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## **PERCEIVED VALUES OF AGRARIAN LANDSCAPES IN EASTERN AND WESTERN NORWAY**

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### **Abstract**

The results reported in the present paper stemmed from a postal survey (n = 447) of the evaluations of scenes from agrarian landscapes in two Norwegian regions the Hamar/Stange area in Hedmark County, Eastern Norway, and Inner Sogn of the Sogn and Fjordane County in Western Norway. The results indicate that regional characteristics still are salient in the perceptions of the general public, that participants do appear to perceive the landscape according to general dimensions or categories, and that the various dimensions are valued differently. In particular, the degree to which scenes are readily recognised appears to be of high importance for the attribution of value to any given landscape category. In this study, one way in which this was demonstrated was that participants residing in the Hedmark area attributed lower economic use value to nature dominated scenes in Sogn than what was done by residents of the Inner Sogn area. In contrast, persons living in Inner Sogn exhibited low preferences for fields and modern road scenes from Eastern Norway. The results also suggest that when landscapes scenes become too familiar, preferences tend to decrease. On the other hand, landscapes typical of area of residence and highly preferred landscapes are both important for subjective well – being. A finding of theoretical interest is the very clear tendency towards agreement across geographical regions when considering evaluations of nature-dominated scenes, whereas evaluations of scenes more dominated by built structures yielded clearer regional differences, suggesting the existence of two separate modes for landscape perception - one biological mode dominating the experience of nature-dominated scenes, and one cultural mode dominating the experience of more human-influenced scenes.

Finally, the findings suggest a conflict between the landscapes most people value in terms of non-material benefits and those landscapes that provide income through agricultural production. Without any doubt, overcoming this conflict would be important for the well-being of the population.

*Keywords:* agrarian landscapes, visual preference, subjective well – being, typicality, conservation value, economic value, cultural heritage

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## 1. Introduction

The present paper provides a description of people's valuations of a set of scenes from cultural landscapes according to six criteria: Visual preference, Conservation value, Cultural heritage/Cultural landscape value, Economic utilitarian value, Importance for everyday well-being, and How typical each scene is for the landscape where one lives. The data reported are taken from a larger material collected within the framework of the study "The cultural landscape as a factor in subjective well-being". The study is an extension of a psychological study of visual preferences for agrarian landscapes in Western Norway (Strumse, 1996).

In Norway, there are at present indications of increased recognition of the experiential values inherent in the cultural landscape. However, there is still too little knowledge about the public perceptions of these aspects of agriculture. Such knowledge is, however, crucial both for implementation of effective measures in order to increase the aesthetical and recreative value of agrarian landscapes, as well as for the evaluation of such measures. Interventions that can be readily measured may range from restoration of stone fences, over maintenance of hay fields, buildings, the establishment of networks of walking paths in the cultural landscape and choice of agricultural practice. In the present study, the focus is on the local populations' perceptions of the agrarian landscapes in the counties of Hedmark and Inner Sogn. We know relatively little about the perceptions of cultural landscapes of lay people, and there is a need to study such subjective evaluations in order to establish reliable knowledge in this field.

## 2. What is the nature of human landscape perceptions?

Below, we will provide a summary of some main conclusions from psychologically oriented studies of landscape experience.

First, the *content* of scenes has consistently emerged as a major contributor to preference. Here, the most preferred scenes have repeatedly been shown to be those where human influence do not dominate the natural elements or where nature dominate, whereas the least preferred scenes often represent intrusions into the natural environment (Gallagher, 1977; Anderson, 1978; Hammitt, 1978; Herbert, 1981; Ellsworth, 1982; Herzog et al, 1982; Hudspeth, 1982; Miller, 1984; Kaplan, 1985; Strumse, 1994a).

However, not *all* nature scenes are highly preferred. Consequently, similarities in preference cannot be explained sufficiently on the basis of content alone. According to Kaplan & Kaplan (1989), additional important factors are environmental attributes enhancing the processes of understanding and exploration. Also spatial information, indicating how well one could function in the space represented, seems important. An earlier examination of preference predictors for the agrarian landscapes employed in the present study (Strumse, 1994b), seemed, in large part, to conform to these findings.

Kaplan and Kaplan (1989) summarized studies of group differences in landscape preferences according to the three main themes of familiarity (how well one knows the landscape in question), cultural and ethnic variation, formal knowledge and expertise. A number of studies have demonstrated that landscape experience and childhood residence are of importance for environmental preferences, however, not always in a positive direction.

Central findings in *a study of visual preferences* for agrarian landscapes in Western Norway (Strumse, 1996; Strumse, 1998; Strumse and Hauge, 1998) were the following: First, the results indicate a strong dislike for modern agrarian landscapes, and an equally strong liking for traditional landscapes. The highest preferences were found for traditional scenes where human influence appeared to be in harmony with the natural elements present in the scenes.

Moreover, a positive association between support to environmental protection and preference for traditional, nature-dominated landscape scenes was demonstrated, but a negative association between support to environmental protection and preference for landscapes characterised by elements from modern farming practices.

