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This paper describes a study about factors impacting the perceived quality of the view out of the office window that was carried out in Trondheim, Norway, in 2013. A total of 106 subjects were visited in their respective working environments. The subjects were asked to evaluate the quality of the view from their typical working (sitting) position on a four-point scale: not satisfactory, satisfactory, good, excellent. The view was documented by taking pictures from the subject's eye position in the direction of the window(s). A regression analysis shows that the view quality evaluated by subjects is best predicted by the view distance, the number of view layers, the quality of the landscape/elements and the composition of the view. The view width, the extent of greenery in the view, the presence of water, the weather conditions, or gender and age were not found to contribute additionally to the perceived view quality.

Keywords: view outside; window; evaluation criteria; scene quality; scene composition; view depth; view width; greenery

1. Introduction

According to previous studies, one of the two most appreciated functions of a window, besides daylighting, is the view out. It gives the possibility to keep contact with the outside environment continuously (Christoffersen et al. 1999; Christoffersen and Johnsen 2000; Veitch and Galasiu 2012). The existing hypotheses and research findings about preferences for view may be categorized into three groups: the need for information about the outside environment, the need for aesthetic experience and the need for restoration and health.

According to Lam (1977), for people inside, a typical window satisfies fundamental human needs for visual information about location, time and weather conditions as well as about activities and events outside the building; without satisfying those needs the ability to focus on a work task is very limited.

Tuaycharoen (2006) found that the more information that is included, the more interesting the view appears for people. A remote and wide view typically contains more information than a close and narrow one and is, therefore, much more preferred. Contrary to Tuacharoen, the Kaplans (Kaplan and Kaplan 1989) found that complexity alone is not a good indicator of environmental preference. They found that the type, amount and structure of information included in an outside view may explain view preferences.

Most people like to see the weather conditions and daylight conditions to keep track of time from their workplaces (Christoffersen and Johnsen 2000). Even a very small prison-like window may give a feeling of having contact with the outside world, something that contributes to a feeling of safety (Boyce, Hunter, and Howlett 2003).

Markus (1967) argues that the most important characteristic of a view is its horizontal stratification. He divides views in three layers: a layer of the sky, a layer of the city or landscape and a layer of the ground. Each layer has its own function: the sky is the source of light and keeps occupants in touch with weather, time of day and year; a view of the landscape or city gives information about the environment on a large scale; a view of the ground gives information about human activities in the immediate vicinity. Other studies confirm the appreciation of the view of the horizon with a margin of ground and sky (Keighly 1973a, 1973b) and with a balanced composition of natural and urban elements (Tuaycharoen 2006).

According to evolutionary aesthetics (Dutton 2003, 2009), perceptions of beauty are evolutionarily determined, that is, things, places and landscapes which people consider beautiful are typically found in settings that are likely to support survival of the perceiving human's genes. In very different cultures all over the word, people tend to like a particular type of landscape: a landscape similar to the savannah that happened to be a place where humankind evolved. This is a landscape with open spaces, low grass, trees that are easy to climb, the presence of water in the distance, indication of animals or birds and a path that extends into a long distance, almost inviting you to follow it.

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This theory was originally proposed by Jay Appleton, who has built it upon philosopher John Dewey's pragmatic view of aesthetics (Dewey 1925). Appleton described "the habitat theory" first in *The Experience of Landscape* (Appleton 1975). He referred to previous work of ethnologists who observed how species seek optimal environmental conditions, a shelter. When the habitat corresponds with their inner needs, a pleasurable sensation occurs. Appleton refined the habitat theory by postulating that the landscape needs only to have an appearance of satisfying survival needs; he proposed the prospect-refuge theory. An optimal environment is a location in which the prospect for survival is substantial, as most open, well-lit landscapes constitute, and in which a place to hide (refuge), while keeping the possibility to observe potential danger, may be found. Both are needed to create optimal environment, which is perceived also as aesthetically pleasurable.

The prospect-refuge theory was tested repeatedly; for example, Stamps (2008a, 2008b) found empirical support for the claim that people will like gazing out over scenes of distant mountains (prospect) while the results for refuge preferences were ambiguous. Also, the theory is most accepted; it is suggested that a considerable amount of additional formal inquiry has to be conducted before assuming the utility of prospect and refuge theory.

