

Landscape mosaics



Thoughts and proposals
for the implementation
of the Council of Europe
Landscape Convention

COUNCIL OF EUROPE



CONSEIL DE L'EUROPE

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for the implementation
of the Council of Europe
Landscape Convention

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Preface

The landscape reflects a present which interacts with a mosaic of memory traces which have diverse symbolic values.

Valerio Di Battista

The European Landscape Convention of the Council of Europe (ETS No. 176)¹ aims to promote landscape protection, management and planning and to organise international co-operation. It applies to the entire territory of the parties and covers natural, rural, urban and peri-urban areas. It concerns landscapes that might be considered outstanding, but also everyday or degraded landscapes. The convention represents the first international treaty exclusively devoted to all the dimensions of landscape, considered from a perspective of sustainable development.

The Council of Europe is continuing the work undertaken, since the adoption of the convention in 2000, to examine and illustrate certain approaches to landscape.² This book, entitled *Landscape mosaics – Thoughts and proposals for the implementation of the European Landscape Convention of the Council of Europe*, explores certain ways of understanding the landscape and makes proposals for more attention to be paid to it.

It brings together the reports presented by Council of Europe experts on the occasion of the Council of Europe conferences on the European Landscape Convention, organised at the Palais de l'Europe in Strasbourg, on 23-24 March 2017, 6-7 May 2019 and 26-27 May 2021. Representatives of governments and international organisations, both governmental and non-governmental, who took part in these meetings were able to discuss the subjects dealt with and make progress in the implementation of the convention.³

The experts who contributed to the production of this book are warmly thanked for the quality of their reflections and their proposals:

- Valerio Di Battista – Towards a grammar of European landscapes;
- Régis Ambroise – Designing agricultural landscapes for sustainable development;
- Patrice Collignon – The rural landscape in transition: energy, agriculture and demography;
- Mauro Agnoletti – Experience of Tuscany, Italy;
- Carmine Nardone – The Manifesto for the beauty of rural landscapes in Campania, Italy;
- Jean Noël Consalès – Urbanisation, town planning and landscape;
- Felix Kienast, with F. Wartmann, A. Zaugg and M. Hunziker – A review of integrated approaches to landscape monitoring;
- Barry Hynes, Valentin Riehm, Maguelonne Déjeant-Pons, with the contribution of Enrico Buergi – Experiences with public funds and the landscape;
- Yves Luginbühl – Landscape and responsibility;
- Michael Oldham – Professional recognition of landscape architects;
- Claire Cornu – Dry stone walls in the landscape, inheritance and innovation for rural sustainability;
- Gerhard Ermischer – Walking the landscape;

-
1. Adopted by the Committee of Ministers of the Council of Europe in Strasbourg on 19 July 2000, the European Landscape Convention (<https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/176> ETS No. 176) – now entitled “Council of Europe Landscape Convention” – was opened for signature by European states in Florence on 20 October 2000. A protocol amending the convention (<https://www.coe.int/en/web/conventions/full-list?module=treaty-detail&treatynum=219> CETS No. 219), which entered into force on 1 July 2021, aims to promote European co-operation with non-European states wishing to implement the provisions of the Convention, by opening it to their accession.
 2. *Landscape and sustainable development – Challenges of the European Landscape Convention*, Council of Europe Publishing, 2006; *Landscape facets – Reflections and proposals for the implementation of the European Landscape Convention*, Council of Europe Publishing, 2012; *Landscape dimensions – Reflections and proposals for the implementation of the European Landscape Convention*, 2017. www.coe.int/en/web/landscape/publications.
 3. Conference reports: Documents CEP-CDPATEP (2017) 19; CEP-CDPATEP (2019) 20; CEP-CDPATEP (2021) 16. www.coe.int/en/web/landscape/conferences.

- ▶ Klaus Fürst-Elmecker: Traditional forms of thought and spirituality;
- ▶ Michael Oldham, with the contributions from Ana Luengo, Niek Hazendonk, Leor Lovinger, Indra Purs: Urban landscapes and climate change: the contribution of landscape architects to improving the quality of life;
- ▶ Régis Ambroise: Landscape and the responsibility of stakeholders for sustainable and harmonious development.

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Chapter 2

Designing agricultural landscapes for sustainable development

Régis Ambroise, expert to the Council of Europe

Agronomist, urban planner and former operations manager for landscape and agriculture with the ministries responsible for equipment, and for the environment and agriculture, France.

Introduction

Landscapes are the expression of development projects and how the spatial translation of those projects was either intended or endured, depending on the era. The art of territorial planning in Europe developed with varying vigour from country to country and from one era to another, leaving us an often remarkable and varied landscape that we still enjoy to this day. What we are now seeking to protect is the result of the best projects left by previous generations. Working with historians capable of explaining how these landscapes were devised to solve the problems of those days, we can take inspiration from their methods. The landscapes remind us that, if we are to find solutions to modern-day challenges, it is in our interest to imagine a spatial project adapted to its context, one that will guarantee the effective transition desired.

Landscapes are also a collective asset. Each region, each farm inherits a landscape, rich or otherwise, that it has to recognise and manage, not letting it deteriorate but, on the contrary, making it flourish, for the benefit of present and future generations. Landscapes are a treasure that offers a vast range of sensory experiences and perceptions of reality. It is also a fund of ecological capital, for wild and domestic animal and plant species have developed in the human landscape mosaic, strengthening the local biodiversity conditioned by the natural specificities of each region. Lastly, landscape is an economic and technical heritage that helps supply a wide range of products essential to the independence of our continent. In connection with that purely productive function, rural landscapes are a factor to be taken into account in local development policies to provide residents with a calmer quality of life than in the city, to foster tourism and to attract image-conscious firms with a quality working environment for their employees.



Figure 1. Agricultural landscape (Photo: X. Remongin, Ministry of Agriculture, France)

1. Landscape and agriculture: a long story

The major periods of rural landscape development in Europe

Many historians pinpoint the beginning of the Middle Ages as a period when agriculture, in its development,

managed to mark vast areas with its stamp, turning forest landscapes around inhabited clearings into open, largely humanised territories. The periods of plenty that accompanied population growth were followed by more difficult times, marked by epidemics and wars, during which the pressure on the land eased off and nature closed in again, as misery spread through the countryside. Then, when conditions changed for the better, people set about clearing the land again and, through careful observation, organising it to cater for their needs. It was at these turning points, when new modes of social and economic organisation had to be found to escape from hardship, that the question of landscape, formalised or otherwise, entered into the picture to help produce inventive solutions.

The Cistercian Order's landscape project

When the first farmer monks, in particular the Cistercians, started tilling unused land, they organised space according to the best agronomic techniques of the day, in order to produce everything, they needed for their own sustenance and that of the villagers who worked for their monasteries. While helping to improve soil use, the principles that inspired them made reference to celestial Jerusalem, full of the light and the divine clarity to which they aspired, and it was that idea that they wanted to make immediately perceptible in the way they organised space: the cloister in the middle of the buildings became the shaft of light connected to heaven, the orderly layout of the plots of farmland contrasting with the forces of evil that reigned in the wastelands and against which a relentless battle had to be waged (Duby 1979). These values, both technical and mystic, spread throughout Europe. Monasteries were built according to the same principles everywhere, from the south of Spain to the Baltic, from the marshlands to the Alps. In many regions the present-day landscape still bears the traces of this period of plenty for agrarian landscapes, even though the monks have stopped farming their lands and the land itself has often been divided up and shared out among the local peasants.



Figure 2. Jörg Breu The Elder (1475-1537): Cistercian monks working in the fields, scene from the life of Saint Bernard

The landscape project of the Italian Renaissance

Well before the term landscape was coined, towards the end of the Middle Ages, and when much of Europe was deep in recession, worn out by plagues and wars, the notables of Siena commissioned two frescoes from the artist Ambrogio Lorenzetti to represent the “Allegory of good and bad government” and a third showing the princes of that era discussing their future. While the fresco of Bad Government, which is not so well preserved, illustrates what state the landscapes must have been in at the time (floods, pillaging, erosion, fires), the fresco of Good Government, which is in excellent condition, portrays a dream landscape the attentive contemplation of which reveals the keys to a better future. First of all, the fresco is divided into two parts of equal size, one half devoted to the city and the other to the country, with the door in the middle of the ramparts organising the exchanges. Each of these two parts presents the political, technical and cultural messages necessary to overcome the curses represented in the Bad Government fresco.

In the city, for example, we see merchants and bankers who have replaced the feudal princes, joining together with craftsmen to develop trade and contribute to the construction of the city with its new buildings that were erected using the most modern techniques of the era. We also see a schoolmaster teaching young people in a classroom. The figures are represented in such a way as to draw attention to their faces and bodies, as if to highlight the creative role everyone has to play. In the part devoted to the countryside the painter depicts the liberation of the peasants from serfdom. They have acquired the status of tenant farmers, living in well-maintained houses and cultivating the fields according to the principles of *cultura promiscua*, with cereals, olive trees and vines growing alongside one another. Developing the land involves building terraces on the steeper slopes; in the plains, space is made for the animals that serve to plough the land and provide transport.

But the general organisation of the landscape is devised by the new landowners from the city, who build their villas on the hilltops and surround them with pleasure gardens. The brand-new bridge over the river shows the importance of exchanges with the outside world in this sustainable land-development scheme. At a time when perspective had not yet been invented, the fresco uses a highly avant-garde system of representation to give depth to the landscape and mix scales (Sereni 1965). This fresco could be included in the World Heritage List in the landscape category. It represents a model of what we call today a

territorial landscape project that brings together all at once political and social, technical and economic, aesthetic and cultural factors. The fresco encouraged the notables of the day to turn to the solutions suggested by the artist and those who commissioned the work: even today, more than seven centuries later, it is possible to find rural landscapes in the Siena countryside that recall certain details of the fresco.



Figure 3. Agricultural detail of the fresco of Good Government by Ambrogio Lorenzetti, Siena (Photo: Scala)

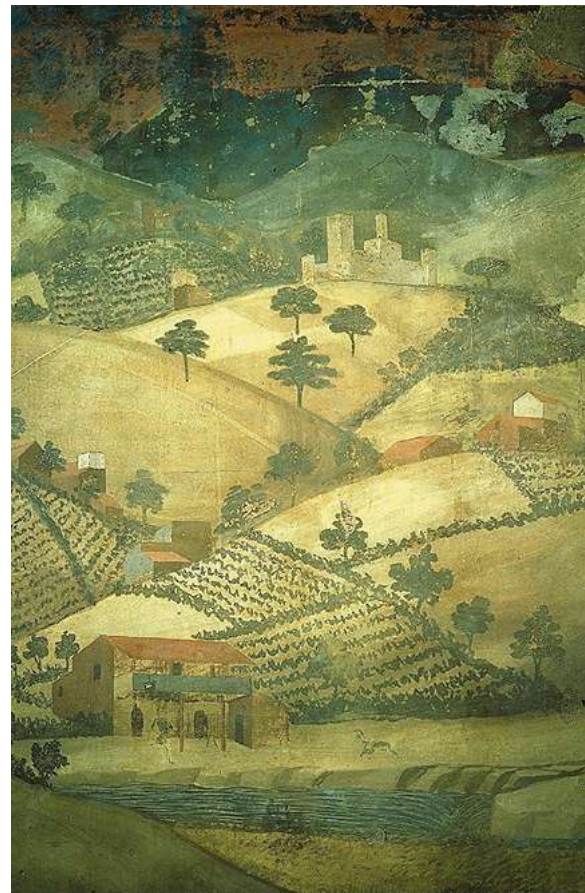


Figure 4. Agricultural detail of the fresco of Good Government by Ambrogio Lorenzetti, Siena (Photo: Scala)

The reclamation of polders in the Netherlands from the 17th century onwards

Other examples from different countries and different periods of history show how landscape approaches were combined with projects to transform societies to help, in the best-case scenario, to improve the situation of a large part of the population while leaving us with forms of landscape of the highest quality. In particular, the Dutch hydraulic engineers, who were extremely attentive to the organisation of space, succeeded in turning the polders into farmland and increasing the area of arable land by building dykes, canals and windmill-driven pumps to evacuate the seawater. Artists joined them to immortalise the intelligence of the solutions they imagined and the quality of the resulting landscape. The engineers were subsequently invited all over Europe to make marshlands and wetlands arable, or to create new polders suited to the particular context.



Figure 5. Anonymous Dutch painter c. 1600

The generalisation of the enclosure system in 18th-century England

The enclosure movement began in 16th-century Britain but did not really become widespread until the House of Commons passed the Enclosure Act in 1773. It turned vast swathes of land into a productive system of farmland, criss-crossed by hedges and trees for the benefit of a landed aristocracy sensitive to the quality of their surroundings. Unfortunately, the trend drove many peasant folks from the land, obliging them to seek work in the new factories, or even abroad. The enclosures marked the end of the rights of local people to use the land, in particular the commons, on which many of them depended for their livelihoods. The art of the English garden developed and inspired the organisation of the rural landscape. Even today, thanks to political determination to protect rural spaces, Britain's agricultural landscapes have

retained their considerable beauty and are used by city dwellers as places to relax and restore their energy.



Figure 6. Anonymous English artist (18th century): *The harvest at Dixton, Gloucestershire*. Cheltenham Art Gallery and Museum (Photo: Bridgeman/Giraudon)

The mixed farming and landscape project in 19th-century France

In France, at the end of the 18th century and during the revolutionary period, great debates took place to define the farming policies to be set in place, in order to better feed the people. For the physiocrats, inspired by the British model, modern farming meant transforming production systems by introducing a system of mixed crop and livestock farming, doing away with fallow land, clearing wetlands, putting untillied land into production and giving peasants a share of the profits thus generated. The revolutionary project was based on the same agronomic principles, but with the aim of giving the land owned by lords and the Church to the peasants. What actually occurred was not so radical, but because of these orientations, the French countryside in the 19th century remained densely populated. The old community-based organisation of villages that allowed even the poorest to survive gradually disappeared, making way for those who managed to acquire small farms or who found work on the larger farming units that were emerging at the time.

This was a time of great transformation of France's countryside, the principles of which were laid down in administrative directives such as those issued in 1797 by the then Minister of the Interior, Agriculture and the Arts, François de Neufchâteau (Luginbühl 1989), in collaboration with André Thouin, professor at the Natural History Museum (Boons 2013), and in technical works such as the *Complete Course in Agriculture* by Abbot Jean-François Rozier, published in 1781 and supplemented at a later date, or the *European Annals of Plant Physics and Public Economics*, edited from 1821 to 1827 by the civil engineer F. A. Rauch (Cabanel 2006). In all these documents we can see the link the authors made between their agronomic proposals, based on the introduction of new farming methods, and concerns about spatial planning. The land had to be organised to serve the agricultural project but also to serve

the beauty of the landscape. Mixing business with pleasure, cultivating the beautiful and the good, these were the values of those who, without petroleum, fashioned the admirable, cultivated landscapes that make up much of the modern countryside and are the mark of the harmonious enhancement of nature.

