

## Landscape ecology goes into engineering

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## IALE MEETINGS

## 7TH ANNUAL U.S. LANDSCAPE ECOLOGY SYMPOSIUM.

The symposium will take place on 8-11 april 1992 in Corvallis, Oregon.

The title of the symposium is: Regional landscape change: Impacts of climate and landuse.

Five major theme sessions will be emphasized:

- Land use planning
- Biodiversity
- Rivers in the landscape
- Landscape-scale experiments
- Modelling and regional-scale research and management.

Contact: See dairy.

Observe the new traveling scholar award mentioned under the news p.12.

## REVIEWS

## LANDSCAPE ECOLOGY GOES INTO ENGINEERING:

*Nature engineering and civil engineering works*

P. Aanen et al.  
1991, 140 pages, hardbound, ISBN 90-220-1053-8  
Price f 70.00/US\$47.00  
Pudoc  
P.O.Box 4  
6700 AA Wageningen  
The Netherlands

Practical transformation of nature at the landscape level has traditionally developed on the basis of the applied science of engineering: Construction of roads, canals, railways, bridges and other sorts of infrastructure, as well as land reclamation, coastal protection, water management and construction of drainage systems, and any sort of buildings, in short the most important parts of the territorial structure of society, has been based on engineers plans for transformation of matter and energy at the landscape level to serve given social and economic needs. Their success has been closely related to their ability to overcome natural obstacles and re-creating the environment in the existing image of man.

Facing this all-embracing landscape-transforming activity it can be seen as a sort of paradox, that

IALE, explicitly founded "to promote communication between scientists and planners and interdisciplinary scientific research", only to a very limited degree have engineers among the members. There might however be a logical reason: Namely that the emergence of landscape ecology as an interdisciplinary science with strong applied ambitions can be seen as a sort of reaction to the ideology of the traditional engineering: Landscape ecology has also an ideological overlay meaning priority to the dynamics of landscape systems, and a wise adoption of man-made landscapes to this dynamics, including the possible stabilizing effects of bio-systems, rather than giving priority to the realization of man-made ideas about man-controlled systems, often avoiding green elements not corresponding former ideals of a controllable environment.

Up to now the engineers have only to a minor degree been assisted by specialists taking up a landscape ecological point of view: Landscape architects, foresters, agronomists, ecologists and different types of physical planners coming from other disciplines (e.g. economists, sociologists, geographers). This is however changing these years, and can be seen as a result of the rapid ecologization of society and the growing acknowledgement of necessity of a comprehensive transformation towards a sustainable development.

It can however also be seen as a result of the development within engineering itself, more and more incorporating landscape ecological theory and methods in planning and construction. This is partly done to compensate for the damage on nature due to the construction works, but also because a landscape ecological approach in many cases has proven to be economically clever, especially reducing the cost of maintenance. This last reason is basically an economic expression for the benefits of managing along with nature rather than against it, and a main reason (and hope) for the coming ecologization of society.

*"Nature engineering and civil engineering works"* is a fine well-composed collection of papers dealing with the change of civil engineering works in the Netherlands during the last decades, focusing more and more on the landscape ecological consequences of civil engineering projects and on the possibilities of incorporating landscape ecological theory and method in the planning and management of civil engineering projects.

The 9 papers are written by specialists with connexion to the environmental branch of the Road and Hydraulic Engineering Division of the Netherlands Directorate-General for Public Works and Water Management.

In some remarkable chapters the development

towards landscape ecological layout and management of herbaceous and planted vegetation in road verges, canal verges, river banks and river dykes, is described. Problems and solutions for a landscape-ecologically based management of banks of large waters (lakes, rivers, canals), and sea dunes are also given. And thanks to the overall theme, the infrastructural linear landscape elements of roads and canals, the importance of spatial heterogeneity and migration for the long-termed success of a landscape-ecological based nature engineering are very much in focus. In two chapters, theory and concepts on structure and dynamics of ecological communities and the perspectives of the island biogeographic theory are introduced and related to the practical engineering problems.

Case after case shows not only how it is possible to combine the traditional goals of these infrastructural and hydraulic engineering projects with ecological and nature protecting measures, but also how such considerations very often have a stabilizing effect and therefore also a positive influence on the economy related to the main goal: In fact, it is striking, how former management of green elements related to civil engineering works until the beginning of the 80ties was mostly applied for considerations of tidiness, often representing a very expensive Sisyfos work against nature, that cannot be explained economically: Mowing of road verges 7-12 times a year resulting in a monotonous lawn exposed to erosion is simply silly when mowing and removing the vegetation 2 times yearly can increase the diversity, the amount of rare species and gives a closer vegetation layer under the cutting level, thus giving better protection against erosion, the latter being special relevant for the management of dykes. After a time it might in some cases even be lowered to once a year. For that reason mowing schedules have been drawn up in the Netherlands since the early eighties for all verges of national roads. However, shredding of wood in thinnings of planted verges is still widespread, although it is generally une-ecological as well as uneconomical. An the practice of dutch farmers to dump their surplus of slurry manure in winter on the dike slopes, having detrimental effects to the natural and protecting values of these grasslands, shows, that short-sighted economic interests still represents strong hindrances against a landscape-ecological sound type of engineering.

But the book shows in a very convincing way, how landscape ecology is entering one of the main landscape-transforming processes in society (we however still have to be involved in the landscape forming processes related to the direct production of goods and services, including all the cars and other vehicles using and demanding the

infrastructural works!). It is also interesting in the way, traditionally ecological theory (and ideology) on ecosystem development is confronted with practical planning. So, van der Sluij and Melman sticks very close to the ideal of succession, stating that "the starting point for ecologically sound construction of verges is the spontaneous development of the vegetation, preferably on a substrate that is disturbed as little as possible"(p. 81), and argues practical for this in relation to problems connected with the planting of trees and shrubs. On the other hand: de Watering, Melman and Verkaar refers experiments showing how the sowing of hay seed from an existing species-rich flood valley flora on old dykes into a plot on a new dyke can promote the establishment of this type of flora very rapidly(p. 95).

The book is highly recommendable not only to landscape ecologists that wants an insight into the practical application of landscape ecological theory and methods, but also for policy-makers and others looking for an introduction to landscape ecology and its application to practical planning and engineering.

Jesper Brandt

## NEWS

### THE EEC-R&D-PROGRAMME INVITES LANDSCAPE ECOLOGISTS

For all - not only European - landscape ecologists the workprogramme of the EEC R&D-programme in the field of environment is interesting reading, among other things explicitly inviting "to develop an approach to landscape ecology"

The programme describes the following main areas of interest:

#### Area I: PARTICIPATION IN GLOBAL CHANGE PROGRAMMES

- A. Climate change and climatic impacts
  - I.1 Natural climate change
  - I.2 Anthropogenic climate change
  - I.3 Climate change impacts
- B. Global changes in atmospheric chemistry and biogeochemical cycles and their consequences for life on earth
  - I.4 Stratospheric ozone
  - I.5 Tropospheric physics and chemistry
  - I.6 Biogeochemical cycles and ecosystem dynamics