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# Functional and Structural Changes of Agricultural Landscapes: How Changes are Conceived by Local Farmers in Two Danish Rural Communities

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**ABSTRACT** *The subject of this paper is the views of farmers concerning their local landscape. In two contrasting Danish case study areas previously analysed in the 1990s, a small number of farmers have been interviewed regarding their views of the landscape and recent changes in their respective area including landscape changes. One of the areas (Hvorslev) is characterized by good conditions for agriculture, intensive husbandry production and a relatively stable landscape history. The other (Nees) has more marginal conditions and major changes in land use characterize the recent landscape history. We analyze the way in which the landscape is perceived by farmers and compare their views of the changing landscapes with the actual recorded changes on the one hand, and with other significant changes on the other. Farmers in both areas emphasized the same type of structural changes in agriculture and in the villages as significant, whereas only farmers in Nees indicated that the landscape had changed. When asked to characterize the landscape, farmers in Nees replied with a greater degree of detail and were more locally focused compared to farmers in Hvorslev who mainly referred to (well known) sites located a few kilometres outside the area in question. Long-term experiences with landscape changes and collective actions concerning landscape issues are suggested as the main reasons that farmers in Nees share a well developed awareness of their local landscape. We conclude by discussing some implications of this study for landscape research and policy.*

**KEY WORDS:** Agricultural landscape, landscape change, multifunctionality, space of place

## 1. Introduction

The profound changes that European agricultural landscapes have undergone since World War II are primarily the consequences of fundamental restructuring processes in agriculture. This process comprises industrialization and modernization including intensification, specialization and concentration (Ilbery & Bowler, 1998; Marsden, 2003). However, other changes related to agriculture, including

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land abandonment in marginal regions, counter-urbanization and tourism, have also affected agricultural landscapes, especially in recent decades (Meeus *et al.*, 1990; Jongman, 2004; Pedroli *et al.*, 2007; Primdahl & Swaffield 2010). The concrete changes of agricultural landscapes depend on the specific agricultural development path such as: land use intensification including reclamation, drainage and removal of small biotopes (often in areas of favourable agricultural condition); or extensification and abandonment (often in areas with less favoured agricultural conditions) (Agger & Brandt, 1988; Baldock *et al.*, 1996; Ilbery & Bowler, 1998; Vos & Klijn, 2000; Mander & Kuuba, 2004). These development paths characterized the agricultural landscape until the end of the 1980s, but recent studies of landscape changes which focus on the development from the early 1990s in North-Western Europe show that new types of changes are evolving. Thus, a halt of land use intensification processes and an increase of uncultivated landscape elements have been documented for England and Denmark (Potter *et al.*, 1996; Primdahl, 1999; Haines-Young *et al.*, 2000; Kristensen *et al.*, 2004). However, these changes do not occur in all regions, and parallel to extensification of agricultural land use intensification processes are taking place including intensification of husbandry production (Evans *et al.*, 2002).

Contemporary landscape changes have been studied within different scientific disciplines and from different perspectives. A common focus among many studies has been changes in land cover and land use, particularly from a nature conservation perspective (e.g. Agger & Brandt, 1988; Barr *et al.*, 1993; Ihse, 1995; Dramstad *et al.*, 2001). Other, mainly British studies have focused on the driving forces behind changes associated with either changing conditions for agriculture due to changes in market, technology and policies; or in combinations with more broad changes to rural space, including urban – rural relationships and a growing interest for rural life and local food production. A general trend away from a productivist era towards a period driven by ‘a post-productivist trend’ has been a central theme in these studies and more recently the notion of a multifunctional agricultural sector has been added (Ilbery & Bowler, 1998; Wilson, 2001; Evans *et al.*, 2002; Marsden, 2003; Burton & Wilson, 2006; Mather *et al.*, 2006). At a more detailed level landscape changes have been studied as a result of farmers’ decisions and behaviour from economic, social or policy related perspectives (Potter & Lobley, 1992; Forman & Collinge, 1997; Pinto-Correia & Mascarenhas, 1999; Primdahl, 1999; Baudry *et al.*, 2000; Kristensen *et al.*, 2004). The farmer’s attachment to his landscape has been the subject for Scandinavian studies in which the farmer’s landscape practices have been studied from a broad perspective involving social as well as ecological dimensions of the landscape (Stenseke, 1997; Saltzman, 2001; Setten, 2002). Meanwhile other studies focus on how people perceive and assess landscapes and landscape changes (either retrospectively or focusing on potential changes) (Zube *et al.*, 1989; Nassauer, 1992; Jensen & Koch, 1997). Within the rich literature linked to agri-environmental policies, several references deal with the farmer’s view of landscape change in a policy context or with the continuation of agricultural practices in relation to landscape maintenance (Morris *et al.*, 2000; Wilson & Hart, 2001; Fish *et al.*, 2003; Primdahl *et al.*, 2003; Pinto-Correia *et al.*, 2006; Stenseke, 2009). In this context it has been criticized that the rigid and descriptive way agri-environmental schemes are designed may conflict with farmers’ views of the ‘right’ or ‘skilful’ way to farm, therefore it may



be counterproductive in supporting new and more sustainable landscape practices (Hodge, 2001; Setten, 2005; Burton *et al.*, 2008).

