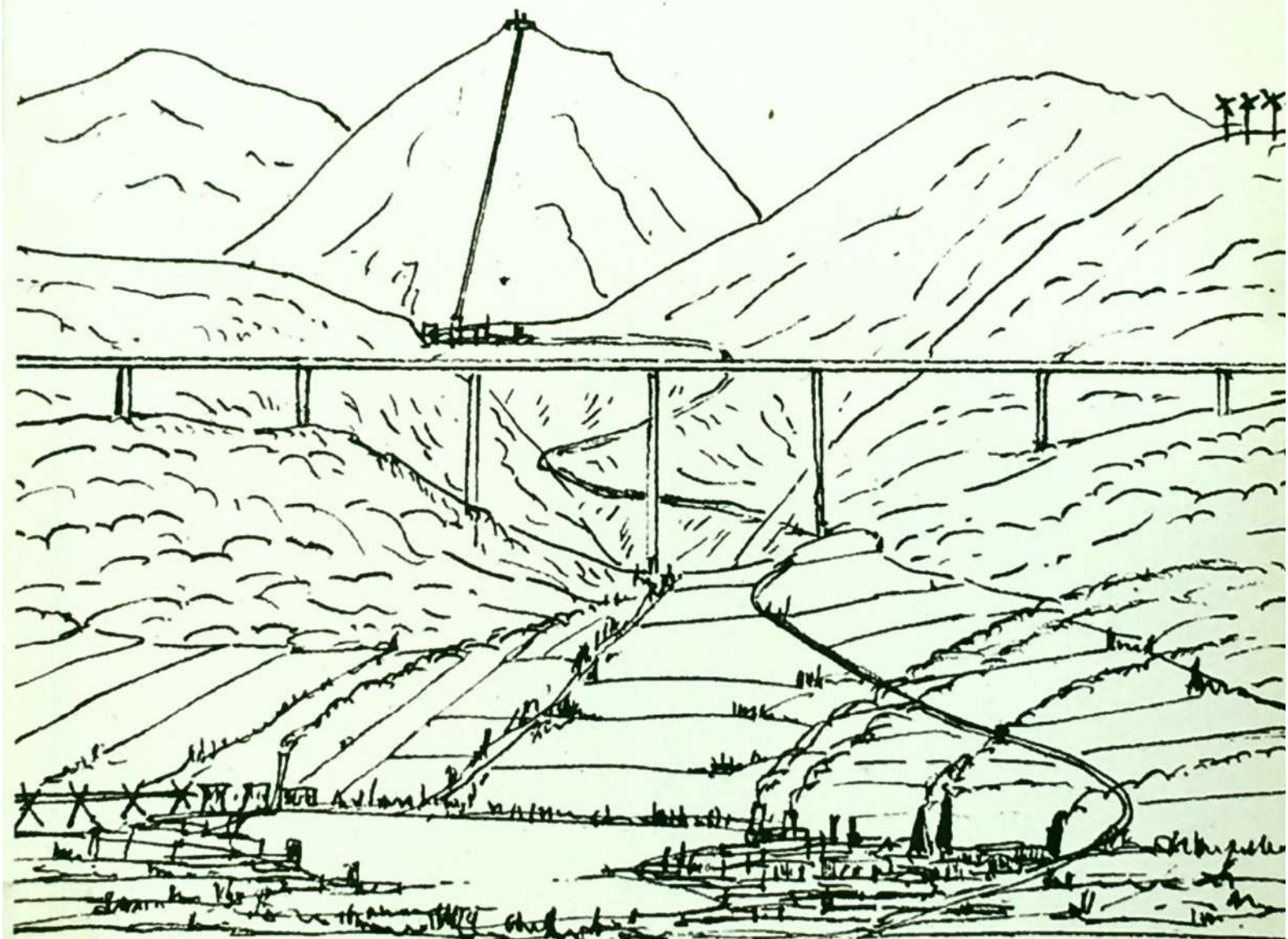


25 years
IALE 2007 World Congress July 8th -12th

25 Years of Landscape Ecology: Scientific Principles in Practice

Proceedings of the 7th IALE World Congress - Part 2



Editors: R.G.H. Bunce, R.H.G. Jongman, L. Hojas & S. Weel

Wageningen, The Netherlands
July 2007

25 years of Landscape Ecology: Scientific Principles in Practice

Part 2, Theme 6-11, Workshops

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ISBN 978-90-78514-02-2

This publication should be cited as follows:

Bunce, R.G.H., Jongman, R.H.G., Hojas L. and Weel S. (Eds) 2007. 25 years of Landscape Ecology: Scientific Principles in Practice. Proceedings of the 7th IALE World Congress 8 – 12 July Wageningen, The Netherlands, IALE Publication series 4

Published by IALE,

This publication has been made possible with support of the Dutch Ministry of Agriculture, Nature and Food Quality, The Dutch Ministry of Spatial Planning and Environment, Alterra, Wageningen UR, ArgoBecas (Spain)

This publication is available from IALE:<http://www.landscape-ecology.org>

Price: € 40 for members including handling and mailing

Price: € 50 for non members including handling and mailing

Cover drawing: Bob Bunce

The cover drawing is a model landscape designed to show the Congress themes as follows:

Theme 1: The landscape contains policy issues e.g. wind power , urbanization and tourism.

Theme 2: Urban areas, industrial development and motorways are all present.

Theme 3: Agriculture dominates in the centre of the drawing with the motorway causing fragmentation Urban development and tourism are also involved.

Theme 4: There is a large lake with a river flowing into it.

Theme 5: Monitoring is needed to follow changes taking place.

