The impact of narratives on the experience of urban and natural environments.

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Abstract

Improved negative mood states, improved cognitive functioning, physiological signs of stress reduction are some of the reported restorative effects following exposure to natural, but not to urban environments. In our study we discovered that a well-designed and attractive urban environment may have a stress-reducing and mood-enhancing power equal to that of an attractive natural environment.

Another issue we explored was the impact of a narrative on perceived restorative qualities, attractiveness and interestingness of the environment. The impact of narratives on the experiential qualities of tourist destinations is an important theme in tourism research as tourist destinations have traditionally been endorsed by narratives to appeal to the tourists' imagination. We constructed competitive narrative representations for both natural and urban environments and assessed their impact on the perception of the environments. Both narratives were almost exactly the same, the one having positive and the other negative overtones. We found that the addition of a 'positive' version of the narrative to a natural and an urban environment resulted into a 25 percent increase in interestingness and a 14 percent increase in attractiveness ratings, while the addition of a 'negative' version of the narrative resulted in a 15 percent decrease in interestingness and a 17 percent decrease in attractiveness ratings. These figures are calculated against the ratings of the version of the video without a commentary. Capitalizing on the strength of our findings we can speculate about the potential impact of narrative framing in terms of the power it extends or takes away in the process of the narrative construction of spaces.

Introduction

In our study we attempted to investigate two different although to some extent overlapping issues. We compared stress-reducing and attention-recovering properties of natural and urban environments. We also used the same environments, which are both tourist destinations, to explore the impact of competing narratives on the environments' perceived interestingness and attractiveness.

Environmental psychology has a long tradition of research into the benefits of natural environments (Ulrich, 1983; Kaplan and Kaplan, 1989). Exposure to a natural environment is expected to lead to psychological well-being, improved mood, pleasure and even better health (Ulrich, 1984; Hartig et al., 2003; Laumann et al., 2003). These positive effects prompted the representation of natural environments as possessing restorative qualities (Ulrich et al., 1991; Kaplan, 1995). In an attempt to provide empirical evidence for such restorative effects, natural environments have traditionally been contrasted with urban environments. Urban environments were found to lack the beneficial restorative properties of nature.

This attitude towards urban environments fits well into the tradition of criticism of urbanism in general. Rousseau's 'Emile' is brought up in the countryside, where 'humans are most naturally suited, rather than in a city, where we only learn bad habits, both physical and intellectual' (Rousseau, 1966). Frederick Law Olmsted's city parks were designed in the 19th century to introduce 'nature' into the city and so to provide a counterweight to at least some of the urban ills (Kaplan, 1995). This integration of nature into city landscapes significantly improved urban living conditions by providing opportunities for leisure, sports, aesthetic enjoyment etc. Consequently, the public's acclaim of the parks was and remains overwhelming with some quarter of a million people visiting New York's Central Park on a spring weekend (The Official Website for Central Park).

From those days onwards the appearance and visual quality of cities kept improving. As a result the attention of policy makers, urban planners and architects as well as the public has gradually shifted from the improvement of urban living conditions to issues of environmental quality and quality of life. For many of us and at least in economically developed countries a modern metropolis is the preferred living environment and a habitat perfectly suited to the enjoyment of life. The restorative potential of urban environments, however, is still considered inferior compared to natural environments. Once again one wonders whether it is at all possible for urban environments to possess a restorative power equal to natural environments. This attitude, although supported by empirical evidence, may meet with scepticism and is usually not shared by the residents of at least some of the better city neighbourhoods.

It is a common characteristic of city life that the urban environmental quality of neighbourhoods varies. Admittedly, in an attempt to demonstrate the benefits of natural versus urban environment, we might have selected locations in the city that possess little or no restorative potential or that are simply stressful. For instance, mostly commercial urban landscapes and industrial areas were chosen by Ulrich to contrast the restorative potential of urban versus natural environments (Ulrich, 1991). However, comparing such

locations to natural environments would be a rather artificial way of demonstrating nature's restorative power, which we indeed take for granted. Additionally, the representation of natural and urban environments as opposites of each other does not do justice to the realities of the contemporary Dutch landscape and urban planning, which exploits and puts into practice the advantages of an integrative approach.

In an attempt to improve the environmental quality of urban environments the inhabitants of at least the better neighbourhoods are provided with ample access to natural elements such as parks and gardens, water, natural light etc. The resulting spatial solutions therefore have different degrees of 'naturalness' or 'urbanity'. Does it mean that such integrated environments are inherently deficient in terms of stress-reduction and attention restoration? We were intrigued by this question and tried to find answers by applying traditional methods of research for measuring the stress-reducing power of different environments to real, contemporary, and equally inspiring natural and urban environments.