In addition, a positive relation was found for support to environmental protection and preference for farming activities. Finally, positive associations among on the one hand evaluations of the importance of protecting cultural landscapes, natural landscapes, species of plants and animals and on the other hand visual landscape preferences. While the relation between general support for environmental protection and landscape preferences was relatively weak, there was a stronger connection between support for landscape protection and visual preference, thus awareness of the aesthetical value of a landscape scene appeared clearly related to the wish to protect it. In this study, relatively few differences between groups and individuals were found. This may to some extent be due to innate human tendencies to react to our surroundings in certain ways, but in this case also the relatively homogenous sample of participants (students between 20 and 30 years old) is an important explanation. In a representative sample, group and individual differences would probably have manifested themselves more clearly.

As an extension of environmental preference research, some researchers have examined whether preferred environments also are health promoting in a general sense, and in particular whether nature distinguishes itself in terms of restorative or recreating effects. In a Norwegian study one has found for example, significantly lower heart rate in persons exposed to natural environments as compared to groups exposed to city environments (Laumann, Gärling og Stormark, 2001). Landscape preference and restorative environments research represents efforts aiming at gradually obtaining better knowledge for the types of environments that are beneficial for humans (Ulrich, 1983; 1984, Verderber, 1986). In the present study, health effects are not directly addressed, but will be treated indirectly by looking at how participants evaluate the importance of each landscape scene for their everyday subjective well-being.

The effect of the physical environment on subjective well-being has seldom been examined in any detail. In particular, there is a lack of research into how characteristics of the molar physical environment, for example landscape types, or other esthetical features of landscapes, may be associated with subjective well-being. MacIntyre, MacIver and Sooman (1993) note that researchers have rarely been interested in the areas themselves, and advocate directly studying features of the local social and physical environment which might promote or inhibit health, and that one should be focusing on places *as well as* on people. There is also a paucity of research into the relative influence on subjective well being of psychosocial and physical-environmental factors.

There is, however, reason for modest expectations with respect to *how much* social and environmental factors may contribute to the variance in subjective well being: One reason for this is previous studies showing that subjective well being is particularly frequent in individuals who *generally* tend to judge their surroundings as good rather than bad (see, for example, Vittersø, 1998). In a study of residential satisfaction, Bonaiuto, Aiello, Perugini, Bonnes & Ercolani (1999) found the context area to be the most powerful predictor, but also length of residence in the neighbourhood and socio-economic level were highly relevant factors.

How typical a scene is perceived to be for where one lives is probably important for the same scene's importance for subjective well-being. Nasar (1994) argues that the experience of "typicality" may be understood as the result of a correspondence between surroundings and knowledge structure. Moderate correspondence would probably lead to involvement or exploration because there is the suggestion that more information will be obtained through cognitive activity. Very low correspondence would result in decreased involvement because there is no experience of meaning. Moderate correspondence will thus probably be the most preferred, because this should imply involvement in an understandable context (that is, a recognisable knowledge structure), or orderly variation. This understanding of the concept of typicality suggests that the too well-known easily is perceived as boring and thus not always is highly preferred. Existing research on typicality is limited, but there is some support for the use of the concept (Purcell, 1986; Purcell and Nasar, 1992).

### **3. Theoretical assumptions in the present study**

Although the present study moves beyond the borders of aesthetics in a narrow sense of the word, i.e., understood as visual preferences or judgments of scenic beauty, we will proceed for a theoretical perspective originally proposed as a new paradigm for landscape aesthetics (Bourassa, 1990). This choice appears defensible because the proposed perspective takes basic psychological conditions as its point of departure, thus the perspective could be assumed to be valid for a broad spectrum of behaviour and experience. An important feature of this new paradigm is that it facilitates the synthesis of apparently contradictory findings.

For Bourassa (1990) aesthetical activity has both biological (innate, instinctive) and cultural (or learned) components, just like any other human behaviour. If both biology and culture are separate foundations for aesthetical behaviour, it will be necessary to overcome both biological and cultural determinism and to move towards a theory including both positions. Thus, in building upon the Russian psychologist Vygotsky's developmental approach to human experience and behaviour (*cf.* Wertsch, 1985), Bourassa (1990) suggests a tripartite theory of aesthetic experience, suggesting that three different modes of aesthetic behaviour, the biological (phylogenesis), the cultural (sociogenesis) and the personal (ontogenesis), have to be taken into account, as they represent three distinct domains that should not be confounded. Consequently, the task for theory in landscape aesthetics is to formulate biologically determined aesthetic *laws* (*i.e.*, in an evolutionary perspective), culturally defined aesthetic *rules* (here, a constructivist interpretation would seem appropriate), and person-dependent aesthetic *strategies* (in this domain, Bourassa notes that the concept of creativity undoubtedly will be important). Following this line of reasoning, no one of these three approaches can explain the whole range of aesthetic behaviour. Moreover, this conceptual frame integrates the innate and learned aspects of aesthetic behaviour.

