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# Chasing the landscape capital in space and time: a model for Val di Cembra

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## Abstract

The landscape is the perception of a territory at a given time: it was shown that the landscape increases the perception of the quality of the wine to the consumer. The terraced, fragmented landscape of the Cembra Valley has been used for decades to identify the wine of the Trentino region (IT). However, we are witnessing a disintegration of the traditional terraced landscape to favor the aggregation of plots and the introduction of mechanization practices, still benefiting of the surrounding characterizing elements. This erosion of the landscape is reflected in the perception of an entire territory and therefore in the ability to bind a portion of the value of the wine to the quality perceived by the consumer through the landscape. In this sense, the landscape becomes a capital distributed in space and both the political choices and the individual choice modify and aggregates this common capital. So we decided to use the Agent Based Modeling to describe the dynamics of this capital in space and time in multiple scenarios spanning from the rigid conservation of the identifying elements of the territory up to the complete destruction of the traditional terraced landscape. We will here present a first attempt to define the *landscapital* to identify, in the future, its evolution in space and time and so providing the community and policy-makers with an operational tool to understand how today's choices affect the future landscape in the medium and long term.

## Keywords

Viticulture, terraced landscape, landscape capital, landscape conservation

### **The conceptual definition of the *landscapital***

With this work the authors want to summarize a path that starts from their first work and ends with the novel concept for the traditional terraced vineyards: the landscape capital or the *landscapital*.

The imagery and the narration of the terraced, traditional viticultural landscape of Val di Cembra are used to promote concepts like the “viticulture of the mountains” and the “traditional viticulture”, and regarding the commodities, to promote the wines produced in the entire region (both on the steep slopes and in the valley bottoms). The vine growers in the latter context benefit lower management costs due to the mechanization, the former must bear higher production costs for the impossibility to replace the manual work with the work of the machine and for the laborious conservation of the (dry)walls. However, the traditional terraced landscapes maintain a strong territorial identity and for such prohibitive working conditions are referred as “heroic viticulture”. To describe this concept, the Center for Research, Environmental Sustainability and Advancement of Mountain Viticulture (CERVIM) identifies some morphological criteria that the author used to describe the Val di Cembra in their first works (Delay 2011, Delay and Zottele 2012). However, the tool developed by the authors did not explain why similar terraced landscapes with century-old traditions of vine growing evolved differently: some are still flourishing and other - just few kilometers away – are partially or completely abandoned. With their further works, the author developed the theory that a pillar of the resilience of the traditional viticultural landscape is the beneficial role of the co-operative association, potentially of any kind (Delay et al., 2015a). So the authors added another piece of the puzzle in the big picture that called “the existence/resistance of the traditional terraced viticulture”.

With these tools at hand, the authors focus now on another emerging phenomenon: the destruction of the terraced landscape with the remolding of the slopes to promote mechanization. This emergence fits both the pressure of the climate change on the viticulture and the mercantile dynamics (post)globalization: a) the terraced landscapes are becoming more and more attractive because their excursion of altitude can be a way to reach those quality standards that are more and more difficult to attain at lower altitudes (Delay et al. 2015b); and b) the higher management costs must be decreased due to a wine market that asks for the same quality at lower prices.

So, the approach of obliterating the traditional landscape may seem like a winning approach for the individual vine grower, but could not be convenient for all the community of vine growers: it has been proved that the landscape influences the perception of the quality of a wine (Tempesta et al. 2010) and the trivialization of the traditional landscape and its symbols could weaken the power of the terraced landscape as a market promotion tool for the entire wine production region. For the authors, the traditional landscape and its symbols, could be consequently seen as a mean of production unevenly distributed in space and time, a capital shared collectively and whose distribution can be influenced by the choice of both single individuals and of the entire community.

### **The operative definition of the *landscapital***

Being the landscape an emerging pattern of complex socio-economic interaction and morphological opportunities, the authors would use the Agent Based Model tool to study the spatial distribution of the landscapital and its possible evolution under multiple scenarios based on the choices of the vine growers that adapt to climatic pressure, economic dynamics, environmental and landscape protection policies.

Before facing the formalization of the scenarios, that must be analyzed with an olistic approach, we should find an operational definition of the landscape and a credible way to describe its spatial and temporal attributes.

The author now agrees that the landscapital can be simplified as a two-component capital: a) the *intrinsic* component linked to the spatiotemporal distribution of the symbols the landscape is made of, and b) an extrinsic component linked to how the landscape is perceived. The latter component is made in turn of an intrinsic component (how the landscape is perceived by the single vine grower and by the local communities) and an extrinsic one (how the landscape is perceived by the strangers and how this perception is linked to the quality of the products).

An Agent Based Model is suitable to describe such a *complex system* made of multiple interaction between a) the humans and the territory: what a vine growers decides to do with a vineyard has consequences on all the landscape; and b) the humans and other humans: the consequence of the choice of one vine grower on the other vine growers.

With this tool we would like to shed light on the deep consequences for the simplistic adagiobased on the evidence that the landscape is changing in just one direction and for a more profitable viticulture the choice of mechanization must prevail over the conservation of the terraced landscape.

The authors believe that, with an operational definition at hand, we could use scenarios based on the Agent Based Modeling to predict how the individual choices could influence the aggregation, dis-aggregation and concentration of such capital and use the result as: a) a guide for the communities to understand the value of the landscape as a mean of production and b) to help the decision makers in setting sustainable medium-long term policies for the development of high-identity wine production zones.

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