The natural environment that we chose for our study is located in the vicinity of Amsterdam and is partly nature reserve and partly agrarian landscape. It is an archetypal landscape of the lowlands: huge in scale, open, traversed by creeks and rivers. It is not 'wild' nature and it features an occasional footbridge, small dams, narrow roads, scattered farms, and church steeples on the horizon. We chose Amstelland because it's a spectacular natural environment that we thought would make the difference in restorative potential between the natural and urban environments even bigger. On the other hand it allowed us to select an equally spectacular urban environment without favouring it, which would have been the case if we had chosen a simple natural environment. Finally, the choice of Amstelland allowed us to explore the second theme of our study: the impact of narratives on the experience of places. The natural landscape of Amstelland is a popular destination for an ever growing number of visitors and can be explored on foot, bike or per boat.

The urban environment we chose for our study is as spectacular as the natural one. It is part of a recent urban development at the location of the former eastern docks of Amsterdam. The neighbourhood consists of mainly one family semi-detached houses and is of excellent architectural quality. Although public greenery in the area is limited to a strip of front gardens, there is a lot of water, canals of different lengths and widths, some quiet and intimate and others busy and used by shipping. It is a well-designed, coherent and beautiful urban environment. It is a location that we thought might meet the criteria for restorative environments. Being an internationally acclaimed and award winning urban development project, the area attracts a significant number of visitors. Some of them come from abroad, often specifically to look at the architecture of the neighbourhood.

As we didn't want to limit the scope of the study to the possible demonstration of an urban environment's restorative potential we used both environments to address a different issue currently much debated by those involved in landscape design: the impact of knowledge, of narrative on the experience of places. It is assumed that the addition of historical and cultural information could significantly alter the experiential qualities of places. The impact of narratives on the experiential qualities of tourist destinations is also

an important theme in tourism research. Tourist destinations have traditionally been endorsed by narratives to appeal to the tourists' imagination. These narratives draw on cultural myths, universal and local histories, fantasies etc. to intensify the experiential qualities of places (Sternberg, 1997). It has been taken for granted that to enjoy popularity a tourist destination requires some image, a theme. According to Sternberg (1997), tourism manifests two phases of touristic composition: *staging*, which consists of setting up, arranging, and contextualizing the attraction; and *thematizing*, which meaningfully situates the attraction through themes such as picturesqueness, freakishness, technological wondrousness, and sensuous romance.

Thematizing can potentially be realized through a variety of media formats. For instance, Urry (1990:3) described the tourist gaze as 'constructed and sustained through a variety of non-tourist practices, such as film, TV, literature, magazines, records and videos'. For our research, we employed two types of representations, a video of the environment and two contrasting narratives to explore the experiential dynamics of students' perception of the environments in our study.

Physical environments, both natural and urban, accumulate multiple meanings. Some meanings are easily retrieved; others require a historic and contemporary context before they can be fully experienced. Story-telling is one of the ways of revealing 'silent' meanings, thereby enhancing people's experience of places (Bendix, 2002). But can a story add anything to an already spectacular display of forms, functions and meanings which can be directly deduced from seeing our selected environments? We wrote a story to go with each of our environments to discover whether the addition of historical and cultural information about the environments would significantly enrich their experiential qualities as measured by attractiveness and interestingness ratings.

Most research on how different representations shape images of tourist destinations has focused on either discursive practices (the portrayal of tourist destinations in various media) or tourist perceptions (Mercille, 2005). Only rarely both phenomena together are the subject of an empirically study (e.g. Mercille 2005) and even more rarely of quasi-experimental research. We attempted such a study by constructing competitive narrative representations for both natural and urban environments and assessing their impact on the perception of the environments. The two narratives were contrasting versions of the same story. Both narratives were almost exactly the same the one having positive and the other negative overtones.

We did not expect the two environments we selected for our study to differ in stress-reducing and mood-enhancing qualities. We did expect that both environments would be judged equally interesting and attractive. We also expected that the addition of a story would make both the natural and the urban environment either more or less interesting, but not to affect the perceived attractiveness of the environments. Finally, in a more exploratory vein, we wanted to discover whether a story added to a video would change the perceived restorative potential of natural and urban environments.

Method

Participants

It is customary in studies on affective restoration to make use of stress-induction to make participants experience negative feelings and feel stressed before comparing any restorative benefits of natural and urban environments. Stress-induction is usually achieved by showing the participants some kind of emotionally disturbing video of e.g. a workplace or road accident. However, stress-induction was not a part of this study's design. Instead we recruited subjects who we thought were already mildly stressed and experiencing negative affect as a result of their participation in a resit of a previously failed exam.

First and second year psychology students at the University of Amsterdam, who had re-examinations in August 2006 could participate in this study. The list of students having re-examinations was obtained from the education office of the psychology department. Potential candidates (around 350) were approached via e-mail. In the mail they were asked to participate in a study on the experience of natural and urban environments. They were told that if they agree to participate they were to watch the video of one of the environments and fill out a number of questionnaires.