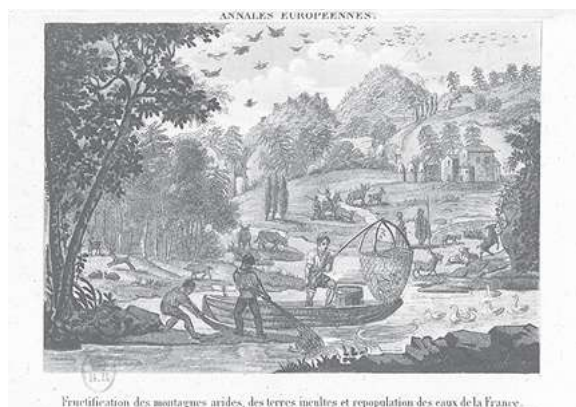


Figure 7. Implementation of the project to plant fruit trees on the arid lands and river banks of France (Photo: Bibliothèque nationale de France)



Figure 8. The intended result. *European Annals of Plant Physics and Public Economics*, review published by F. A. Rauch from 1821 to 1827 (Photo: Bibliothèque nationale de France)

The agronomic project

The agronomic project was intended to challenge the system prevalent under the *Ancien Régime*, where farmland was divided into two categories: the *ager*, or land used for crop farming, and the *saltus*, which was very often common land used extensively by the local people to feed the few animals that families possessed and their beasts of burden. The small amounts of manure that were collected, and the fields left fallow for crop rotation, did not suffice to keep the *ager* fertile; the amount of organic matter dropped, and yields diminished as a result. But an innovation from Flanders and England soon revolutionised crop farming. The introduction of new plants such as clover, turnip and, later, colza, beans, potatoes and beetroot, and the installation of temporary pastures in the rotation of crops, improved the productivity of the land thanks, *inter alia*, to the nitrogen that these vegetables brought

to the soil. Combined with privatisation of the commons and the building of enclosures, this system made fallow fields obsolete because every piece of land could be cultivated each year, thanks to the manure produced by animals raised for their milk or their meat, which helped enrich the soil. So, mixed crop and animal farming gradually spread, adapting to every type of climate, topography and social set-up. Special attention was paid to field trees, which became an integral part of these new agrarian systems, on a par with crops and animal husbandry (Papy and Ambroise 2012).



Figure 9. Prize-winning field of fruit trees in Normandy (Photo: CMRSH Caen Fonds ancien du ministère de l'Agriculture)

Land reorganisation

In addition to all the advice on how to work the land and raise livestock, whole chapters of the treatises on agronomy at the time were devoted to the organisation of agricultural space, according to the constraints and advantages of each small region. Diagrams illustrated how to reorganise the boundaries of the land, design a network of ditches to drain and irrigate it, lay out service paths, build support walls, install fencing, provide watering places and so on.

The landscape of the 19th century in France was the result of a veritable agronomic landscape project (Ministry of Agriculture, 1866-72). It was fostered both by the elite – as seen from the descriptions of the farm that won prizes or the best farms in each department, the files about which were illustrated by precise technical plans and coloured drawings expressing the aesthetic values defended for these new layouts – and by the small farmers, who did not leave much written evidence but whose feeling for space was expressed directly in the pride they took in caring for their land like good, sensible people.

In certain regions the place names reflect the inhabitants' attitude to the landscape. Some names of villages or hamlets, for example, express a sensitivity to beauty: Bellecombe, Bellefosse, Pré-Coquet, Beaujolais, Champfleuri, Bellevue, Beaupré and so on.



Figure 10. Plan of a farm that was awarded the departmental prize in Pays de Caux in 1868 (CMRSH, Caen Fonds ancien du ministère de l'Agriculture)



Figure 11. Commune of Bellecombe, Haut-Jura, France (Photo: R. Ambroise)

Other examples in Europe also reveal the close link between the ability to produce under difficult conditions and the pride the peasants felt in having fashioned landscapes of such fine quality. Take the peasant painters of the Gruyère valley, in Switzerland, who painted frescoes over the doors of their winter chalets depicting charming agricultural scenes, such as farmers leading their herds up to mountain pastures. Similarly, in the Douro in Portugal, in every railway station in the villages of the region there are *azulejos*, ceramic paintings, showing the exceptional landscapes of the terraced vineyards in honour of the peasants' work. In these regions of mountain slopes collective practices were more necessary than elsewhere and fostered the development of particularly typical productions linked to the singular qualities of each stretch of land.



Figure 12. Fresco by a peasant painter in the Gruyère region of Switzerland



Figure 13. Azulejo in a railway station in the Douro region of Portugal (Photo: R. Ambroise)

Farm building

Worth mentioning are the magnificent timber-frame farm buildings, works of prodigious ingenuity and beauty, to be found in numerous regions of eastern Europe, particularly in Romania. Indeed, farm buildings are a strong feature of Europe's agrarian landscape diversity. In general, they were built out of materials available locally, singly or in combination: limestone, granite, shale, wood that was cut, sawn, splintered or sculpted for different uses, dried or baked clay, straw or thatching. Added to this diversity of materials was the diversity of architectural forms linked to the functions served by the buildings: housing, stables, barns for storing fodder or crops, cellars for producing and storing wine or oil, rooms for turning milk into cheese, tool sheds, etc. Water was also needed for the families and the livestock, and this meant building what were sometimes highly sophisticated supply and storage systems: cisterns, fountains, ponds and drainage. Here again, decorative features often enhanced the actual constructions. The traditional rural architecture still visible today is thus a source of identity that deserves to be preserved, and not only for its heritage value, as we shall see later.



Figure 14. Stone and brick barn in Normandy, France (Photo: R. Sauvaire)

In the 19th century, following Britain's lead, mixed crop and livestock farming developed in France and many other countries, adapting to the natural and human characteristics of each territory. The result was a wide variety of agrarian production and landscapes which, from the Mediterranean to the Baltic, from the wooded fields of the Atlantic shores to the great plains of the east, from the mountain pastures to the vast river deltas, formed a valuable asset for Europe.

The components of traditional agricultural landscapes

For a long time, local natural resources were all that the peasants had to live on: water, soil, flora and fauna, stone, wind and sun.

Water

Water, which had to be fetched when there was not enough, and from which people had to protect themselves when there was too much. The peasants channelled rivers to avoid flooding, built canals to irrigate land which was too dry, created reservoirs, drained wetlands, harnessed and exploited hydraulic power with mills that made flour and oil from the crops they harvested, developed water courses to make them navigable, built bridges to facilitate exchanges and defined water rights to share this valuable resource.



Figure 15. Pond in a sinkhole (Photo: R. Sauvaire)

The soil

The soil was cleared, organised, cultivated, improved and protected from predators or erosion. The peasants organised their plots of land according to the agronomic potential of each type of soil, to make the most of crop rotation and produce all the food they needed.



Figure 16. Peasant carrying a mixture of earth and manure (Photo: R. Ambroise)



Figure 17. Crop growing in the plains

Crops

Crops were chosen and seeds selected by the peasants according to the climate and their empirical knowledge of the agronomic potential of their soil. Each small region could boast particular varieties of potatoes, distinctive species of fruits and vegetables or original grape varieties as the origin of specific recipes. The peasants made fruit juices, oils, wines or alcohol characteristic of each type of *terroir*.



Figure 18. Plantation of phacelia as green manure (Photo: P. Xicluna, Ministry of Agriculture, France)

Livestock

Livestock was also selected according to the use to which it was to be put (meat production, milk production, beasts of burden, army animals) and the environmental conditions (suitability for mountain regions, plains, wetlands, arid zones). It was in the 19th century that the selection of breeds took place that gave rise to so many varieties of cheese. At important festivals agricultural competitions were held to honour farmers who had done the most to improve local breeds and products, which often bore the names of the region or a nearby town (Gouda, Gruyère, Gorgonzola, Charolais, Highland Cattle, Montbéliarde), differentiating them from those of other regions.



Figure 19. Vosgian cattle breed (Photo: Communauté de communes de la vallée de la Bruche/J.-S. Laumond)

Trees

Trees were used by farmers to mark out the farmlands, to protect the soil and animals from extreme climatic conditions, to provide wood for building or heating, and for their fruit. Hedgerows, avenues (alignments), marker trees, wooded meadows, orchards, pasturelands and copses, all these were ways in which peasants would use trees, for their functional qualities but also for their decorative qualities.



Figures 20, 21. Hedgerow trees (Photos: R. Sauvaire)

Stone

In regions where stone abounded and the land was less fertile, farmers turned this constraint into a resource for other uses: dry stone walls to mark out the fields, stone pathways, lining for rivers and canals, buildings to which stone gave a special patina and the magnificent terraced hillsides we see around the Mediterranean and in certain mountain regions or valleys in the north, in Germany's Moselle region, for example. Sometimes, such as in Majorca, these features date back to the times of the Arab invasions and are still in perfect condition, which shows just how sturdy they are.



Figure 22. Stone boundary wall (Photo: R. Ambroise)



Figures 23, 24. Stone hut and cobbled track
(Photos: R. Ambroise)

Wind

Wind, like water, was used in certain regions to drive millstones to make flour and oil. In some places, however, it was necessary to shelter crops, animals and dwellings from the wind, which called for a special organisation of the farmland to make the most of the shelter afforded by the lie of the land. Otherwise, hedges needed to be planted as windbreaks.



Figure 25. Small windmill used to pump water out of the ground (Photo: F. Bonneaud)

Sunshine

Last of all, the resource to which we owe photosynthesis, sunshine can be put to good use in complex production systems such as agroforestry, where trees and crops are grown together to make maximum use

of the sun's rays. Elsewhere, in mountain regions where there is a marked contrast between the amount of sunshine received by the *adret* and the *ubac* (the sunny and shady sides of a mountain), crops are positioned according to the amount of warmth they need.



Figure 26. Jacob Philipp Hackert (1737-1807), *Vines growing on trees, San Marino*

In their heyday, traditional rural societies managed to put all the natural resources that were available to them locally to remarkably good use.

Agricultural landscape structures

In order to make all these local natural resources usable, the peasants organised the space on the basis of a few main models which they adapted to their own contexts. What we call agricultural landscape structures today are these broad types of organisation of space that farmers used to protect themselves from natural risks and make the most of the available resources. Each major landscape structure covers a whole series of local variations, all of which nevertheless follow a logic based on the same principles. Some of them are mentioned below.

Bocage

Bocage comprises a series of cultivated fields or pastures surrounded by hedges and bordered by hollow pathways to drain off the water in wet weather. The hedges serve as enclosures for livestock, protecting both animals and crops from strong winds and sunshine, and providing wood for building and heating the often-isolated homes in a widely dispersed habitat. The type of trees, the way they are laid out (in hollows, on grassy ridges or alongside stone walls) and the way they are pruned all vary from one region to another, giving each regional landscape its own particular atmosphere: more enclosed where the trees grow high and resemble the edge of a forest, blocking the view; more open when they are trimmed low and you can see beyond them, as if over a fence, dominating the wide landscape shaped by the lines of the hedgerows. A wide variety of bocage landscapes has developed in western Europe, in the

United Kingdom, France, Belgium and Denmark, but also in certain mountain regions or hilly areas. The presence of the trees and the animals always visible in the prairies give these areas a very natural look. Along the Atlantic coast, from Ireland to Portugal, there are also bocage landscapes (terrain consisting of mixed woodland and pasture), based on the same principles but with more emphasis on stone, where hedgerows are replaced by dry stone walls, giving the scenery a more architectural touch.



Figure 27. Bocage with low hedges (Photo: R. Sauvaire)



Figure 28. Bocage with high hedges (Photo: R. Ambroise)



Figure 29. Bocage with stone walls (Photo: R. Sauvaire)

Marshes and polders

Marshes and polders are types of landscape structure that have helped enhance the agricultural value of wetlands and land reclaimed from the sea. Controlling water levels is of the essence here, and the land is structured by dykes and canals which let water into and out of the cultivated fields or meadows.



Figure 30. Water meadow (Photo: R. Sauvaire)



Figure 31. Salt marsh (Photo: H. Cividino)



Figure 32. Wet grassland (Photo: P. Xicluna, Ministry of Agriculture, France)

The marshes can be flooded or dried as necessary, and the canals or ditches lined with trees, pruned or otherwise, but farming these lands always requires considerable collective discipline to keep water levels under control. The omnipresence of water gives these landscapes an exceptional wealth of biodiversity and offers a wonderful natural environment for an abundance of birds and fish. This type of landscape is found in the Netherlands, of course, but also in the west of France, the south of Portugal, the Baltic countries – Lithuania, Latvia and Estonia – Poland and Belarus.

Valleys

Valleys are found in most regions where large or small rivers flow in marked major and minor beds. Observation of the limit between the flood plain and the dry zone generally reveals a ditch which drains off excess water after a flood. The sediment deposited on the flood plain enriches the soil and the land is generally used as grassland, or to grow summer crops, while winter crops and temporary pastures occupy the neighbouring slopes, sometimes along with vineyards or orchards. The linear organisation of space dictated by the downward flow of the river is often strengthened by the presence of communication networks along the valley, on the edge of the flood plain. Watermills with their canals or reservoirs often punctuate the length of the watercourse.



Figure 33. Farmed and wooded valley of the Vézère, France (Photo: R. Sauvaire)

Open field

Open field is a system of land use characterised by vast unenclosed spaces. It was the system in use under the old three-year crop rotation and fallow scheme introduced following the clearing of the wastelands around groups of villages. It is found in many places, from the great plains of the Paris Basin to the vast cereal farmlands of Germany, Poland, Hungary, Ukraine, Moldova and Russia. The structure of these farms is generally more imposing and the expanse of the fields larger than elsewhere. The departure from the fallow method led to a reorganisation of the distribution of the land and the introduction of larger herds. The immensity of the open sky is an impressive feature of these landscapes.



Figure 34. Large-scale farming (Photo: R. Sauvaire)

Terraces

Terraces cover many hillsides of the Mediterranean basin, from Spain to Greece, not to mention Italy, Malta, Crete and Albania, and the numerous islands that belong to these countries, such as Majorca, Corsica, Sicily, Pantelleria. Terraces are also found in the cultivated mountains of the Cevennes in France, in the Italian Piedmont, the Valais in Switzerland and further north in the vineyards along the Rhine and the Moselle in Germany, Luxembourg and the Grand Est (Alsace and Lorraine) in France. This system is organised so that walls made of stone, hewn out of the bedrock, hold up horizontal strips of earth formed by erosion and the manure brought in by the peasants. During heavy rain not only does this organisation of the slopes into steps help to slow down the water run-off, giving it time to seep into the terraced soil, but the gaps between the uncemented stones throughout the thickness of the retaining walls allow the excess water to escape. This technique decreases the pressure of the water and prevents the walls from being washed away. In some cases, the width of the cultivated strips is smaller than the height of the retaining walls. Indeed, people who grow vines in such regions call it "heroic" viticulture. Through their remarkable mastery of hydraulics, the peasants managed over the years to turn these barren mountainsides into productive farmland. Working together, they dug out channels several kilometres long to bring water; built reservoirs out of stone and clay to store it; made outlets to evacuate excess water from storms; and traced a network of access paths to each level. Understanding the behaviour of water is essential when working in such conditions, to avoid destroying the functional logic of the site (Ambroise, Frapa and Giorgis 1989).