Following the prospect–refuge hypothesis, natural views should be preferred to urban views. The clear preference for natural versus urban views is one of the most consistent findings in these studies (Ulrich 1981; Kaplan 1985, 1987, 2001). Kaplan (2001) found that the residents' satisfaction in low-rise apartment buildings was significantly affected by the presence of natural elements in the view from their windows. Although urban views may be appreciated by many people, the urban views with natural landscape elements were found to be preferred over similar ones without natural elements (Herzog 1989; Kaplan 1993).

The general preference for natural views agrees with the biophilia theory developed by Wilson (1984) and Kellert and Wilson (1993) and adapted by a number of environmental psychologists, for example, Heerwagen and Hase (2001) who use it in the context of office-work design.

Regarding the human-built environment, some characteristics of buildings are found to influence the perceived aesthetic value of the building(s), namely, building age and maintenance. Herzog (1989) found that ordinary older buildings are less liked than modern buildings, but in a second study (Herzog and Gale 1996) he found that when old buildings are disliked, poor maintenance is a contributing factor. This result was also confirmed in a later study (Herzog and Shier 2000).

Another interesting aesthetic aspect of buildings is complexity. Herzog and Shier (2000) found a positive correlation between complexity and preference. The effect was stronger for older buildings than for modern ones. Interestingly, when complexity was high on the scale, there was no correlation between age and preference, but when complexity was low, age was negatively correlated with preference.

Table 1. The Kaplans' model of preference.

	Understanding	Exploration
Immediate	Coherence	Complexity
Inferred	Legibility	Mystery

Tuaycharoen (2006) found also that complexity is likely to influence building preference. The view that was of lowest interest in his project was one of a monotonous concrete wall, lacking variation of texture, colour, material or form.

Additionally, a natural context may enhance the perceived aesthetic value of a building (Herzog and Gale 1996) if both the building and the natural environment are well maintained. The building care and the care for nature were positively related to preference and to each other.

The Kaplans proposed a model that has been used a lot for the preferred features of an environment (Kaplan and Kaplan 1989), see Table 1. The model expresses one of the most widely studied theories in environmental psychology that postulates that people have two basic needs regarding environment: to understand and to explore. Coherence and legibility contribute to preference by making the environment understandable (column 1), complexity and mystery contribute to preference by involving the observer, inviting exploration (column 2).

In spite of the fact that the model is well accepted by scientists, more research is needed to validate it further. Twenty-eight out of 61 scientific articles that studied the Kaplans' model of preference, selected during a wide literature review, were the subject of the meta-analysis carried out by Stamps (2004). He found considerable degree of heterogeneity in the data, indicating that results have not been reproducible.

Research shows that the presence of natural landscape elements, especially greenery, has a positive impact on well-being and health. A groundbreaking paper published by Ulrich (1984) reported the finding that hospital patients who had a view of green spaces, as opposed to patients who had a view of a blank brick wall, recovered more quickly from surgery and required less postoperative pain medication.

A generally accepted theory explaining this phenomenon is the attention restoration theory proposed by Kaplan (1987). According to this, natural environments provide good opportunities for psychological restoration, because natural environments have qualities that in combination seldom emerge in other types of environments. First of all, they give a sense of being away and, second, they allow a sense of extent, that is, what is seen is a

part of a larger area. Natural environments give a sense of fascination, which means that they encourage exploration and attract and hold a person's attention effortlessly. The final characteristic is compatibility, which can be explained as it offers someone the kind of experience that that person needs (Kaplan and Kaplan 1989; Kaplan, Kaplan, and Ryan 1998).

In order to study the effect of nature on stress recovery, Ulrich et al. (1991) showed subjects a video of either a natural or a built environment after exposing them to stress by showing a frightening movie. The recovery time was both self-rated and measured physiologically. The results indicated that subjects recovered faster and more completely when exposed to slides with natural landscape. Such experiments reveal that we do not need to have physical contact with nature to benefit from its qualities. A visual connection with nature through the window should be satisfactory to have a positive effect on well-being and health.