Despite the comprehensive documentation of landscape changes, farmers' views of these changes are only documented to a limited extent. Their opinions are critical in this context as they are key decision-makers behind the functional and structural changes of agricultural landscapes. Although farmers' decisions and agricultural practices affect the landscape, these decisions may not be addressing the landscape as such and so may not be included in the way that farmers experience landscape change. On the other hand, a large number of public policies address objectives related to the protection, maintenance and enhancement of values at the landscape scale rather than at the individual farm level. In this context farmers' conception of the local landscape becomes important—especially if there are clear differences in the way scientists and policy-makers document landscape changes on the one hand, and how farmers view these changes on the other. It may also be critical if there is strong divergence between the local perception of landscape changes and the changes which are aimed for by the general public as articulated in policies and spatial planning. Furthermore, in situations where the landscape is seen as a positive development factor (to attract tourists and new residents, for example) it is useful to know how local people perceive actual and potential landscape changes.

The aim of this paper is to investigate the farmers' views of their local landscape *per se* and to analyse how their view of landscape changes correspond to the actual (recorded) changes. We apply a transdisciplinary approach with point of departure in social science and humanities and with references to concepts and methodological approaches developed within mainstream landscape ecology.

## 2. The Agricultural Landscapes: Changing Meanings and Research Issues

Our study focuses on how change is conceived by farmers with reference to the actual changes in farm structure, land cover, the drivers behind such change and the role of farmers as conveyors of these changes. The interpretation of changes, the reasons behind changes, and how they are conceived may be interpreted according to various points of departure. Below we will present the main discourses and paradigms pertaining to the landscape concept of relevance for this study.

The concept of landscape has gained interest in recent decades, both as a research subject and as a policy field. Parallel to this increasing awareness, the original concept of landscape as an area with more or less well defined customs and regulations of rights and duties is again becoming more widespread (Olwig, 1996). This widens the more narrow conceptions of landscapes as either scenery (Daniels & Cosgrove, 1988), system (Leser, 1995) or habitat (Forman & Godron, 1986). The 'European Landscape Convention' is an example of this development (Jones *et al.*, 2007). The convention which aims at improving the general awareness of landscapes from a multitude of perspectives is departing from the following definition of landscape: "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (Council of Europe, 2000, Art. 1). However, no general consensus exists about how to understand and conceive landscapes. Within different local areas there may exist varying degrees of overlapping views of the landscape, the 'inter-subjective' view of the landscape

(Jones, 1991). This lack of a commonly accepted conception of landscape is a problem for several reasons. For the growing body of ‘landscape sciences’, including a growing number of interdisciplinary studies (Naveh, 1998; Tress *et al.*, 2003), it is a problem because different interpretations sometimes complicate discussions and perspectives, thus impeding theorization in the field. For policy it is a problem since it makes it difficult to communicate a landscape perspective and to position landscape as a theme or an issue within the public policy domain. ‘Landscape policy’ is not a well developed domain in most countries.

In the landscape convention’s notion of landscape, it is implicitly understood that **landscapes fulfil several functions for humans**. This understanding is embedded in the main paradigm, that landscapes are multifunctional *per se*. **Agricultural landscapes** are in general characterized by the presence of functions such as production, settlement, wildlife habitats, and recreation (Brandt & Vejre, 2004). Consisting of a mixture of ecosystems and housing a number of farms, agricultural landscapes thus provide multiple functions. These functions vary in time and space. For instance, the settlement function varies strongly: in some landscapes the farming families constitute the dominant group among residents; but more often, at least in a European context, a mixed group of people occupy the agricultural landscape (Primdahl, 1999; Murdoch *et al.*, 2003; Præstholt & Kristensen, 2004). Leisure functions associated with outdoor recreation and tourism play a significant role in many agricultural landscapes—either because of their location in urbanized regions or because of the cultural, natural and aesthetical attractiveness (Jensen, 1998; Jensen & Koch, 2004). Ecological services representing the natural capital (Costanza *et al.*, 1997) are often provided in agricultural landscapes such as drinking water, wildlife habitat, CO<sub>2</sub> sequestration, and filtering of harmful substances. The relative importance of such functions over time and between different places is influenced by overriding social processes—first of all by **urbanization**. The employment of the **multifunctionality concept represents a link between** the traditional monofunctional, productivistic role of agriculture and **the role the sector plays in relation to ecological services and intangible amenities, including aesthetic and cultural values**.

When landscape values are considered, the distinction between landscape as a space and as a place is important (Tuan, 1977; Olwig, 2002). **When a landscape is perceived as a space the focus** is on structures and genuine/universal values, which are associated with the physical landscape—irrespective of how local people perceive the values. Examples could be ascribing ecological value to a hedgerow or aesthetic values to a riverbed with open views. Theories on ‘inborn’ landscape preferences related to survival needs of early prehistoric humans are also within the space tradition of valuing landscapes; for example, the savannah theory of Orians (1980, 1986) and the prospect-refuge theory by Appleton (1975) which emphasize the need of humans for shelter and for keeping close watch over their surroundings. Describing the landscape structures and their dynamics would be a way of analysing the space dimension of a landscape. **When individuals or groups become familiar with a particular space through practical uses and personal experiences and link these experiences with their cultural values and social meanings, it becomes a place to them**. “If we think of space as that which allows movement, then place is pause” as Tuan (1977, p. 6) formulates it. Personal, social and cultural processes of appropriation hence superimpose a layer of meaning on a space (Altman & Low,



1992) and thus transform it into a place. Such places cannot be substituted by other sites with similar physical attributes, each place is unique; the place dimension is closely related to specific persons with specific experiences, the perception of local citizens is essential. Mental mapping, identification of favourite/important places and accounts of how landscape changes are perceived are examples of methods when analysing the place dimension of a landscape.

