

The Ecology of Medieval English Monasteries

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ABSTRACT

After the Norman Conquest of England, the political and economic climate allowed the development and rise of the Cistercian order in England. The ending of what had become a benign ecological regime occurred during the mercantilistic-religious lifetime of Henry VIII. The Cistercians of Europe allowed later times to start further up on the ladder of technology. Much of the knowledge and insights that they gained have been ignored until today. The purpose of this essay is to show that the Cistercians were intelligent, thoughtful, and feeling towards man as a part, not a user of Nature. They produced a sustainable system, with a mind to always improving the land. These white friars and what they represent, are, in the author's assessment, superior to our present materialistic non-sustainable civilization.

(Key Words: conservation, traditional environmental management, technology evolution, historic agriculture techniques, agrarian societies, science history, sustainability studies)

INTRODUCTION

"Quo Vadis Domini" (1)

The English Cistercians were a reformed branch of the Benedictine monastic family inaugurated in 1098 at Citeaux. The monks sought to follow the rule of St. Benedict more closely, with emphasis on solitude and poverty, manual labor, and simplicity of life and liturgy. The Cistercian reform adopted many of the new ideas developed within the monastic revival of the twelfth century. The order, under the spiritual direction of St. Bernard, saw rapid expansion throughout Europe, especially in England. Its social influence was felt in the area of agrarian reform and the opening of full religious status to the simple and poor.

We will examine certain aspects of how the English Cistercians understood their environment and how they attempted to change their environment without doing violence to the ecological chain. As Professor R.A. Donkin states in *The Cistercian Studies in the Geography of Medieval England and Wales* (2).

"The work of the Cistercian order in England and Wales (and generally throughout Europe) fell into three main phases. The first two each of about one hundred years and the last of about two hundred years. The order of Citeaux was founded in 1098. The purpose of the order was to revive the monastic principles that St. Benedict had expounded in his original rules that the various monastic orders had left or abandoned by this point. This meant to the Cistercians that it necessitated a physical isolation from any temporary secular settlement and the potential for the development and physical activity that would allow them to survive."

These monks did not look upon themselves as innovators. We today realize that their work in the field of "Land Reclamation", "Control and Use of Water", "Animal Husbandry", and "Grafting and Seed Selection" is a unique contribution to our understanding of biological systems. They were the first modern scientific farmers. This was possibly because of their world view. They did not make the mistakes that many 20th century farmers have made. Why? Maybe because they understood the importance of not upsetting the balance of nature.

LAND RECLAMATION

*"A MONK there was, a fair for the maistrie,
An outridere, that lovede venerie,
A manly man, to been an abbot able." (3)*

Clearing of land for agricultural purposes normally commenced soon after a monastery was founded. St. Bernard, the founder of the Cistercians, based his monastic rule on the philosophy of St. Benedict, the founder of Western Monasticism. He laid great emphasis on the value of manual labor as well as prayer. The only activity the first generation of monks on any particular site could expect to take part in was clearing operations. However, there is a great difference between 13th Century timber cutting and clearing and the mass leveling of forests today. Only some trees were cut. Many were left and many saplings of oaks were planted. Many of the oaks planted by the monks were cut down five centuries later to be used in the building of ships for the British Navy. Several of these "Men of War" were in active service on the high seas for more than one hundred years, this being the basic instrument of military power during the early industrial revolution in England.

There were on the average, one hundred monks in each monastery. In addition, converse or lay-brothers either joined the order or were hired to help with the work. The monks understood the needs of future generations. There was a great demand for timber in medieval times for buildings as well as the construction of bridges. In addition, wood was used for fuel. This is why they preserved stands and also conducted large-scale re-plantings.

The oak tree had another important use in the ecological chain. It produced large quantities of acorns or oak apples. Swine herds were permitted to eat these acorns in the autumn and grew fat on them. The main source of fresh meat for the medieval peasant population was the pig.

The monks were aware of the various properties of each different type of tree. Alder was used for clogs and butter boards because it was waterproof. Ash, because it will not split, was used for making handles of tools. Elmwood is a curiously damp-resistant wood. It was used for coffins, piles under bridges and timber used for construction below the water line. Hornbeam was sought after by millers for the cogs of their wooden wheels because of its hardness. There were laws regarding the cutting of timber. It was an offense to cut down a tree without permission.

Woodland soils normally produced good arable land. The monks never wholly denuded the forest but left patches of standing timber. The digging up of stumps was a difficult task. Many of the new fields were created by clearing the woodland were double trenched by hand the first time. After this was done, the field was ploughed like any other field owned by the monastery

In most cases, it was easier, even though it took time and great labor, to bring a forested area under cultivation, than to make crops grow on moorland or heath. Often the soil was too thin for plowing. Reclaimed moorland was immediately put down to grass and used for grazing. The rank grasses that grew on reclaimed 'waste' were used as a source of turbarry, rough thatch, and other building material.