The working conditions for many people are difficult nowadays. We are constantly connected to the Internet, we are distracted by moving advertisements and we are using more electronic devices that potentially take focus from our work tasks. As the ability to focus is nowadays lower than even 10 years ago, restoration of attention is much needed (Goleman 2013) and a view of a green landscape can contribute significantly. This was a central question in the study done by Shin (2007) who found that Korean workers who had a view of a forest were more satisfied with their job and perceived less stress than those without a forest view.

It should be mentioned that the three cited theories explaining the underlying reasons for view preferences have been criticized by a number of authors, including Stephen C. Bourassa (Bourassa 1991) who proposed a three-tiered model that incorporates biological and cultural constraints as well as personal idiosyncrasies, and Denis E. Cosgrove who argued that environmental preference is mainly culturally constructed (Cosgrove 1998).

In spite of the progress in research that confirms a positive impact of the view out based on aesthetical experience, well-being (psychological aspect) and the health of occupants, requirements for the view out from workplaces in buildings are not (or seldom) explicitly formulated and included in building codes in most countries (Hellinga and de Bruin-Hordijk 2010; Hellinga 2013). One of the reasons for this is the absence of an agreed upon set of view quality criteria. The quantitative criteria, as, for example, the angular width or height of the view, are easy to measure and use, but they do not convey any information about the content and composition of the view and, consequently, we may not rely solely on them alone.

The research question for the present study is: *to which degree do the qualitative criteria impact the evaluation of the view quality and how important they are in comparison to the quantity criteria?*

To approach this question, a study of the view out was carried out in Trondheim on the campus of the Norwegian University of Science and Technology (NTNU).

In the study, we have used quantitative evaluation criteria that have been proposed based on the literature. In addition, two qualitative criteria were proposed by Matusiak, namely, the beauty of the scene, that is, the aesthetic quality of important viewing objects or landscape, and the composition of the scene, meaning the part within the window frame. Both, the quantitative and the qualitative criteria are described in Section 2.

During the study over 100 subjects were visited at their permanent work places and asked to judge the view out of the window situated nearby their respective workplaces. The method and the procedure are described in Section 3. We used the four-point scale for the view quality evaluation: not satisfactory, satisfactory, good and excellent, see Section 3.3. The statistical analysis conducted in this study is an ordinal logistic regression analysis, see Section 3.4. The results are presented in Section 4 and are discussed in Section 5.

The study is limited regarding the number of subjects and their background. The environmental variety is also limited to views accessible from university campus situated in one of the medium-sized Norwegian towns, which is surrounded by hills with plenty of greenery.

2. View quality descriptors

The parameters used in this study that may influence the evaluation of the view quality can be divided into quantitative and qualitative. The quantitative measures are: view width, view depth, number of view layers, fragmentation of the view and the presence of greenery; additionally the age and gender of subjects and weather conditions were considered. The qualitative measures were: beauty (aesthetical quality) of objects dominating the view and the composition of the view. Both qualitative parameters were evaluated by Matusiak, with help from colleagues at the Department of Architecture at the NTNU. The attributes for a positive evaluation of the beauty of buildings/trees in the case of rather close views were: age, maintenance/upkeep, moderate complexity and historical significance. It has to be acknowledged that these criteria were necessarily based on subjective evaluations by the researchers, but through the discussions and the use of theoretically derived dimensions the degree of subjectivity was made as small as possible, though it was not absent. In the case of distance views, the beauty of the whole landscape was evaluated with the help of Kaplan's attributes: coherence, legibility, moderate complexity and mystery (Kaplan and Kaplan 1989). The composition of the view was evaluated on the basis of two criteria: the balance between the left–right and top–down parts of the picture and the existence of obstructing elements such as protruding walls, balconies, pillars and scaffolding. Thus,

Table 2. The parameters and attributes used in the study.