Closely linked to the space-place distinction is the effect of communicating about landscape values related to a specific local area. When people communicate about landscape values (e.g. what is valuable and to whom, and which changes are desired or not) and develop a common language on landscape values, their awareness of the specific landscape values increases (Spirn, 1998; Hajer, 2003; Højring *et al.*, 2005). The communication may be based on general arguments (space related), personal experiences (place related) or a mixture of the two perspectives; it may also involve both persons from within or beyond the local area. Apart from raising awareness—eventually leading to enhanced individual practices—the communication may also lead to a common understanding, or alternatively, a number of competing discourses of how the specific local landscape should be conceived (Macnaghten & Urry, 1998; Højring *et al.*, 2005).

Another way to characterize the 'space-place dimension' of the landscape is through its relationship with the surrounding world. Castells's concepts of 'space of flows' and 'space of place' represents a sociological and planning theoretical approach to space and place. Even though Castells and Tuan are from different academic traditions, 'space of place' and 'space of flows' are related to Tuan's concepts of place and space, respectively, and enables the analysis of landscape as a place for living and a space located within an increasingly globalized world (Castells, 1992, 2000; Swaffield & Primdahl, 2006; Primdahl & Swaffield, 2010). The latter is determined by the way networks of different kinds (a multinational food company, for instance) are organized and interlinked, whereas the former is the local place in which people live and attach experiences and meaning to the place. For the agricultural landscape some functions—the industrial production of pork, for instance—are closely linked to external supply of foodstuff and chemicals, as well as to the external market for pork meat—that is to 'space of flows'. Other activities, for instance the development of new residential homes for incomers from the city, or the establishment of landscape elements such as hedgerows or ponds, are more closely linked to the 'space of place'. Specific landscapes may be characterized and compared in respect to how these two dimensions are 'balanced'.

We will return to these discourses concerning the meaning and perception of landscapes in the final discussion. In the next two sections we present results from recent studies of landscape changes in two Danish local areas (section 3) and the ways farmers view these changes (section 4).

### **3. Two Danish Case Studies: Hvorslev and Nees**

The two studies are based on empirical data from various surveys of two Danish agricultural landscapes. The two case areas represent common but contrasting agricultural landscapes in Denmark. The Hvorslev case area was the study subject in a large multidisciplinary project on 'landscape boundaries', carried out during the

1990s (Primdahl, 1999; Primdahl & Christensen, 2002). In Nees, the other case area, similar studies were carried out in 1990 and 2000 (Bramsnæs & Primdahl, 1991; Busck, 2004; Primdahl *et al.*, 2004). Semi-structured, face-to-face interviews with farmers were the primary source of information in both studies. Farmers were asked questions concerning their farm properties (including agricultural production, non-farming businesses, hunting and other activities); landscape changes; and experiences with regulatory measures, agri-environmental schemes and other types of policy interventions. Land use and landscape changes were recorded on maps during the interviews. A central issue in the surveys was the farmer's double role as a landscape manager. As a producer of food and fibre, he or she makes key decisions concerning farming practices (tillage, fertilization, use of pesticides, etc.) and the overall use of the land. As the owner of a property, he or she will make important decisions typically related to the garden and the farm house, stonewalls, ponds and other cultural elements which historically were established as an integrated part of the production, but now are detached from production related functions. Other landscape elements such as hedgerows, ponds and semi-natural grasslands, may have combined production and 'property' functions. The studies from the 1990s clearly showed that the new hedgerows were mainly planted based on motives related to aesthetics, habitats, hunting, and 'shelter around the farm house' whereas motives related to plant production clearly played a secondary role (Primdahl *et al.*, 2004).

In addition to the interviews, data were gathered from maps, aerial photos and public databases. The two case studies are presented below including an outline of historic and recent landscape changes.

#### *A. The Hvorslev Area*

The area includes two parishes and is an intensively farmed moraine landscape with good conditions for agriculture. The open moraine landscape (Figure 1) is