Theme 6: The mountains have tourist pressures and High Nature Value land.

Theme 7: Many changes are taking place e.g. the construction of a ski resort.

Theme 8: The power plant and the wind farm show the impacts of global energy demand.

Theme 9: Many planning issues are included e.g. urban expansion.

Theme 10: The motorway cuts through forests on the mid-slopes.

Theme 11: Forests are being conserved in priority areas

Cover design: Silvia Weel

Printed by Ponsen and Looijen bv Wageningen, The Netherlands

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The geoagronomic approach to rural landscapes management: a methodological path to characterize contemporary challenges

D. Rizzo, M. Galli, T. Sabbatini, E. Bonari

Land Lab, Scuola Superiore Sant'Anna – v.S.Cecilia 3, 56127 Pisa, IT.
e-mail: d.rizzo@sss.it

Introduction

Mediterranean rural landscapes are subjected, since the Sixties, to the polarization of agriculture between intensification and abandonment, with an increasing lost of productive function in several marginal areas, partly kept by hobby and part-time farmers (Pinto-Correia & Vos, 2002). Even if rural landscapes are always exposed to change by farming activities, the transformation rate of the Mediterranean ones appears much more higher than in the past, such as to cause concern about the future sustainability of the process.

Thus, the signs of change assume a significance to assess the sustainability of territorial management practices (Galli *et al.*, 2003; Benoît *et al.*, 2006) especially if we consider landscapes as a tangible expression of local knowledge in the use and conservation of resources. This is the case of the terraced landscapes, whose distinctive drainage systems are identified among the more important structuring and managing assets of hilly territories (Baldeschi, 2000; Brancucci *et al.* 2000; Galli *et al.*, 2003; UN, 2005). A novel approach to cope with the arising changes, such those regarding the management priorities, is the geoagronomy (Benoît *et al.*, 2006) that seeks, on one side, to apply and adapt the theories of production agronomy to the landscape components (e.g. the role of farming processes to explain structures and dynamics) and, on the other side, to use the geographical theories to study agronomical features (e.g. allotments and spatial configuration of farming systems).

The aim of this research is twofold: firstly to define a methodological path for the agrarian terraced landscapes characterization, evaluating their reliable conservation conditions through the geo-agronomic approach; secondly, to identify the elements of vulnerability for hillside drainage systems in a Mediterranean environment, in order to provide support for the decision-makers in the coordination of the local management actions. The study area is the SW hillside of the Monte Pisano (62 km², 43°44' N – 10°32' E, Tuscany, Italy) chosen for its convergence between the presence of a historical terraced system and the need, manifested by the local Administrations, to face the management changes occurred during last decays.

Material and methods

The landscape was “read” as a “system of landmarks”, where each “landmark” was meant as the spatial entity materially resuming the productive farming processes (Rizzo *et al.*, 2006). The identification and the characterization of landmarks were hinged on the geoagronomic approach, applying the wide definition of landscape (*sensu* CoE, 2000) as an interface between a productive-operational perspective of the rural territory (i.e. in terms of agricultural practices) and a perceptive conception of it (i.e. visual survey of traces – either transient and permanent – left by the practices). The research followed three steps: (1) geoagronomic characterization of the key landmarks: land cover, surface drainage works and cultivation condition on the field and their geographical context; (2) landscape state evaluation, through a multicriteria analysis based on results of step one, defining the parameters (structural and operational ones) capable to affect at the territorial scale the propensity to degradation (“fragility”) of the surface drainage works; (3) detailed evaluation of the operational needs for the drainage system conservation, through field surveys and meetings with farmers and agricultural service cooperatives.

Results and discussions

The results of the first step are relevant to set the main landscape elements in context and then, focus on the quantitative aspect of the key agrarian landmarks. In particular, land cover shows that cultivations extend for 1,813 ha (36% of the study area); this Total Agricultural Surface (TAS) primarily consists of permanent crops (77%, chiefly olive groves), followed by arable land (12%) and other crops (3%); pastures are under 1%, whilst fallow land covers the remaining 7%. Concerning the surface drainage works, 62% of the TAS is terraced *sensu stricto* (held-up by dry-stone walls), and the rest are other kinds of terracing more fitting with the micro-topographic conditions. About the cultivation condition in the fields, abandoned area adds to 21% of TAS. By overlaying these results it is possible to observe that the 85% of olive groves (being them the 95% of the permanent crops) are on terraces s.s. and about one fifth of them are abandoned.

The second determined the relations between the spatial configuration of the above mentioned landmarks and the geographical parameters, allowing the estimation of about 32% with low fragility, 40% intermediate and 28% with a medium-high “fragility”, the latter chiefly regarding areas at high altitude with a great density of dry-stone walls per hectare, made worse by the abandonment. To each level of fragility it is possible to associate different management interventions, ranging from ordinary to extra-ordinary operations.

Finally, the results of the third step were used to prepare a handbook to support the management interventions, coping with the different priorities defined on the fragility maps.

Conclusions

The definition, application and testing of a methodological path to study the “fragility” of a rural terraced landscape from a geoagronomic viewpoint, led the composition of a knowledge framework which can be used to identify, localize and assess the main management needs. Those needs were neither detectable nor completely understandable using the classical agronomic approaches (i.e. parcel-centred). In terms of landscape conservation, the geoagronomic approach may surely be proposed to support the operative management decisions of such complex systems, consistently with the expectations of the society and the rural policies about the externalities of the agriculture itself (e.g. maintenance of cultural values, landslide prevention, etc.) placing, for instance, the drainage system management within the agro-environmental schemes, as required in the recent developments of the Common Agricultural Policy about the services delivered by the agriculture to the community.

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