On the basis of the distinction among the three modes of aesthetical experience, Bourassa (1990) speculates on how they might come into play in relation to different types of landscapes: Thus, natural landscapes could be hypothesized to be experienced primarily through the biological mode, *i.e.* through evolved psychological mechanisms; the experience of more human-influenced or urban landscapes, would probably be dominated by the cultural mode, *i.e.*, heavily influenced by learning and group membership, whereas, in particular, some urban landscapes may have no particular meaning to any cultural groups, thus, they will be subject to entirely individual preferences. It is not clear, however, whether evolved psychological mechanisms should be regarded as underlying all three modes.

Bourassa (1990) refers to evidence suggesting the existence of two perceptual modes: First, neurophysiologists have demonstrated that various parts of the brain are specialized on, respectively, innate and learned behaviours, and that the visual and other sensory systems are directly connected to these different parts (MacLean, 1973). Moreover, psychological experiments have resulted in findings that indicate the development of preferences for stimuli in the absence of cognitive knowledge about them (Moreland and Zajonc, 1977; Wilson, 1979; Kunst-Wilson and Zajonc, 1980), and that affective judgment can take place in the absence of recall (Seamon *et al.*, 1983; Seamon *et al.*, 1984). Two implications of such findings are (1) that responses to landscapes can be seen as independent of conscious processes, and (2) that the existence of separate innate and learned responses to landscape is a real possibility.

Bourassa's theoretical framework for landscape aesthetics is also supported by existing research on visual preferences for landscapes. As already discussed, findings strongly suggest innate, biologically founded mechanisms

influencing visual preferences (for example, Kaplan, 1992; Oriens and Heerwagen, 1992). Pertaining to the distinction between the biological and cultural modes is the general finding that the distinction between nature and human influence is repeatedly found to be salient categories in peoples' perception, and that nature almost always is more liked than human influenced settings.

On the basis of Bourassa's theory one would expect few and small group differences in the evaluations of nature-dominated landscapes and larger group differences in the evaluations of clearly human-influenced scenes. In the present study, it is possible to test both assumptions, as the study includes a broad range of landscapes scenes, ranging from outfields to farm environments and modern road constructions.

#### **4. The study**

The area surrounding the town of Hamar in Central Eastern Norway consists of large and varied agricultural land, nature reserves and densely populated areas. The area is part of one of the most important agricultural districts in Norway, which is comprised by the municipalities of Hamar, Løten, Ringsaker, Stange and Vang. Hamar is the most densely populated area in the county of Hedmark. Because the agglomeration of Hamar comprises more than the municipality of Hamar, and because there is relatively little agriculture in this municipality, we chose to let the study area also include parts of the neighbouring municipalities of Vang and Stange. Stange is an important agrarian community, in particular producing cereals, potatoes and vegetables, but there is also an important forestry sector in the municipality.

The Inner Sogn region in Western Norway is characterised by a complex traditional cultural landscape, in which can be found various stages, ranging from traditional practice to succession in marginal areas where fields and semi natural vegetation of meadows and pastures rapidly become invaded by woodland.

In a national registration of valuable cultural landscapes, single farms in the area have been classified as high priority areas (Østebrot m.fl., 1994) due to the fact that they are still run according to traditional methods, they are rich in cultural heritage, and they have high research, educational and recreational value (Austad et al., 1991). The cultural landscape has a higher biological diversity than modern agrarian landscapes. Moreover such landscapes are complex with a mosaic of different types of cultivated meadows, pollarded trees, wooded pastures and wooded hay meadows connected into a functional whole through old technical elements representing cultural heritage. In addition, also scenes from more modern cultural landscapes are included.

The purpose of this study was to identify dimensions in a set of landscape evaluations of cultural landscapes in the counties of Hedmark and Sogn, and to examine whether these dimensions can be generalised across participants from the various localities. Further it is of interest to identify which landscape types

that receive, respectively, high, moderate and low evaluations on the various criteria, as well as to investigate possible associations among the different types of evaluations. More precise specific questions include the following:

- Are nature dominated and/or traditional landscapes generally more highly valued than other landscape types?
- Are landscape types perceived as typical of place of residence also perceived as more important for subjective well-being than other scenes?
- Are highly preferred landscape scenes more important for subjective well-being than less preferred landscapes?
- Is it possible to obtain support for the assumptions about biological and cultural modes for landscape experience?

For some of the results, comparisons will be made between participants from Eastern and Western Norway.

## **5. Method**

*Sample and response rate.* The data reported in the present article stem from a study of perceptions and evaluations of two Norwegian agrarian landscapes, using a photo-survey and a standard questionnaire. Data were collected during spring/summer 2000 in a mail-back survey among two representative samples, one from Eastern Norway and one from Western Norway. The original sample comprised 1025 persons older than 15 years randomly sampled at the household level in seven municipalities in eastern and western Norway. Municipalities with landscapes typical for the two regions were selected.

In the county of Hedmark, Eastern Norway, participants were drawn from the municipalities of Hamar (250 persons) and Stange (250 persons). In the Sogn og Fjordane county in Western Norway, participants were drawn from a larger number of municipalities due to small populations in each municipality. Here 125 persons were drawn from the municipality of Sogndal, while the municipalities of Luster, Årdal, Lærdal and Aurland participated with 100 persons each. The final sample comprised 447 persons, 204 men and 224 women (19 missing on gender), 241 persons from Western Norway and 204 persons from Eastern Norway, corresponding to a response rate of 43,6%, which is relatively low.