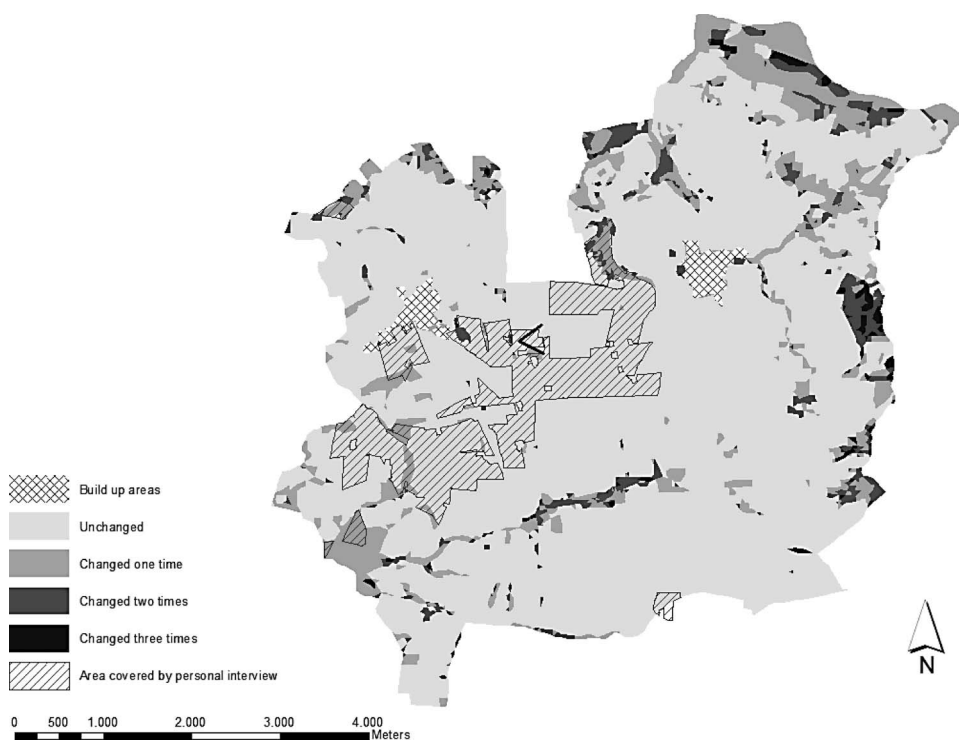


**Figure 1.** Air photo of central part of the Hvorslev area. See Figure 2 for photo point. (Photo: Jørgen Primdahl).

characteristic of agricultural landscapes in the eastern part of Denmark. Until the land reforms around 1800, all farm buildings were concentrated in villages, which in turn were usually located in the middle of fertile moraine plateaus with common grassland and forest in the periphery of the village land—often in relation to wetlands and valleys. The land reforms resulted in comprehensive re-allotments of farm properties so each farm had all the land united in one lot, when needed farms were moved out of the village and relocated in open landscape with the farm buildings placed in the middle of the property.

In the subsequent decades following the re-allotments, the landscape changed to form a mosaic; with patches of permanent grasslands and a few wood lots scattered in a matrix of arable fields, with a few open ditches, stone and earth walls and hedges as the most widespread linear elements. As it appears from Figure 2, the landscape structure has been relatively stable since the 1870s especially in the surroundings of the two villages. According to the standard topographical maps from four different points in time (1815, 1877, 1950, 1995), only a small proportion of the area has experienced land use changes.

The conversion from mainly arable to dairy farming at the end of the nineteenth century did indeed result in changed crop and field patterns, as well as the construction of almost the entire secondary road network; which in (rural) Denmark was not



**Figure 2.** Landscape stability in the Hvorslev area based on the standard topographic map at four different points in time (1815, 1877, 1950, 1995). ‘V’ indicates the photo point for the air photo shown in Figure 1.



constructed until the roads were needed for the transportation of milk. In addition the intensification, concentration and specialization of individual farms which mainly took place after the Second World War, has affected the landscape, especially the farm buildings which have increased in size, and the flows of matter and energy. Although the small uncultivated elements in the landscape, for example, ponds, hedgerows, and field boundaries, were limited in numbers and size, they were reduced as part of these post-war developments. Finally, new developments appear in the 1990s. These include a minor decrease in arable land and a small increase in permanent grassland as shown in Table 1. Changes in hedgerows represent more profound changes where significantly more hedgerows have been planted than removed. It also appears from Table 1 that the population is increasing in Hvorslev parish.

There are several reasons for the most recent landscape changes: a growing number of hobby farmers, the evolvement of a general positive view of wildlife and landscape aesthetics and new agri-environmental support schemes are among these (Primdahl, 1999; Kristensen, 2003).

Parallel to the landscape developments, the villages in the local areas have lost most of their shops, post offices, schools, dairies and other services, meaning that they have **become monofunctional residential areas** for people with urban jobs, pensioners and families on social welfare. The exhaustion of the functions of villages and the above described landscape development in the agricultural landscape represent a common trend in most rural areas in Denmark.

**Table 1.** Recent changes in Hvorslev-Vellev and Nees. See notes below for sources

	Hvorslev-Vellev parishes	Nees parish
Population 2006 <sup>a)</sup>	1078	442
Population change 1990–2006 ( $\Delta\%$ of 1990) <sup>a)</sup>	+5.7	–6
Agricultural area (AA), ha <sup>b)</sup>	3749	3176
Arable, % of AA <sup>b)</sup>	70	80
Permanent grassland, % of AA <sup>b)</sup>	8	8
Forest, % of A <sup>b)</sup>	10	11
Other, % of AA <sup>b)</sup>	12	6
Change <sup>b)</sup> :	--- 1991–1996 ---	--- 1990–2000 ---
–Arable, $\Delta\%$ of AA (1991/1990)	–0.7	–5.4
–Permanent grassland, $\Delta\%$ of AA	+0.5	–0.3
–Forest, $\Delta\%$ of AA	0	+5.7
–Hedgerows planted, m/100 ha AA	135	682
–Hedgerows removed, m/100 ha AA	13	351
–Ponds, number established	4	11
–Ponds, number removed	0	0

*Sources:*

<sup>a)</sup>Statistics Denmark 2007.

<sup>b)</sup>For Hvorslev-Vellev: Special run from a large study of all farmers in two out of 13 surveyed parishes in Eastern Jutland (See Primdahl 1999 for a description of the survey). For Nees: Data from two surveys carried out in 1990 and in 2000 (see Primdahl et al. 2004 for a short description of the two surveys) – please note that the change figures represent a longer period for Nees than for Hvorslev-Vellev.