Figure 35. Ribeira Sacra, Spain (Photo: R. Ambroise)



Figure 36. Douro, Portugal (Photo: R. Ambroise)



Figure 37. Aosta Valley, Italy (Photo: R. Ambroise)

Mountain pasture

In mountain areas which, in addition to growing crops to feed the family, also produce milk to make cheese and sell on the open market, the landscapes are organised in such a way as to provide the livestock with grass in the summer and fodder in winter. That basic requirement has generated a wide variety of solutions, depending on the natural and human conditions in each territory. Complex social systems emerged where people worked together to get the livestock up into the mountain pastures in the spring, while the families stayed down below to cut grass and store the hay in barns. In some cases, the livestock come from further afield, via a system of inter-regional transhumance. Be it in the Spanish, French or Andorran Pyrenees, the Italian, Swiss, French, Austrian, Slovenian or Liechtenstein Alps, the Swiss and French Jura, the Polish, Czech, Slovak, Ukrainian or Romanian Carpathians, the Balkans, Croatia, Montenegro, Serbia, Bosnia and Herzegovina, North Macedonia, the Caucasus mountains of Azerbaijan and Georgia or the high plateau of Armenia and Turkey, all these mountain landscapes have been forged by farmers in spite of particularly difficult conditions of climate and relief.

Mountain landscapes (Photos: R. Ambroise)



Figure 38. French Pyrenees



Figure 39. Béarn, France



Figure 40. Jura, Switzerland

Orchards or huertas

In the Mediterranean regions, orchards were developed in areas that could be regularly irrigated by developing a whole system of canals dug into the land and branching out at the ends to channel water into each small plot. The origin of these systems dates back to the period from the 7th to the 14th century, when the Arabs developed new forms of cultivation in Spain. This form of market gardening, which requires very strict organisation based on water towers, provided cities in these regions with the fruit and vegetables they needed to feed their inhabitants, and contributed to their development.

By organising the space in a different way to make the most of the available resources, farmers also developed extensive grazing in the steppes of south-eastern Spain, the limestone plateaus of southern France, Slovenia, Serbia, or Bosnia and Herzegovina, in the Romanian and Bulgarian Dobruja and in the Hungarian Puszta. Elsewhere, agro-sylvo-pastoral systems such as the *dehesas* in Spain or the *montados* in Portugal use communal land to combine animal husbandry in the underbrush (scrubland) with the production of timber and fruit growing. In the north of Finland, Norway and Sweden, and in Siberia, farmers breed reindeer, which in the summer months graze on the grasses, mosses and lichens found in the tundra, before moving to the forests of the taiga in winter. In other regions, such as the French West Indies and French Guiana, different types of farming that are better suited to tropical or equatorial conditions were invented.

Particularly in periods of population growth, Europe's peasants managed to organise their lands into broad landscape models adapted to the characteristics of their regions, which helped enhance the image of the region concerned. To achieve this transformation all they had to rely on was their empirical knowledge, their physical strength, a few tools, their powers of observation and the natural resources found locally: water, soil, the diversity of animal and plant life and trees, whether cultivated or wild, stone, wind and sunshine. They created systems that worked, aesthetic references that inspired artists and a cultural heritage largely shared by the rest of the population.

Understanding how these landscape structures work helps avoid ecological disasters when developing landscapes. One has to be able to determine what the load-bearing walls of the landscape are, what features are essential to the healthy operation of the territory (which might be certain hedgerows, walls or ditches), and to distinguish them from secondary partition walls which can be removed without risk as time passes, land changes hands and development projects come into play.

Today a new interest in these landscape designs is emerging in the search for environmentally friendly agricultural systems. They are the proof that it is possible to feed large rural populations without resorting to fossil fuels. But landscapes are not only the result of technical choices corresponding to given types of land, they are also the result of cultural choices.

The farming landscape of the 20th century

The progress in agronomic science that started in the 19th century led to very far-reaching changes in how agricultural processes were viewed and also how landscapes were organised. The mineral theory introduced

by Liebig around 1840, which was the origin of the use of mineral fertilisers to improve crop production, gradually made headway in agronomic circles and found testing grounds in the pilot farms that were able to acquire these new fertilisers, thanks to the cheaper transport costs linked to the use of coal.

General use of fossil resources and genetics

The successful increases in productivity were such that the use of chemical fertilisers developed throughout the 20th century. Phosphorus, an element essential to plant growth, came first from local mines, then progressively from mines further and further afield – the Maghreb, for example. Nitrogen-based mineral fertilisers are mainly made from ammonia, obtained by synthesising nitrogen from the air and hydrogen from natural gas.

Initially phosphorus was imported from Chile; then, after the First World War, it was made in factories that had produced ammonia for explosives on an industrial scale. A second innovation further changed the face of farming and fostered agricultural progress: genetics made it possible to engineer high-yield strains. These new developments progressed in different ways in the regions of Europe, faster where vast tracts of land were being farmed and the owners had money to invest, and more slowly where smaller family farms were the norm. In France, for example, agriculture did not really start to be mechanised until after the Second World War, with the aid of the Marshall Plan, which enabled farmers to buy American tractors. In the space of 20 years, the cart-horse disappeared.



Figure 41. Advertisement for phosphate fertiliser from Morocco (Photo: R. Ambroise)

Fertilisers and then pesticides were used on an ever-increasing scale. Easy access to new means of transport and discoveries that facilitated the preservation of produce by refrigeration substantially changed the systems of collection, processing and commercialisation of farm produce. In the states affected by the Common Agricultural Policy (CAP) of the European Union, first outlined in 1957 in the Treaty of Rome, farmers enjoyed guarantees that they could sell their products on international markets, as well as subsidies to purchase land, erect buildings and buy equipment. These subsidies have privileged the large-scale farmers to the detriment of the smaller ones, whose children have been forced to leave for cities in search of work. In the course of the 20th century, the number of farmers in Europe diminished by 90%.



Figure 42. Advertisement for new fossil-based products necessary in modern farming

Some states, such as Switzerland which receives no subsidies from the CAP, also introduced policies to support farmers and improve the country's self-sufficiency in food production. In the countries of eastern Europe, the collectivisation of land changed and simplified the landscape. The size of farms increased as mechanisation gradually replaced manual labour. Farming was modernised, but not as rapidly as in western Europe.

So, the use of fossil substances and fuels in agriculture radically changed rural landscapes and the social organisation of farming communities.

The banalisation of the landscape

These changes to the landscape followed three patterns, which all led to landscapes becoming less pleasing on the eye.

Simplification and consolidation of cultivated land

In zones where farming was easy to mechanise, the size of fields increased as a result of major land improvement programmes involving consolidation, drainage, irrigation and redirecting of water courses.

These developments resulted in the disappearance of the semi-natural features that dotted the meadows and farmlands, such as ponds, the odd tree, copses, orchards and screens, or that surrounded them, such as hedgerows, stone walls and paths. All these landscape features, the presence and particular forms of which identified each region, lost their usefulness and even became a nuisance for farmers working with tractors. They were therefore gradually eliminated to form larger tracts of land that were easy to plough with machines. As a result, there was a substantial loss of landscape diversity in the flat regions, accentuated by a decrease in the variety of crops in rotation.



Figure 43. Landscape after consolidation (Photo: R. Sauvaire)

Closing of the landscape

On slopes too steep and in areas too wet for machines to be used, or where their use would be too costly, manual labour was not profitable enough for farmers to be able to continue working in the traditional way. Rural exodus suddenly emptied whole regions of their populations and previously cultivated lands were abandoned, particularly in middle mountain regions and more particularly the dry mountain regions around the Mediterranean. These regions had previously fed large populations; people worked hard, but they made a living. When they headed for the cities, leaving the land behind, the other agricultural areas had to intensify their efforts to feed these hitherto self-sufficient populations. In terms of space, that meant physically and visually shutting off some magnificent landscapes, making life even harder for those who stubbornly refused to leave.



Figure 44. Foothills covered with pine trees after being abandoned by farmers (Photo: R. Ambroise)

Blurring of the landscape

Towards the end of the 20th century a major change got under way in the territorial dynamics of several west European states. After a long period of population growth in the towns, cities and suburbs, to the detriment of remoter villages, the latest census figures revealed that city dwellers were returning to the countryside. The building of numerous roads and motorways out of the cities made it possible for people to move as far as 50 kilometres from a city centre without increasing the time it took them to travel to work and back. Some people chose this option to savour the joys of a quiet life and a garden in the country, while others saw it as a means of paying less for somewhere to live.

Those states which were not well organised to protect their farmlands against urban development saw new buildings popping up wherever developers had the opportunity to build them, without any development master plan. This resulted in a sort of urban anarchy and the blurring of the previously clear boundaries that separated towns, villages and farmlands. In the absence of laws to control advertising, we witnessed a complete jumbling of the traditional landscape and the emergence of a new landscape that had nothing to offer in terms of a better living environment. These trends could co-exist on the same territory when land was left abandoned for speculative reasons pending its potential urban development, while farmers cultivating the neighbouring lands tried to buck the trend using increasingly intensive farming methods, with the result that vast tracts of cultivated land now stop right outside the new housing estates that have replaced the greens and market gardens that previously surrounded the towns and villages.



Figure 45. Urbanisation of the countryside
(Photo: F. Bonneaud)

Renewal of landscape projects in agriculture

In the face of these trends, farmers, local and regional authorities, associations and individuals have tried to react. The first reactions were seen in those areas where the industrialisation of farming proved most difficult.

Mountain areas

In essentially mountainous countries such as Switzerland or Austria, then in Germany, France, Italy, Spain and Andorra, policies in favour of mountain farming were implemented. Governments sought to keep their farmers in the mountains for several reasons: to guarantee a minimum of national independence in food production, to maintain the population in rural areas at sufficient levels to provide social living conditions acceptable to all, to tend the landscapes and to encourage the development of tourism. The support provided took multiple forms:

- ▶ direct aid to farmers to make up for the difficulties of mountain farming compared with farming on the plains;
- ▶ encouragement of more natural production systems, or even organic farming, making maximum use of local natural resources;
- ▶ promotion of the products thus produced through protected designations of origin (AOP), or other marks of quality;
- ▶ remunerating the services rendered by farmers to the community, be it in connection with their farming activities, by the upkeep of communal lands, for example, or through other services (clearing snow, maintaining paths, tourist activities and so on).

The role farmers played in landscape upkeep and management became clear when their departure left the land to become overgrown with shrubs or planted with forests that darkened the landscapes and blocked the views. Protecting farmland against urbanisation for tourism rapidly became a major issue following the first examples of landscape destruction by unfettered real-estate speculation witnessed in the first winter sports resorts. The local and regional authorities, and not only ministries of agriculture, developed landscape policies to protect farmland and support farming activities in the mountains.



Figure 46. Gate to let hikers into pasture lands in the Swiss Jura (Photo: R. Ambroise)

Intensive farming areas

In areas where industrial farming methods prevailed, there were reactions against the disappearance of the trees, hedgerows or walls in and around the fields. But the main drawback of this type of farming became clear when soil and water pollution, and the erosion of the biodiversity it caused, became major economic problems for society at large. Water that contains excessive levels of nitrates is unfit for consumption; when bees disappear, when pesticides sprayed on crops pollute the soil, the air and even our food generates serious illnesses from which the farmers themselves are the first to suffer, so people react and demand a stop to the pollution. Initial research was carried out and regulations were introduced in an attempt to find means of protecting various natural features inside cultivated areas and to limit the pollution by planting grasses along riverbanks to serve as a filter, by treating excess water pollution in denitrification plants or by optimising the quantities of fertilisers used and the dates when fields could be sprayed.

The aim was to solve the problems while maintaining high yields. It was not enough, however. The pollution continued, as did the dependence of production systems on fossil resources. Landscape projects developed here and there, often in connection with land-development schemes, but were generally intended merely to protect traditional landscape features that would otherwise have disappeared. In failing to address the transformation of agricultural production systems, they mostly failed to persuade the farmers themselves, unless there was a strong financial incentive, to take action to define a new landscape corresponding to a new agricultural project.



Figure 47. John Deere advertisement (Photo: John Deere)

Subsidies in farming

In 1992, the United Nations Environment and Development Conference in Rio de Janeiro brought the term “sustainable development” to the fore. This concept challenged the development model based on private ownership and the reckless use of fossil resources, a model that was destroying biodiversity. It proposed a mode of development based on a more sparing use and a fairer sharing of natural

resources, in time and space. With such high stakes, it was no longer possible to leave it to a few specialists to protect the many remarkable places. Sustainable development concerns everyone, everywhere.

At that time agricultural policies were beginning to change, in the European Union and in other European states, such as Switzerland. In order to limit surplus production, the European Union now offered farming subsidies integrated directly into product prices, in the form of guaranteed prices, and identified payments, calculated according to the surface areas cultivated and subject to environmental conditions, which gradually became more demanding. Nonetheless, presented as constraints, they never succeeded in reversing the industrialisation of agriculture: the size of farms generally continued to grow, as did the size of fields, further simplifying the agricultural landscape.

At the same time, agri-environment payments were offered to farmers who were willing to use environmentally friendly methods. Unfortunately, these payments, calculated based on the additional cost or loss of income that the farmer would suffer, gave the impression that environmentally friendly practices must be economically unfavourable to agriculture. But water, soil, biodiversity and landscape are useful production factors for farmers committed to sustainable agriculture. Presenting things in this manner doubtless delayed the changes that should have been encouraged long ago. However, by enabling motivated farmers to preserve certain landscape structures, these measures led to a more in-depth reconversion of their system of production. Their implementation in the field was also an opportunity for farmers, agronomists and environment and landscape specialists to meet and propose some initial landscape projects in agriculture (Ambroise, Bonneaud and Brunet-Vinck 2000). Today, more “systemic” agri-environment measures are intended to remedy these shortcomings. The specifications developed in Switzerland and Austria, for example, are considered models of good practice.

The landscape challenges of the 21st century

Very early in the 21st century, the question of global warming came along to reshuffle the cards. Fossil fuels, which were significant contributors to the emergence of industrial agriculture, were decried because of the CO₂ and other greenhouse gases they emitted, in addition to other forms of pollution. In 2015 the 21st Conference of the Parties to the United Nations Framework Convention on climate change (COP 21) set the objective of limiting the increase in temperature to 2°C by the end of the 21st century. This naturally challenged the very core of modern agricultural development. The world was

going to have to learn, or relearn, how to produce while limiting, as much as possible, the use of these fossil substances and fuels which are non-renewable and cause pollution. In addition, methods enabling agriculture to store greenhouse gases should be fostered. At the same time, the world population would continue to grow, so the task of agriculture was to find ways to feed more people without polluting. In this new context, landscape could be a useful tool at the service of a transition project, as well as its sounding board. Indeed, the stakes at issue in sustainable development concern not only agriculture but society as a whole, so there will be great pressure to define new rules for the interface between the rural and urban worlds.