*Questionnaire.* The questionnaire employed consisted of two main parts, a photo survey and standard social survey. With an exception for county of residence, the data from the standard social survey is not reported in the present paper. In the photo – survey, participants were presented with a set of 32 colour photographs from a varied sample of scenes from the agrarian landscapes of the two areas included in the study, presented in random order. Among the 32 pictures presented, 4 had been manipulated by removing landscape elements or introducing new ones. The present analyses are based on responses to the 28 non-manipulated pictures only. Participants were asked to rank scenes according to a number of criteria:

Visual preference, ranked on a five-point scale with 1 = “Does not like at all” and 5= “Likes very much”.

Conservation value ranked on a five-point scale with 1 = “Not valuable at all” and 5= “Extremely valuable”.

Cultural heritage and cultural landscape value ranked on a five-point scale with 1 = “Not valuable at all” and 5= “Extremely valuable”.

Economic use value ranked on a five-point scale with 1 = “Not use value at all” and 5= “Extremely high use value”.

Importance for everyday subjective well-being ranked on a five-point scale with 1 = “Not important at all” and 5= “Extremely important”.

How typical the landscape shown is for the place each participant live, ranked on a five-point scale with 1 = “Not typical at all” and 5= “Extremely typical”.

## **6. Statistical analyses**

Analyses of frequency distributions, one-way analyses of variance and correlations were applied in order to identify central tendencies and bivariate relations. Identification of landscape dimensions was accomplished by means of *principal components analysis* (PCA). In all analyses, possible regional differences were examined through separate analyses for the Eastern and Western Norwegian samples, however, in this article, frequency distributions for single variables or the detailed results of principal components analyses are not reproduced. PCA made it possible to reduce a large number of single variables (27 x 6) to nineteen index variables. In choosing the final dimensions, an attempt was done to avoid solutions where single variables loaded on several dimensions or had loadings lower than .50 on the dimensions chosen. All dimensions chosen received Eigenvalues = 1.00 or better, and the internal consistency reliability as measured by the standardised Cronbach's alpha coefficient ranged from acceptable (0,64) to very high (0,97) (see table 1). When sumscores were constructed, missing responses were substituted by the item mean, and outliers were recoded to +/- 2SD from the sumscore mean (see for example Aarø, 1986). Data were analysed with *SPSS 10.0.5*.

## **7. Results**

The results in the present article will be reported on the basis of principal components analyses (PCA) of the six different landscape evaluations, i.e., each of the dimensions described below characterise a group of scenes proving to be judged in a relatively similar way by respondents. The groupings are thus done on the basis of the responses, not to be confounded with a priori categories.

For all six landscape evaluations, analyses were conducted both for the entire sample as well as for the western and eastern samples separately. For all evaluations the data justified that the best model for the entire sample also was acceptable for the two regional samples. Mean values for the evaluations of each



individual scene are here only reported for the purpose of giving examples. For both single variables and sumscores, mean preference ratings at 3.7 and above were considered as 'high', mean ratings between 3.0 and 3.7 as 'moderate', and means below 3.0 as 'low'. These cut-off points were chosen as they have repeatedly been employed in visual preference studies based on the general finding that ratings at 4.0 or above and at 2.0 or lower are highly unusual (*cf* Kaplan & Kaplan, 1989). In addition, these characterizations of mean preference levels both enhance the review of the results and the subsequent interpretation of divergences between group means and the overall mean preference for a given category. The mean ratings for all dimensions were significantly different from each other.

*Dimensions in visual preference evaluations.* Similar to earlier findings (see Strumse, 1996), also in the present study scenes from traditional cultural landscapes were the most preferred, whereas built structures and clearly human-influenced scenes receive lower preference ratings. A number of distinct dimensions were identified on the basis of preference ratings, suggesting the existence of perceptual categories in the experience of the scenes included:

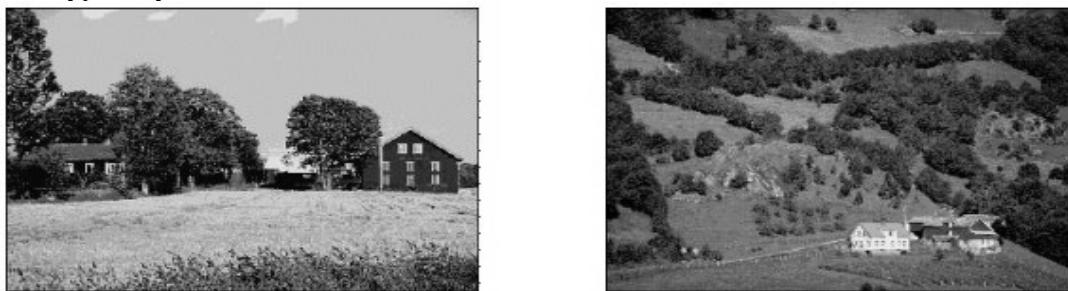
The first of these dimensions was labelled *Nature-dominated traditional landscapes* (see Fig.1). This dimension included nine items and obtained a moderate mean preference (mean 3.26) for the entire sample. However, a clear and statistically significant regional difference was found, as the Eastern sample had a clearly higher preference for these for them familiar scenes (see Table 1). The next preference dimension only included two items and was labelled "*Modern road constructions*" (see Fig. 5). Here we find scenes characterised by dominating human influence. This dimension received the lowest mean preference of all (mean = 2.29), but also here the Eastern Norwegian sample demonstrated significantly higher preferences. The third preference dimension included evaluations of nine scenes and could be labelled "*Fields dominated by built structures*" (see Fig. 4). This dimension includes both traditional and modern scenes from Eastern and Western Norway, and received a relatively high mean preference rating (mean = 3.71) when considering the entire sample and there were no regional differences. Included in the dimension are also those single scenes that received the highest mean preference, such as a scene from a traditional cultural landscape depicting a field with hay stack and old farm buildings. The last of the preference-based dimensions included evaluations of seven scenes which all depicted traditional cultural landscapes, receiving the label *Nature dominated traditional landscapes* (see Fig. 3). The dimension includes scenes from both Eastern and Western Norway, and received the highest mean preference rating (mean = 3.81).