In total, one hundred and six psychology students participated in the study. The data of one of the participants were removed from the sample because he/she marked positive as well as negative mood states on the questionnaire indiscriminately with 'very much applicable'. The remaining 105 participants were 62% female and 38% male and had an average age of 21.3 years ($SD = 4.9$). Only 85 of 105 participants participated in the study directly after they had a resit. These eighty-five participants had to be assigned to one of the six conditions: to judge natural and urban videos without a narrative, with a 'positive' narrative and with a 'negative' narrative. However, the allocation of 85 participants in six conditions would make the number of participants per condition too small. Therefore we decided to assign the participants who had a resit to just one of the four conditions: two groups judging the video of a *natural* environment without a narrative and with a 'positive' version of the narrative and two groups judging the video of an *urban* environment without a narrative and with a 'positive' version of the narrative. The distribution of the participants over the four groups was as follows: 26 participants were assigned to a natural environment condition with and 21 without complementary narrative and 19 participants were assigned to an urban condition with and 19 without complementary narrative.

To investigate the impact of a 'negative' version of the narrative we recruited 20 additional participants. This group did not participate in the study of affective restoration but directly judged the interestingness and attractiveness of the natural and urban environments accompanied by negatively tuned narratives. All participants received 15 euros (approximately \$18 US) for their participation.

Environments

Amstelland is the natural environment we chose for our study. It is a protected polder-landscape located approximately 20 kilometres southwest of the city of Amsterdam. The area is of outstanding beauty. Part of it is used for agriculture (mainly milk production) and part is a nature-reserve. The scenery of the nature-reserve is a large peaty-area with islands of dense vegetation of plants, bushes and small trees. It approximates the physical characteristics of the former landscape, before the land has been reclaimed. Former Amstelland used to be traversed by many small peat-rivers draining into the bigger ones, like Amstel, that flowed further into the sea. Water is still an essential feature of the landscape. A dike alongside one of the small rivers that crosses the area provides a spectacular view of the surroundings. The flat land that lies two to three meters below the dike stretches for kilometres. The agrarian landscape is mostly grassland, with clumps of trees and farms spread around the area. Grazing cows, sheep, and horses complete the idyllic scenery. Amstelland is not an archetypal example of 'nature'. It's a realistic and complex blend of natural, agrarian, and 'Arcadian' landscapes: idyllic and beautiful, ordered and chaotic, bearing obvious as well as hidden traces of human interference. As mentioned above, the natural landscape of Amstelland is a popular destination for many visitors, particularly from Amsterdam and from the neighbouring small towns. Finally, our choice for Amstelland, except having been determined by the need to select urban and natural environments that would be equally inspiring, was also determined by the need to find a natural environment rich enough in history, natural beauty and cultural significance to be commented upon.

The urban environment we selected for our study is a recent urban development in the area of the former eastern docks in Amsterdam. Although the Eastern Docklands have undergone renovation from the 1980s onward, the location we chose is the latest realized quarter known as Sporenburg-Borneo. It was developed and built between 1995 and 2000. The neighbourhood is a high-density development, with 100 dwellings per hectare, which is a typical density for the whole of the Eastern Docklands. The city authorities wanted, however, to make the quarter attractive to families with children, and chose therefore to build the area up with low-rise, semi-detached one-family houses. Previously only apartment buildings had been realized in the Eastern Docklands.

A special type of house had to be designed to combine high-density development with low-rise housing. Each house has got a roof-terrace and a mini-patio to compensate for the lack of space-consuming public green areas. By applying this design-strategy, 1550 one family semi-detached houses have been realized. In addition, two massive apartment buildings, with 600 apartments, were added to the low-rise housing to reach the desired high density and to enhance the neighbourhood's 'urban' feel.

Sporenburg-Borneo was developed by a renowned Dutch landscape architect Adriaan Geuze of West 8 architects. The project has won international acclaim for its ingenious architecture and unorthodox urban design (Information about the project can be found on the website of West 8 Urban Design and Landscape Architecture). A number of architects made contributions to the design of the area. As a result of strict design guidelines, the area is experienced as a skilfully integrated whole. A definite highlight of the neighbourhood is a row of houses facing a small canal. The future inhabitants of the

houses were given free parcels of land and could choose an architect to design and build their own houses. As a result, sixty unique houses have been realized.

Sporenburg-Borneo is located in the vicinity of the centre of Amsterdam and is an attractive and fashionable place to live. Although public greenery is very scarce, the area has a lot of canals of different lengths and widths that give this densely built area a sense of spaciousness. Sporenburg-Borneo is at the present time a cosmopolitan living quarter with a creative and innovative atmosphere. It is a well-designed, coherent and beautiful urban environment. It is an environment that meets the criteria for restorative environments and this environment's restorative potential possibly equals the restorative potential of the natural ones. Sporenburg-Borneo attracts significant number of tourists, some of them investigating the area on their own and some coming in groups.