Parameter	Scale	Comments
Age		Given by the participants
Gender		Given by the participants
Cloudiness	0 – cloudy 1 – partly cloudy	Noted by the assistant during the visit and estimated by examining pictures
Sky with or without sun	1 – clear sky with sun 0 – cloudy	Noted by the assistant during the visit and estimated by examining pictures
View width (degrees)	0 – 120 degrees	Horizontal view angle measured from the subjects' eyes; the view angle was measured of the pictures taken vertically from the eye position
View depth – maximum (metres)	0 – 5.0 km	The distance from the window to the most distant visible element of the landscape; estimated on the map of the city; the view to the horizon was estimated to be 5 km
View depth –minimum (metres)	0 – 300 m	The distance from the window to the closest building included in the picture, estimated on the plan of the campus
Layers	1 – one layer 2 – two layers 3 – three layers	Number of view layers visible in the picture
Fragmentation	0 – not fragmented 1 – fragmented	Fragmentation of the view by window mouldings or splitting of the view into more than one window
Greenery	0.00 – no greenery 0.50 – greenery makes about 10–50% of the landscape visible in the picture 1.00 – 50% or more of the landscape	Extent to which the view contained greenery (grass, bushes, single trees or forest)
Aesthetical quality of dominating buildings, trees or the whole landscape	1 – very poor 2 – poor 3 – good 4 – very good	The attributes for a positive evaluation of the aesthetical quality were: *Buildings/trees*: age, maintenance/upkeep, moderate complexity, historical significance. *Landscapes*: coherence, legibility, moderate complexity and mystery
Composition	1 – very poor 2 – poor 3 – good 4 – very good	Evaluated using two criteria: balance between the left–right and top –down part of the picture and existence of view-obstructing elements

the view having good composition has to be free from obstructing elements at least in the central part of the view and it has to be well balanced. Again, this measure is to a certain degree influenced by the subjective evaluations of the researchers, but clearly defined attributes were formulated to reduce this impact as much as possible. The parameters for evaluation of the view quality are specified in Table 2. In addition to the already mentioned parameters there are also weather evaluations, which were coded by research assistants on a three-point scale (cloudy, partly cloudy, sunny) and then recoded into two dichotomous dummy variables with cloudy as the reference category, prone to bias based on subjective evaluations, which has to be recognized when the results are interpreted.

3. Method and procedure

The study was carried out on the campus of the NTNU, Trondheim, Norway, in 2013. There are two main campuses: Gløshaugen located near the city centre but at a much higher elevation than the centre and the Dragvoll campus located on the outskirts of the city and surrounded by cultivated landscape. There was an excellent view of wooded hills surrounding the city from the west and east from the upper floors on both campuses. It was also possible to see mountains at a long distance in the south and north directions. In general, both campus locations include office locations with excellent visual access to greenery as well as office locations with no or very limited access, which ensured a variability between the participants' view out with this dimension.

3.1. Participants

The participants ($n = 106$) were predominantly NTNU's employees and students who have been regular users of the same workplace on campus beginning at the latest from August 2012. When the study started in January 2013 each participant had used his/her workplace for at least half a year; enough time to harvest and store experiences of her/his view out in different seasonal and weather conditions. A total of 48% of the participants were male and 52% female. The subjects' ages ranged between 26 and 70 years, most were in the category 30–39 years (24%),

but the categories, 20–29 years (23%), 40–49 years (18%) and 50–59 (21%) were almost equally strong. Two per cent were younger than 20 years, 14% were 60 years or older. Seventy-two per cent of the sample were NTNU employees, 28% were students. Also, 79% were located on the Gløshaugen campus and 21% on the Dragvoll campus. Since the participants were either employees or students at NTNU their educational level was homogeneous and higher than average for Norway. All participants were recruited in the same university, which means that within the variability between and within the two campus locations with respect to office views there are limits to how much the view varies, which also may have an impact on the results.

3.2. Procedure

All subjects were visited at their respective workplaces. To change the mental focus of the subjects from an actual working task to the evaluation of his/her view out, the procedure started with a short interview containing, among others, the following questions:

(1) *How important is it for you to have a window nearby your workplace?*
- *Important*
- *Not important*
- *No preference*
- *If it is important, why?*
- *Daylight*
- *View*
- *Natural ventilation*
- *Other reasons?*

(2) *How large windows do you prefer at home?*
- *Living room: from very large to very small*
- *Bathroom: from very large to very small*

(3) *What do you prefer to look at through the window at your workplace?*
- *Water (landscape elements)*
- *Mountains*
- *Greenery*
- *Cultivated landscape*
- *Urban landscape*
- *Human activities*

3.3. View quality categories

The crucial question about the quality of the view was the next step in the procedure.