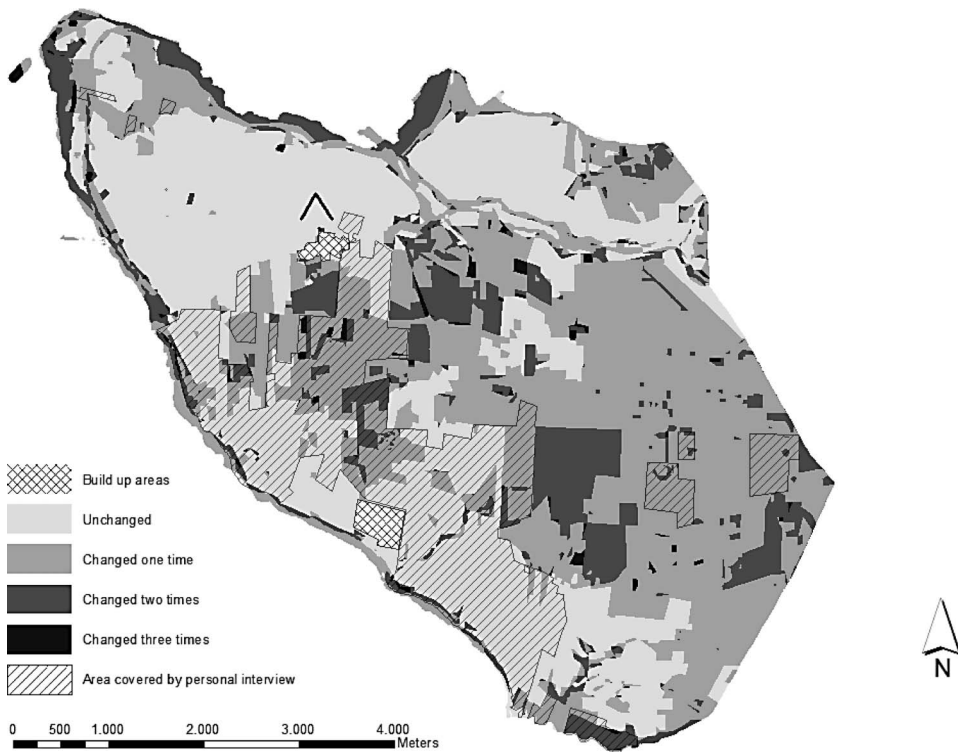
### B. The Nees Area

This area is located on a glacio-fluvial plain with sandy soils and is characterized by poor conditions for agriculture and a highly turbulent landscape history during the last 200 years. The landscape is a former heath area characteristic of large parts of western Denmark; the last large heath reclamation project in the country took place within the study area in the 1950s—implying reclamation of the remaining heath lands and colonization by a number of small farm-holders with financial support from the state. As part of the heath land was wet (moorland) the reclamation also included large draining projects, likewise subsidized by public funds. The landscape is flat with scattered farm buildings and with most of the land in cultivation (Figure 3). The area is relatively isolated with no regional roads and is situated more than 30 km from the nearest town.

There is a small village in the parish housing a grocery store and a small furniture factory. Along the coastline a subdivision of **second homes** from the late 1990s is found and a number of large **wind turbines** have been located in the area mainly financed and owned by farmers but **subsidized** by the state partly through price support on the electricity produced. It appears from Figure 4 that there have been changes in land use in most of the area during the last 125 years (recorded in 1873, 1917, 1958 and 2004). The most important changes have been conversion of **heathland** (intermixed with moorland) **into cultivated fields** and from cultivated fields **to forest**. The heathland reclamation has taken place over a long period, initially with the reclamation of the best land along the inlets to the south, west and north of the area. Later, in the 1950s, the central and eastern part of the area was



**Figure 3.** Air photo of central part of the Nees area, 1990. See Figure 4 for photo point. (Photo: Jørgen Primdahl).



**Figure 4.** Landscape stability in the Nees area based on the standard topographic map at four different points in time (1873, 1917, 1958 and 2004). 'V' indicates the photo point for the air photo shown in Figure 4.

reclaimed. Along with reclamation came plantings of a dense network of shelter belts. The first shelter belts were planted with single rowed spruce trees (*Picea glauca*) and these have, since the 1970s, gradually been replaced by three to 10 rowed hedgerows composed of a diversity of deciduous trees and shrubs. A number of small forests were planted in the 1920s.

In the 1990s major landscape changes occurred as shown in Table 1. Most significant were the number of new forests, covering an area equivalent to 5 percent of all farm land. The total length of hedgerows and the number of ponds have increased. Most recently (and not shown on Table 1), extensive grazing has been reintroduced on the salt marshes along the inlet as part of an agri-environmental project.

The reclamation projects and the early hedgerow planting were implemented as part of national policies to develop the less developed regions of the country and to establish smallholdings for the poor part of a growing rural population. Recent hedgerow plantings, afforestation and grazing projects were implemented with agri-environmental arguments and funds, including EU co-financed schemes. Generally, most of the changes have taken place in co-operation with local farmers organized in the local 'parish association' (a local association without any public authority). In 1990 the association took the initiative to discuss the future of Nees. Two alternative plans for afforestation and new wetlands were formulated and discussed in

co-operation with university researchers (Primdahl & Bramsnæs, 1993). As a result of this the farmers were able to co-operate with the local Chief Forester of the regional State Forest District: **this led to a number of forests being established, partly as state forests (on farm land purchased by the state) and partly as private forests.** The association was also actively and successfully fighting against the location of a regional waste site in the middle of the parish. The farmers in Nees have therefore gained some experience in cooperating with each other when it comes to dealing with landscape changes (Primdahl & Bramsnæs, 1993; Busck, 2003); or rather they have, as opposed to most other farming communities, maintained the old traditions of co-operating in shaping their local landscape.

Although farming and the farm structure has a much shorter history in Nees compared to Hvorslev, the same overall structural developments have affected the Nees area; this means that agricultural production has been concentrated and specialized, and the village has lost services (school, dairy and blacksmith). Similarly, a growing number of farmers obtain their main income from outside the farm. However, in contrast to Hvorslev, where there has been an increase in population in recent years, Nees experienced a decline in population (Table 1).

