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LANDSCAPE ECOLOGY TERMINOLOGY A PROPOSAL

by Hubert Bunce, Simons Reid Collins, Vancouver, Canada

At the excellent congress held at Toulouse this year there were several discussions about "terminology" for landscape ecology. There were arguments pro and contra about formalizing such a terminology and a strong desire was expressed that landscape ecology would achieve the status of a science.

It already has international standing. If it is to be an international science than all of the terms unique to landscape ecology should have an accepted common meaning and be clearly defined in a published source. Linnaeus, the Swedish botanist, set an example with plants; plants are a major component of landscape ecology. Some arguments were expressed contrary to establishing a terminology. Agreement of definitions would be difficult or impossible to obtain; such an exercise would take time, work and expense.

It is suggested that a two- or three-person working terminology sub-committee be established. Their first task would be to compile a first draft list of all terms they consider uniquely applicable to landscape ecology. This list could be published in the *IALE Bulletin*. Additions and deletions could be suggested by any member.

The sub-committee could then apply the suggestions to the list. Definitions for each item would be collected. There could be several alternate definitions for any one item. These would then be carefully considered by the sub-committee who would select the best one for each item. If there was no existing definition found they would draft a provisional one. The set of selected and draft definitions would be distributed to all members. Members having a problem with a particular definition would advise the sub-committee with their reason and a recommended revised definition. The sub-committee would review all the suggested revisions and, if acceptable, would replace the provisional definition. If not, and three or more members had suggested revision of the first definition, than negotiation of an acceptable version by E-mail, fax, phone or letter would hopefully produce a favorable result. If no agreement could be reached the term would be listed as "no acceptable definition available". The final terminology as a first edition would be published by IALE. Further editions, updated and revised could be produced subsequently.

BOOK REVIEW

A UNIQUE BOOK ON LANDSCAPE ECOLOGY

by Zev Naveh

LAND ECOLOGY
An introduction to landscape ecology as a base for land evaluation, land management and conservation
By Isaac S. Zonneveld
1995. xii and 198 pages with 29 figures, 5 tables and 3 photographs. ISBN 90 5103 101 7. DFL 70.00 / US $ 43.75
Published by SPB Academic Publishing, P.O. Box 11188, 1001 GD Amsterdam, The Netherlands

This book is a most welcome, unique and valuable contribution to the rapidly growing number of books and (mostly edited) volumes dealing with landscape ecology. It is welcome, because it is written by one of the most influential European landscape ecologists, who was the first president of the IALE and is presently Professor Emeritus at the Agricultural University of Wageningen and the International Institute for Aerospace Surveys and Earth Science (ITC) in Enschede, The Netherlands.

This book is unique because it differs from most other, chiefly research-oriented, publications by its down-to-earth and practical orientation, guided by a broad-minded humanistic-ecological world view and a deep concern for the fate of our planet Earth. Its main aim is not to serve as a field guide for carrying out all the activities of research and survey; in his own words, it should just open eyes to approaching our environment more comprehensively than via the monodisciplinary route. Nevertheless, this book is highly valuable because it summarizes some

of the most relevant premises of European and - above all - Dutch landscape ecology with a wealth of literature sources, a great part of which, however, unfortunately in the Dutch language or not readily available. The contents of this book show in a convincing way that Zonneveld's holistic and transdisciplinary systems conception of landscape ecology is not a fiction of the mind, but the most sound and realistic way to study, manage and practice landscape ecology. This approach has grown out of his own practical experience and from interactions with his colleagues from the Netherlands Soil Survey, UNDP, FAO, UNESCO and especially from the ITC and his students - many of them from developing countries - who carried out numerous studies under his guidance.

The book contains eight chapters, with many subchapters and two appendices. The first chapter deals with the landscape concept in three landscape-ecological dimensions, which are traced further throughout the whole book:

1. The topological-vertical dimension, varying from a few square meters up to several kilometers, to which classical ecosystem studies have been restricted;
2. The chorological-horizontal dimension, with complex spatial units consisting of topological units, mapped on scales varying from a few thousand to about a million. This is the classical field of geography;
3. The geospherical, global dimension of energy and information flow, mapped on scales of one to ten million.