Films

Two 10-minute films were made by the experimenters to recreate the experience of the selected natural and urban environments. The films were made using a Sony Handycam camera. While shooting, the camera was always put on a tripod to stabilize the image. Panoramic views were filmed by turning the camera. Zooming in an out helped to avoid static images. Most attractive and characteristic features of both environments were selected for filming. Using a Movie Maker, we tried different arrangements of the filmed material until a smooth and cogent transition from one scene to another was achieved. We filmed both environments in the summer of 2006, early in the morning, and under perfect weather conditions. Because of the early hours of filming we managed to practically eliminate all visible human activity while shooting both videos. We thought that the presence of cars or people might influence the perceived qualities of the environments. Finally, no environmental sounds are audible on either of the tapes.

Stories

Both Amstelland and Sporenburg-Borneo have a rich history of human intervention, the former exemplifying Dutch cultured landscape and the latter epitomizing creative and modern urban development. The environments are rich in history, beauty and cultural significance. We wrote two narratives to tell the story of the landscapes' development and gradual change, accentuating the resulting mixture of old and new elements. We wrote alternative versions of the narratives for each of the environments. Both versions were almost exactly the same in terms of content, the one having positive and the other negative overtones. By manipulating the linguistic features of the narratives we attempted to alter the students' perception of the environments. By changing the wording of the stories we changed the presentation style from high-sounding, grandiloquent and inspiring to that of a purely informative and sometimes boring factual report. We either replaced superlatives by neutral adjectives or eliminated them, for instance: replacing "The exceptional history of Amstelland…" with "The history of Amstelland…". In addition we sometimes changed the connotative meanings of sentences by replacing positive allusions with negative ones through a slight change in the wording of the text, for instance: when

describing the high-density development at Sporenburg-Borneo. Finally, it is worth mentioning that in our stories about the environments we tried to avoid direct comments on the environments' attractiveness or interestingness. Instead, we wrote interesting and attractive stories about the environments.

Procedure

The study was conducted in August 2006 and over nine days. The students who agreed to participate had, after finishing their resit, to come to a room, located in the same building, where we conducted the study. Upon arrival, each of the participants was issued with a file with a title page on which they reported their age, gender and name (not obligatory), a page of instructions and questionnaires that were to be filled out before and after watching the video.

The participants were told that no connection would be made between the results of the study and the marks they got on their resit. The fact that the study took place directly after the resit was explained as due to the difficulty of finding participants during the summer months. None of the students explicitly stated that the mood-state after having the resit could have been a possible reason for their participation in the study.

At the start of each session the experimenter provided information about the tasks the participants had to fulfil during the session and explained the layout of the questionnaires. After reporting their age and gender the participants filled out the first part of the POMS-questionnaire to measure the initial level of stress and fatigue (t1). Thereafter they watched the video. Participants were asked to watch the video attentively and to try to imagine themselves present in the environment of the film. After watching the video they rated the environment of the video on a number of scales measuring attractiveness and interestingness of the environment. Then they went on to complete the second part of the POMS-questionnaire (t2). After filling out the questionnaires the participants were paid and dismissed. The sessions lasted between 25 and 30 minutes. For the group of 20 students who didn't have a resit a different procedure was followed. This group watched the videos of both the natural and urban environments accompanied by a 'negative' version of the story and judged them on attractiveness and interestingness. The participants were not asked to fill out the POMS-questionnaire.

Measures

The questionnaire we used to measure affective restoration was a Dutch translation of the Abbreviated Profile of Mood States (POMS) (Van der Ark et al., 1995). This is a shortened version of the original developed by McNair (McNair et al., 1971) to assess affective states and feelings. It consists of 30 five-point scales (adjectives) measuring five dimensions: depression, anger, tiredness, power and tension. Each dimension is formed by the responses on six scales. Responses on each scale vary between 'not at all

applicable' and 'very much applicable'. The total score on a dimension is derived from an aggregated score on its six subscales.

The version of the POMS we used consists of two parts and is specifically designed to be used as a pre-test and post-test measure. Each part consists of 30 adjectives, which measure the five dimensions described above. The adjectives of the first and the second part are not the same words, but synonyms. The scores on both parts of the POMS are found to be highly correlated with r = 0.9 (Van der Ark et al., 1995). The participants in our study filled out the first half of the POMS before, and the second part of the POMS after watching the video.

The second questionnaire we used to measure interestingness and attractiveness of the environments consisted of ten bipolar ten-point scales and was filled out directly after the participants watched the video. Attractiveness and novelty (interestingness) are considered the two fundamental dimensions of aesthetic evaluation (Oostendorp and Berlyne, 1978).