(4) *Please evaluate the quality of the view from your sitting position at your workplace*.

Subjects could choose between four categories: not satisfactory, satisfactory, good and excellent. To help participants choose the most adequate category, the following comments were given:

- Not satisfactory I feel really uncomfortable having that poor outside view
- Satisfactory I wish I could have a better view
- Good I do not complain, I do not boast of it either, the view is OK
- Excellent I am proud of the view from my window(s)

The researchers acknowledge that it would have been beneficial from an analytical perspective to have more than four categories on this central variable to allow for a finer grained analysis, especially since most participants were expected to score higher scores. However, our interest was to define the answering categories as precisely as possible for the participants to reduce the subjectivity in the *interpretation* of the categories as much as possible. This would have been more difficult with more categories. Therefore, we decided to use four instead of more categories.

The view that the subject evaluated was documented by taking photos from his/her eye position in the direction of the window using the digital reflex camera Canon EOS300D. The camera was set in the vertical plan. Similarly to the method proposed by Hellinga (2013), the view width could be easily measured by comparing the photo of the window glazing to the photo of the horizontally positioned measurement stick taken by the same camera, set in the vertical plan, from the distance of one metre.

3.4. Statistical analysis

The central statistical analysis conducted in this study is an ordinal logistic regression analysis. A standard linear regression analysis was not applicable. This was because of the nature of the dependent variable, which was not normally distributed and could not be understood as a continuous variable as it only had four rank-ordered answering categories, Furthermore, since the sample was relatively small and assumptions regarding distribution of the residuals were not met, it was decided to use bootstrapped standard errors and bootstrapped confidence intervals in the analysis. Bootstrapping is a technique that makes it possible to estimate standard errors and confidence intervals more robustly by running a large set of repetitions of the same analysis based on samples of the same size as the original sample but including only a random subset of the participants each time (Efron and Tibshirani 1986). Thereby, the standard errors of the regression coefficients and consequently also their confidence intervals are estimated based on the real distributions from the sample. Bootstrapped confidence intervals are allowed to be asymmetrical, which makes sense in cases where variables are skewed.

Figure 1. Subject no. 60: not satisfactory view.

Figure 2. Subject no. 41: excellent view.

4. Results

4.1. Interview

All but two of the subjects said that it was very important to have a window nearby the workplace. Both access to daylight (94%) and the possibility for a view out (70%) were given as the most important reasons.

Most subjects answered that they preferred large or very large windows in the living room (80%) and middle or small-sized windows in bathrooms (85%).

Regarding question 3 about the prevailing view elements the answers were: water (86%), greenery (79%), mountains (52%), cultivated landscape (37%), urban landscape (25%) and human activities (16%).

4.2. Evaluation of the quality of the view

The evaluation process revealed considerable differences between subjects. It seems that a view similar on the measured dimensions may be evaluated as satisfactory or good by one subject, and as good or excellent by another (in the case of two persons in one room) but the difference was never larger than one step on the scale; any view type was evaluated as both excellent and satisfactory by different subjects.

The views that were evaluated as not satisfactory had typically an urban character (of a monotonous building wall); see an example in Figure 1, and had minimum of one of the following features: (a) very short distance to an opposite façade, (b) missed one or two layers, or (c) the aesthetical quality of the dominating object was low (e.g. very low complexity). In some cases the composition of the view was also poor; for example, the view was dominated by an undesired element (a protruding façade wall). Subjects having such a view also complained that they could only follow the activities outside to a very limited degree.

On the other hand, the views evaluated as excellent are characterized by a diverse content (high complexity) with elements of high aesthetic quality (e.g. beautiful buildings or trees) and a satisfactory composition, see Figure 2. Many of them are views stretching to the horizon. The most

Figure 3. Subject no. 57: satisfactory view.