Zonneveld regards as the most comprehensive landscape concept the "holon" (eco)system view, in which the landscape perception and the pattern (mosaic) views are united into land units. These serve as the main framework for studying topological and chorological relationships as a means for transferring landscape knowledge via land evaluation to application in management (and this is the major theme treated in this book, in detail and with great expertise), and as a feasible mapping tool for these purposes. It should be mentioned at this point that the definition of explicit land units and their hierarchical classification is very different from the - chiefly - North American approach, treating landscape units in a rather vague way as "patches".

These ideas are carried further in the second chapter on the development of landscape ecology as a systems science with a clear tendency towards transdisciplinarity, in which the diverse land attributes treated in other basic and applied sciences are not merely combined or used together in a multidisciplinary or interdisciplinary fashion, but integrated into a transdisciplinary science on its own right.

Chapter three deals with basic concepts of classification, and chapter four with landscape patterns and chorology, including a detailed hierarchical classification of land units from the ecotope to the megachore. These chapters are of great importance, because they lay the epistemological foundations for organizing in a rational way the complexity of spatial and functional heterogeneity with which landscape ecologists have to grapple in the field.

Chapter five, on landscape functions, relies chiefly on the Dutch approach, which has proved itself in many, mostly problem-solving-oriented, studies of landscape planning, management and conservation. At the same time, it also presents a good overview of recent advances in the field of networks and connectivity, which can be considered as some of the most important contributions to landscape ecology as an emerging science of "ordered complexity" (it actually disproves Zonneveld's claim in the introduction that there is hardly any special landscape ecological methodology unique to this discipline).

Chapter six deals with landscape change (chronology), and is in my opinion less satisfactory because it does not succeed in presenting a comprehensible review of the terms dealing with landscape dynamics used in this chapter, such as stability, diversity, self-organization, homeorhesis, and - in contrast to the other chapters - it is not supported sufficiently by relevant literature references to which the reader who is not familiar with these terms could be referred for further study.

Without doubt, chapters seven and eight, on land evaluation and management and the application of landscape ecological principles to these fields, together with the two appendices with practical examples of land survey case studies, comprise the heart of this book and contain Zonneveld's most important and

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original contribution to the science of landscape ecology. Some fundamentalist "deep ecologists" may not like the Zonneveld's statement that the "core of application value of landscape ecology is no less and no more than a means for understanding and increasing man's capacity and power to act as regulator", but Zonneveld also makes a strong point that landscape ecology teaches us that man is not even the "engineer" who has the landscape fully in his hands, let alone the capacity to "make" it. "The self-regulating aspects of the landscape do not exclude the factor of man's ability to add his intellectual capacity to the system in a creative way. ...Sound landscape-ecology thinking may guide mankind toward development of the capacities of a good steward, who at the same time remains part of the system." (page 90).

The basic scientific knowledge and professional information is interlaced with much practical advice which is invaluable for anybody engaged in land appraisal, classification for land use and development, which Zonneveld calls "pragmatic land classification". These are discussed bearing two main human attitudes in mind; to "have" (to use or exploit), leading to the evaluation of suitability, constraints and thus the possibilities of use, and to "care for", leading to the evaluation of intrinsic values and vulnerabilities and thus the need for conservation. It seems to me that in this way the vital life-supporting functions of semi-natural and traditional agricultural biosphere landscapes which cannot be expressed in marketable dollar values but still have great instrumental values fall somehow between both categories, and I therefore prefer the distinction between "hard" values - producing marketable goods - and "soft", intangible values, which include not only intrinsic values, but also vital, non-marketable functions for sustainable organic life on earth, including humans. In Appendix A the principles of land survey are elaborated by practical examples. Zonneveld insists strongly that every land unit surveyor must know how to handle and interpret his main tool, the remote sensing image, and must do the work himself and not leave it to a so-called photo- (or remote sensing-)interpreter, that *fieldwork and photo-interpretation work must be in the same hands and heads*, and that tracing, redrawing and compilation has to be done *by the same person who did the interpretation, and will do the field survey*. In the context of the relationship between remote sensing and field work, the author emphasizes that the real character of field work is not just checking the remote sensing interpretations, but also collecting thus