We used these ten scales in a previous study to evaluate the aesthetic experience of design gardens by landscape architects and users. Six of the ten scales (ugly-beautiful, unfriendly-friendly, unpleasant-pleasant, unenjoyable-enjoyable, repulsive-inviting, unpersonal-personal) measure the attractiveness of an environment. The scales are highly correlated and were found in our previous study to form one attractiveness dimension. The six scales measure slightly different aspects of the attractiveness and their aggregated score provides a better measure of attractiveness than the scores derived from a single scale e.g. ugly-beautiful. For the same reason we used four scales (uninteresting-interesting, average-exceptional, dull-exciting, and simple-complex), instead of one, to measure the perceived interestingness of the environments. It is worth mentioning that in the instructions preceding the questionnaire the participants were specifically asked to rate the attractiveness and interestingness of the environments by trying to imagine themselves present in the environments filmed, and not to pay too much attention to the idiosyncrasies of the video presentation.

Results

First, we conducted a one-way MANOVA on the ratings of five affective dimensions – depression, anger, tiredness, power and tension – to discover whether the urban and natural groups differed in any respect prior to watching the environmental video. No difference was found between the two groups on any of the measures of mood states: $F_{(5.79)} = 0.61$, $p = 0.69$. This indicates that both the nature and urban groups were similar with respect to their mood prior to watching the videos.

Next we wanted to discover whether a 'positive' narrative added to the videos in any way affected the perceived restorative capacity of both natural and urban environments. The presence of a narrative did not seem to exert any systematic influence on any of the

affective dimensions. A mixed between-within subjects ANOVA (Tabachnik and Fidell, 2001) yielded no significant differences on affective dimensions between the natural environment without a narrative and with a 'positive' narrative and the urban environment without a narrative and with a 'positive' narrative (Tables 1 and 2).

Table 1. *Affective dimensions. Natural environment with or without a story (condition).*

Dimension	Interaction dimension * condition	Main effect condition
Depression	F (1,45) = .40; p = .53	F (1,45) = 1,48; p = .23
Anger	F (1,45) = .74; p = .39	F (1,45) = .88; p = .35
Tension	F (1,45) = .03; p = .87	F (1,45) = 3,1; p = .07
Tiredness	F (1,45) = .002; p = .97	F (1,45) = .16; p = .69
Power	F (1,45) = .26; p = .61	F (1,45) = 2.03; p = .16

Table 2. *Affective dimensions. Urban environment with or without a story (condition).*

Dimension	Interaction dimension * condition	Main effect condition
Depression	F (1,36) = .005; p = .53	F (1,36) = .26; p = .61
Anger	F (1,36) = 1.15; p = .29	F (1,36) = .64; p = .43
Tension	F (1,36) = 1.34; p = .26	F (1.36) = .31; p = .86
Tiredness	F (1,36) = .80; p = .38	F (1,36) = 1.86; p = .18
Power	F (1,36) = .24; p = .63	F (1,36) = .057; p = .81

Therefore we decided to further compare the perceived restorative potential of natural versus urban environments by merging the data of the two natural and the two urban groups to form one natural and one urban condition.

Thereafter, a series of mixed between-within ANOVAs was conducted with nature versus urban conditions as a between factor and ratings on five POMS-dimensions before (t1) and after (t2) watching the video as a within factor. No significant environment by dimension interaction effects were found on any of the five POMS dimensions, see Table 3.

Table 3. *Affective dimensions. Natural versus Urban environment.*

Dimen- sion	Environment * dimension interact.	Main effect environment	Main effect Nature	Main effect Urban
Depres.	F(1,83) = 1.79; p = .19	F(1,83) = .92; p = .34	F(1,46)=11.38; p= **.002**	F(1,37)=1.62; p = .21
Anger	F(1,83) = .42; p = .52	F(1,83) = .64; p = .43	F(1,46)=39.74; p<**.0005**	F(1,37)=10.92; p= **.002**
Tension	F(1,83) = .044; p = .84	F(1,83) = .025; p = .87	F(1,46)=18.03; p<**.0005**	F(1,37)=3.91; p<**.0005**
Tired.	F(1,83) = .51; p = .48	F(1,83) = .058; p = .81	F(1,46)=2.04; p = .16	F(1,37)= .43; p = .51
Power	F(1,83) = 2.82; p = .097	F(1,83) = .13; p = .72	F(1,46)=22.89; p<.0005	F(1,37)=4.22; p = .047
Restor. Comb. (DAT)	F(1,83) = .86; p = .36	F(1,83) = .53; p = .47	F(1,46)=37.37; p<**.0005**	F(1,37)=19.04; p<**.0005**

Testing of the main effect of restoration (ANOVAs with repeated measures) within the natural and the urban conditions revealed that participants who viewed natural environments experienced restoration on all affective dimensions (depression, anger, tension), whereas participants who viewed urban environments experienced restoration on two of the three affective dimensions (anger, tension) (Table3). We combined the three dimensions of restoration - depression, anger and tension - to form one dimension of affective restoration (DAT). We added together the scores on the three restorative dimensions at t1 and at t2. A mixed between-within ANOVA was conducted to discover whether a difference would be found between the natural and urban environments on this combined dimension of restoration. Again, no significant environment by dimension interaction effect was found (Table 3), which leads to the conclusion that both the natural and the urban environment we selected for the study were equal in their affective restoration potential.