For the most preferred scenes there are relatively small preference differences between the two regional samples. High preferences in the range between 3.70 and 4.00 are found for traditional scenes from both Eastern and Western Norway. Among these scenes are traditional farm environments and cotter farms from both regions, but it should be noted that these scenes, the built structures do not dominate the nature elements in the scenes.



**Fig. 1.** Scenes dominated by cultivated fields. Examples from the Hamar area (left) and from Inner Sogn. This dimension was reproduced across most evaluations. The dimension received moderate to high conservation value, relatively high economic use, moderate aesthetic preference (significantly higher for the Eastern Norwegian sample), and was judged to have low to moderate importance for well-being (also in this case the ratings were significantly higher for the Eastern Norwegian sample). (Photos: Einar Strumse (left) and Leif Hauge.

*Typicality ratings* (see Fig. 2). Two dimensions were identified (see Table 1), and labelled "*Typical Eastern Norwegian scenes*" and "*Typical Western Norwegian scenes*". Here, the task for participants was to rate each scene according to how typical it was for their place of residence. Thus, it is not meaningful to calculate mean ratings for the entire sample. The results indicate, as one might have expected, that individuals from Eastern and Western Norway distinguishes clearly between scenes typical for the two regions: Whereas the Eastern Norwegian sample rated Eastern Norwegian scenes as "Quite typical", the Western sample rated the same scenes as "Not typical at all" for their own region. Similarly, the typical Western Norwegian scenes received a rating in between "somewhat typical" and "quite typical", whereas the Eastern sample found these scenes to be less than "a little typical", thus a clearly lower rating on typicality.



**Fig. 2.** Included in the dimension **Typical Eastern Norwegian scenes** (left) are both traditional and modern farm environments and field scenes from this region, together with dirt roads and asphalt roads through the fields. The dimension **Typical Western Norwegian scenes** (right) was to a larger degree dominated by traditional farm environments. (Photos: Leif Hauge (right) and Einar Strumse)

*Conservation value ratings.* In this case, the PCA-analyses resulted in the identification of three distinct dimensions (see Table 1). The first of these was labelled *Conservation value of fields dominated by built structures* and comprised 14 scenes from both Hedmark and Sogn depicting fields and grassland, either with farm buildings or with different types of road constructions (see Fig. 4). The sumscore constructed indicated "some", i.e. moderate, conservation value (mean = 3.20). The next conservation value dimension consisted of 10 items, all of them being evaluations of traditional scenes mainly defined by vegetation, and the dimension could thus be labelled *Conservation value of nature dominated traditional scenes* (see Fig. 3). This dimension, including scenes mainly from Sogn in Western Norway, received the highest mean conservation value (mean = 4.05). The third conservation value dimension included evaluations of three scenes and was labelled *Conservation value of monumental landscape elements* (see Fig. 6). This dimension includes a very old stone stable from the Hamar region, a stave church and an old allé and received a relatively high conservation value rating (mean= 3.90).



**Fig. 3.** Nature-dominated traditional landscapes, here exemplified by outfields from Sogn and Hedmark. This dimension includes, with one exception, only scenes from Sogn in Western Norway, both nature scenes and scenes with buildings or road constructions. A common feature was, however, that the nature elements were more salient than other elements. The dimension was given high conservation value, low economic use value (somewhat higher in the Western Norwegian sample), high visual preference, and high importance for well-being. (Photos: Leif Hauge (right) og Einar Strumse)

*Cultural heritage value dimensions.* Here a two factor solution proved to be the most unambiguous one. The first of these dimensions, including 15 items, could suitably be labelled *Cultural heritage value of scenes dominated by built structures*. The individual scenes are drawn from both Western and Eastern Norway and depict fields with various built elements such as old farm roads, old farms and more modern road constructions and farm buildings. This dimension obtained low to moderate ratings on Cultural heritage value (mean = 2.88) i.e., somewhat below "Some value". The second dimension in this set received the label *Cultural heritage value of nature dominated traditional landscapes*, and

consisted mainly of scenes from Western Norway. This dimension was rated considerably higher as it was rated to be "Quite valuable" (mean= 4.20).



