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# Unobtrusive Signage in Winter Outdoors

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## **Abstract**

Situated signage in the outdoors activity context is commonplace e.g. along nature tracks, in sports events and recreational areas. Whereas the signage needs to be informative and functional, also aesthetics and design play a role. When designing for the outdoors, it is good to take into account the context and the overall user experience related to being in nature. This paper focuses on the design of situated signage in winter context, and different aspects of signage design. Ephemeral signs utilizing nature materials are proposed as an approach for creating unobtrusive design, and a preliminary focus group study on utilizing snow and ice in signage is reported.

## **Author Keywords**

Signage; outdoors; winter; unobtrusive design; ephemerality; snow; ice.

## **ACM Classification Keywords**

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

## **Introduction**

Being outdoors is regarded as a recreational or even meditative experience, where we can disconnect from the urban everyday life and enjoy the nature environment [2, 11]. Outdoors is a context, where the

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**Figure 1:** Example of an unobtrusive design with a permanent information sign.

authenticity of the landscape, nature elements and natural beauty are essential for the experience. Benefits for one's mental state, i.e. not only the physical aspects, have been found to be of utmost importance for hikers [8]. Also sports such as climbing identify 'nature lovers' as one of the key user groups [3].

However, recreational outdoors activities are often carried out in settings, which have been specifically designed for certain activities in mind. For instance, establishing hiking or skiing tracks, outdoors activity parks, or sport events require environmental design and arrangements regarding to the location. This means adding artifacts or introducing changes which are, however subtle, applied by humans to the nature landscape. The recreational nature environments typically involve shelters, stairs, or information displays, which have been introduced to support people in their outdoors activities. In our research, we are interested in how to create designs that are unobtrusive and where the aesthetics fits in the nature context. As an example, figure 1 illustrates a navigation sign situated at a cross-country skiing track. It employs a wooden design, which is naturally camouflaged into the forest background, creating a harmonious aesthetics experience with the context.

In this paper, we focus on situated signage designed for outdoors. These signs are used to show information related to, e.g., directions, difficulty level, or location specific instructions. We discuss about different approaches for situated signage in recreational outdoors context, and propose a design approach utilizing ephemerality and aesthetics through the

material selection. We focus on winter context, and experiment with snow and ice as design materials.

### **Signage Design and Nature**

Much of the research on public displays design has addressed the interactive elements (e.g. [1,7]), interactive displays being predominantly in the focus of HCI. However, interactive displays often are not either suitable or desired in outdoors context. When designing for nature context, *unobtrusiveness* as a design driver has lately gained attention [5]. Recently, materiality has been a much-discussed topic in HCI research, and the role of materials has been highlighted in the user experience and aesthetics of the design [13].

User experience when interacting with different nature materials has been systematically investigated in [6], and displays made of natural materials have been created e.g. with sand [10], water [9] and ice [12]. In our approach, we are interested in ephemerality as a design factor, and the use of materials from the nature. These materials suit well for the approach of ephemeral displays [4], as in living nature, the organic materials change and disappear due their natural course. Especially when considering the winter outdoors, snow and ice work as natural ephemeral materials. In the following, we present a preliminary user study, which was organized to gain insight about the possibilities of using snow and ice for signage in the winter outdoors.

### **Focus Group Study on Ephemeral Signage**

#### *Study Setup*

A focus group based user study, n=6 (2 female, 4 male, age 23-26 years) was organized to gather preliminary user perceptions of ephemeral signage for the winter outdoors. The study consisted of two groups of three



**Figure 2:** Ice and snow signs used as probes in the focus group study.

participants. Winter outdoors activities were familiar to all participants, 6/6 involved in them at least once a month. The most popular activity was hiking (5/6), followed by downhill skiing and snowboarding (3/6).

The focus group sessions started outdoors with a short walking path, along which three types of ephemeral signage had been constructed by using snow and ice, see figure 2. The first sign was a block of ice with a carved text and an arrow. The carved parts were filled with snow to make the text more visible. The block was placed on the ground level and its size was appr. 60 x 40 x 30 cm. The second sign was a simple arrow situated on a metal wall at eye level, made by spraying water to the surface and scrubbing snow to the water before it froze. The last of the three signs was written to the snow next to the path with red food colour using a spray bottle.

The participants walked the path with two researchers. Along the path, the group was asked to stop by each sign to discuss about their reactions and thoughts. One of the researchers took notes during the discussion. After the participants had seen and discussed all three signs, there was a short end discussion indoors. Finally, the participants filled in a background questionnaire and answered open-ended questions about the signs and the concepts.

#### *Preliminary Results*

The preliminary results indicate that there is potential in utilizing snow and ice for signage. Especially, the aesthetics was appreciated. The sign made of ice (figure 2, top) was the most liked one because of its beauty but also due other qualities: *“The ice sign was the most stylish and natural, and you got a picture that there has been effort put to that one” (Participants #6),*

*“Ice! [was my favourite.] I believe it has the most possibilities for visual creativity.” (#1), and “Using ice brings aesthetics and longevity to the sign” (#5).* The latest comment is interesting as it reveals an impression (longevity) which is not strictly true, as in the long run, the ice melts. At the same time, the comments show how materials can mediate strong impressions and provoke feelings.