#### 4. Farmers' Views on Contemporary Changes in Agriculture and Landscape

In order to elucidate how the farmers conceive the current development patterns in the two different landscapes, personal interviews with a small number of farmers (14 in Hvorslev and 15 in Nees—see Figures 2 and 4 for the location of their farm properties) were carried out in 2005. The farmers were selected in order to represent both small and large-scale farmers with different production types. All were located within a typical part of the case area. In most instances both the farmer and the spouse participated in the interview. The interviews were all done by two of the authors of this paper, they were taped, transcribed and finally analysed thematically with respect to the farmer's view of the changes.



In addition to **follow-up questions** from the surveys in the 1990s (concerning changes in agriculture and landscape), the farmers were questioned about how they conceived the changes of the recent decades on their farms, in the local area, and of the landscape. In addition they were asked to characterize the landscape. The interviews were conducted as semi-structured interviews with a high proportion of

**Table 2.** A summary of the farmers views of the changes in the Hvorslev and Nees areas based on face-to-face interviews in 2005, 14 in Hvorslev and 15 in Nees. The questions asked on former changes referred to the last 20 years. See bottom of table for the precise questions concerning change

Questions on change	Hvorslev	Nees
1. Change of the farm	Changes in livestock were emphasized. Many of the interviewed farmers stopped dairy farming in the 1990s, some as part of	Reductions in or end of livestock were mentioned by several as was the general scaling down of production. On a few

(continued)

**Table 2.** (Continued)

Questions on change	Hvorslev	Nees
	retirement strategy; others specialized in pig production. A few referred to an expansion of the farm size.	farms there was a reference to the fact that the whole property has been afforested. 
2. Change of the local area in general	The structural developments in agriculture (specialization and concentration) and the changes in villages (closing of shops, schools, dairies, blacksmith, etc.; decline in house prices and newcomers with low income was mentioned by many). 	The structural developments in agriculture (concentration of production) and the changes in villages (closing of shops, schools, dairies, blacksmith, etc.) Many references to the new forests.
3. Change of landscape and description of landscape	Most farmers did not find that the landscape has changed much—apart from a few references to less livestock in fields and a more intensively farmed landscape. Most references to the present landscape were references to a large river valley north of the area.	Almost everyone emphasized the new forests and the attractiveness of the inlet, the wildlife and the peace. All the descriptions refer to the local landscape—no references to attractive areas outside.
4. Future changes to be expected	No future changes of the landscape were anticipated. Present structural changes were expected to continue.	Mixed opinions of the likelihood of new forests. Concern about the future of the grocery store and community life. A few were hoping that the area would develop into an attractive place to settle.

The specific questions concerning changes dealt with in the table are shown below and listed in same sequence as during the interviews. It should be noted that these questions represent a just a few among a large number of questions:

- *What are – in your opinion – the most significant changes of the farm and the land use of your property since 1985 (or since you came to the farm)?*
- *What do you consider to be the most significant changes in the Hvorslev/Nees area since 1985 (or since you came)?*
- *Focusing on landscape, nature and buildings/built up areas—what do you then consider to be the most significant changes?*
- *If you look at this part of the Hvorslev/Nees area as a place or a landscape to live in, how would you characterize the area? What are the most significant characteristics of this area and what do you appreciate most in the area?*
- *What do you think will change in the area in the next 10 years?*
- *Can you think of any problems/difficulties concerning the future of Hvorslev/Nees?*

open-ended questions, concerning the farmer's view of changes. These questions were asked in the same sequence for all farmers. See Table 2 the bottom for precise formulation of the questions.

#### A. The Hvorslev Area

Concerning the *changes of the farm* most farmers referred to changes in livestock and farm size. Two types of changes were frequently mentioned: a) termination of dairy farming as part of a retirement strategy, and b) conversion from either mixed livestock or from **dairy to specialized pig farming**. This conversion was usually also followed by **a growth in farm size**; more land is added to the property through acquisition of one or more additional farms, normally followed by the selling of the buildings surrounded by a few hectares to **hobby farmers**. When the farmers were asked about the *changes in the area*, they all referred to these developments in the farm structure as one of two major changes. Often they commented on the development with expressions such as “This has been a necessary development, I suppose” or “It simply has to be larger”, or they express views such as “I liked it better when there were more farmers and more life. Formerly eight farmers [full time farmers] were living along this road, now there are only two” or “Now we have only neighbours at night”. The changes in the village(s) were the other overall change referred to by the farmers, and the statements were all negative. Partly this was because jobs and services had disappeared and the village had turned into **‘a dormitory town’**, partly because the house prices in the village recently had gone down (in the years before 2005 the general trend was increasing house prices) and **low income families** or families on **social welfare were moving in**. “It has become somewhat a dreary place—it is difficult to get the village hall to function, and clearly the young newcomers will not be living here forever” and “The houses now cost only a third of what they do in Bjerringbro and Hammel [small towns approximately 10 km from the village]—and then one knows what kind of people will move in”. **No one explicitly referred to the landscape in their reflections on the general changes in the area.**

On the specific question on how the farmers conceived *the landscape and landscape changes* (see Table 2 for the precise wordings) about half the farmers stated that there had been **no landscape changes**. A few mentioned that the **livestock had disappeared** from the landscape, that **winter crops were now more widespread** and the landscape is more intensively farmed (**less permanent grassland**). Concerning the present landscape character most of the farmers referred to **a nearby river valley which was not part of the parish**. Only a few referred directly to the local landscape in question emphasizing the open landscape and wide views, and some mentioned the many lakes and bogs at the border of the area. A few referred to how the newcomers have changed the landscape by “shining up the buildings”; although there was also one reference of the opposite “They forget to clean up the mess”. **No one mentioned the changing trend in the overall landscape development: a decline of the cultivated share of the land due to more uncultivated elements appearing, including a rapid increase in hedgerows.**