The monks harvested bracken from the unimproved 'waste' land. Bracken's quality of keeping dry was well known. It was used in the foundation of hay and oat stacks. It raised the value of the hay because it was damp proof. It also protected oats, as rats will not gnaw through bracken for it, like horsetail, makes their mouths sore. The tall bracken was cut in September and then carried away leaving the under cut grasses to be grazed.

The Cistercian monks did not do violence to their environment. They lived in harmony with nature. They have been recognized as the great agriculturalists of the 13th and 14th centuries. The sites chosen by the monks for their monasteries were usually in wild and inaccessible places, which were left to them precisely because they were uncultivated, and no one else cared to undertake the task of reclamation and clearing the land for the plough.

Arthur Hallam, the 19th century British historian, in *The Middle Ages*, states "We owe the agricultural restoration of a greater part of Europe to the monks" (4). The monks appeared to understand the ecological chain. Over the period of centuries, they drained the fens and marshes, cleared the forest and thus increased the land under cultivation. Knowles, in *The Religious Order in England*, states (5):

"Most of the Cistercian foundations were, however, made in wild or waste districts, nominally the property of an overlord but economically undeveloped. The monks were therefore inserted, as it were, into the countryside without dislocation or disturbance of any kind: they proceeded to reduce the wilderness to cultivation and to live upon their labour. When they had developed the land within the immediate neighborhood of the monastery, granges were constructed or adapted on more distant parts of the property and the abbey became the centre of a wider economic unit, such as we can see by glimpses in working order at Rievaulz under Alfred. These granges multiplied rapidly. Meaux, founded only in 1151, had seven granges already by 1170, and Wardon twelve by 1190, and neither of these was an abnormally large house; Furness came gradually to the nerve-centre of a far-flung system of exploitation."

As a rule, the Cistercians went into the more remote and desolated districts and established their monasteries there. Within a hundred years of the establishment of the Cistercian order the land under the plough had doubled in England. One-third of the English houses founded

by 1250 lay in or near royal forests. Wooded districts supplied essential building material. The two most essential pre-requisites for the foundation of a monastery were good stands of timber and water.

CONTROL AND USE OF WATER

The majority of Cistercian monasteries were built beside a river or large stream. The monks had a profound knowledge of the importance of water in their own daily lives and the vital junction connected with the monastic farm. The river served a variety of purposes. It supplied the monks with water for drinking, cooking, and brewing. Then lower down in priority, the river supplied water for washing of men and their clothes. It also turned the watermill, used for grinding corn. According to Austin Poole in *Medieval England, Volume 1*, "There were some six thousand water mills in England at the time of Domesday (1086) and many more had come into existence by the time Fountains Abbey was built in the mid-11th century" (6). As the water left the monastic enclosure, it took away human sewage. In most cases the monk's latrines, the *necessarium orreredorter*, were overhanging the river (7). In other cases, the monks constructed sluice gates that could be opened to flood and clean out the vaulted storerooms beneath the large dormitory.

The monks did much to improve the pastures and meadows surrounding the abbey. The pastures were gradually leveled, hollows filled, and large stones removed. The moles did valuable work as they supplemented surface drainage and supplied top dressings of fine soil to be cast about. The monks used to plant a stake in the center of any bare patch of grass. Cattle used to gather around it and scratch and rub themselves. They manured that spot and made it fertile. When this happened the stake would be moved to another bare place.

The area on each side of streams and rivers were drained by the building of dikes. In spring this low-lying area would be flooded. The silt carried by the water helped to fertilize the field. This helped to improve the hay crop in the following summer.

The monks were not permitted to eat meat, and were dependent on fish as one of the main sources of protein in their diets. They constructed special fishponds. They controlled the number of fish in each pond and were able to produce enough fish to meet the large demands of the monastic community.

The monks, often to supplement the stock of fish in their ponds, used to fish and net the streams and rivers in the vicinity. (To be remembered, Friar Tuck of Robin Hood fame, was fishing when he first met the outlaw leader at the edge of Sherwood Forest.)

In medieval times, fish was an important food item. The Cistercians mastered the problems of mass production. In the pond, fish were fed mildew grain. The bones of the fish were used for fertilizer with other kitchen waste. Fountain Abbey used a nearby marsh as a fish-pond or *vivarium*. Waterfowl were also part of the monks' diet.