Generally, participants discussed that noticeability, aesthetics, and information content were all important aspects of the signage design. Altogether, the participants regarded the general aesthetics important, but did not emphasize the role of nature materials in the design. The use of the winter materials should be balanced and complemented with other factors that improve the usability and their noticeability of the signs. The use of colours, large enough shapes and lights was suggested. The (non-optimal) placement of signs during the walk provoked several comments, and its importance for sign design was discussed.

#### **Discussion**

In this paper, we have opened a discussion addressing our interest area for designing outdoors signage. The topic is interesting for the user experience (UX) design, as well as usability and aesthetics. We are especially interested in material qualities that are linked with the UX design for the outdoors, and we see potential in using ephemeral nature materials for winter outdoors, snow and ice. The possibilities with these materials relate to unobtrusive design of signage and aesthetics. The approach can be applied by the experience industry, e.g. in tourist destinations or winter events. Our preliminary focus group based user study showed that utilizing ice and snow in the signs was generally

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regarded as a positive idea, especially for aesthetics. However, the placement and noticeability of the signs needs to be considered. The overall design must be balanced between usability and aesthetics, and the aesthetics must not hinder the use of the signage.

## References

1. Florian Alt, Alireza Sahami Shirazi, Thomas Kubitz, and Albrecht Schmidt. 2013. Interaction techniques for creating and exchanging content with public displays. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)*. ACM, New York, NY, USA, 1709-1718.
2. Børge Baklien, Borgunn Ytterhus, and Rob Bongaardt. 2016. When everyday life becomes a storm on the horizon: Families' experiences of good mental health while hiking in nature. *Anthropology & medicine* 23, no. 1 (2016): 42-53.
3. Florian Daiber, Felix Kosmalla, Frederik Wiehr and Antonio Krüger. 2016. Outdoor Nature Lovers vs. Indoor Training Enthusiasts: A Survey of Technology Acceptance of Climbers. In *Proc. NatureCHI 2016 workshop at CHI*.
4. Tanja Döring, Axel Sylvester, and Albrecht Schmidt. 2013. Ephemeral user interfaces: valuing the aesthetics of interface components that do not last. *interactions* 20, 4 (July 2013), 32-37.
5. Jonna Häkkinä, Keith Cheverst, Johannes Schöning, Nicola J. Bidwell, Simon Robinson, and Ashley Colley. 2016. NatureCHI: Unobtrusive User Experiences with Technology in Nature. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '16)*. ACM, New York, NY, USA, 3574-3580.
6. Jonna Häkkinä, Yun He, Ashley Colley. 2015. Experiencing the Elements - User Study with Natural Material Probes. In *Proc. INTERACT (1)* 2015: 324-331.
7. Hannu Kukka, Heidi Oja, Vassilis Kostakos, Jorge Gonçalves, and Timo Ojala. 2013. What makes you click: exploring visual signals to entice interaction on public displays. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)*. ACM, New York, NY, USA, 1699-1708.
8. Ingeborg Nordbø and Nina K. Prebensen. 2015. Hiking as Mental and Physical Experience. In *Advances in Hospitality and Leisure*, pp. 169-186. Emerald Group Publishing Limited, 2015.
9. Erika Okude and Yasuaki Kakehi. 2011. Rainterior: an interactive water display with illuminating raindrops. In *Proceedings of the ACM International Conference on Interactive Tabletops and Surfaces (ITS '11)*. ACM, New York, NY, USA, 270-271.
10. Ben Piper, Carlo Ratti, and Hiroshi Ishii. 2002. Illuminating clay: a 3-D tangible interface for landscape analysis. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '02)*. ACM, New York, NY, USA, 355-362.
11. Karolina Taczanowska, Christiane Brandenburg, Andreas Muhar, Kinga Hat-Pawlikowska, Szymon Ziobrowski, Bogusława Chlipała, Szymon Grocholski et al. "Who is hiking in the Tatra National Park, Poland? A socio-demographic portrait of visitors." In *The 7th International Conference on Monitoring and Management of Visitors in Recreational and Protected Areas (MMV)*. Estonia, 27-29. 2014.
12. Antti Virolainen, Arto Puikkonen, Tuula Kärkkäinen, and Jonna Häkkinä. 2010. Cool interaction with calm technologies: experimenting with ice as a multitouch surface. In *ACM International Conference on Interactive Tabletops and Surfaces (ITS '10)*. ACM, USA, 15-18.
13. Mikael Wiberg, Jofish Kaye, Peter Thomas. 2014. PUC theme issue: material interactions. *Personal and Ubiquitous Computing* 18(3): 573-576 (2014).