ANCIENT FORESTRY PRACTICES

Oliver Rackham
Corpus Christi College, Cambridge, England,UK

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Summary

Apart from modern forestry, horticulture, and orchards, trees play a part in a set of alternative practices known as woodmanship. These practices deal mainly with wild trees and natural forests and savannas, rather than plantations. They are often concerned with producing stems and logs of small sizes, more easily handled (especially in an unmechanized age) than the large timber produced by modern forestry. Scholars tend to underestimate the sophistication of early woodmanship; doubtless there have been many management practices about which we shall never know. Woodmanship practices make use of natural regeneration, especially by sprouts from felled trees.

Ancient management practices are normally reconstructed from written documents, field evidence such as surviving ancient trees, early pictures and photographs, and timber, wood, or charcoal in archaeological excavations or standing buildings. These are

best used in combination.

Where only one is available the details may be difficult to elucidate. Plantations of timber trees began in fourteenth century Germany, which is the original source of modern forestry. There was a parallel history in Japan, where cultivation of trees for timber developed (before European influence) alongside the coppicing and pollarding tradition.This article is not concerned with plantation, orchard, garden, or street trees. It concentrates on the production of timber, wood, and leaves rather than fruit, drugs, bark, and other products. Examples are drawn from Europe, North America, and the Mediterranean Basin.

1. Introduction

The history of forestry is usually written from the viewpoint of modern forestry; alternative traditions, if mentioned at all, are treated merely as primitive precursors of forestry. It is taken for granted that:

- the object of forestry is to grow timber, not wood, leaves, bark, fruit, and so on
- the trunks of trees should be harvested, not the branches
- trees die when cut down and have to be replaced deliberately, often by planting
- trees should grow in forests, not scattered in the general countryside
- they should be separated from other land-uses, especially from pasturage
- forestry should be at least regulated, if not carried out directly, by national governments

This restrictive group of ideas arose out of the Enlightenment philosophy of eighteenth century Europe, especially in the divergent forestry schools of France and Germany, and has been exported to other parts of the world where it may or may not be suitable for the local trees, land tenure, and cultural practices (see *History of Forestry*). There are other traditions of managing trees that reject some or all of these assumptions, and are far more widespread in geography and time.

They survive to widely varying extents in different countries and continents, and in Europe itself. Where no longer active, they have often been replaced by neglect rather than by modern forestry, and their effects can still be seen in the landscape and in living trees. These will be called woodmanship to distinguish them from modern forestry; some of them barely count as forestry.

This article is not concerned with orchard, garden, or street trees. Although it concentrates on timber, wood, and leaves, other products may have been significant in management. Hazelnuts were an important human food in England in the Mesolithic period (12 000 years ago to 6500 years ago), and it has been suggested that people found some means of encouraging the tree. In Italy chestnuts have been a major human food (replacing cereals).

They were mostly from special varieties, but the distinction between cultivated chestnut orchards and chestnut woodland is a narrow one. In Japan and Norway, leaf-litter gathered from forests has been used to fertilize farmland. Ancient management practices

are normally reconstructed from written documents, field evidence such as surviving ancient trees, early pictures and photographs, and timber, wood, or charcoal in archaeological excavations or standing buildings. These are best used in combination. Where only one is available, the details may be difficult to elucidate.

2. Properties of Trees

Woodmanship cannot be discussed in general terms: it depends on the particular trees involved, and on the reactions of different species to activities such as felling, pasturage, and burning. Trees are not part of the environment; they interact with human activities, and each has its own agenda in life. Some trees die when felled, but many species sprout either from the base (coppicing) or from the roots (suckering). Repeated cutting produces a stool**,** yielding an indefinite succession of crops of wood.

Whether a tree coppices, suckers, or dies on felling depends on the tree, not on the woodsman. Most temperate broad-leaved trees sprout from the stump, at least when young; a large minority (especially elms and poplars) sprout from the roots and spread into ever-widening, circular, clonal patches. Closely related species may differ: European beech (*Fagus sylvatica*) coppices, whereas American beech (*F. grandifolia*) suckers. Most conifers die when felled, but some coppice (e.g., European yew (*Taxus baccata*) and Californian redwood (*Sequoia sempervirens*)). Many tropical trees and Australian eucalypts coppice.

Some trees, especially some American, European, and Japanese species of *Tilia*, are self-coppicing: the original tree rots at the butt, falls down, and is replaced by a circle of sprouts arising from the base. However most coppicing behavior is evoked by felling. Such widespread behavior is presumably older than the axe, and is a long-standing genetic adaptation to something.

In eucalypts and some oaks it is an adaptation to fire, but it occurs also in noncombustible genera such as beech and elm. Perhaps coppicing and pollarding are adaptations to recovering from the assaults of elephants and other giant herbivores. The extermination of the great tree-breaking beasts in Paleolithic times may have been mankind's first and farthest-reaching influence on the world's forests. Trees may be cut at about 3 m above ground to form pollards that yield a self-renewing succession of crops of wood. Pollarding behavior is somewhat more widespread than coppicing: thus many pines and larches will pollard but not coppice.