ANIMAL HUSBANDRY

The English Cistercian monks became well known in the 13th and 14th centuries for their animal husbandry. They maintained the balance of their herds of white, wide-horned Chillingham cattle by deliberate weeding out of unwanted traits and skilled selection of breeding beasts. They used Sussex cattle as draught oxen, which did most of the heavy ploughing on the monastic farm. (At this time, horses were not used for plowing, as working collars for horses were not invented until centuries later.)

Oxen were easier to winter than horses who usually demand hay rather than straw and often required some oats or other grain that humans could eat. In the autumn, the cattle not needed as draught animals, for milk, or breeding were slaughtered and the hides tanned. It is concluded that the vegetarian Cistercians either sold or gave away the meat.

During the early years when the monasteries were being established, there were large herds of cattle. The flocks of sheep were small. There generally were not enough sheep to produce sufficient wool for the creation of cloth. Cattle were more suited to scrubland and stretches of coarse, wet herbage. They did not get in trouble in the underbrush or drown in the fens like sheep.

However, as the land was reclaimed, the monks turned more to sheep. They became famous sheep-breeders and the size of their flocks grew. The Cistercian houses across England produced a surplus of wool and it rapidly became their principal cash crop. Many monasteries in the hundred years prior to the Black Death Plague of 1349, had the right to export wool to Flanders and Italy.

The monks did not make the mistake of the Scottish Highland land owners of the 19th century. They kept up the number of cattle, mostly because of their domestic need for dairy produce. This meant that bracken was kept in check by cows lying down on the young ferns killing or stunting them. The ground did not become sour as it did in Scotland, after the clearances in the Highlands. Both cattle and sheep held their ecological niche in relationship to the environment as a whole. The Cistercians were recognized as good sheep farmers. From illustrated manuscripts, we have a good idea what Medieval English sheep looked like; they had long-locked fleece and short, rather straight horns on both ram and ewe. Their heads and the back of the neck were dark and the fleece along the back was full of coarse hair. The monks were the first to dock the tail of the sheep.

Several of the herds that roam the Yorkshire dales today have existed continuously since the 13th century. It is worth noting that it is illegal to sell off a complete hirsle from any mountain because it takes several generations of sheep to learn their individual "sheep-walk" and some of the older, experienced sheep must be left to guide the young, who would otherwise starve.

An early Cistercian work of instruction states that "a shepherd should not go without his dog, his hook, a pair of shears and his tar book".

Intentionally, the monks never overstocked or overused the land. A proper balanced number of cattle and sheep were maintained with a few horses, mainly for riding. The ecological balance of the ideal monastery was maintained. The number of animals and the type of animal were regulated. The aim was to improve the breed.

After the dissolution of the monasteries by Henry VIII in the 16th century, such ecological balance was broken and not re-introduced until the late 19th century.

TIME AND ORDER

The use of the clock can be interrelated to the use of order as an adjustment, or almost as a technological adaptation towards one's environment. The desire to have an ordered environment was until then unique. This basic desire to have a philosophian ordered society, an ordered religion, and an ordered environment was fundamental to the English Cistercians. This was a rather revolutionary concept. It is an established fact that the advent of agriculture was related to the genetic development and adaptation of the various types of grain forms in the Middle East in the Tigris-Euphrates valley. While the people of the Middle East may have achieved many advances in agriculture, they lacked the ordered process, scientific approach, defined aim, and advanced methods that the monks used to achieve their goals for an orderly life.

One might say the period of time that was involved was a lot longer than would be tolerated today, but the basic approach remains unchanged. The development of the clock can be related to the development of the biological order system of the medieval monastery. From current interpretations of readings in the medieval period, monks set out to establish order in their world. From this concept of order, one might say arises the idea of ecology, since ecology is an attempt by man to order nature or the biological portions of nature. The interrelationship between organisms and the hierarchical structures were understood and were recorded by the monks. Problems under consideration by the monks, which were not well understood, were treated in a speculative manner. In some cases speculations were correct and in some cases they were wrong, as speculative answers tend to be, but the monks expressed a desire to understand the biological world in terms of structure. This attempt to structure the biological world symbolizes an attempt to utilize a pre-determined structure within an ecumene.

The development and improvement of various approaches such as intercropping and the interdependence of various types of edible species was developed during this time. The improvement of agricultural technologies resulted. The sorting houses and clearing houses for new advances outside the monastery and new research and development within the monastery was continuous from the time of St. Benedict in the 9th century to the time of Gregor Mendell in the 19th century. It is interesting to note that the entire basis of modern genetics is based on speculations of this Swiss Abbot. These speculations were done only over a short portion of his life before he was transferred. The amount of data that was necessary to have biological research projects fit nicely into the medieval monastery or the medieval commune because the monastery was the only place within the medieval society

where individuals were able to read and write. It meant that they had access to past records. They also could write down the results of their research. This meant that they had the hindsight and recorded wisdom that can come from written past records. The concept of the medieval monastery I believe, is necessary for the development of the major portion of our civilization. This is reiterated over and over again by Louis Mumford in his various books such as *City and History* and *Technics and Civilization*.

