

9 Epilogue and Acknowledgements

This thesis results from work done at the Joint Research Centre (JRC) in Ispra, Italy where I was post-graduate grant holder from 1998 to 2001 and at the University of Southern Denmark (SDU) in Esbjerg, where I have been employed as research worker from January 2003. Meanwhile, I have been working part-time on the Ph.D. thesis under the supervision of Dr. Blackburn, first at King's College, London, and from October 2000 at Lancaster University.

At the JRC, I was affiliated with the Eurolandscape project at Space Applications Institute (SAI), a project where one of the objectives was to develop methods for large-area monitoring of sustainability in forest management, as a contribution to the forest policy of the European Union (EU). Thus, from the onset the purpose of my project was to develop **criteria and indicators** for sustainability of forest in Europe. Focus soon came to be on biological and structural diversity – and the relation between these. During the project monitoring of landscapes and indicators of sustainable land use and measures of multi-functionality was included as well.

Given the easy access to various types of Earth Observation data at the SAI, research was directed towards extraction of relevant thematic maps, in particular forest maps from satellite data, followed by calculation of spatial metrics to characterise forest structure. A rich literature was found to exist on the relations between biological diversity and spatial structure, and this became the focus of the literature survey that was carried out from the onset of the project. Here, **Fragmentation** was identified as a key concept in forest ecology, and attention turned to develop metrics for quantification of this process/state. Also the concept of **scale**, was found to be central in issues concerning EO and GIS in general and calculation and use of spatial metrics in particular. Besides its geographical and cartographic applications the term scale also has an ecological meaning and thus it was found worthwhile to quantify the effects

of changes in spatial as well as thematic scale, especially since the correct scale(s) for environmental monitoring is still an issue of discussion.

During my employment at SDU, focus turned to the use of Land Use and Land Cover (LUC) data for landscape characterisation and use of spatial metrics as contextual information for cultural environment sites and areas. This followed from an objective to evaluate the utility of data from the Danish Area Information System (AIS) in the framework of an Internet-based database and atlas of cultural environments in Vendsyssel, Northern Jutland. For these parts of the study, the importance of incorporating the historical dimension of landscape development into description of current state became clear to me, and on-going work within the DACE project is aimed at that. Similar to the work done at JRC was calculation and display of spatial metrics values with a moving-windows approach and selection of a suite of metrics as indicators of landscape naturalness.

During the preparation of this thesis, I have been so fortunate as to work with geographers, foresters, engineers, historians and archaeologists, who have all given me indispensable advice, hopefully making this a somewhat cross-disciplinary study. I have learned that forests are not just groups of trees, landscapes are more than what appears on maps and biological diversity is indeed a complex and fascinating issue, much more than counting and comparing genes and species. Apart from the technical skills and insights gained (GIS, image processing, data and reference management, writing academic English), much of what I have learned in Ispra, Umbria, Lancaster and Esbjerg is beautifully summarised in this quotation from one of the 'grand old men' of landscape ecology:

Neotechnological landscape degradation, like other syndromes of the severe global environmental crisis, must be addressed as part of a far-reaching environmental and cultural revolution, aiming at the reconciliation of human society with nature. For this new symbiosis landscape ecology should provide a new conception of cultural landscapes and practical, holistic methods and tools, combining scientific knowledge with ecological wisdom and ethics.

Zev Naveh, at the IALE world congress - Ottawa, July 1991, published in *Landscape and Urban Planning* 32 (1995) pp. 43-54.

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