**Fig. 4.** The dimension "Fields dominated by built structures", here represented by one traditional and one modern scene from Sogn in Western Norway, was reproduced in slightly different versions across two evaluations. The dimension received relatively high visual preference ratings (mean = 3, 71) but relatively low cultural heritage value (Photos: Leif Hauge)

Three *Economic use value dimensions* were identified. First, a dimension that could be labelled *Economic use value of scenes dominated by cultivated fields*, included cultural landscapes from Hedmark in Eastern Norway characterised by highly mechanised farming practices. The mean economic use value rating for this dimension ended up between "Some" and "Quite high" use value (mean = 3.63). The second dimension, *Economic use value of nature-dominated traditional landscapes* included mainly scenes from Sogn in Western Norway, but also a few traditional scenes from Eastern Norway. The economic use value of this dimension was rated to be quite low, between "A little" and "Some" value (mean = 2.56), however in this case a statistically significant difference between the two regional samples was found: The Western Norwegian sample attributed a higher use value to these scenes than the Eastern Norwegian sample did. The last dimension in the set was labelled *Economic use value of modern road constructions* and was evaluated to represent a moderate economic use value (mean = 3.35).

*Importance for subjective well-being.* In the case of subjective well-being, we want to find out whether the landscapes in which people live are important for their daily well-being. Thus, the ratings of each region's landscapes by the residents are of primary interest. As many as five dimensions were identified. The first of those, receiving a relatively high mean rating = 3.78 for the entire sample, and was labelled *Importance for subjective well-being of nature dominated traditional landscapes*, and included mainly evaluations of scenes from Sogn in Western Norway, although also a few traditional scenes from Hedmark were included. No regional difference was found, thus it can be concluded that this category of landscapes is of considerable importance for subjective well-being among both Eastern and

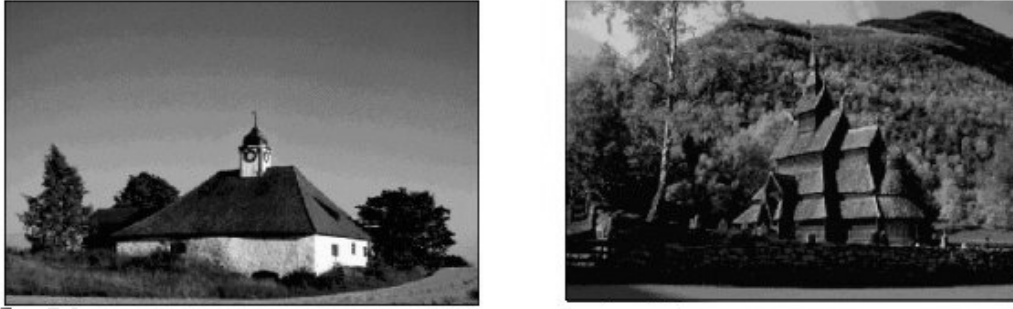
Western Norwegians. The second dimension was labelled *Importance for subjective well-being of modern farm environments and road constructions in Eastern Norway*, and received a mean rating across regions = 2.35) which is quite low. No regional difference was seen, so none of the participants seemed to consider this landscape type as important for their subjective well-being. The third dimension was labelled *Importance for subjective well-being of modern farm environments in Western Norway* which was given a mean rating = 3.14 by the entire sample. However, there was a clear regional difference, with the Western Norwegian sample considering these scenes as more important for their subjective well-being than what was the case for the Eastern Norwegian sample. Also for the fourth well-being dimension, labelled *Importance for subjective well-being of monumental landscape elements* mean rating in entire sample = 3.34), a statistically significant difference between the regions was found: In this case, the Hedmark sample rated the scenes as somewhat more important for their subjective well-being than what was the case for the Sogn sample. The fifth dimension resulting from the evaluations of well-being comprised six scenes from Eastern Norway and was labelled

*Importance for subjective well-being of scenes dominated by cultivated fields*. The mean rating for the entire sample was low to moderate (mean = 2.93), but the scenes were significantly more important for well-being in the Hedmark sample than in the sample from Sogn.



**Fig. 5.** Modern road constructions (left) and modern farm environments from Hedmark County in Eastern Norway constituted dimensions either alone or in combination. This type of scenes received low ratings both on their importance for well-being and for visual preference. In contrast, the economic use value of modern road constructions was rated to be from moderate to high (Photos: Einar Strumse)

*Correlations.* A series of bivariate correlations between the evaluative dimensions were performed in order to identify possible patterns in the landscape evaluations of the participants. In Table 2 it can be seen that in most cases the ratings on the dimensions included are significantly and positively correlated with each other.