Figure 4. Subject no. 5: good view.

excellent views (17 of 20) had three layers. An example of a satisfactory view may be found in Figure 3 and a good view in Figure 4.

The results of statistical analysis are presented in Table 3. An ordinal regression analysis was conducted with the four categories of view quality as the dependent variable. Since the sample was relatively small, the standard errors were bootstrapped. Figure 5 displays the unstandardized regressions weight estimates and their bootstrapped

Table 3. Results of the ordinal regression with bootstrapped standard errors controlled for possible weather, gender and age effects ($N = 105$).

	B	SE_{boot}	β	p
Maximum view distance	0.293	.085	.357	.001**
Number of visual layers	0.598	.264	.234	.023*
Aesthetical scene quality	1.025	.348	.414	.003**
Viewing angle	0.006	.009	.052	.527
Fragmented view	0.324	.317	.086	.307
Greenery	− 0.278	.449	− .073	.537
Partly cloudy	− 0.118	.369	− .026	.749
Clear sky	0.210	.353	.055	.553
Gender	− 0.271	.281	− .079	.335
Age	− 0.026	.098	− .021	.793

Notes: $R^2 = .660$. Dependent variable "quality of view" (1 = not satisfactory, 2 = satisfactory, 3 = good, 4 = very good), independent variables: maximum viewing distance (in km), number of visual layers (1–3), scene quality (1–4), viewing angle, fragmented view (0 = no, 1 = yes), greenery (0–1). Control variables: partly cloudy vs. cloudy (1 = partly cloudy, 0 = not partly cloudy), clear sky vs. cloudy (1 = clear sky, 0 = no clear sky), gender (1 = female, 0 = male) and age.
*$p < .05$.
**$p < .01$.

90% confidence intervals. Weather conditions, gender and age were used as control variables. As expected, no impact of gender, age or weather conditions on the view quality could be detected; also if the view is fragmented by the window pane or not does not appear to be important.

Contrary to previous studies, the degree to which the view is dominated by the greenery had no significant effect when the other predictors in the equation were controlled. This may be connected to the site where the study has been carried out as already discussed above: greenery is possible to see from nearly everywhere and in each direction at the location, which means that greenery is not that sparse and precious, as it may be in other locations. So even if there is variability between the offices, it might be that the variability is still lower than at other sites or that seeing greenery is not as rewarding in a city where it can be seen from many places.

The two parameters that are easiest to measure, the view depth and the view width, had very different impacts. The view depth, expressed as a maximum viewing distance in km, had a strong positive impact on the perceived view quality, see also Figure 5, while the width of the view had no additional significant effect. This fact may be connected to the location of the study also; people with offices on the higher floors on the university campus have views stretching to the horizon; this is quite exceptional even in Norwegian conditions. The issue of having (or not) a "horizon view" probably overshadows the importance of the wide view. Additionally, most subjects have a work place close to the window; thus the number of subjects having very narrow view was very small, less than 10%.

Similarly to the findings of Markus (1967), the number of view layers had a strong impact on the view quality in this study.

Probably the most important result from this study is the strong impact of the aesthetical quality of the scene, that is most important objects (buildings, a group of trees, etc.) seen from the window, on perceived view quality. The human preference for aesthetically valuable landscape