Increasing agricultural production and limiting chemical inputs

For two decades, everyone has been talking about sustainable agriculture, conservation through agriculture, organic farming, biodynamic agriculture and agroecology. Numerous research and development programmes, as well as new regulations, have shown an interest in improving farming methods by means other than simply optimising the use of chemical inputs (fertilisers and pesticides). Lengthening crop rotations, not ploughing the land, covering the soil in winter, compost and agroforestry are among the range of techniques increasingly used today by farmers interested in the transition towards sustainable development. Some of them have shown that it is possible to produce as much as before while substantially reducing the use of fossil inputs.

Paradoxically, while the transition to industrial farming went hand in hand in many countries with major land-development policies at the service of modernisation (reorganisation of tracts of land under cultivation, rectification of water courses, drainage, irrigation), programmes in favour of agroecology very rarely addressed the issue of landscape, as if it were possible to change the course of agriculture while maintaining the organisation of space developed for industrial agriculture! More specifically, for example, farmers were encouraged to use fewer chemical pesticides by lengthening crop rotations, but without reorganising the size of their fields. In cereal-growing regions, however, a single field may cover more than 40 hectares.

If beneficial organisms are to be able to colonise the whole area under cultivation and destroy for example crop pests, thereby helping offset the effects of not using pesticides, they must have somewhere to live (grass verges, hedges, copses, ponds, dry stone walls). These habitats must not be presented to farmers as compensation for the damage their activity does to the environment but rather as an essential and positive component of

their production systems, one which makes them more profitable while helping to reduce the use of chemical products. This paves the way for new possibilities for a much wider variety of landscape projects suited to the characteristics of the territory, devised with and for farmers.



Figures 48, 49. Agroecological transformation of farmland at Vernand farm, Department of the Loire, France (Photos: R. Janin)

In livestock farming areas, where producing one's own fodder for livestock appears increasingly a target to be achieved with sustainable development and energy transition, the return to grass is one path farmers should consider taking. Instead of using meal imported from other continents and maize, the production of which causes considerable pollution, it is preferable to feed livestock on grass, which requires far fewer chemical inputs to grow (fertiliser, fuel) and has better food value. The size and shape of the fields where it is grown needs to be determined not on the basis of the requirements of mechanical farming but on the imperatives of grazing. In order for the animals to be able to get the maximum benefit from the open pastures in spring and autumn, or in certain cases even all year round, the space must be reorganised to give the grazing animals some shelter from the wind and sun, by planting trees or hedges, making watering holes where they can drink, inventing types of fencing that are easy to move, and providing paths for moving herds to pasture. Similarly, in dairy farming this approach challenges the larger farms which concentrate high numbers

of animals in a small space, confined to their buildings and fed with inappropriate products.

In addition, researchers have identified the need for society to rethink its dietary patterns, which are the origin of serious health problems (obesity and increased cholesterol, for example), by decreasing the proportion of animal products and increasing that of plant products in human consumption (Afterres2050, 2013). Rather than shedding doubt on the benefits of mixed crop and livestock farming, this requirement will encourage farmers to better adapt the crops they grow to the agronomic potential of each of their plots of land, and increase the variety of their crops while making more systematic use of trees in their production systems in order, when it becomes possible, to decrease the proportion of livestock in their production.

The changes to come in the focus on sustainable agriculture offer a vast scope for action, of yet unexplored kinds, to test the implementation of new agricultural landscapes in connection with changes in crop growing and animal husbandry systems. While the industrialisation of agriculture forged, and continues to forge, simpler, more banal, less natural landscapes, it is becoming possible again, and even necessary, to imagine landscapes that reflect the natural characteristics of the land, with a greater diversity of vegetation, the visible presence of grazing animals and a new place made for trees and other landscape features specific to each region.



Figure 50. Taking cows to pasture (Photo: P. Xicluna / Ministry of Agriculture, France)

These changes promise new challenges for farmers. First, they will have to adapt their crop and livestock production and marketing systems to the new climatic conditions, while becoming much more economical in the use of fossil inputs, both to avoid pollution and to leave reserves for future generations. Many experimental farmers, although in the minority, are proving that it can be done, and even more easily if they bring reflection on the future of their landscapes into the equation. As well as feeding people, however, farmers have a

role to play in the production of renewable energy and in storing greenhouse gases.

Producing renewable energies and storing greenhouse gases

Farmers are well placed to produce biomass, if they realise that this activity must not interfere with their primary purpose, which is to feed the world. In addition, plants that produce methane from animal manure or from certain crops have the advantage of producing energy while preserving the mineral elements, which can be put back into the earth. The roofs of hangars, barns, sheds and other large farm buildings cover vast areas and can be used to produce enough photovoltaic energy for the needs of the farm and much more besides. Lastly, in some regions wind turbines are being installed on farmland. They are a new landscape feature in the agricultural landscape, and thought must be given to their shape and location so that they are seen as symbolising the reorganisation of agriculture at the service of the common good and not as mere eyesores spoiling the quality of the scenery. Considering the importance and the size of these wind turbines, it would be legitimate to systematically involve landscape artists, architects and planners in the discussions between farmers, engineers, owners and local officials and inhabitants.



Figure 51. Wind farm (Photo: P. Xicluna, Ministry of Agriculture, France)



Figure 52. Silos for methane production (Photo: C. Saidou / Ministry of Agriculture, France)



Figure 53. Solar panels on shed roof (Photo: P. Xicluna / Ministry of Agriculture, France)

It is now known that crop systems that use no chemical inputs and adopt agroecological production methods (having no bare earth in the winter, integrating semi-permanent meadows in crop rotations and leaving a place for trees to grow) store substantial amounts of greenhouse gases in the ground (Papy 2016).

Sustainable agriculture thus becomes one of the solutions to global warming instead of seeming to be a problem. From this point of view all the recent research on the benefits of agroforestry systems of crop and livestock farming (Dupraz and Liagre 2008) are producing some very interesting results, broadening the possibilities for imagining new, more diversified farming systems and new landscapes that are in phase with the issues of the day.

In different states the presence of trees in and around pieces of farmland may be allowed by law or, on the contrary, may pose problems because of the historic separation between rural and forestry codes. In industrial farming, trees in fields were considered an obstruction to farming for which there was no longer a place. Not so long ago, in certain states, subsidies paid under the Common Agricultural Policy for crop growing were restricted to cultivated fields only, so land covered with hedgerows did not count. Today, in contrast, the presence of semi-natural features on land under cultivation is a condition of eligibility for subsidies.



Figure 54. Flock of sheep sheltering in a poplar wood (Photo: R. Sauvaire)

Defining new relations between town and country

Another major development is the need for new approaches to our perception of relations between farming and society. Historically the rural exodus went hand in hand with the industrialisation of towns and cities, but more recently it has been noted that, in many countries, city dwellers have been leaving the towns for the country. Much of the new housing to accommodate them has been built on former farmland, and in the absence of planning regulations the result is a disorderly scattering of constructions that have disrupted the old urban logic of villages without any visible benefit. At the same time, shopping centres or industrial estates, well connected by transport networks, have sprung up on the outskirts of towns and cities, creating banal landscapes and forcing many city centres shops out of business. High-speed train stations and airports with their huge car parks have been built on the farmland around cities, much of it very good farmland, which the owners had been tempted to sell to developers. Protecting this land from such property speculation requires the farming profession to participate in the planning process.

States such as the United Kingdom, Germany, the Netherlands, Denmark and Switzerland have managed, through effective regulation, to protect their rural spaces and contain urban sprawl. Their examples should inspire other states under similar pressure whose landscapes are rapidly deteriorating. While it is legitimate that city dwellers should be able to find nature near where they live, there is no need for them to own it, or for them all to have private gardens.

Urban planners and landscape designers are today working on: constructing denser developments in built-up areas; making nature accessible in towns, and even growing agricultural products in them; organising easy non-motorised connections between towns and the surrounding countryside; facilitating the direct sale of agricultural produce; and creating reception areas in farms. These changes will help farmers to make the most of the singular landscape features on their territory while encouraging them to practise agroecological farming. This focus on quality products, a quality environment, quality landscapes and a quality welcome is an economic choice that is much appreciated by urban consumers. More and more local and regional authorities, concerned about questions of transition towards local sustainable development, are taking an interest in keeping farming activities alive and proposing means of protecting farmland and providing financial support for agriculture, subject to the farmers also committing themselves to the transition at their own level. Farming is thus becoming not only an activity that produces essential resources,

mainly food, but also a piece of the urban composition or, more broadly, the landscape composition of the territories. Major cities such as Milan, Munich and Lille have developed projects to enhance the landscape in the surrounding agricultural areas.

Thus, during the second half of the 20th century, unlike the 19th century, the landscape was largely absent from agricultural policies because it served no useful purpose in an industrial world where even farming was industrialised. Today, in a context of commitment to sustainable development of land, the need to define a new relationship between farmers, nature and society invites us to renew the close ties between agriculture and landscape.



Figure 55. Path around a village, marking the boundary between residential gardens and cultivated fields (Photo: C. Sauvaire)

The preceding considerations highlight two main ideas: landscapes reflect self-sustaining systems of agriculture that evolved locally or regionally until industrialisation undermined them and the societies on which they were based. Today, “green” priorities are driving a return to sustainable development.

2. The contribution of landscape to agriculture

The European Landscape Convention of the Council of Europe refers to the values of sustainable development and that it is the spirit of a landscape approach in agriculture to “guide and harmonise changes which are brought about by social, economic and environmental processes” (Article 1.e). The implementation of such an approach is key to setting in motion a process of transformation of agriculture by providing both the will and the means for change. Used in this way, the landscape becomes a tool at the service of agriculture that contributes to sustainable territorial development, rather than a constraint imposed on farmers. Landscape is also the object of a project at the service of people’s well-being.

After presenting the common features of these approaches, it will be possible to consider how to use them at the level of a sustainable development project carried out by an individual farmer on their farm, and then how to use them to engage other

farmers in a region in a process of recognition of their activity in connection with the other players in their territory.

Different approaches to landscape

The definition of landscape, enshrined in the European Landscape Convention as “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”, acknowledges the dialectic that exists between the space-object and the observer-subjects. This recognition – of the materiality of the territory and the diversity of perceptions underscored by this definition – considers the points of view of the farmers, those of the other players involved in spatial development and those of the local population, allowing them and us to imagine territory-specific projects which are more coherent and in phase with the challenges of society as it actually is. While for the farmer, as a professional, the area concerned covers the production space that he develops and models, in keeping with his agromonomical objectives, that same area is experienced and “perceived by people” as a living environment. This point requires us to be capable of articulating objective and subjective approaches to set a project dynamic in motion, based on the know-how and the sensitivities of all concerned.

Sensitive approaches

Unlike more technical approaches, sensitive approaches are interested in how the landscape is perceived. Beautiful, ugly, attractive or disgusting, these are the sorts of adjectives used by farmers, inhabitants or visitors to a region to describe some part of a territory or some landscape feature. These perceptions, which are not always voiced or discussed, influence the attachment of residents to their living environment, or the attractiveness of a territory as a site for new activities or for tourists. Knowing how to compose fine landscapes becomes a skill in its own right, one that is essential to a certain *savoir vivre*, as well as to a sound economy. Sensitive approaches to landscapes mobilise emotions, sensations and feelings to facilitate inventiveness and creativity, and to imagine new landscapes. Calling on all the senses, but particularly sight, these approaches use the notions valued in the art of garden design, such as harmony, contrast, resonance, open or closed spaces, alternation, depth, transparency, balance or viewpoint. They include the perception of volumes, the organisation of boundaries and the mosaic of the land with its ever-changing textures, colours and smells. The farming world no longer claims these skills, whereas individual farmers, when asked, frequently prove to be extremely sensitive to the (often negative) effects on the landscape that their activity generates, whether they like it or not.



Figure 56. Wine tasting in front of a fresco of a vineyard landscape (Photo: R. Ambroise)

Geomorphological and climate-based approaches

Limestone or granite sub-soil, steep hills or rolling plains, mountains or coastlines, these are the plinths on which landscapes are built. Together with the climate, Mediterranean, continental or Atlantic, they are the factors every society has had to take into account to develop its territory, endeavouring to turn these apparent constraints into advantages. Knowledge of the hydrographical system of each catchment basin, with its slopes and its network of rivulets, streams and rivers, is fundamental because this system organises the whole way a territory functions, with an essential influence on the location of buildings, paths and farmed lands. Certain geological formations with particular, exceptional or picturesque shapes have become landscape and cultural references, such as the Greek volcanic island of Santorini in the middle of the Aegean Sea, which houses one of Europe's oldest vineyards, the fjords of Norway or the hot springs of Iceland which fire the imagination. Landscape approaches attach importance to the geomorphological and climate characteristics of a territory, which are essential in understanding appropriate technical solutions that can be implemented, and in grasping the cultural importance of certain singular geological formations.



Figure 57. Map of soil types



Figure 58. Sheep grazing on salt meadows (Photo: X. Remongin, Ministry of Agriculture, France)

Ecosystem approaches

Given the local geomorphological and climate conditions, different types of flora and fauna will develop in the north and south, the east and west of Europe, in coastal regions and in highlands, adapting to the specificities of each territory. The societies that have prospered in each region have done their best to limit the presence of dangerous plants and animals and encourage useful species. Since the moment when agriculture began to develop, they have transformed space, cleared forests to cultivate useful plants, planted, ploughed, selected and introduced. They have created new environments, permitting the spread of certain species to the detriment of others. Flows, links, lines, corridors, networks, fractioning, islands and clearings are the notions used in the ecology of the landscape as a basis for reflection on projects on the scale of a territory or a farm, to make nature an ally.

The transformations made to satisfy the needs of a petroleum-based society have destroyed numerous ecological continuities and landscape structures essential to the proper functioning of a territory and farming methods based on the use of pesticides destroy many species useful to man and to the overall balance of nature. To change our relationship with nature we must relearn things we have forgotten. Farmers, hunters, fishermen and anglers, naturalists, beekeepers, nature lovers all have their point of view and know different things about the ecology of their regions. Bringing them together in the field to work out the principles of development in a logic of multifunctionality of a territory is a method that has proved its worth: each individual's knowledge contributes to everybody's knowledge and helps to define a collective project.



Figure 59. Biological riches of a wooded landscape with its hedgerows, meadows and sunken paths (Photo: R. Ambroise)

Historical approaches

Every territory has a history that one can read in the traces left in the organisation of the land and buildings. They reveal the relations between those who own the land and those who work it, and remind us of conflicts which, if they have not been resolved, can block development projects even today. They also reveal the intelligence that our forebears needed in order to develop collective or private spaces and make life possible in these territories, and from that point of view they inspire us to find new technical solutions. Knowledge of the past can lead planners to adapt certain tried and tested practices and put them to use again, at the service of equipment that works without fossil fuels.