**Fig. 6.** Scenes depicting Monumental landscape elements resulted in dimensions for, respectively, evaluations of conservation value and importance for subjective well-being. The examples depicted here are an old stone stable from the Hamar area (left) and a stave church from Sogn County. The scenes received high conservation value and moderate to high importance for subjective well-being. (Photos: Einar Strumse (left) og Leif Hauge)

There may be a number of reasons for this result. One possibility is a response bias in the direction of responding positively rather than negatively. Positive correlations among dimensions within each type of evaluations, for example among evaluations of cultural heritage value, suggest also, not unexpectedly, that the various dimensions are in fact measuring facets of a more general dimension, thus confirming the construct validity of the sumscores. However, the evaluations of typicality do not conform with this pattern. From Table 2, it can be seen that the evaluations of *Typical Western Norwegian scenes* are uncorrelated with as many as 8 of the remaining 18 dimensions, and of course, negatively correlated ( $r = -0.539$ ) with its med "counterpart" *Typical Eastern Norwegian scenes*. The tendency to perceive Eastern Norwegian scenes as typical for where one lives, is also clearly associated with preference for subcategories of the Eastern Norwegian landscape, such as *scenes dominated by cultivated fields* ( $r = 0.304$ ) and to a weaker degree, for *modern road constructions* ( $r = 0.14$ ). Also, the preference for typical Eastern Norwegian scenes tend to be associated with a tendency to perceive field scenes as having high cultural heritage value ( $r = 0.128$ ) and conservation value ( $r = 0.155$ ) and to perceive such landscapes as important for well-being ( $r = 0.35$ ). On the other hand, the tendency to perceive Western Norwegian scenes as typical for where one lives is related to almost completely opposite perceptions: in particular, there is a clear association between perceiving Western scenes as typical and of experiencing both modern farm environments in Sogn ( $r = 0.362$ ) and nature-dominated traditional landscapes ( $r = 0.244$ ) as important for well-being. However, here the associations with preference are relatively weak.

**Table 1.** Dimensions in landscape evaluations: Number of items, reliability, mean ratings

<i>Landscape dimensions</i>	<i># of items</i>	<i>Standard Cronbachs alpha</i>	<i>Entire sample N=447 Mean SD</i>	<i>Western Norwegian sample n=241 Mean SD</i>	<i>Eastern Norwegian sample n=196 Mean SD</i>
<i>Visual preference</i>					
Nature dominated traditional landscapes	7	,8109	3,8144** ,7229	3,8050 ,7192	3,8427 ,7221
Fields dominated by built structures	9	,8533	3,7111** ,6481	3,7475 ,6489	3,6706 ,6473
Modern road constructions	2	,7396	2,2942** ,9219	2,1950* ,8835	2,4005* ,9589
Scenes dominated by cultivated fields	9	,9004	3,2644** ,7984	3,0662** ,7805	3,4977*** ,7508
<i>Typicality</i>					
Typical Eastern Norwegian scenes	10	,9769	-----	1,4903** ,6153	3,8696** ,8976
Typical Western Norwegian scenes	13	,9404	-----	3,4643** ,7841	1,9838** ,7225
<i>Conservation value dimensions</i>					
Conservation value of nature dominated traditional scenes	10	,8825	4,0463** ,6347	4,0388 ,6500	4,0708 ,6065
Conservation value of monumental landscape elements	3	,6374	3,9036** ,7908	3,8096** ,7444	4,0361** ,8058
Conservation value of scenes dominated by built structures	14	,9333	3,2036** ,7527	3,1472 ,7581	3,2582 ,7322
<i>Cultural heritage value dimensions</i>					

Cultural heritage value of scenes dominated by built structures	15	9,211	2,8845*** 7,144	2,8695 6,942	2,8955 7,222
Cultural heritage value of nature dominated traditional landscapes	12	8,641	4,1985*** 5,595	4,1336 <sup>a</sup> 5,560	4,2894 <sup>a</sup> 5,430
Economic use value dimensions					
Economic use value of scenes dominated by cultivated fields	12	9,300	3,6345** 6,762	3,6019 6,502	3,6788 7,109
Economic use value of modern road constructions	2	7,200	3,3500** 9,384	3,2924 9,644	3,4265 9,9071
Economic use value of nature dominated traditional landscapes	13	9,219	2,5651** 7,331	2,6601** 7,355	2,4628** 7,073
Importance for subjective well-being					
Importance for subjective well-being of nature dominated traditional landscapes	10	9,132	3,7867** 7,786	3,8067 7,476	3,7731 7,999
Importance for subjective well-being of modern farm environments and road constructions in Eastern Norway	4	8,182	2,3554** 8,445	2,3129 8,117	2,3924 8,771
Importance for subjective well-being of modern farm environments in Western Norway	4	8,309	3,1493** 8,777	3,3102** 8,447	2,9452** 8,604
Importance for subjective well-being of scenes dominated by cultivated fields	6	9,010	2,9364** 9,065	2,7358** 8,781	3,1645** 8,639
Importance for subjective well-being of monumental landscape elements	3	7,103	3,3460** 9,784	3,1950** 9,522	3,5238** 9,679

\*\* significantly different mean values ( $p < .01$ ). In the column for the entire sample, it is the different dimensions within each set of evaluations that are significantly different from each other (counted vertically)