When it came to the future, most farmers did not expect changes in terms of the landscape. The reasons mentioned included the fertile soils and the good conditions for agriculture in general, along with the conserving effects of the environmental legislation prohibiting changes of landscape elements such as meadows, bogs, lakes



and stone walls. This did not mean, however, that the same farmers anticipated an unchanged future. Almost all the farmers expected the structural developments to continue: concentration of the production on fewer and larger farms and one farmer was referring to the introduction of energy crops. Concerning the overall development including changes in the villages, several expressed concern that the area will be marginalized because it is located some distance from towns and cities—despite the fact that it is located less than 30 km from Aarhus, a city of about 300 000 inhabitants. One of the farmers was worried about further growth of the pig farms and the environmental consequences of this—including problems with smell.

The general views expressed among the interviewed farmers are summarized in Table 2. Whereas there was a distinct awareness of the structural developments in agriculture and in the villages, there were relatively few specific references to landscape changes, and those who did used only a few words.

### B. The Nees Area

As in Hvorslev, most farmers when asked about important *changes of their farm* emphasized the amalgamation of farms and the termination of dairy farming. Some of the farmers mention afforestation on their land as a major change and some refer to changed leasing patterns. Indeed it was surprising that most of the interviewed farmers had reduced or stopped livestock production since there are—due to poor soils—few options in making crop farming profitable in this area (mainly potato growing which only occurs on a small scale). One of the farmers, in his late 40s, had diversified his income. He has gradually reduced his pig production, is slowly starting a small beef production and also has an income from wind turbines and a small-scale construction business—he put it in this way: “The most important change that happened to us is that we have gone from expansion [of the farm size and husbandry production] to standby—we have enough to manage and are pleased with that—we do not have to buy more land or to expand the stables”. Such diversification of income also occurred on some of the other farms which formed part of the sample and they should be seen in connection with the general reduction of productive land.

Concerning *changes of the area* many respondents pointed to the structural changes in agriculture and to the afforestation, which had taken place in the late 1990s. Several farmers made direct references to the landscape when asked about (general) changes. As in Hvorslev, a few of the interviewed complained about the ‘lack of life’ during daytime because people are working outside the area. Several of the interviewees mentioned problems with newcomers on social welfare. On the other hand, there were also a few references to Nees as a former poor area which is now changing to become more attractive. One farmer was both complaining about the change from “an agricultural area to an area from where people drive to work every day” and pleased with the ‘upgrading’ of the area: “Many newcomers have moved to the area—probably because of the forest and the peace and the cheap house prices—and then it is not far to Struer and Holstebro [two towns about 30 km away]. The houses have been renovated; there are no empty houses any more. In any case it is a pleasure to drive around and see that things are being maintained.”

Asked specifically about *the landscape* everyone referred to the new forests and to the landscape attractions in the area—the inlet and the coastal zone, the ‘naturalness’

of the area, the wildlife, and the silence and peace. Most respondents expressed positive views of the new forests, a few gave negative responses. There were, to our surprise, no references to the many new wind turbines. One hobby farmer who has cattle grazing along the inlet mentions the landscape:

I would characterize it as a West Jutland pearl ... We have both the forest and the inlet, it is a lovely nature out here ... I love to go for long walks, when my livestock is grazing along the inlet, then I walk down there ... We have almost a kilometre along the coast, I never meet strangers down here, only me and my stock. This kind of peace does not exist where I work as a carpenter—there it is stress and rush.

It is typical for the descriptions of the landscape given by the farming families in Nees to refer to the local area itself (not to attractive locations nearby) and that they were rich in details and aesthetic references.

The responses to the question about *future developments and possible threats* varied. Many did not think there would be much more afforestation in the future. Several expressed the concern that the only grocery shop left would soon close. Some thought that the depopulation trend was over and that people with children and urban income would be moving to the area, partly because of the new forests and other landscape changes. The farmers' views of the changes and the future are summarized in Table 2.

## 5. Discussion and Conclusion

Based on the empirical data, it is obvious that the landscapes of both case areas are changing, functionally as well as structurally. In the following text we will compare and discuss the actual landscape changes with the changes perceived by the farmers. Functionally, the two landscapes are changing due to developments in the agricultural structure and the rural economy. Husbandry production is concentrated on a few large farms with a highly industrialized production linked closely to global food networks. In general, the farm size of professional farmers is increasing through the process of farm amalgamation, leaving the remaining farm houses including a few hectares of land to a parallel development where small- and medium-sized holdings are taken over by families with mainly urban incomes and with primarily a 'residential' relationship to the farm and the landscape. Such development may result in polarization between the few large productivist farms and the many smaller hobby farms. The villages are also undergoing change with most functions other than housing having disappeared. In both case study areas these development trends mentioned by the interviewed farmers including the altered strength among functions, such as production and housing and by that the multifunctional character of their local area is acknowledged. Structurally, the landscape is changing more slowly. The share of arable land is declining, while the non-cultivated elements are increasing in number and area. The changes are most predominant in the Nees area with its marginal conditions for agriculture, but do also to some degree occur in the Hvorslev area. Considering this background information it is surprising that the interviewed farmers in Hvorslev, with a few exceptions, do not mention the changes of the landscape. In Nees almost



all respondents mention the afforestation, which took place during the 1990s, as among the most important changes of the area in general. In neither of the two areas do farmers refer to changes related to new uncultivated landscape elements such as ponds, small wood lots, etc. or to new large farm buildings related to large-scale pig farming.

