or emigrate. Either course could deepen ecological problems. Market integration, as much as overshoot, has created the contemporary physical and social landscapes of the Mediterranean mountains.

A few of the millions of peasants affected, while forced to alter their inherited way of life, found very happy landings. Quite a few found satisfactory ones, and very, very few starved to death. So it is tempting to think that while overshoot and market integration may have meant

⁶ Gulliet 1984.

⁷ Dourojeanni 1990. In addition, transforming coca into cocaine requires chemicals, notably kerosene and sulfuric acid, that are turning up in toxic concentrations in the Peruvian Amazonian river system.

declining living standards in recent centuries in the Mediterranean mountains, the adaptations provoked and pursued, most notably emigration, have on balance made for a happy story. Certainly it is hard to find a mountain emigrant who prefers to return to his native or ancestral village. But many will say that mountain life is better than life in the plain or the city. It may be that while they prefer not to live in the shell villages of today, they think they would prefer the villages of yesterday, if not overcrowded. Perhaps they pine for a simpler past, one without anonymous buying and selling, without concrete and glass, and idealize it accordingly. In any event, the mountain life they remember (or have been told about) is gone, and whether the demise of the mountain way of life is an improvement, on balance, is impossible to say.

In the pages that follow I will argue that ecological and economic changes combined to force the abandonment of the mountain way of life in the Christian Mediterranean, and that the same forces are currently operating in similar ways in much of the Muslim Mediterranean. I will maintain that most of the deforestation and anthropic erosion in upland areas is comparatively recent. I will contend that peasants suffered from fuel shortages and land shortages, as wood and soil grew ever scarcer, while population grew more abundant. Further, I will claim that this difficult situation led to desperate attempts to preserve customary life, most of which merely exacerbated ecological troubles, as peasants in effect consumed their capital in an effort to avoid or delay starvation or a risky venture into the outside world. Finally, I will claim – with little to offer as proof – that the straitened circumstances of mountain folk in the nineteenth and early twentieth centuries created an enduring resentment, a sense of grievance, that made mountaineers ready followers (and occasionally leaders) of political movements that promised basic changes. That is, the mountains, which in previous centuries supplied so many loyal recruits for the princes and sultans, helping them maintain and expand their authority, now served as a reservoir of rebelliousness, promoting political instability where they had once done the opposite. The tumultuous political history of the modern states of the Mediterranean world has among its many tributaries a current of mountain ecosystem history.