AN INDUSTRIAL INSTITUTION IN A PRE-INDUSTRIAL SOCIETY

"Dawn on the somber sea brings on the sun

Then passes the hill: look darkness is lifting."

It could be said that the two main motive forces of our modern technologic civilization are the biological and the mechanical. It is interesting to note that both of these theories come from the medieval world. The widespread production of hydraulic machines such as water mills and hydraulic technology in Medieval England can be directly attributed to the inventiveness of the Cistercians. In the area of biological technology, there was a continuous attempt designed to improve the various livestock and vegetables that were utilized during the medieval age. The turnip increased from the size of a tomato to its present rather large size, over a 500-year period of genetic selection. There was an improvement of agricultural techniques such as the introduction of rotational systems, the introduction of farrowing systems, fallowing, and the introduction of independent interdependent systems. There was a beneficial effect from various species such as the utilization of manure to develop larger humus through moles.

It is interesting to note that the attitudes propounded within the medieval church have been taken over by the various government agencies of today. One could even make a case that modern agricultural research stations were equivalent to the monastery in the 13th century. There was a large amount of genetic selection taking place over a long period of time. Breeds of cattle, horses and sheep were improved by selection. There were improvements of agricultural implements and agricultural techniques. The medieval monastery was not what our 20th century monasteries are. They functioned within a different world; they were used as 'clearing houses' for information.

The daily routine of the Cistercian monk contained certain periods of hard physical labor in the fields, fens and forests, balanced with periods of study and also of prayer. The monk lived close to nature; he came to understand the forces of nature and attempted over a long period of time to adapt and change his environment without doing ecological damage to nature. He had an understanding of time (8):

"In terms of the human organism itself, mechanical time is even more foreign: while human life has irregularities of its own the pulse be of the pulse, the breathing of the lungs, these change from hour to hour with mood and action and in the longer span of days, time is not measured by the calendar but by the events that occupy it."

CONCLUSION

Various later upheavals have each left misinformation and lies about what the Middle Age was. Ours is included in this category. What this paper illustrates is, that popular concepts of wholesale environmental exploitation by Middle Age societies hold absolutely no water, at least with respect to the English Cistercians. The medieval religious concept of nature can be shown by the Sermon to the Animal of Saint Francis Of Assisi. This concept of man as a responsible caretaker of the Garden Earth led them to patience and to humility in front of the Creator's creation. The Cistercians are still here and will still be here five hundred years from now, whatever type of decline occurs in between.

FOOTNOTES

1. St. Peter. On the road to Rome, upon seeing a vision of Christ.
2. R.A. Donkin, *The Cistercian Studies in the Geography of Medieval England and Wales*. Pontifical Institute of Medieval Studies, Toronto, 1978.
3. Geoffrey Chaucer, *The Canterbury Tales*, The Prologue. Lines 165-167.
4. Arthur Hallaum, *Middle Ages*, see as quoted in Donkin, *The Cistercian Studies in the Geography of Medieval England and Wales*, 1978.
5. Dom David Knowles, *The Religious Orders in England*, Vol. I, Cambridge, at the University Press, 1962.
6. Austin Lan Poole, *Medieval England*, Vol. I, Clarendon Press, Oxford, 1958.
7. *Fountains Cistercian Abbey*. Founded in 1132. Description of the location: "It was a place remote from all the world, uninhabited, thick set with thorns, lying between the slopes of mountains and among jutting rocks - fit rather, it seemed, to be the lair of wild beasts than the home of human beings". (The last Abbot, William Thirak, was hung by Henry VIII for taking part in the "Pilgrimage of Grace" rebellion in 1539).
8. L.S. Stavriano, *The Promise of the Coming Dark Age*, W.H. Freeman and Co., San Francisco, 1976.

About the Author:

Austin Mardon, Ph.D. was a member of the 1986-87 Antarctic Meteorite Recovery Expedition to the Lewis Cliff Ice-tongue and environs. He has authored over 100 scholarly communications in addition to 21 books in such varied areas such as polar geography, historical geography, space science and Alberta political history. He received his Ph.D. in Geography from Greenwich University in 2000. In 1999 he was awarded the Governor General's Caring Canadian Award, which was personally presented to him by the Canadian Governor General. His most prestigious communication was several years ago when he was published in *Science* on the topic of Antarctic meteorites. He is currently an adjunct faculty member in geography and space science at Greenwich University.

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