The fact that the landscape is changing without farmers conceiving the changes may be explained in various different ways. First, it may be linked to the conceptualization of landscape. Although the original broad meaning of the term landscape is gaining recognition, farmers may simply not conceive a new hedgerow or a new pond on the farm as part of a changing landscape—they may see it as a (minor) change of their own property. We return to how the landscape as such is conceived below. A second reason for not identifying the landscape change in Hvorslev may be due to the structural change of the landscape taking place so gradually: farmers simply do not see the disappearance of a view, for instance, the same year a hedgerow is planted. The same is true for wildlife, as new species do not occupy a landscape overnight, with the exception of birdlife in relation to wetland restoration. This inability to perceive the changes and the changing processes means that interviewees are also unlikely to participate with others in discussions concerning these developments.

Clearly, there are no reasons to believe that landscape issues are considered to be of importance in all rural communities. The historical context may play a role in the way landscape is considered to be an important factor in a change perspective. In Hvorslev, which has a relatively stable landscape history concerning land cover, the image of an unchanged landscape dominates the views of most farmers, they also anticipate the landscape to be basically unchanged in the future in spite of all the changes in the agricultural structure, which inevitably will lead to changes in landscape structures. This is in clear contrast to Nees, which has a highly unstable landscape history, a history characterized by radical and frequent changes of landscape functions and patterns over the last 200 years, including significant changes during recent years. Here the farmers consider landscape changes to be part of the overall change patterns and express a high degree of uncertainty concerning the future landscape—some believe that more afforestation will take place and more cultivated land will revert to 'nature', whereas others are less clear in their predictions.

A second explanation, supplementary rather than alternative, of the differences in the way farmers look at landscape and landscape change in the two areas may be found in the role public policies have played (and are playing) in the two areas. In Hvorslev, the policy interventions which historically have affected land use and landscape are typical reactive, regulatory policies related to planning and nature conservation. In Denmark these did not really have any effects on the rural landscape in general before the 1970s and even from then these policies have not had great impacts in this area. In recent years some of the EU agri-environmental policies have played a role—but again these policies have been given low priority in the Hvorslev area. Alternatively in Nees, there is a long tradition of pro-active interventions—related to heathland reclamation, drainage, soil improvement, hedgerow planting and in recent years to afforestation and extensive grassing schemes. The characteristics of these policies are that they affect behaviour and decisions directly related to the landscape.

Finally, a third possible explanation may be associated with **different experiences in collective actions**. Farmers in Nees have (maintained) a tradition for co-operating with public authorities concerning landscape issues, most recently with the afforestation programme and grassing scheme. In addition the farmers and other locals have struggled together to avoid the location of a waste site in the parish. Through these actions, local landscape values have been debated and discussed between the local farmers; and between the farmers, the public authorities and various advisors. From this, a collective awareness of the landscape may have evolved and this landscape has become a major component of their 'place' (Tuan, 1977).

In summary and with a reference to Castells's (2000) concepts of 'space of flows' and 'space of place' mentioned in section 2, it may be fair to suggest a relationship between the farmers' understanding of the landscape and their actions concerning **'space of place'**. Thus, the farmers in Hvorslev are, despite their concern for the villages, not very aware of and involved in the 'space of place' dimension of their community. They do not see major problems concerning the agricultural landscape (some were concerned of the lack of interest in the village hall), and they have not taken any collective initiatives concerning the landscape. When asked to characterize the local landscape they refer to (well known) sites located close to the area rather than within the area itself. The situation is different in Nees, where farmers have taken a number of actions related to the **'space of place'**: the farmers see landscape changes as part of the significant general changes and the landscape values referred to (in a rich language) concern the local area itself and the personal experiences of the farmer. **Nevertheless, Hvorslev and Nees are both 'places'**, where people are living and they represent 'home' for people—or a 'pause' in a daily life characterized by increasing movements (to reword Tuan's [1977] metaphor for place quoted in section 2 above). Whereas Castells's work on globalization indeed contributes to understand how a landscape is 'located' in a changing world Tuan's work is more useful in dealing with the landscape as a place.

Concerning the methodological aspects of the studies presented we have found it useful to include the question of the farmers' own views on the landscape and landscape changes seen in broader context. However, the use of the term landscape has not been without difficulty because the farmers do not have a clear and unambiguous understanding of it; a problem also noticed by Setten (2002). Nevertheless, we are convinced that part of the differences in the way farmers conceive the agricultural landscape and landscape changes in the two areas **do reflect some significant differences in the intersubjective meanings attached to local landscape**.

## **6. Implications and Perspectives**

Clearly more research concerning how farmers as well as other owners and users of the rural landscape conceive the local landscape is needed to enable a better understanding of **how some of the key decision-makers view and experience the landscape and comprehend the change of landscapes in general**. Research on these issues will also be in line with the visions outlined in the European Landscape Convention.

Concerning the design and implementation of public policy affecting agriculture, rural development, nature conservation and planning **there is in our opinion a clear need for the inclusion of farmers and other landowners and users of local landscape in the policy process as a whole.** The research presented here indicates that landscape oriented policies, especially measures which are able to encourage coordination of landscape practices amongst farmers, may induce an increased awareness of different landscape values. One way to facilitate this could be through development of landscape level strategies as part of an overall rural policy. The process of formulating such strategies may also be a way to raise awareness of local rural places and through this open the opportunity for local communities to (re-)gain control over their own local landscape.

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