The associations and firms that are interested in reintroducing trees in fields into agricultural production systems because of the many roles that they can play, or those that offer a new future to dry stone techniques to replace concrete in supporting walls for terraces, provide good examples of how the lessons of history can be used in modern-day projects. In order for society to be better acquainted with the realities of the agronomic world and to avoid blockages between “protectors” and “planners”, farmers should be encouraged to talk about the history of their territory and their profession. Protectors and developers will thus all become actors in a new project, enriched by the knowledge of the past.

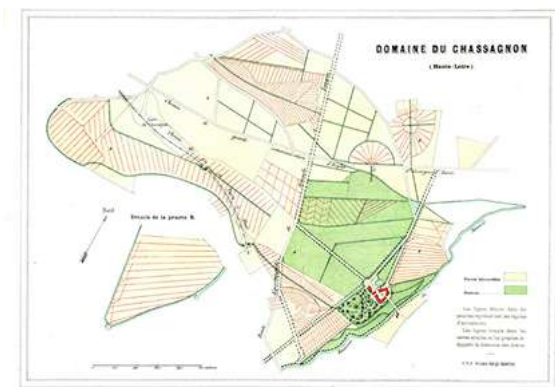


Figure 60. Plan of the drainage and irrigation system (thin red lines) of a prize-winning farm in Haute-Loire, France (Photo: CMRSH Caen, Fonds ancien du ministère de l'Agriculture)

Geographical approaches

If agriculture makes up an often-substantial part of the rural landscape, other activities also contribute, and the way they are implanted in the landscape influences the positive or negative perceptions felt by local people and visitors alike. Road and rail networks, canals and river features, power and telephone lines and nowadays wind farms facilitate exchanges, keep flows moving and allow people to communicate, while at the same time restructuring the landscape. The built heritage is the fruit of an often-ancient history, the expression of a close bond with the local environment, as seen in the construction materials used and in the principles of location adopted to avoid natural hazards and adapt to climate constraints. As new housing encroaches on the rural world, resulting from the urbanisation of the countryside, the structure of traditional farm buildings deserves to be protected, to give direction to new forms of urbanisation which are low energy because they are adapted to the place and the climate. Other activities, such as forestry, industry, crafts, commerce, services, tourism, advertising and power stations, also influence the quality of the landscape, and landscape projects consider their positive or negative influence on rural landscapes to learn how to integrate new developments that are coherent with what already exists, and to enhance the autonomy of the region in terms of energy.



Figure 61. Rural landscape composed of farmland, forest, factories and roads (Photo: R. Ambroise)

Sociological approaches

Each individual perceives the same landscape in their own way. Their childhood, their education, the values they were taught, their social environment, their knowledge and their interests make them sensitive to certain things that others might not even notice. This results in different appreciations, which are often complementary, but which can become conflictual if people are not careful. Professionals often tend to consider that there is only one way to address a problem and thus believe that the solutions they recommend should be heeded, because they are right. Such working methods are based on exclusion and power relations. However, landscape approaches that allow for diverse perceptions are

based on the expression of different points of view and on discussion to find the best solutions acceptable to the largest number.



Figure 62. Different viewpoints on landscape
(Photo: R. Ambroise)

It is thus necessary to collate and share the different points of view expressed on the relation between landscape and agriculture.

Landscape principles at the service of sustainable development

If work on the landscape is to be useful in putting harmonious sustainable development projects in place and fostering energy transition, it must apply a few essential principles (Ambroise and Marcel 2015).

Contextualising the analysis and the projects

Because the technical efficiency and power of the means of intervention required standardisation, the petroleum era privileged standardised modes of production, and spaces developed in a homogeneous manner to facilitate the mechanisation of work. The massive use of chemical inputs made it unnecessary to take into consideration the differences in the agronomic potential of the soils in each piece of land. However, the environmental, resource sustainability and social consequences of these choices made it necessary to find alternative methods. How to maintain sufficient global productivity to cater for the basic needs of humankind while sharply decreasing the consumption of fossil resources, which is largely responsible for global warming and pollution? One possibility was to rethink the future of the world, based on its differences, rather than trying to do away with them and impose a single model everywhere. Each territory is the result of a particular natural and human context that must first be understood and then put to good use in the transition towards sustainable development.

Taking history and geography into account

It is of fundamental importance to study what it is that makes each territory different from another, in terms of its agrarian history in bygone days and its geography. Understanding how societies managed to move forward using only locally available resources

and energies, and how they organised space to be able to use those resources, liberates the mind to imagine solutions for the future other than present-day models. Conditions have changed, of course; the number of farmers has decreased considerably, climate change is already beginning to influence the possible choices of crops or livestock to farm, and marketing methods have become extremely concentrated. Even so, by paying attention to the inventiveness of past solutions, we can confidently anticipate the decisive choices to be made to shape the agriculture of tomorrow. One example would be restoring the walls that used to support the former landscape structures, the usefulness and relevance of which was lost to the modernisation of the territory and put the walls to new uses.



Figure 63. "Fabulous" Hetés transfrontier landscape between Hungary and Slovenia (Photo: M. Kempf)

Reorganising farmland according to agroecological potential

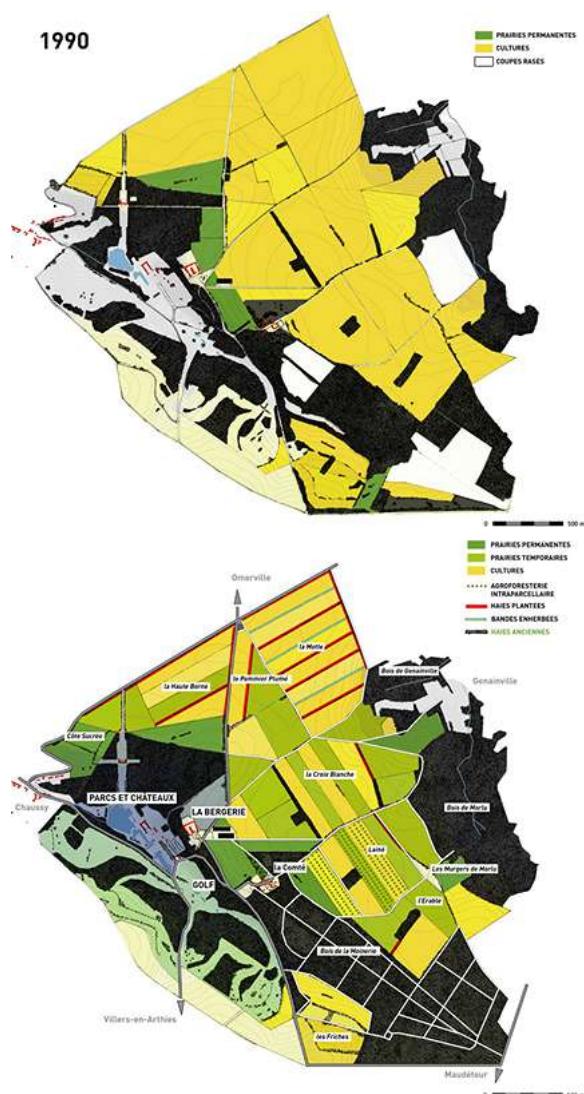
The mechanisation of agriculture considerably altered the shape of the land. Farmers used to adapt the shape of their fields to create pieces of land of uniform agronomic potential. Their size corresponded to the amount of work a man could do in one day with his horses or oxen. The use of fertilisers and tractors freed farmers from these constraints and since then the size of their fields has just grown and grown. This increases the risk of infestation of crops by parasites, so farmers have to use pesticides more and more.

The turn towards agroecology, taken by an increasing number of farmers, focuses on the best way to organise fields to facilitate the use of natural resources instead of chemical fertilisers and pesticides.

The first step is to relocate crops, meadows, vineyards and trees on the most propitious pieces of land and thereby take a renewed interest in the agronomic potential of the soil (without inputs). Various forms of rotation will then be defined, depending on the characteristics of the land concerned. In many cases this will result in a major transformation of the landscape, in particular by making more room for grass and pasture land, as well as greater crop diversity. Using animal manure as compost and increasing the production of vegetables makes it possible to reduce the use of chemical fertilisers on crops.

The second step is to organise the fields so that beneficial organisms are able to colonise the farmlands and prevent loss of yield when the farmer scales down the use of pesticides. The work of researchers in landscape ecology converges in confirming that beneficial organisms colonise an area up to about 60 metres from their shelter. This shelter is made up of semi-natural zones such as grass verges, hedgerows, copses, dry stone walls and ponds, most of which unfortunately no longer exist in modernised agriculture.

Reorganising the division of land can be achieved by taking this principle and factoring in local characteristics, in the interests of greater agroecological efficiency. Farmers are thus less exposed to loss of yield when they diminish their use of pesticides. Reorganising the subdivisions of farmland to rely more on local resources and as little as possible on chemical inputs is a course of action too often ignored by agronomists. This principle deserves to be rehabilitated, to introduce agroecological systems suited to each type of soil.



Figures 64, 65. Villarceaux farm, Chaussy, France (drawn by B. de Gallineau). Layout of fields in 1990 and in 2000, when it was reorganised in a transition to organic farming. The average size of a field went from 20 to 8 hectares.

The Association Française Arbres Champêtres et Agroforesteries (*Afac-agroforesteries*), which champions trees in fields, proposes taking the results of work done on landscape ecology into account, to define new conditions for the payment of subsidies to farmers (under the Common Agricultural Policy for example, or more generally by states). The adoption of this proposal would free farmers from having to keep a small percentage of land of ecological interest in their utilised agricultural area (UAA) to qualify for subsidies.

This requirement, which pays no heed to the location of the natural features concerned, is considered a constraint by farmers and deemed ineffective by environmentalists. *Afac-agroforesteries* proposes calculating the ratio of the utilised agricultural area (UAA) to the area that could be colonised by or favourable to beneficial species (AFB). This ratio of UAA/AFB should not exceed a certain amount, fixed to satisfy the interests of both agriculture and the environment. If adopted, this measure would give an agroecological legitimacy to the conditions of entitlement to subsidies and considerably facilitate the acceptance of this constraint by farmers. The calculation, made directly from the aerial photographs which are used to apply for the subsidies, involves no additional administrative costs. Based on an agro-landscape approach, such a measure has the advantage of being adaptable to different contexts, while enhancing the particular qualities that give different areas their identity. The resulting redistribution of land would help improve profitability, solve various ecological problems linked to biodiversity and water quality, and in certain cases help combat erosion.

It is thus necessary to give farmers the tools and means to reorganise their lands along agroecological lines.

Improving the system of protected designations of origin

The system of protected designation of origin (PDO, or in French, *appellations d'origine protégées*, AOP), which is based on an acknowledgement of the close connection between the natural characteristics of the local land, traditional practices and the unique gustatory qualities of a product, is an example of a contextualised agricultural system. Where the specifications governing such products have become too lenient with regard to the use of chemicals and the area of the agricultural lands concerned, that connection may have been weakened. Changes for the worse, in the distinctive taste of the product and the distinctive quality of the landscape, have caused many farmers themselves to react and develop more demanding specifications requiring reduced dependence on chemical inputs and reorganisation of the land. For certain PDO mountain cheeses, for example, the

specifications now require the animals to be fed mainly on grass and fodder produced within the designated area, which obliges breeders to use all the available territory, rather than just using the easiest lands to work and supplementing with food purchased from other regions. Certain PDO vineyard associations are actively trying to persuade farmers to use fewer inputs and to reconsider the size and shape of the land they cultivate, in order to avoid expanses so large that they favour erosion and the disappearance of the semi-natural zones that attract beneficial organisms. All these changes in farming methods and land organisation patterns draw inspiration from knowledge of how things used to be done and are adjusted to suit modern-day agroecological conditions and the available manpower. While the decrease in chemical inputs helps underline the distinctive qualities of the products, the new land patterns help bring out the singular nature of the landscape, and all this makes the products more appealing, based on the subconscious connection that consumers make between the quality of the products, the quality of the landscape and the quality of the environment.



Figure 66. Chestnut grove in Corsica, used to produce PDO flour, and for grazing
(Photo: X. Remongin, Ministry of Agriculture, France)

It is thus necessary to defend the PDO (or AOP) system in international relations and pay more attention to landscape in the relevant specifications.

Fostering integrated and multifunctional approaches

The monofunctional spatial zoning that was the norm in land development in the 20th century was characterised by extremely high land and energy consumption. If we were to assign a single function to each piece of territory, be it for food, energy, ecology, water management, urban development, industry or leisure, it would take the surface area of several planets to satisfy all the needs of humankind. Conversely, improved knowledge of the local characteristics of each territory will reveal ways of solving several problems in a single space. The integrated methods that characterise landscape-based

approaches propose spatial solutions capable of satisfying various requirements at the same time. The landscape which organises them becomes the source of a new economy in terms of farming and energy, and also of transport, urban planning and the environment.

Planting trees in fields

Agroecology offers farmers various technical measures to help them reduce their consumption of fertilisers, insecticides and fuel, without a serious decline in yield. The basic principle lies in the idea of a diversification of activities – breeding and cultivation – and, within each of these main work activities, a diversification of production. Animal manure, for example, concentrates the nitrogen in the grass and straw that the animals eat in the meadows; once composted, it helps enrich the fields where crops are grown and partially replaces chemical fertilisers. This system is even more effective if different herds graze the land in succession. Also, the diversification of crops makes for longer rotations, which limits the ability of parasites reliant on a single type of crop to develop; this in turn makes it possible to reduce the use of pesticides. Other actions strengthen the efficacy of these systems, such as covering the soil in winter, not ploughing or choosing more resistant seeds and breeds. This agronomy relies on the reciprocal benefits of the association of different crops and livestock species on the same territory.

Yet some farmers are not ready to move on to mixed crop and livestock systems, which they consider too demanding on their time. The solutions proposed are therefore less convincing in their eyes and they see using inputs as an economic necessity. Reintroducing trees into agricultural systems could be a solution.

Contemporary agronomists have generally tended to pay little attention to trees in fields which until recently were considered obstacles to farming. It was the findings of landscape designers working with farmers that showed the importance in each small region of the trees in fields, associated in various ways with the local farmland. In spite of their gradual disappearance, these trees still produced income for farmers and served a number of useful purposes: acting as hedgerows, meadow orchards, wooded pastures, alignments or forest pastures. This observation changed ideas about what might make an “ideal” agroecological system on the scale of a farm. Such a system would combine annual crops, perennial features (with meadows and trees) and livestock. This approach offers a farmer who cannot or does not want to breed animals, for example, or who wants to reduce the size of their herd, to move to a system of crops and trees, thus going much further in reducing other inputs.

Experiments with sylvo-arable or sylvo-pastoral agriculture are quite encouraging from this point of view. According to researchers and experimental farmers, trees placed in lines at regular intervals in fields where crops are grown, or in meadows, offer undeniable advantages in economic and agroecological terms. Converted to money, the overall production of a well-run agroforestry farm (with income from wood and crops) is at least 30% higher than the combined income from agricultural production on one half of an equivalent farm and forestry production on the other half.