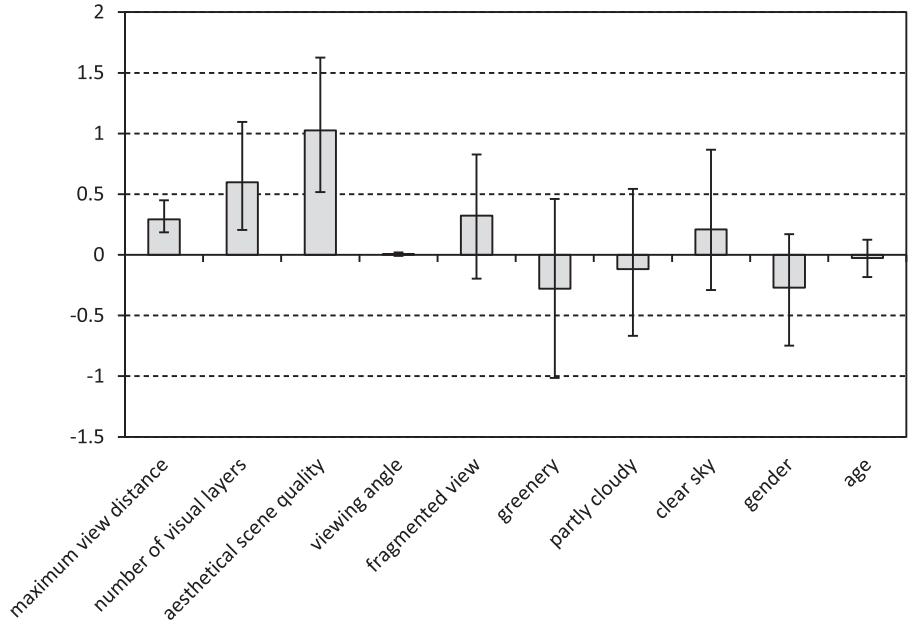

Figure 5. Unstandardized regression coefficients of the predictors in the ordinal regression with bootstrapped asymmetric confidence intervals.

elements, buildings and trees has been confirmed by this finding.

Interestingly, the two qualitative parameters "composition of the scene" and the "aesthetical quality of the scene" were strongly correlated with each other and with the perceived view quality; for this reason the composition parameter could not be included in the regression analysis without causing a multicollinearity problem. In other words, composition and aesthetical quality are closely related aspects of view quality.

5. Discussion

The study found that controlling for weather effects, age and gender, three aspects were important for the evaluation of the view quality: maximum viewing distance, number of visual layers and aesthetical quality of the scene. The other factors tested could not be confirmed to have an impact that goes above these three, indicating that their contribution to view quality is already captured in the three or was not relevant in the analysed setting. Interestingly, one of the two qualitative parameters came out as an important predictor, which shows that even if there is an element of subjectivity in this rating, the rating has a relation to the evaluation of the view conducted by another independent person. The study gave important insights into how the quality of a view might be operationalized in European standards. It confirmed most expectations but also produced some surprising results, namely that the two qualitative parameters were highly correlated and that the degree to which greenery was visible did not have an impact on the evaluation of view quality.

Initially, the two qualitative parameters "aesthetic quality" and "composition" were proposed to be fully independent. It is reasonable to think that the high aesthetical quality of a scene is not a guarantee of a good composition. The position of a workplace in relation to the window may be such that it enables only perception of random fragments of a beautiful building or landscape; the view composition may be unbalanced (left–right or top–down). It may also be dominated by an undesired element.

One reason for the unexpectedly high correlation between these two aspects may be connected to a large number of the panoramic views in the sample of rooms, see Figure 6. Such views nearly always include attractive buildings or trees, something that gives a high score for aesthetical quality. They have nearly always good or very good composition; the composition is balanced, the horizon divides the picture nearly horizontally; the landscape appears as a horizontal stripe nearly equally visually loaded on both sides. A second reason may be connected to the difficulty with evaluating the composition, for example, how to evaluate the composition of the view in Figures 1 and 2? We decided to evaluate them both as poor, since only a small part of a building is visible in these pictures. The balance of the view in Figure 1 is slightly better (the ribbon window on the top-left side is balanced by the little box on the right-hand side), but an undesired element (a street lamp) is situated at the middle of the view. We may expect that for such short views of ordinary buildings both the aesthetical quality and the composition will have a low score.

Figure 6. Subject no. 54: excellent view.

More research is needed to deepen the understanding of the qualitative criteria for evaluation of a view from the window, especially if it was to be included in design principles and thus would need to be described in a way that reduces the impact of subjectivity in the rating process.

In spite of the contribution the study has made to developments of such standards, it also has some limitations that should be acknowledged and addressed in future research: (1) the main dependent variable "view quality" was measured on a four-point answer scale. From a methodological perspective more categories and also more than one question would be beneficial to reduce noise in the data. Future studies should take that into account. (2) The sample of offices analysed in this study was restricted because they were all located at the same university in the same city. This might have reduced the impact that some of the factors have on evaluation of the view quality because the variance in these factors was lower than if several locations had been included.

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