

# Comparative research on outdoor recreation between Austria and Japan

Y. Aoki and A. Arnberger

**Abstract** — The University of Natural Resources and Applied Life Sciences, Vienna and the National Institute of Environmental Studies, Tsukuba conducted a research project to identify differences and commonalities in outdoor recreation activities between Austria and Japan. Between 2005 and 2007 the recreational use in several recreational urban and peri-urban areas was investigated in both countries using a range of methods. Standardized data collecting procedures were established for comparative analyses. The results of this cross-cultural research project showed that although different outdoor activities were carried out, several commonalities in recreation use patterns and recreationists' perceptions were found. This inter-area and cross-cultural comparison of green space users added to the understanding of urban green space use in Japan and Austria. Urban green space management of both countries will benefit from this cross-cultural research project.

**Index Terms** — Cross-cultural comparison, outdoor recreational activities, climate, Austria, Japan.

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## 1 INTRODUCTION

Green spaces are important for humans. They offer opportunities for recreational physical activities, are places for social gathering and refuges from urban living [1], [2], [3]. Attractive urban and suburban green spaces in Austria and Japan are experiencing increasing numbers of visitors, often exceeding their social as well as ecological carrying capacities. Therefore, information about recreation use is needed.

Reliable and valid research about rec-

reation use supports green space management and provides useful data for urban planning. It also demonstrates the importance of urban green space.

In particular standardized cross-country comparisons of recreation use focusing on urban green spaces are rare. In addition, little research has focused on cross-cultural comparisons of outdoor recreation use and behaviour between Japan and Austria.

Standardised cross-cultural comparisons would further enhance the understanding of recreation behaviour in general, and, in particular, of the recreation use in urban green spaces. Cross-cultural research can identify the role such spaces play for their visitors of different cultures. Comparisons deliver helpful information for green space management, how to provide optimal opportunities for outdoor recreation and to maintain or increase the quality of the outdoor recreation experience.

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## 2 THE PROJECT

### 2.1 Research goals

This 2.5-year cooperative research project funded by the Austrian Science Foundation (FWF) and the Japan Society for the Promotion of Science (JSPS) aims at enhancing the understanding of recreation use and recreation behaviour in both countries [4], [5]. Cross-cultural and inter-area recreation use comparisons across several Viennese and Japanese recreation areas were carried out in a standardized manner, applying sophisticated outdoor recreation research methods.

Beside its focus on urban and suburban green spaces, additional research investigated cross-cultural differences in recreation behaviour and activities as well as the perceptions of landscape change by season [4], [5].

This project involved several researchers from different disciplines. The Japanese side involved 9 universities to gather data of urban and suburban park visitors for the comparative research. The Austrian side was predominantly presented by the Institute of Landscape Development, Recreation and Conservation Planning at the University of Natural Resources and Applied Life Sciences Vienna. Based on several visits by the researchers in Japan and Austria a network of partners was established, and study sites in Japan and Vienna for the cross-cultural comparison were identified. A standardized strategy for data collection was developed.

The project targeted on a range of research topics such as visitor perceptions, satisfaction, use patterns, crowding, user conflicts, use displacement, visitor motives, user conflicts, park design, spatial distribution of visitors within a recreation area, and the influence of weather on recreation.

### 2.2 Study sites

The settings investigated were urban pocket parks, historical gardens (Fig. 1) and historical sites, theme parks, urban forests and conservation areas differing in size, physical



Fig. 1. The Stadtpark - a famous historical garden in Vienna was one of the study areas.

setting and recreation uses. Green spaces were heavily used or with low visitation, used predominantly by the local population or tourists. The area sizes ranged from less than one hectare to more than 1000 hectares. Although there was a high diversity of areas studied, management problems were often similar both in Japan and Austria.

### 2.3 Methods

A range of methods were applied. Several of the methods were set up in a standardized way enabling comparative analyses between the cultures and among recreation areas:

- Visitor counts by human observers and long-term video monitoring
- Face-to-face interviews with thousands of green space visitors
- Visitor observations
- Image-based stated choice methods for the assessment of trail use preferences and intended use displacement behaviour using digitally calibrated images (Fig. 2).
- 3D computer animated choice model for the assessment of trail use preferences using digitally calibrated films
- GIS-based route analysis exploring spatial behaviour patterns of visitors
- Surveys among Japanese and Austrian students
- Collection of weather-related data (Fig. 3)



Fig. 2. Digitally calibrated images of a choice model asked in several Viennese recreation areas [6].