When designing our study we wanted to discover whether the addition of historical and cultural information about the environments would significantly alter their experiential qualities as measured by attractiveness and interestingness ratings. At a next stage of the analysis we explored whether the natural and urban environments in our study differed in terms of their perceived *attractiveness* and *interestingness* as a consequence of the addition of either a 'positive' or a 'negative' version of the narrative.

The participants in our study rated the environments on attractiveness and interestingness on ten ten-point scales. In our previous study of the aesthetic experience of design gardens by landscape architects and users we found that factor analysis of these scales generates two factors which we called attractiveness and interestingness. Therefore, as a next step in the analysis, factor analysis was applied to the data of the 85 participants to discover whether it would generate a two-factor solution. Factor analysis with Varimax rotation produced two factors with a total amount of explained variance of 64.34 percent (Eigenvalue ≥ 1.0).

As an ideal case we expected a single significant loading on only one factor for each scale. One of the 10 scales, 'ugly-beautiful', however, showed split-loadings. It had high loadings on factor 1 as well as factor 2. Therefore we decided to exclude the beauty scale from further analyses. After eliminating the beauty scale we decided to derive a new factor solution. Factor analysis with Varimax rotation, applied to the reduced data of 9 scales produced two factors with a total amount of explained variance of 66.52 percent.

The internal consistency (Standardized Cronbach's alpha) of the items on each factor was as follows: factor 1 = .86, factor 2 = .80. The two factors can easily be interpreted (Table 4). Factor 1 includes 5 scales: 'unpleasant-pleasant', 'repulsive-inviting', 'unfriendly-friendly', 'unenjoyable-enjoyable', and 'unpersonal-personal'. This factor was called 'attractiveness'. Factor 2 contains four scales: 'simple-complex', 'dull-exciting', 'uninteresting-interesting', and 'average-exceptional'. It was called 'interestingness'.

Table 4. *Factor Loadings on 9 Scales.*

	Component	
	1	2
UnpleasantPleasant	**.904**	.059
RepulsiveInviting	**.843**	.182
UnfriendlyFriendly	**.756**	.093
UnenjoyableEnjoyable	**.700**	.309
UnpersonalPersonal	**.610**	**.374**
SimpleComplex	-.224	**.835**
DullExciting	.438	**.772**
UninterestingInteresting	.342	**.751**
AverageExceptional	.330	**.648**

For further analysis, the ratings of environments on scales falling under each of the two factors were taken together to form two variables: attractiveness and interestingness. By comparing the combined scores we wanted to discover whether the addition of a 'positive' narrative to an already spectacular display of physical forms would make the natural and urban environments more attractive and interesting.

An independent-samples t-test was conducted to compare the attractiveness and novelty of the natural and urban environments without a narrative and with a 'positive' narrative. A significant difference in attractiveness was found between the natural environment with a 'positive' story and without a story: (M(story) = 7.22, SD = 1.64; M(no story)=6.30, SD = 2.57; t(233) = 3.14, p = .002) and interestingness (M(story) = 6.22, SD = 2.0; M(no story) = 4.77, SD = 2.29; t(186) = 4.61, p < . 0005). Therefore, the addition of a 'positive' story to the video of the natural environment led to it being rated as significantly more interesting and also as significantly more attractive. Similarly, participants who viewed the urban video with a 'positive' commentary experienced the environment as significantly more interesting (M(story) = 7.05, SD = 2.22; M(no story)=5.49, SD = 2.28; t(150) = 4.28, p < .0005) and attractive (M(story) = 5.92, SD = 1.96; M(no story) = 5.06, SD = 2.11; t(188) = 2.88, p = .004).

We proceeded with the analysis of the remaining data of 20 participants who did not participate in the study of affective restoration but judged the attractiveness and interestingness of natural and urban videos accompanied by a 'negative' version of the narrative. We wanted to discover whether the addition of a 'negative' version of the same narrative would reduce the perceived attractiveness and interestingness of the environments. First we applied factor analysis with Varimax rotation to the data of the twenty participants derived from the ratings of the environments on nine scales. The tenth scale 'ugly-beautiful' was eliminated from the analysis as we eliminated it earlier from the factor analysis of the data of participants who watched the videos without a narrative or with a 'positive' narrative. Factor analysis produced two factors with a total amount of explained variance of 67.4 percent.