**Table 2.** Intercorrelations (Pearson's r) between landscape evaluation dimensions (n= 447)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Typical Eastern Norwegian scenes																		
2. Typical Western Norwegian scenes	-,539**																	
3. Conservation value of monumental landscape elements	,166**	-,014																
4. Conservation value of scenes dominated by built structures	,155**	,052	,451**															
5. Conservation value of nature dominated traditional scenes	,024	,130**	,469**	,447**														
6. Economic use value of scenes dominated by cultivated fields	,096*	,105*	,167**	,370**	,350**													
7. Economic use value of modern road constructions	,060	,052	,090	,219**	,197**	,510**												
8. Economic use value of nature dominated traditional landscapes	-,065	,222**	,195**	,298**	,206**	,278**	,027											
9. Cultural heritage value of scenes dominated by built structures	,128**	,128**	,313**	,605**	,313**	,379**	,244**	,410**										
10. Cultural heritage value of nature dominated traditional landscapes	,170**	,028	,450**	,370**	,776**	,386**	,226**	,176**	,406**									
11. Preference for scenes	,304**	-,114*	,340***	,469**	,294**	,327**	,204**	,145**	,426**	,390**								



## 8. Conclusions

In the present paper we have analysed six different landscape evaluations in a representative population sample of 27 scenes from agrarian landscapes in Eastern and Western Norway. The results suggest that participants do appear to perceive the landscape according to general dimensions or categories, and that the various dimensions are valued differently.

A dimension labelled *Nature-dominated traditional landscapes* received high ratings across evaluations and regions. In contrast, the ratings of *Fields dominated by built structures* varied somewhat across evaluations. *Modern road constructions and farm environments* received generally low mean ratings. Finally, a dimension labelled *Monumental landscape elements* was highly valued both in terms of well-being and conservation value. The above mentioned dimensions are the ones that appeared to be particularly salient in the landscape perception of the participants in the present study. Another interesting finding is the very clear tendency towards agreement across geographical regions when considering evaluations of nature-dominated scenes, whereas evaluations of scenes more dominated by built structures yielded clearer regional differences.

The identified dimensions group themselves relatively clearly along the nature – human influence continuum, thus supporting earlier findings from similar studies. Moreover, it is the nature-dominated dimensions that are receiving the highest mean ratings both in terms of visual preference, conservation value, cultural heritage value and importance for subjective well-being. A clear exception from this is of course the evaluations of economic use value, where the scenes containing cultivated fields received the highest mean ratings. This suggests a conflict between the landscape most people value in terms of non-material benefits and probably want to be surrounded by, and on the other hand landscapes that provide income.

The question is whether this conflict is necessary? Without any doubt, ways to avoid this conflict would be important for the well-being of the population.

As mentioned earlier, few and small regional differences were identified in the evaluations of nature-dominated scenes, whereas there tended to be more numerous and larger regional differences in evaluations of scenes dominated by built structures. Such findings suggest, following Bourassa (1990), the existence of two separate modes for landscape perception - one biological mode dominating the experience of nature-dominated scenes, and one cultural mode dominating the experience of more human-influenced scenes. An alternative interpretation of the findings is that there are probably culturally defined models in each geographical region that are being applied by the individual to scenes dominated by built structures, whereas the culturally defined models for the experience of nature-dominated landscapes to a larger degree are common across regions. The present results do not allow conclusions to be made concerning this question.

Evaluations of typicality resulted in two dimensions that do not directly fit into the overall picture. Two categories were identified, typical Eastern and Western Norwegian landscapes. As expected, large regional differences in typicality ratings were found, demonstrating clearly that the regional characteristics of the Norwegian cultural landscape are salient in the perceptions of individuals from different regions.

Moreover, correlations among landscape evaluations demonstrate that the more positive one evaluates nature-dominated surroundings the more negative evaluations of scenes depicting dominating human influence in landscape scenes. Furthermore, high typicality ratings of Eastern Norwegian scenes are related to low ratings of use value of nature-dominated scenes. In other words, there is a tendency that residents of the Eastern Norwegian region included in this study are attributing less economic use value to nature-dominated landscapes than what residents in the Western Norwegian region do. A similar pattern, although in the opposite direction, was seen for evaluations of the Western Norwegian landscape as typical for where one lives. Such evaluations are related to low ratings of the conservation value of monumental traditional landscape elements, and to low preferences for cultivated fields and modern road constructions. Residents of Western Norway value these landscapes – which also are uncommon in their region – less than what was found for the Eastern Norwegian sample. This suggests that familiarity exerts an important influence on landscape evaluations.

The relatively weak relation between evaluations of typicality and preference, suggests some support for Nasar's (1994) position, in which a certain difference between the known and the actual landscape appears to result in increased preference because this situation invites exploration. Very typical scenes easily become too well-known, and may be seen as boring resulting in reduced preference.

As expected, some associations between evaluations of importance for well-being and typicality were found: The more typical Eastern Norwegian scenes are perceived to be for where one lives, the more important are the same scenes (in particular cultivated fields and monumental landscape elements). Likewise, the more typical Western Norwegian scenes are perceived to be for where one lives, the more important nature-dominated traditional landscapes (mainly from Sogn) and modernised Western Norwegian farm environments are perceived to be for daily well-being. Finally, it should be emphasised that highly preferred landscapes also are important for well-being, as suggested by moderately strong correlations between visual preference ratings and ratings of importance for well-being for nature-dominated scenes and fields dominated by built structures.

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