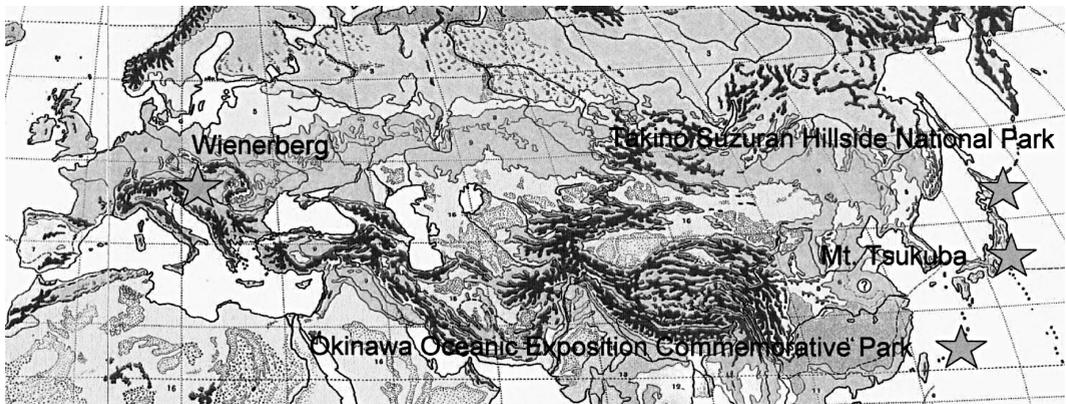


Fig. 3. Location of study areas with analyses on the impact of weather on recreation use levels.

### 3 RESULTS

The results of this cross-cultural research project showed that although different outdoor activities were carried out, several commonalities in recreation use patterns and visitor perceptions were found. For both ethnic groups recreation, health, nature und landscape are important visiting motives, while dog walking, watching other people, meeting with friends and family, taking children outside, and solitude were rather unimportant.

Cross-cultural differences in crowding preferences of urban forest visitors between Vienna and Sapporo, using several standardised image-based stated choice

approaches [7], [8], revealed that Viennese forest visitors are more sensitive to overcrowding, while undercrowding seem to be a more prominent issue in Japan. However, among each ethnic segment the group with preferences for lower use densities is dominating.

Similar effects of climatic conditions and the day of the week on the visitor numbers were found. Figs. 4 and 5 showed the results of analyses obtained by the Quantification Theory I by Hayashi. Similar deviations of parameters were found for the Wienerberg recreation area in Vienna and the Takino Suzuran Hillside National Park in Sapporo. Both are located in the cool temperate climatic zone.

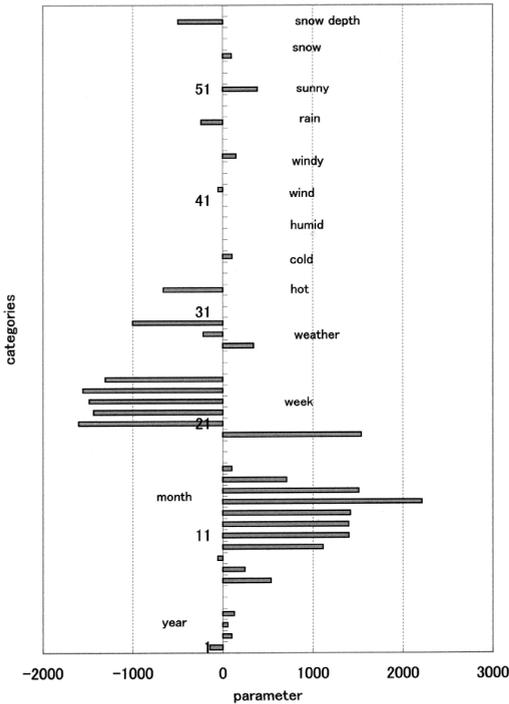


Fig. 4. Daily numbers of visitors to Takino Suzuran Hill-side National Park analyzed with the Quantification Theory I by Hayashi.