Factor 1 (attractiveness) includes 5 scales: 'unpleasant-pleasant', 'repulsive-inviting', 'unfriendly-friendly', 'unenjoyable-enjoyable', and 'unpersonal-personal'. Factor 2

(interestingness) contains four scales: 'simple-complex', 'dull-exciting', 'uninteresting-interesting', and 'average-exceptional' (Table 5).

Table 5. *Factor Loadings of 20 Participants on 9 Scales*

	Component	
	1	2
UnpleasantPleasant	**.899**	.069
RepulsiveInviting	**.831**	.176
UnfriendlyFriendly	**.757**	.127
UnenjoyableEnjoyable	**.703**	.335
UnpersonalPersonal	**.630**	.386
SimpleComplex	-.246	**.823**
UninterestingInteresting	.329	**.775**
DullExciting	.415	**.787**
AverageExceptional	.308	**.645**

For further analysis, the ratings of environments on scales falling under each of the two factors were taken together to determine a combined score on two variables: attractiveness and interestingness.

This time we wanted to discover whether the addition of a 'negative' narrative would make the natural and urban environments less attractive and less interesting. Therefore we compared the scores on attractiveness and novelty of the natural and urban environments by participants who watched the videos without a narrative with the scores of the participants who watched a video with a 'negative' version of the narrative. An independent-samples t-test was conducted to compare the two conditions. A significant difference in attractiveness was found between the natural environment with a 'negative' version of the story and without a story: (M(story) = 5.1, SD = 1.76; M(no story)=6.30, SD = 2.57; t(203) = 3.56, p = .001) and in interestingness (M(story) = 4.01, SD = 1.9; M (no story) = 4.77, SD = 2.29; t(162) = 3.81, p < . 001). Therefore, the addition of the 'negative' version of the narrative to the video of the natural environment led to it being rated as significantly less interesting and also as significantly less attractive. Similarly, participants who viewed the urban video accompanied by the 'negative' commentary experienced the environment as significantly less interesting (M(story) = 4.65, SD = 1.42; M(no story)=5.49, SD = 2.28; t(154) = 3.88, p < .001) and less attractive (M(story) = 4.22, SD = 1.66; M(no story) = 5.06, SD = 2.11; t(193) = 2.78, p < .001).

Discussion and Conclusions

Frederick Law Olmsted strongly believed that experiencing or simply viewing nature reduces stress and brings tranquility to the mind (Ulrich, 1979). Improved negative mood states, improved cognitive functioning, physiological signs of stress reduction e.g. lower heart rates and muscle tension are some of the reported restorative effects following exposure to natural environments (Ulrich, 1983; Ulrich, 1991; Kaplan, 1995).

The restorative potential of natural environments has traditionally been contrasted with the restorative potential of urban environments. The latter was consistently found to be inferior compared to the restorative potential of natural environments. Affective restoration and stress-reduction, however, does not need to be associated exclusively with nature, as potentially any environment that possesses restorative qualities may be a restorative one (Kaplan 1995). We have provided empirical evidence that this is indeed the case for the urban environment we selected for our study. Considering the steadily improving appearance and visual quality of cities, the representation of urban environments as inherently inferior in terms of stress-reduction, mood enhancement or attention restoration seems a gross generalization. We found that a well-designed and attractive urban environment may have a stress-reducing and mood-enhancing power equal to that of an attractive natural environment.

Another issue we explored in this study was the impact of a narrative on the perceived restorative qualities, attractiveness and beauty of the environments. First we wanted to explore whether the addition of a commentary to the natural and the urban videos would have any effect on the affective dimensions of restoration. We thought that the commentary added to the video might make additional demands on already depleted attentional resources, due to having resat an examination. We had expected the impact of an added commentary would be manifested in a perceived lower restorative potential of environments with commentary, which would be reflected in lower ratings of mood states. However, this proved not to be the case.

On reconsideration this result is not surprising. The addition of a 'positive' story to the videos changed their experiential qualities as manifested in significantly higher ratings of attractiveness and interestingness of the environments. It seems unlikely that the 'positive' story that made the participants judge the environments as more attractive and interesting could at the same time have a negative impact on the participants' mood states. Interestingly, the addition of a 'positive' story didn't improve the participants' mood either as there was no difference in mood states between the participants who watched the video without a commentary and those who watched the video accompanied by a 'positive' version of the narrative. Therefore, the participants could somehow discriminate between the altered perception of the outside world resulting from the addition of a 'positive' commentary and the unchanged perception of their inner states. This, we think, reinforces the idea that the participants who watched the video while listening to a 'positive' story genuinely experienced the environments as more attractive and interesting and not experienced a general increase in positive affect. It is worth reiterating, that we only explored the impact of a 'positive' narrative on perceived mood

states, as we hadn't had the possibility to explore the impact on the participants' mood of the video with a 'negative' story.