Figure 67. Sylvo-arable farming (Photo: X. Remongin, Ministry of Agriculture, France)



Figure 68. Linear orchard amid crops (Photo: C. Saidou, Ministry of Agriculture, France)

In livestock farming zones, grazing fields (pasture) and their hedgerows are now a modern tool for farmers seeking to return to open grazing systems to avoid having to feed their livestock with supplements such as soya feed from far-off countries, or maize, a crop that generally requires treatment with pesticides. The presence of trees will protect the animals from the wind and sun and, once again, contribute to biodiversity, enhance the landscape and improve the environment.

Increasingly, farmers are interested in reintroducing trees for the numerous positive effects that trees have on the territory in terms of agronomy, economics, water management, ecology, energy, climate and landscape, and they are developing spatial management plans for trees, including a map of plantations, felling schedules and maintenance

recommendations (shaping, pruning, clearing). Analysis of the landscape will suggest a multifunctional replantation project capable of fulfilling all the required functions in the best possible way. To achieve this, the analysis attaches great importance to: the location of the trees, which is determined differently for each plot, according to soil quality; how to combine them: isolated trees, alignment, hedgerow, sylvo-arable option, meadow orchard, wooded meadow, copse; pruning and maintenance.

With the help of such management plans, trees in fields become a significant source of income for farmers, while providing other services and helping farmers to save money; in agroecology, they provide a home for beneficial organisms, making it possible to reduce pesticide use; in terms of water management, they help water soak into the earth and control its flow; they limit the pollution of water, soil and air by fixing and recycling pollutants, particularly the CO₂ in the air and N₂O; through their roots and dead leaves they enrich the soil with organic matter and help earthworms do their job; they block erosion, provide a constant supply of wood for heating, shelter crops and animals from the wind and sun, and embellish the landscape with their volume, colours and smells. Trees thus become a fully acknowledged component of a sustainable agricultural production system.



Figure 69. Sylvo-pastoral farming (Photo: R. Sauvaire)

The European Agroforestry Federation (EURAF) brings together associations working in different countries to reintroduce trees in fields and propose measures to help trees find their rightful place in agricultural production systems:

- legal measures to acknowledge the status of trees in fields in rural codes so that their presence in or around fields does not decrease the surfaces eligible for subsidies;
- land ownership measures to precisely define the rights and duties of owners and farmers with regard to trees;
- scientific, pedagogical and technical measures to finance research into agroforestry, to increase awareness amongst students of agronomy,

forestry and landscape, and to train consultants capable of helping farmers who want to introduce or reintroduce trees into their production systems;

- economic measures to set in place all the ingredients of a new economic chain, ranging from the local production of quality plants to the different ways of exploiting trees (construction timber, fuel).

Once these conditions are fulfilled, trees will be an asset in helping all farmers become less input-dependent. The presence of trees will help to give each region a distinctive touch because of the species and shapes of the trees suited to each territory.

It is thus necessary to foster the revival of trees in fields as a component of an agroecological production system, adapting them to each context.

Reviving the dry stone technique

In other contexts, dry stone walls find their place in agricultural production systems. This age-old technique, which makes it possible to cultivate difficult spaces, still has all its legitimacy today because of the numerous functions it fulfils. Be it in terms of support, drainage, biological reserve, earthquake resistance or even low building costs, dry stone walls provide solutions where concrete walls cannot compete. As with trees in fields, this is another area where new skills are emerging and trades that had almost completely disappeared are making a comeback. Mastering landscape approaches is essential to them, and associations such as the French Federation of Dry Stone Professionals (FFPPS) are working all over Europe to restore a high-quality, professionally crafted environment.

In some hillside vineyards farmers were tempted to build concrete walls, with weep-holes to let the water through. But disaster struck during heavy storms, when the pressure of the water pushed the walls down. Nowadays more and more vine growers are opting to learn how to build dry stone walls, which they consider more effective, less costly and preferable in terms of image and landscape.



Figure 70. Onion growing on terraces (Photo: X. Remongin, Ministry of Agriculture, France)



Figure 71. Olive growing on terraces (Photo: R. Ambroise)

It will be helpful to develop training in dry stone building for farmers and their advisors in the regions concerned.

Green and blue belts

On the scale of a territory much larger than one farm, landscape approaches can address the issues in a more integrated, multifunctional way. Following the slicing up of the territory by roads, motorways, railways and other networks that criss-cross the modern landscape, programmes have been launched in different states to create green belts or ecological corridors to allow protected natural species to move from one refuge to another. The debates that take place when these belts are installed say a lot about the disadvantages and the risks of clinging to a sectorised vision of the territory that translates into monofunctional zoning: agriculture on some land tracts, urbanisation on others, natural networks elsewhere. A simplistic way of deciding where these green belts should go would be to place them on the shortest line between two refuge zones. This would be tantamount to considering the belts as spaces devoted specifically and exclusively to the protection of nature. It would result in more zoning, reinforcing the idea that land development is all about applying rules and laws, and power struggles between lobbies. Another method consists of thinking how these green belts, in the broad sense of the term, can be useful to developers engaged in the sustainable development of their territory. It then becomes a question of a project to protect biodiversity that is also in tune with the aims of environmentalists, farmers, water supply companies, city park services, town planners and the people themselves.

In this area, as in others, seeking to understand the logic behind the way farmland used to be divided is a good key to setting a green belt project in motion in a rural area. In the past, fields were not necessarily rectilinear; they were adapted to the relief and to pedological (soil) variations and were the result of successive divisions or consolidations linked to inheritance. Farmers who are interested in turning to agroecology need semi-natural spaces around their

fields to house beneficial organisms and birds, and to feed the bees and other pollinators. Studying old maps and photographs, and talking to people who remember how plots of land were organised prior to consolidation, can help determine the right locations for the new green belts. If these semi-natural “refuge” zones are present in sufficient number and correctly dispersed around the farmland, beneficial species will be able to colonise the whole production area and effectively combat pests; farmers will be able to reduce their consumption of pesticides sharply, without too much impact on crop yield. In addition, inside the cultivated plots, greater animal and plant diversity will be able to develop, without entering into real competition with the crops. The water left by rain falling on these zones will no longer have to be decontaminated. Awareness of the beneficial role played by farmers with regard to the environment will then help reduce any tensions that may exist between farmers and ecologists. By helping to limit the use of chemical substances, such an integrated green belt policy fosters biodiversity while at the same time helping to reduce the dependence of our economies on fossil resources.

More detailed knowledge of the territory and thinking about the multiple uses to which land can be put are thus means of imagining more effective solutions than those obtained by simply applying zoning rules and models, even for “green” belts.



Figure 72. Green belt made up of farmland under permanent meadow and riparian trees (Photo: R. Ambroise)

It is important to strengthen the role of farmers and landscape designers in the bodies responsible for designing and implementing green and blue belts, or ecological corridors.

Involving local populations

When seeking to introduce more complex systems, with multiple uses of the land, the participation of different players becomes indispensable. Landscape approaches, as mentioned earlier, draw on knowledge of different disciplines which a single individual generally does not possess. It is therefore necessary to bring together several skill sets to study the project and diagnose solutions.

In the years of modernisation of agriculture, farmers grouped together to undergo training, equip themselves and develop. They set up study groups, with agronomy and management consultants, in various forms, depending on the history of each country. In general, however, the world of agriculture kept very much to itself. Today the future of agriculture will depend on how farmers manage to develop partnerships with other sectors of society and define projects together. Conversely, the future of territories will depend on how much elected officials factor in the logic of the farmers who occupy and exploit the spaces they manage. Local and regional officials are becoming increasingly involved in action programmes which concern agricultural areas. They are responsible, for example, for questions of access to water and its distribution, the production of renewable energies, urban waste disposal, planning the installation of new housing and industrial estates, improving the living environment and developing tourism and new forms of transport. All these issues are directly connected to the world of agriculture.



Figures 73, 74. Meeting and tour of the land for livestock farmers, elected officials, local inhabitants and consumers, to discuss the multiple advantages of meadows in the landscape (Photo: Communauté de communes de la vallée de la Bruche/J.-S. Laumond)

The landscape is the material and cultural bedrock that bonds local populations together. Thinking about its future is an excellent way to bring together the inhabitants and the users who have an interest in the future of this common asset. The landscape is everybody's business. Everybody is an expert in their own way. Whether they use it on foot, by bicycle, by car or by train, whether they are young or old, athletic or disabled, everyone uses the territory in one way or another, and appreciates or criticises it. Everybody knows something about how it functions, about its history. All this knowledge needs to be shared to enrich the overall picture and develop richer, more complex, more welcoming projects capable of winning the support of the greatest number.

So, be it the farmer, the expert, the local official, the inhabitant or the tourist, everyone has a legitimate opinion about the future of the landscape which deserves to be expressed, heard and considered to imagine together the forms to invent to make our collective and individual lives easier and more agreeable.

It is essential to involve the population in the creation of agricultural projects.

Flowering meadow competitions

The general agricultural competition of flowering meadows came from Germany, and more specifically the Black Forest. A major effort had been made there to define an agri-environmental measure to support farmers who wanted to keep permanent meadows using little or no chemical input. The idea of a competition was taken up in France, first of all by the Bauges Natural Regional Park, then by that of the Haut-Jura. Today it applies to natural meadows all over France, is part of the General Agricultural Competition and is spreading across the borders to Switzerland, Italy, Belgium and Spain. The meadows are judged by their forage, flora and fauna, apicultural and landscape value. In each competing region, the members of the local jury, made up of people qualified in these different areas, visit all the competing meadows following a well-established pattern. The prize-winning farmers prove that it is possible to keep and tend meadows that produce high levels of forage while enhancing biodiversity with indigenous species and contributing to the preservation or creation of open landscapes and their presentation. The on-site observation, the ever-informative discussions, the articles in the press and on television programmes all enhance the image of livestock breeders committed to agroecological practices and bring the diversity of purposes served by natural meadows, and the importance of their existence, to the attention of other farmers, the general population and elected officials.



Figures 75, 76. Jury of a flowering meadows competition and some of the flora in one of the meadows inspected (Photos: R. Ambroise)

Daring to speak of beauty

Considering the landscape dimension, as it is included in the European Landscape Convention, can help farmers and, more broadly, planners to find more effective solutions in line with the challenges of land transitioning to sustainability. This long-term economic quality of the landscape must be asserted and better understood by farmers and their advisors, so that they can use it to improve their projects.

However, the term "landscape" also has a sensitive, emotional dimension linked to a sense of fulfilment, a successful achievement of evident high quality. In the face of what we call beauty or harmony, we all feel a powerful attachment to the world and respect for those who forged that harmony. The search for beauty is one of the essential needs of humankind. It is expressed in every period in history and reveals the values that drive it. It means looking beyond mere functional considerations and paying attention to what it is that determines our human condition and joins us together through all our differences. Where landscape composition is concerned, the diversity of individual viewpoints does not prevent us from achieving broad consensus as to their beauty, as the inhabitants of each city and region are also members of a society that shares common values, inherited cultural forms and a symbolic heritage. To invent the forms of the future together, farmers will be able to draw on these resources.

Over time, artists and farmers have influenced each other to build the inherited landscapes. This understanding was at least partially eclipsed in the 20th century. At that time, artworks depicting landscapes produced by industrial farming techniques tended to denounce such changes – the exploitation of nature, the development of individualism and the drive for maximum profit – and never managed to stir enthusiasm in more than a small part of the population. This does not make it acceptable, however, to attempt to restrict the need for beauty solely to the contemplation of past successes which, once protected, serve to condone a *laissez-faire* attitude everywhere else. Why would our era be incapable of producing high-quality landscapes everywhere, acknowledged as such and capable of rising to the challenges of our day and age?

Faced with the multitude of rationales that shape the new landscapes through the actions of the different players, the role of landscape designers or architects, whose job it is to guarantee the quality of a project, is changing. They no longer have only one client to satisfy: the owner who wants a new garden, the mayor concerned by the redevelopment of a square, the industrialist who wants to improve his corporate image, the developer wanting a *décor* to make it easier to sell what he is building, or sometimes the farmer who wants to reorganise his buildings and open them to the public. Nowadays all these protagonists must be brought together and persuaded to work together towards a common goal, taking into account everyone's ideas and the singularities of the territory. With sketches, drawings and photos the specialists give shape to the various intentions and expectations, they fire the imagination and formulate proposals that open up new possibilities capable of making these projects desirable, exciting people and making them proud to have contributed. The sensitive rediscovery of the territory, working on perceptions, forward-looking analysis: these are methods for venturing into projects that tend to combine the good and the beautiful, business and pleasure.

It is useful to encourage exchanges between farmers and artists.



Figure 77. Modern landscape observatory, Bruche valley, Vosges, France (Photo: Communauté de communes de la vallée de la Bruche/J-S. Laumond)

3. Landscape diagnosis and the agroecological project

The application to agriculture of the approaches and principles previously mentioned requires a minimum knowledge of the idiosyncrasies of how farms work, and particularly farms in the process of transition to an agroecological system (Ambroise and Toublanc 2015).

Landscape diagnosis in farming

Every landscape approach begins by establishing contact with the landscape concerned.

Observation of the landscape

Observation of the landscape can be done in various ways, in particular by an on-site visit or by applying the method of comparing views and know-how.

The on-site visit is the basic tool of any landscape approach. When making a diagnosis of a territory or a farm, it is important to involve other actors or users of the territory and experts, in addition to the farmer. The group visit is an opportunity to bring people together: the farmer or farmers concerned, their families, agricultural or environmental engineers and, if possible, local officials and neighbours. By combining affective and rational perceptions, the visit is an opportunity to understand a reality in all its complexity. Everyone concerned can play a part in defining the challenges of the territory based on their own experience and giving their point of view. This is not the classic crop tour carried out by agronomists, which is mainly about the condition of the land under cultivation and the production area in the farmer's care. Landscape approaches require a broader vision and also factor in the links between farmlands and the surrounding territory. For example, it is important to observe the features that surround the plots of land: hedgerows, banks and ditches, walls, paths and woodlands, for their different agronomic and ecological functions, but also in qualitative terms. It provides an opportunity to study how the farm under study is located with regard to other buildings, infrastructures, developments envisaged by the authorities or by companies, and the landscape singularities of the immediate region. The on-site visit uses sight and the other senses as instruments of learning; it helps reduce linguistic misunderstandings, offers common references, facilitates dialogue, puts adamant or peremptory opinions into perspective, helps the participants understand each other's reasoning and spurs them to action. It offers direct contact unfiltered by figures, speeches, pictures or computers. It saves time.