2.2. Destructive Forces and their Impacts

Browsing animals such as cows and goats are often thought of as destroyers of forests, but there have been herbivores for many millions of years, and some trees are more or less resistant. They may be distasteful or spiny, or they may be adapted to survive in a bitten-down form in the presence of herbivores, gradually inching their way up until a leading shoot arises at a height which the animals cannot reach. This is characteristic of several trees of the European Mediterranean, notably prickly oak (*Quercus coccifera*) and Greek fir (*Abies cephalonica*).

Fire is not a universal destroyer. Some trees will burn, others not. Trees are combustible by adaptation, not misfortune: they burn because they make fire-promoting resins and oils. Most pines, palms, and eucalypts are fire-adapted: it is their business to catch fire from time to time (from lightning if other sources of ignition fail) and burn up competing species. They survive the fire in various ways, or perish, but regenerate by sprouts or seeds. Particular woodcutting, browsing, or burning regimes favor one species over another. In North America, for example, the twentieth century often produced artificially high densities of deer, which effectively eliminate young trees of hemlock (*Tsuga*).

3. Timber, Wood, Leaves

A fundamental distinction in many cultures is between timber**,** stems of trees big enough to make beams and planks (sawlogs, lumber), and wood of smaller sizes (roundwood). Wood arises from coppice stools, pollards, and branches of trees felled for timber. The distinction occurs in most European languages, but not in North America or Australia. The objective of most early woodmanship is to produce a permanent succession of small or smallish stems. Woodmanship is based on the discovery that when a tree is felled the resulting shoots grow into poles that are more useful than the original tree.

Medieval houses in England, Spanish-colonial buildings in Colombia, and Japanese vernacular houses are carpentered from large numbers of small timber trees. Each beam is hewn from the smallest tree that will serve the purpose. Handling big logs and dividing them lengthwise was laborious and was avoided where possible. Occasional extra-large trees were needed for dugout boats, ships' masts, bridges, cathedral roofs, and monumental temples: indeed the sizes of boats, ships, and cathedrals were often constrained by the sizes of available trees. Only in the last 150 years has special machinery (and the roads needed to support such machines) made the logging of giant wildwood trees a matter of routine.

Felling timber must not be confused with destroying forests. People destroyed forests because they wanted the land. Their object was to make a modest living from newly created farmland; they were not in the business of transporting, processing, and marketing trees. As with the destruction of the Amazon rainforest, most of the trees were wasted. Woodmanship may also produce leaves on which to feed domestic livestock. Cows, sheep, and goats eat tree leaves—cows prefer them to grass—but cannot climb for them. In much of Asia and old-fashioned parts of Europe trees are harvested to yield leaves, either fed green to the animals or dried and stored as winter fodder.

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Bibliography

Cronon W. (1983). *Changes in the Land: Indians, Colonists, and the Ecology of New England.* New York: Hill and Wang. [Deals with the pre-European cultural landscape and the effects of European settlement.]

Grove A.T. and Rackham O. (2000). *The Nature of Southern Europe: The Question of Desertification.* New Haven, CT: Yale University Press. [Includes a history of woodmanship and savanna in Mediterranean Europe.]

Moreno D. (1990). *Dal Documento al Terreno: storia e archeologia dei sistemi agro-silvo-pastorali*. Bologna: Il Mulino. [Relations between written and archaeological evidence in a forested, densely populated part of Italy.]

Rackham O. (1980). *Ancient Woodland: Its History, Vegetation and Uses in England.* London: Edward Arnold. [History and uses of the many different kinds of natural woodland in England.]

Rackham O. (1986) *History of the [British and Irish] Countryside.* London: Dent. [Deals also with hedges and non-woodland trees.]

Rackham O. (1989). *The Last Forest: The Story of Hatfield Forest [Essex]*. London: Dent. [A history of one particular group of woodlots over the last 2000 years.]

Rackham O. (1990). *Trees and Woodland in the British Landscape*, Revised Edition. London: Dent. [A popular and general account of trees and woodland in a densely populated land without much woodland.]

Rackham O. (1994). *The Illustrated History of the Countryside.* London: Weidenfeld and Nicholson. [A picture-book account.]

Rackham O. and Moody J.A. (1996). *The making of the Cretan Landscape.* Manchester, UK: Manchester University Press. [Includes an account of trees and their management in a specialized environment.]

Totman C. (1989). *The Green Archipelago: Forestry in Preindustrial Japan.* Berkeley, CA: University of California Press. [Biased toward the Japanese equivalent of modern forestry; there seems to be no adequate, fieldwork-based account in English of Japanese woodmanship.]

Troup R.S. (1928). *Silvicultural Systems.* Oxford University Press. [Mainly about modern forestry, but mentions links with earlier practices.]

Biographical Sketch

Oliver Rackham, O.B.E., M.A., Ph.D., is a Researcher in the Botany Department, Cambridge University. He studies the history, functioning, and conservation of cultural landscapes, as investigated by a combination of fieldwork, written records, and archaeology. He is a Fellow at Corpus Christi College where his interests are in the ecology and history of vegetation and landscape of Britain, Ireland, the Mediterranean, and the US. He is the author of several major books, *The History of the Countryside*, and *The Last Forest.*