Reading and interpretation of agricultural landscape: a methodological proposal of geomathic instruments application in the case of Monferrato Astigiano
by Serena Chetta
Tutor: Federica Larcher
Co-tutor: Enrico Borgogno Mondino

The thesis tried to create a landscape study methodology that, through a territorial analysis, a landscape indicators research and them application and a classification which trial identify some areas similar between them for specific characteristics, brought to get a "Map of the ecological quality". Such result, adequately overlapped to analogous results related to the other components of the agricultural landscape, it competes to a zoning of the functional territory to objective of management and governance. The work allows, in fact, to underline inside a circle of landscape areas to great or smaller agro-ecological value individualizing so criterions and strategies of intervention from the local Corporate body.

The area of study reverts in a part of the Monferrato Astigiano that it inhales to get the important recognition UNESCO, and that in the specific it understands six communes that are combined in three couples with the same peculiarities: Antignano and San Martin Alfieri, Calosso and Moasca, Cassinasco and Rocchetta Palafea.

The first phase has concerned the data retrieval: ISTAT dates (2000) related to the divisions of use of the ground, Regional Technical Map, Region Piedmont (nominal scale 1: 10.000), real color aerial photo (nominal scale 1: 10.000), thematic cartography of road network (nominal scale 1: 25.000) and finally the dates IPLA related to the use of the ground. Nextly the categories IPLA is been modified and readapts in GIS reconstructing the vineyards theme through photointerpretation and adding the categories of use not yet present; finally on the mosaic they have been attributed some themes to the corridors getting some Maps of the agro-mosaic for the different circles. Secondly some landscape indicators, fit to the finalities of the study and proper for the peculiarities of the territory investigated which were located on a cartographic surface by coordinates, have been selected. The followings indexes have been selected:

- Naturalness index (adimensional classes)
- Edge index (P/A)
- Fractal dimension (logP/logA)
- Shannon diversity index (routine IDL)

From the application of the indexes they have been gotten for the three circles: the Naturalness Map, the Edge index Map and the Shannon diversity Map, while has not been given the Fractal Dimension Map, instead it represented through histogram.

All the gotten Maps have been transformed from vector to raster because this last format of data, constituted by a matrix of pixel, it allows to effect different types of operations as overlaps or interactions of file, since every cell of the image is able to bring the information for one determined characteristic.

MULTILAYER IMAGE
(Naturalness, Shape, Shannon)
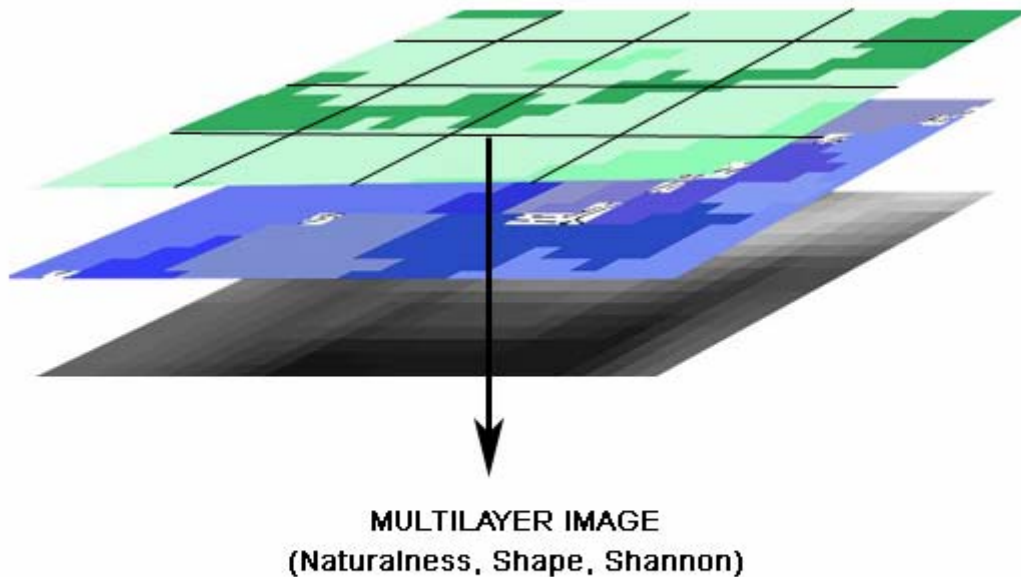
Subsequently the multilayer image constituted by the rasters of Naturalness, Shape and Shannon has been inserted in an automatic Classifier of digital images with Neural Gas algorithm, that it asks for the definition from the consumer of the number of knots or classes before the process of iteration. This trial allows to classify the territory on the base of select parameters (indicators) with the effect to assign every pixel of the multilayer image to an ecological class of pertinence.

The three gotten Maps represent the Maps of the agro-ecological typologies that, through a process of interpretation of the static ones of the same classification, they allow to individualize some classes of ecological Quality for the territory.
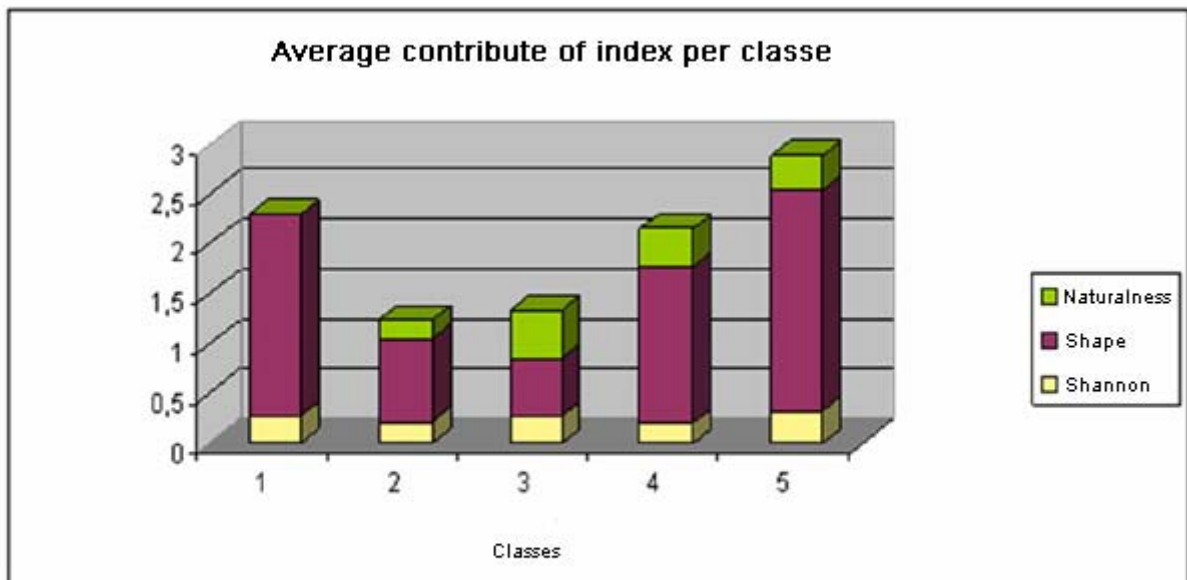
When the critical classes are been individualized among these, it can be suggested some lines of intervention in the agro-ecological field which could be integrated with lines individualized for the other components of the landscape (historical, architectural, perceptive). The method represents an objective instrument to attribute a qualitative judgment to the landscape.

For further information, e-mail:
Serena Chetta: serenachetta@hotmail.it