Figure 78. Diagnosing a farm (Photo: R. Ambroise)

Comparing views and know-how is a method based on the observation that everyone sees things from their own point of view and according to their own experience, culture and knowledge, and on the fact that learning what others are thinking is a factor of personal and collective enrichment. The views of a hydrologist, an official, a naturalist or an ordinary citizen can broaden a farmer's vision and make the farmer see opportunities or problems they were previously unaware of. Talking to the different participants on the spot gives those who live and work on farms an opportunity to express their concerns and their interests. It helps others to understand their choices (products and workshops, organisation of the land, annual routines) and their reasons (personal preferences, constraints linked to the market, regulations or the specificities of the territory). With the help of outside opinions, it helps detect various agroecological or territorial constraints and advantages.



Figure 79. Different points of view on a landscape analysed together (Photo: Communauté de communes de la vallée de la Bruche/J-S. Laumond)

The additional task of documentary analysis

When preparing a territorial diagnosis, it is possible in many regions to find landscape charts, plans or maps and planning documents that relate the history and geography of the area, the economic and environmental challenges, agricultural projects and the development of the territory. Some of these documents offer a good synopsis of most of the environmental, social and economic themes relevant to the area, which may confirm or contradict some of the intuitions generated by the on-site visit. They help one understand and visualise the distinguishing features of the region, to grasp the changes under way and to manage agricultural projects in keeping with the sustainable development of the territory.

When the diagnosis is on the scale of a farm, the usual records of agricultural data are an essential additional asset in quantifying the challenges: a plan of the farm, aerial photos used to apply for subsidies, grazing or crop-rotation plans. Some farmers have old photos or plans which are useful for a historical perspective.

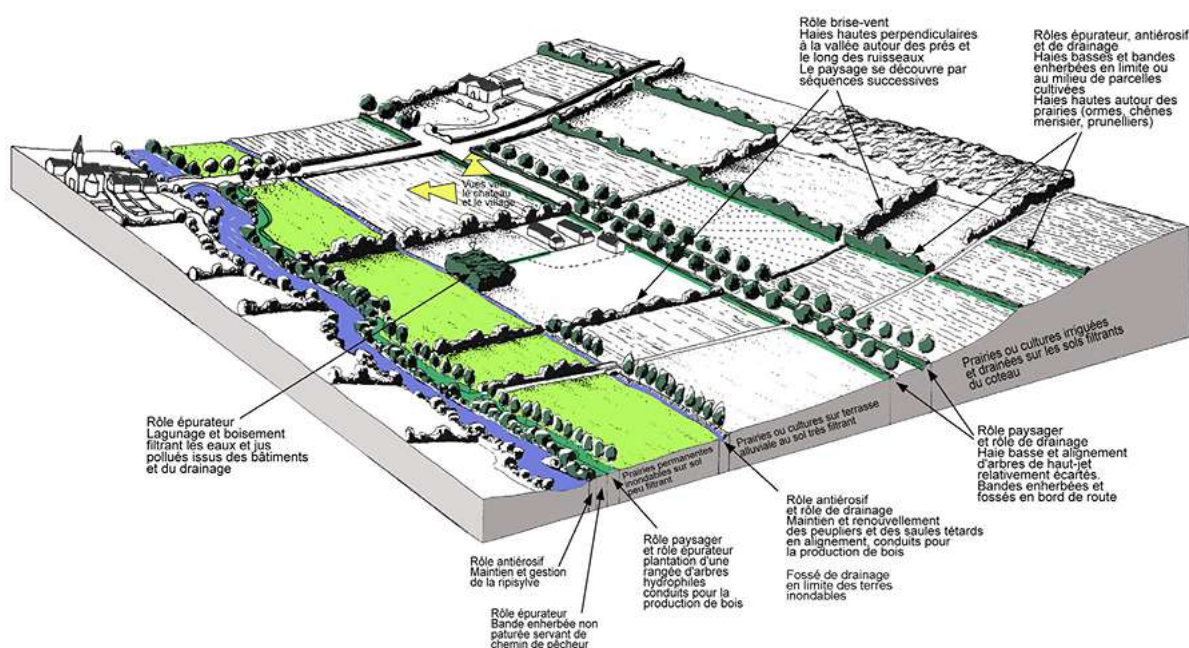


Figure 80. Block diagram (drawn by F. Bonneaud)

Formulation and presentation of the diagnosis

The presentation of the diagnosis can combine two types of document: documents on various themes and a spatialised synopsis.

The method of dividing up the landscape helps assemble observations on each major agroecological theme (soil, water, biodiversity, stone, buildings, energy) on data sheets including the relevant information and a map or aerial photo indicating the precise location.

The diagnosis proper is a synopsis of all the technical, economic, social, environmental and spatial information collected in the aforesaid theme-specific documents. It is not just a matter of superimposing them but of giving an opinion that integrates and articulates the different data, to identify the main advantages and the problems to be solved and engage the farmers in a sustainable development approach. A map helps to locate the challenges. Understanding the spatial organisation of the territory is essential for the improvement of technical responses for the production site and the more qualitative responses for the living environment.

The landscape approach at the farming project stage

Once the diagnosis has been established, landscape approaches focus on addressing agronomic issues but also on the way agricultural projects affect, or will affect, people's surroundings.

Landscape, a tool at the service of the agroecological project

Based on the observations made in the diagnosis, the maps locating the features to be protected or developed and the elements to be implanted, the farmer and his advisors consider the possible changes to the production system by analysing the spatial consequences they would have or what could be done to make them easier to achieve. For example, what pesticide-free system of crop production is suitable? How could one revise the grazing system to let the livestock graze for longer periods and so need less imported feed? Each hypothesis is linked to a place on a map, which helps verify its feasibility, detect any incoherencies and find better solutions.

Seen in this light, the landscape approach helps improve the technical solutions by adapting them to the local agroecological context.

Landscape, a component of the living environment shaped by farmers

Generally, the technical choices concerning the productive land are only partly the result of a landscape analysis. However, the choices made have an impact on the landscape, which is the living environment of the farmer and his family, the local people and visitors.

The move towards sustainable agriculture based on the use of renewable local resources already tends to strengthen ties with the territory and thus to underscore the singularities of the landscape. But special action can be taken to improve the impact of these changes on the quality of the living environment. Sensitive points are detected and given special treatment to make the landscape more interesting, more open, more welcoming and more pleasant to live in: laying paths, borders along roads and waterways, improving farm buildings and the surrounding lands, installing gates in fences, rehabilitating stone walls and other vernacular heritage features, providing panoramic viewpoints and planting local tree varieties. These actions are planned in conjunction with the agronomic project but without the two necessarily being directly related.

In methodological terms landscape approaches emphasise familiarity with the spatial singularities of the territories and how they are perceived. Such approaches deserve to be more widely used by farming consultants and teachers in courses on agroecology which are organised for farmers and students. Based as they are on group visits, comparing views, iconographic documents and interviews, these approaches are quite simple, but getting them right takes practice. Interdisciplinary training courses bringing together agronomists, landscape specialists, architects and environmentalists will facilitate introduction of the landscape as a tool at the service of the transformation of production systems and a part of the agricultural project. The landscape is thus considered not as a constraint but as a concern that helps enrich the advice given and the agricultural project for the benefit of all concerned.

It is thus necessary to involve landscape specialists in the drawing up of agroecological diagnoses and projects, and to train landscape specialists in the specificities of the world of agriculture.

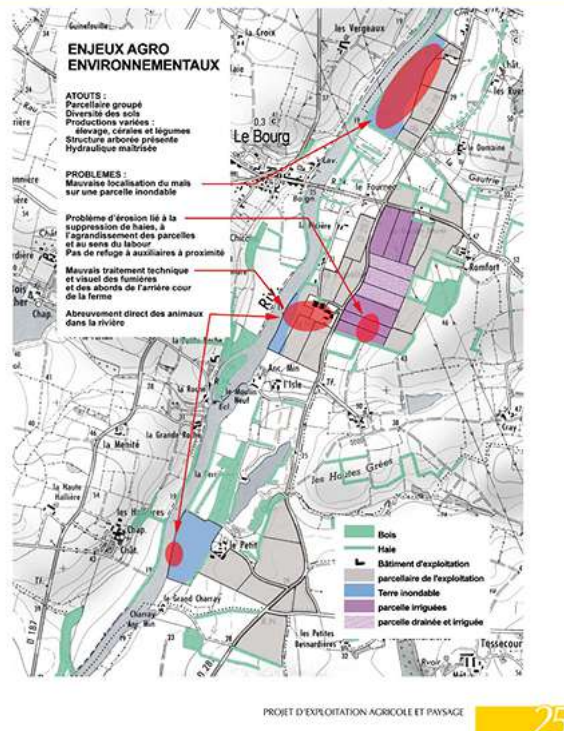


Figure 81. Example of an agricultural/landscape diagnosis (R. Ambroise, M. Toublanc, F. Bonneau, 2009)

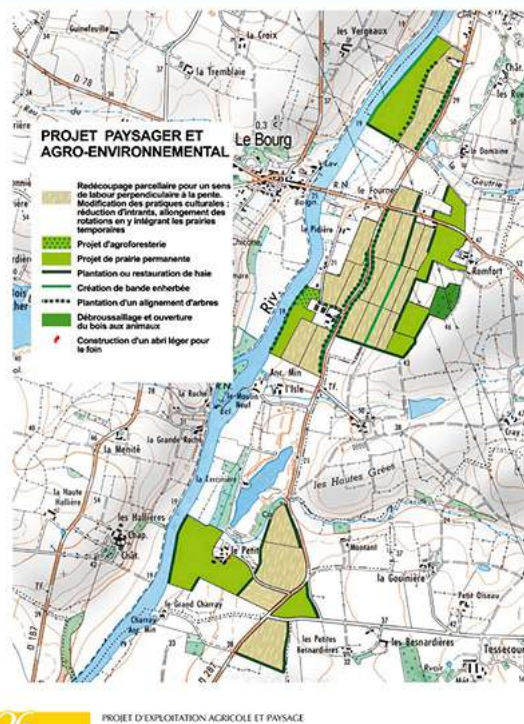


Figure 82. Example of an agro-environmental landscape project (R. Ambroise, M. Toublanc, F. Bonneau, 2009)

Farm buildings

Lying as they do at the crossroads between the technical, heritage and architectural approaches, farm buildings deserve special attention. Old buildings are the result of particular customs, styles, cultures and materials and they have long contributed to forging local identities. Indeed, the finest and best conserved ones are used in the literature promoting the regions. All too often, on the other hand, modern farm buildings have not received a great deal of architectural attention. The problems differ with the types of building.

Traditional buildings

Traditional buildings that are too small or ill-suited for modernisation often fall into disrepair or are even abandoned, but there are other solutions available to farmers.

Refurbishment

In certain cases, the buildings can be reused for housing or other uses with a little work to bring them up to modern-day standards of comfort. Some states have set in place incentives to help farmers approach architectural consultants who specialise in farm buildings, to help them modernise, consolidate and upgrade this architectural heritage without destroying the most distinctive features.

Change of use

When the buildings are no longer of any use for agricultural purposes, or as housing for the farmer, they can be turned into housing for rent, tourist accommodation or even – provided they are not a source of disturbance for the neighbours (noise, smells, dust, pollution) – into craft trade workshops or industrial warehouses, especially when they have special heritage value, or are an essential part of the overall composition formed with the buildings still in service.



Figure 83. Plane trees framing a traditional farm building transformed into a house (Photo: R. Ambroise)

Protecting the small-scale vernacular heritage

The numerous small constructions that dot the rural landscape are places of memory. They remind us of the projects, the work, the way of life of former generations: vineyard cabins, mills, isolated shepherd huts and “strong” granaries which deserve to be conserved. They are sources of inspiration to imagine the future. All the buildings made of dry stone, wood or clay that are rehabilitated by associations, with the help of craft workers, use techniques based on local resources (know-how, materials and construction systems) and integrate them into their contemporary projects.



Figure 84. Protecting a source (Photo: R. Ambroise)

Demolition

Where the buildings are made of materials that pollute, such as asbestos, and no rehabilitation solution seems possible, the best course is to demolish them and recover the materials rather than let them fall into disrepair, with the problems of security and liability that that raises.

Contemporary buildings

Contemporary buildings are unfortunately often architecturally mediocre with insufficient thought having been given to their setting. The model of the metal hangar placed on a concrete slab was adapted for storage of crops and equipment and to house livestock. This construction system and its volumes clash with the traditional appearance of the rest of the farm. When a hangar is built into a hill, the embankment it generates often accentuates the negative effect on the landscape. For this type of building, the tone and colour of the paintwork or the way the weatherboarding is restored must be given careful consideration. With a little investment, however, it is possible to improve the general aspect by planting a few trees or climbing plants or clearing, cleaning and tidying the surrounding grounds.

New projects

New projects, often imposing by their size, leave a strong mark on the landscape. The size of the investment involved and the impact on the landscape

oblige farmers to use an architect. The architect's role is to provide for the functional requirements of the farmer while proposing solutions that also take into account the setting, the surroundings, the volumes, the roof lines, the choice of building type and materials, the treatment of the surrounding area, circulation, working hours and the comfort of the livestock and the workers. An architect uses their technical and architectural culture to give overall coherence to the project, in keeping with the objectives of sustainable development. In fact, today architectural design helps to solve the challenges of energy transition.



Figures 85, 86, 87. New animal breeding facilities in Switzerland, Austria and France (Photos: H. Cividino)

Location

Several criteria must be taken into account when planning a new project: natural features, such as relief, the masking effect of nearby ridges or woodlands, the seasonal course of the sun, exposure, climate, prevailing winds; these factors are decisive both for the bioclimatic aspects of the design and for the energy production or savings they make possible; and circulation in and around the buildings to limit pollution and improve working conditions.



Figures 88, 89. New livestock buildings in Germany and Switzerland (Photos: H. Cividino)

The choice of materials

The choice of materials will be made as far as possible with durability in mind. From this point of view, bio-sourced materials (straw, wood) and geo-sourced materials (clay, stone) present advantages in terms of durability, recycling or reuse, insulation, breathability and appearance, benefits that more and more architects are learning to use. These alternative solutions require real skills, the learning of which must be included in the education system of the building sector.

They are the fruit of traditional techniques forgotten as a result of industrialisation and the general standardisation of building materials and methods after

the Second World War. These traditional choices encourage the development of short supply chains and new economies in the regions. They not only contribute to better integrated, better designed buildings, but use local professionals who are proud to work with farmers to discover new solutions that will leave a positive mark on the landscape. The surroundings also deserve special treatment, which can often use these local materials or plants, drawing inspiration from older forms.



Figure 90. Grass-covered roof in Germany (Photo: H. Cividino)

Architectural quality

Architectural quality is also developed by organising competitions, awarding prizes and introducing educational modules in schools of architecture to teach students about the specificities of farm buildings and the rural environment. Visits to exemplary constructions give farmers an opportunity to look beyond the ready-made models proposed to them and seek solutions better suited to their contexts.



Figure 91. Weatherboarding and climbing plants on a building in France (Photo: R. Ambroise)

Lastly, architects may wish to discuss the project with the farmer. The choice of building type can affect the way in which the space is used in such a way that the farmer becomes even more dependent on inputs from fossil resources. For example, the concentration of dairy animals in ever-larger

buildings prevents the direct use of all the land available for grazing. Mobile milking systems can prove more interesting in certain cases in terms of using local forage resources and avoiding outsized buildings.