Summarizing the results of our study we conclude that participants' ratings of attractiveness and interestingness of environments may be significantly influenced by the provision of information about the environments. We had expected that the addition of a story would make both the natural and the urban environments more or less interesting, but we were surprised to discover that the addition of a 'positive' story significantly heightened the perceived attractiveness of both environments, while a 'negative' story significantly lowered it. The effect of a story on perceived interestingness, however, is stronger than its effect on perceived attractiveness. In our study the addition of a 'positive' version of the narrative to a natural and an urban environment resulted into a 25 percent increase in interestingness and a 14 percent increase in attractiveness ratings, while the addition of a 'negative' version of the narrative resulted into a 15 percent decrease in interestingness and a 17 percent decrease in attractiveness ratings. These figures are calculated against the ratings of the version of the video without a commentary. Direct comparison of the 'positive' and the 'negative' versions of the narrative reveals a much stronger difference: 29 percent in attractiveness and 34 percent in interesting ratings over both of the environments.

One of the conclusions of our study is that the experience of natural and urban environments resulting from the perception of the physical characteristics of an environment is not phenomenologically 'closed', but can be significantly altered by providing some kind of explicit commentary.

In this article we wanted to clarify the influence of narratives on the perceived qualities of environments. These qualities changed to a significant extent, depending on the choice of a particular narrative, suggesting that the narratives we composed for the study were capable of engaging the participants' imagination in the direction we expected.

The themes or concepts through which we framed the narratives in our study were neither given nor obvious. Indeed, both environments are amenable to several compatible or contrasting local or global themes, including the environment, the picturesque or the sublime, technology (e.g. water management), romance, history, mythology, etc.

In our choice of verbal representations of the environments we simply selected two plausible but contrasting interpretations. The story we provided is no more 'real' than any other of many possible narrative framings of the environments. In our choice we pragmatically emphasized some of the themes while neglecting other possible interpretations. Gitlin (1980:7) described such a framing as 'persistent patterns of cognition, interpretation, and presentation, of selection, emphasis, and exclusion by which symbol-handlers routinely organize discourse' (see also Entman 1993).

Our thematic choices were realized through the application of deliberate narrative strategies in an attempt to manipulate the impact of the story on the experience. Such strategies may appear rather artificial and unauthentic, bringing to mind Disneyland-like practices of thematization. Not surprisingly, such strategies of staging and thematization have traditionally been met with criticism in the face of 'threatening transformations of

the world into imagineered inauthenticity (which) raises questions of genuineness, fakery, verisimilitude, and delusion, authentic and inauthentic, the real and the false' (Sternberg, 1997).

However, it would be naïve to think that something like a thematically unproblematic essence exists to be narrated upon, in relation to both the environments in our study (Harkin, 1995; Uriely, 2005). Some sort of interpretation or 'distortion' of reality in the representation of the environment is unavoidable. Our narrative strategy did not substantially differ from existing narrative practices, for instance, those promoting tourist destinations (Santos, 2004; Chronis, 2005). Additionally, concern about representations' authenticity has been undercut by the analysis of the role of makebelieve in the creation of touristic images (Cohen, 1995).

Furthermore, the problem of authenticity of representations did not concern us in this study. We limited our inquiry to a demonstration of the impact of a narrative on experience. Capitalizing on the strength of our findings we can speculate about the potential impact of narrative framing in terms of the power it extends or takes away in the process of the narrative construction of spaces. Narrative becomes a vehicle through which contesting representations of reality can potentially be fought out (Kane, 2000).

By manipulating linguistic features of the narratives we changed the perception of reality, empirically confirming Hall's (1981) remark that reality exists outside language, but it is constantly mediated by and through it. In particular, connotative meanings of a narrative are considered more open and subject to more active transformations. From this perspective, any denotative sign is potentially transformable into more than one connotative configuration. At the level of connotation the coded signs intersect with the deep semantic codes of a culture and take on additional, more active ideological dimensions (Hall, 1981).

Urbain (1989) observed that a tourist resides in a *network of narrative possibilities*, choosing one program or the other. Research on tourism semiotics and narrative practices could potentially elucidate the dynamics of touristic experiences through understanding how subjects constantly reinterpret narrative events in terms of their own experiences, engaging their imagination, their perceptual, cognitive, and emotional abilities and their ideological preferences. One of the aims of such research would be to understand the various decoding strategies audiences apply to adapt or oppose tourist messages. Finally, at the end of this discussion of the impact of narrative practices on experience, we would like to emphasize the importance of conjoint research on semiotic and syntactic features of representations and their impact on experience.

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