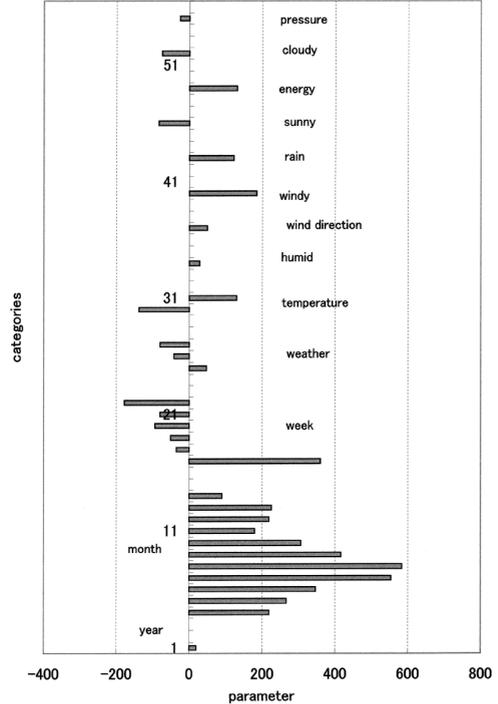


Fig. 5. Daily numbers of visitors to the Wienerberg recreation areas analyzed with the Quantification Theory I by Hayashi.

**4 CONCLUSION**

So far, little recreation research in urban settings in respect to visitor motivations, visitor perceptions, visitor behaviour etc. and the influence of weather has been carried out, compared to backcountry and frontcountry settings. Most of outdoor recreation research has been undertaken in North America, while particularly for Austrian's and Japan's urban green spaces information is scarce. Investigations on cross-cultural differences in recreation behaviour between Austria and Japan are also missing.

This inter-area and cross-cultural comparison of green space users added to the understanding of outdoor recreation use in Japan and Austria. Results indicate that urban green space users in both countries seem to be quite similar and green space management of both countries are facing related challenges. Thus, urban green space management of

both countries will benefit from this cross-cultural research project. The results of this international project strengthen the importance of outdoor recreation research in urban settings.

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**REFERENCES**

[1] W. H. Whyte, "The Social Life of Small Urban Spaces", Washington, DC: The Conservation Foundation, 1980.  
 [2] W. E. Hammitt, "Urban forests and parks as pri-

- vacy refuges,” *Journal for Arboriculture*, vol. 28, no. 1, pp. 19-26, 2002.
- [3] A. Arnberger and W. Haider, “A comparison of global and actual measures of perceived crowding of urban forest visitors”, *Journal of Leisure Research*, vol. 39, no. 4, pp. 668-685, 2007.
- [4] Y. Aoki and A. Arnberger (eds.), “A data book of outdoor activities in Austria and Japan”, Research Report from the National Institute for the Environmental Studies, Tsukuba, Japan, in press.
- [5] Y. Aoki and T. Aikoh, “Comparison of outdoor activities between Austria and Japan”, *Journal of Environmental Information Science*, vol. 36, no. 5, pp.109-118, 2008.
- [6] A. Arnberger and W. Haider, “Crowding, behavioural, managerial and aesthetic preferences of urban park users: an image-based choice experiment”, In: Haider, W., et al.: ISSRM 2006, June 3-8, 2006, Vancouver, BC; Book of Abstracts, p. 7, 2006.
- [7] A. Arnberger and R. Eder, “Social trail use preferences, use displacement and crowding perceptions of urban forest visitors: a comparison between forest visitors of Sapporo and Vienna”, Unpublished research report, University of Natural Resources and Applied Life Sciences, Vienna, 2007.
- [8] T. Aikoh, A. Arnberger, Y. Shoji, T. Mieno and R. Eder, “Comparison of motivations and crowding preferences between Austrian and Japanese ur-

ban forest visitors”, Fourth conference on “Visitor monitoring and visitor management in recreational and protected areas”, Montecatini Terme, Tuscan, Italy, October 14-19, 2008, in press.

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