Figure 92. Mobile milking unit permitting livestock to use all the available grazing, France (Photo: H. Cividino)

The rural world has a built heritage, often sober and of high quality, which contributes to the interest of the rural landscapes which we inherit. Functional, economical agricultural constructions will find their place in the rural landscapes of tomorrow and will express, through their appearance, the quality of the sustainable agriculture project to which they contribute.



Figure 93. New livestock building in Austria (Photo: H. Cividino)

It is thus necessary to involve architects in the design of farm building construction or rehabilitation projects, and to train architects in the specificities of the world of agriculture.

Landscape, agriculture and country planning

Relations between city and countryside, farming and town planning, farmers and consumers, changed profoundly in the 20th century. In many regions rural exodus was followed by the reconquest of the countryside by the towns, while the number of farmers continued to decline. Agricultural products

were transformed by large agri-food groups and sold in supermarkets built on the outskirts of towns.

Protecting farmlands

These trends become extremely costly in energy and land consumption.

From urban expansion to densification

In order to turn these negative trends around, farmers need to change their production methods for more environmentally friendly, fuel-efficient methods, but that alone is not enough. It is necessary to defend the place of agriculture in society, particularly for all of its functions that are benefits to all society. In this context the landscape factor can help farmers explain to local and regional authorities how important it is to protect their activity, in particular against urban sprawl. Purely technical arguments in terms of agricultural production are sometimes not enough to persuade a mayor to protect the local farmland when a property developer offers to buy some of it to build an industrial estate or a housing estate. The owners, whether they are farmers or not, may prefer to sell their farmland as building land, at a much higher price. The future of farming and the quality of life of the population will depend on how planning documents are prepared, on whether talking to farmers is part of the process, on the ability of officials to comprehend all the issues facing their municipalities and, of course, on the capital gains tax rules on landed property applicable in each state.

Planning documents

While farmland was being reorganised in the 20th century to facilitate the use of fossil fuels and resources, the urban landscape was being transformed by and for the motor car and prefabricated buildings. The new orientation of cities towards the sustainable development rationale requires redefinition of these forms. That is the purpose of the planning documents responsible for organising the future of the territories. The new town planners are seeking to increase the density of the urban fabric to avoid encroaching on the surrounding farmland. Their work today consists of redesigning the city in the city, increasing the density of the urban space, improving the quality of public spaces and giving nature a place in the city. These measures help reduce energy use and commuting times between home and workplace. Farmers are not used to explaining how and in what conditions their activity fulfils a landscape function as well as producing food. With their sketches, drawings and photos, landscape professionals can help them show why agriculture must no longer be considered a simple overspill space for the city, by explaining the multifunctional roles farmers can play, particularly in favour of the quality of life of city dwellers. With the

support of landscape specialists, the presence of farmers on the committees responsible for drawing up planning documents is essential for them to be able to express their views and their proposals in terms of food independence and the living environment.



Figure 94. Volunteers clear a common outside a village, for use as pasture land (Photo: Communauté de communes de la vallée de la Bruche/J-S. Laumond)

It is thus necessary to increase the protection of farmland in planning documents.

The advantages of farming for sustainable land development

Looking beyond planning documents, officials committed to energy transition and the sustainable development of their municipalities are seeking to promote the use of public transport rather than private cars: they are laying cycle paths for cyclists; launching programmes to improve the insulation of private and public buildings and supporting the construction of positive-energy buildings. To make these policies more effective they increasingly rely on landscape approaches to take into account the natural and human characteristics of their territories and find the solutions best suited to the relief, the climate, the natural environment, the history of the places and the sociology of the inhabitants. Agriculture has to find a place in the spatial reorganisation of the territories. If city dwellers no longer have their own individual gardens in the future, the work of the planners will be to provide them with alternative solutions, be it flats with terraces that they can use as leisure spaces or to grow things, or by offering them shared gardens and high-quality public spaces where people can meet, relax, stroll or garden.

Modern lifestyles generate, by reaction, a taste for places where one can see, smell and taste natural things that are scarce in the city: plants, animals, water, earth, trees, stones, open spaces. In this new context two specificities distinguish agriculture from other activities, things which are very important from the point of view of the landscape: it occupies and manages vast spaces; and nature is its main capital.



Figure 95. Potato picking by members of an association for the promotion of small-scale farming (Photo: R. Ambroise)

Bearing in mind these characteristics and the new needs of city dwellers, farmers have everything to gain by entering into partnerships with local authorities. Such partnerships make it easier for them to obtain various benefits: permission to use certain common land, funding for land-development programmes or the inclusion in town-planning documents of increased protection for farmland. In exchange, they can undertake to enhance the multi-purpose potential of their activity, implementing agroecological production systems that help provide quality water, maintain biodiversity, use fewer fossil inputs and produce healthier products. They can also develop means of enabling city dwellers to come and enjoy the nature that they are so fond of, and the attraction of agricultural landscapes: embellishing rest areas, opening up vantage points for the view, receiving people, selling produce at the farm and looking after footpaths. In giving city dwellers access to it, this “staging” of the farming scene, as Olivier de Serres called it in his work *Le théâtre d'agriculture et mesnage des champs* [“The theatre of agriculture and the management of fields”] as long ago as 1600, highlights the quality of the agroecological system in place, and the attention paid to the quality of the living environment.



Figure 96. Harmonious co-existence of livestock farming and urban development in Austria (Photo: H. Cividino)

It is thus necessary to facilitate landscape partnerships between farmers and local authorities.

Landscape plans, protected sites and land development

Different procedures are used in European states to protect, manage and develop landscapes, often inspired by the European Landscape Convention. The following are some examples which can be used to work on the relationship between landscape and agriculture.

Landscape plans or charters

In many states, landscape plans or charters are drafted at the request of the authorities wishing to make a transition to sustainable development in their territory. A landscape plan comprises:

- ▶ a landscape study, which details the essential characteristics of the region and the changes it is likely to be faced with, as well as the view of the populations concerned; this document is presented to the authorities, local inhabitants and all those with an interest in the territory, for validation;
- ▶ the definition of a landscape scheme, supported by as many people as possible;
- ▶ the creation of a work programme for each stakeholder and each part of the territory;
- ▶ the creation of a follow-up structure composed of people responsible for assisting with the implementation of the programme and for its coherence.

Such a plan is an opportunity to give concrete form to the objectives of “protection, management and planning of the landscape”, as promoted by the convention. It is also an opportunity to formulate together the “landscape quality objectives”, in order to achieve the “sustainable and harmonious development” of the territory. When this stage is reached, the landscape plan details:

- ▶ the most remarkable features, which will be given special attention or even protection as landscape features that identify the site;
- ▶ the management principles that will help achieve sustainable development of the different activities, including farming;
- ▶ the zones where reassignment or development projects are required to permit new activities that can take advantage of the singularities of the site, with emphasis on the quality of the inhabitants’ living environment.

The landscape plan incorporates the principles of the landscape approaches mentioned earlier: diagnoses that consider the historical and geographical context of the area; the need for

integrated, multifunctional solutions; the involvement of the local population; and a concern for landscape quality.

In each phase of this work, the farmer’s role is to participate and be a source of suggestions to imagine forms of protection, management and planning acceptable to all. In some cases, farmers may be involved at the outset of landscape plans, especially where agriculture occupies a prominent place in the quality of the landscape and contemporary forces threaten that quality. The International Network of Viticultural Landscapes, which co-ordinates and promotes the Fontevraud International Charter,⁵ is a good example of how vine growers drive a landscape policy in vine-growing regions using the landscape plan method. Through this charter, wine-growing syndicates, local authorities and economic, research and development agencies all work together for the protection, management and development of the landscape heritage formed by the vineyards, in liaison with the rest of the territory. Based on a shared diagnosis, each participant implements an action programme in their own field of competence and helps finance a co-ordination body responsible for ensuring the coherence of the whole (Herbin 2015). The authorities responsible for town-planning documents could decide, for example, to ban any new building visible from the vineyards or to encourage the tourism sector to promote visits to vineyards or the vine growers themselves to adopt agroecological methods.

In any event, a landscape plan drawn up prior to a planning document, a classification procedure or a development operation is a fine opportunity to place these actions in a more effective, more widely shared, more harmonious logic of transition for the territory.

Protecting sites

Some sites or heritage features should be protected. As well as being places of memory, they are places of inspiration. Agriculture is concerned when the quality of the site depends on a type of crop or livestock which constitutes the setting, the showcase or even sometimes the jewel itself (lavender fields, vineyards, fruit orchards, original species), on agricultural landscape structures which have conserved their perfect coherence (terraces, wooded fields, marshes) or on exceptional agricultural practices. Farmers have often opposed protection of their territory, fearing that it would block any opportunity

5. The Fontevraud International Charter was drawn up at the instigation of the InterLoire Interprofessional and the Loire Valley Mission, following the inclusion of the Loire Valley on the World Heritage List by UNESCO in 2000 and the Fontevraud international Colloquium “Landscapes of vines and wines” held in July 2003.

for change or modernisation. Nowadays, however, they are increasingly in favour of this kind of protection, which makes the most of their agroecological know-how and improves the image of their products. The classification of a territory as a UNESCO World Heritage site or, more modestly, a national or regional award, is a bonus for the farmers involved. When their products are linked to a protected designation of origin (PDO), a mountain, farm or organic label which vouches for the origin of the products or their mode of production, the boost to their image places them in one of those quality categories that are often very profitable. On the other hand, it obliges farmers, who are particularly under public scrutiny, to focus on quality.



Figures 97, 98. The Lavaux vineyard in Switzerland, a UNESCO World Heritage Site and member of the Fontevraud Charter (Photo: A. Brochot)

Agroecological and territorial planning and development

In the days of the industrialisation of agriculture, land-development policies in many countries helped to adapt the size and shape of agricultural lands to the needs of modernisation. The most common of these policies was land consolidation. Today, with equal stubbornness, we should be setting land reorganisation procedures in place to foster agroecological production systems and sustainable development of the territories. Today's challenges require us to devise new land distribution patterns that facilitate farmers' work while enabling them to reduce their consumption of chemical inputs. At the same time, this reorganisation of space should help resolve environmental problems of water, soil and biodiversity and enhance the quality of the landscape. The changing relations between city and countryside also require this reorganisation of the land to consider the demands of society for the quality of people's living environment, the laying of paths, the treatment of boundaries, the sharing of the land and surrounding areas, and the multi-purpose use of the soil. The integration of landscape approaches in studies carried out before implementing agroecological land-development projects greatly increases the chances of success of these approaches. Opening membership of the committees in charge of new land-development projects to interested parties from outside the farming community is a good means of arriving at more sustainable and consensual solutions.

Pre-development analysis and installation of a walkway for hikers in a wet meadow, farm in Vernand, Department of the Loire, France

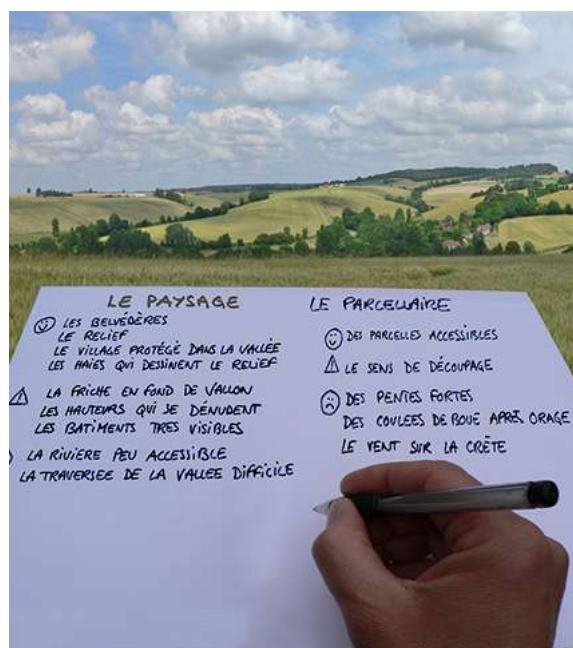


Figure 99. (F. Bonneaud)



Figure 100 (Photo: R. Janin)

It is thus necessary to use landscape factors as a means of simplifying relations between city and countryside, farmers and city dwellers.

Urban or peri-urban agriculture

The farmers most directly concerned by landscape approaches are often those who sell their own products directly or charge their clients for various services (guesthouses, rural lodgings, country inns). Proximity to their client base in peri-urban or sometimes even urban areas becomes an asset that allows them to invest in the production, transformation and sale of their products and to keep all the added value. The quality of the landscape is thus an essential factor to be considered when developing their business. As a result, new agricultural landscapes are emerging in and around our cities, or in urban parks. In some cases, local authorities, water authorities or public foundations purchase farmland that they then give back to farmers under the condition that they manage the land in an agroecological, landscape-friendly manner. This collective ownership of the land is a guarantee of a long life for the farmlands concerned. As public ownership is not a universal solution, agro-landscape analyses can help define which spaces deserve to be strategically protected in this way.



Figure 101. Allotment gardens (Photo: X. Remongin, Ministry of Agriculture, France)



Figure 102. Gardening on a city rooftop (Photo: X. Remongin, Ministry of Agriculture, France)

Allotments, shared and community gardens that traditionally surround towns and villages, but have often been built over, are coming into their own again in and around our cities, and even on rooftops and terraces. These spaces are a source of great creativity for imagining new forms of market gardening for use by people of different origins interested in recreating social bonds in a quality environment.

Conclusions

The strong bond that existed between landscape and agriculture grew considerably weaker in the 20th century. It is now necessary to strengthen knowledge of the relationship between landscape and agriculture. To solve the challenges linked to global warming, water, soil and air pollution, an ever-increasing world population and international tensions, it is essential that we change our approach to agriculture. Intensification based on the use of fossil resources cannot last, as it just exacerbates all these problems. The research and experiments conducted in agroecology provide interesting solutions, proving that it is possible to maintain production while substantially decreasing the use of chemical inputs, simply by more rational use of the natural resources available. The spatial organisation of fields and meadows will have to be redefined to suit these new agricultural models and make them more efficient. Landscape approaches are naturally fully relevant in helping farmers organise their production space in order to adapt these innovative systems to the natural and human specificities of each territory.

In parallel with these technical changes, relations between city and countryside continue to develop and farmers have a role to play in finding new partnerships with city dwellers by presenting the environmental, energy and landscape functions that they can fulfil by turning to agroecological farming. Stronger relations need to be forged between farmers, agronomists, environmentalists, energy specialists, architects, urban planners and landscape specialists. Training young specialists in these

different disciplines to work together in the field is an objective for teachers that requires the compartmentalisation of knowledge and working methods. Public authorities and individuals also have an essential role to play in envisaging the necessary transitions in the agricultural space and together forging the landscapes of tomorrow, the beauty of which will confirm that the measures taken to promote the sustainable, harmonious development of the territories were truly worthwhile.

The landscape can become what brings together all the actors of a territory.

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