DIARY

- Galveston, Texas, USA, 26-30 March 1996. 11th Annual U.S. Landscape Ecology Symposium. Integration of Cultural and Natural Ecosystems across Landscapes. Contact: Dr. Robert N. Coulson, Dept. of Entomology, Texas A&M University, College Station, TX 77843, USA. E-Mail: coulson@igis3.tamju.edu
- Budapest-Veszprém, Hungary, 9-12 April 1996. Geomorphology and Changing Environments in Europe. IAG. Dénes Lóczy, Geographical Research Inst., Hungarian Academy of Science, P.O. Box 64, Budapest, H-1388 Hungary. Phone/Fax: (+36.1) 111 7814
- Jerusalem, Israel, 30 June - 4 July 1996. 6th International Conference on Preservation of our World in the Wake of Change. Contact: Yosef Steinberger, Dept. of Life Sciences, Bar-Ilan University, Ramat-Gan, 52900 Israel. Phone: (+972.3) 531 8571; Fax: (+972.3) 771 088
- Copenhagen, Denmark, 11-15 August 1996. 11th Conference of the International Federation of Organic Agriculture Movements (IFOAM): Organic Agriculture: Fundamentals, New Research and Wider Implications. 1st Organic World Exhibition. Contact: IFOAM'96. Blegdamsvej 4, DK-2000 Copenhagen N, Denmark. Phone: (+45) 3537 2096; Fax: (+45) 3537 4096; E-mail: ifoam96@login.dknet.dk
- Copenhagen, Denmark, 19-23 August 1996. 10th International Symposium on Ecological Modelling. Contact: S.N. Nielsen, Royal Danish School of Pharmacy, DK-2100 Copenhagen Ø, Denmark. Phone: (+45) 3527 0850, ext. 455; WWW-server: http://info.dfh.dk/ECOSUM96
- Warsaw, Poland, 9-12 October 1996. IALE International Conference: Landscape Transformation in Europe. Contact: Ewa Malinowska, Faculty of Geography and Regional Studies, University of Warsaw, Krakowskie Przedmiescie 30 St., P-00-927 Warsaw, Poland. Phone: (+48.2) 620 0381, ext. 644, 633; Fax: (+48.22) 261 965, E-mail: GZK01 at PLEARN.BITNET, or IN%GZK01 at PLEARN (from USA and Canada)

far unknown data, in addition to the data supplied by the interpretation of this material. Thereby field work becomes the second core of land survey, complementing the photo-interpretation. For this purpose stratified sampling seems to be the most sound procedure. Zonneveld, who has throughout his own work closely followed the striking advances in the computerized technologies, can judge their advantages better than anybody else. However, he still insists that one should not to get too carried away by technology and neglect the simple tool of the pencil and the personal inputs of ingenuity, common sense and thought, which cannot be replaced even by the most sophisticated computer hard- and software.

The value of this important monograph would be even greater if more attention had been paid to the editorial and didactic aspects. There are quite a number of stylistic and typing errors, and inconsistencies between the text and the references. In some of these, details are missing and annotated with a question mark. There are many cross-references between chapters and subchapters, but as the headers have only page numbers and no chapter or subchapter numbers, it becomes rather cumbersome to check all these references without referring to the page numbers.

For teaching purposes it would have been desirable to distinguish between references which served as sources for the text and those which are specially recommended for further reading and study and are easily available. It may even be worthwhile considering the publication of a reader as a follow-up to this book. Hopefully, in the second, improved edition, the errors could be corrected and the last chapters could be reorganized so that the Appendix dealing with the land unit survey could become an integral part of chapter seven.

The material presented by Zonneveld is so important that all efforts should be made to ensure its future presentation in the most efficient way.

THE FUTURE OF IALE WORKING GROUPS

On the basis of a proposal by the Executive Committee, the IALE Council decided on 30 August to distinguish between working groups and contact groups.

IALE working groups are short-term groups which work on a clearly defined concrete product. They work under the responsibility of the IALE and need the approval of the Executive Committee. The approval must be given on the basis of a proposal including the aims, a list of members and their tasks, a description of the product and a planning scheme. Responsibility is delegated to a working group leader. Progress made will be reported to the IALE and published in the *IALE Bulletin*. Concrete products include journal papers, books, brochures, software and other educational material and public meetings under the IALE-flag.

IALE contact groups are groups that supply a contact function to IALE members and other interested people on a given landscape ecological theme or method. They do not need the approval of the IALE, but must present themselves to the IALE-EC in the form of a description of their field of interest, a membership list and the name of a coordinator. IALE contact groups have their own responsibility, but are asked to report on their activities in the *IALE Bulletin*.

This decision implies that all present working groups will be changed into contact groups by 1 January 1996.