

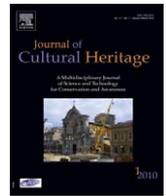


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Original article

The FarmBuiLD model (farm building landscape design): First definition of parametric tools

Patrizia Tassinari^{1,*}, Daniele Torreggiani², Stefano Benni², Enrica Dall'Ara³, Giovanni Pollicino³

Department of Agricultural Economics and Engineering, Spatial engineering division, University of Bologna, Viale G.-Fanin 48, 40127 Bologna, Italy

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ABSTRACT

The paper presents a set of synthetic architectural parameters dealing with the morphological aspects of rural buildings. The definition of these parameters represents a fundamental step of the FarmBuiLD research model (farm building landscape design), proposed by the authors as a tool for the analysis of the architectural characteristics of both historical and contemporary rural buildings, as well as the meta-design of new construction and transformation of contemporary rural buildings. The FarmBuiLD's module of physiognomical characterization of rural buildings allows to define the analytical-design parameters through the following phases: a critical analysis of the international scientific literature, a preliminary identification of the essential physiognomical characteristics of rural buildings, and an in-depth study of validation and calibration focusing on specific study cases. This work presents the preliminary definition of the parameters and a discussion about their experimental application through illustrative examples. Given their numeric value and strictly instrumental, thematic and complementary nature, the proposed parameters do not have any geometric, formal or stylistic characterization, and thus can be considered as capable of leaving an appropriate level of freedom within the design of solutions aimed at meeting both contemporary and future functional and aesthetic needs.

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1. Introduction and research aims

This research is based on the recognition of the landscape values of the rural space and stems from the need for their protection and renewed and innovative planning of the countryside, issues whose great relevance is also stated in the most recent land-use management and planning policies [1–8].

The paper focuses on the presentation and experimental application of a set of synthetic architectural parameters developed to deal with the morphological aspects of rural buildings through a quantitative approach. These parameters represent crucial tools within the FarmBuiLD research model (farm building landscape design), proposed by the authors [9] as a comprehensive method for the analysis of the architectural characteristics of both historical and recent rural buildings, and for the *meta-design* of new construction and transformation of contemporary farm buildings.

The FarmBuiLD model has been based on the theoretical principle that historic rural buildings are expressions of an accumulation of empirical knowledge broadly associated with high architectural quality [10–16], thus having remarkable potential to contribute useful elements to the design of contemporary farm buildings [17–23].

Within this theoretical and methodological approach, the parameters are considered as interpretive-analytical tools, part of a broader knowledge framework aimed at supporting, stimulating and suggesting the design choices.

2. State of the art

It is well-known that the design themes of the architectural quality and landscape compatibility of farm buildings have been studied through several approaches within different research fields and contexts. However, their interpretation allows them to be identified with “schools” sharing a common “way of thinking” or cultural affinities.

Within this variety of approaches, a preliminary definition and schematization of the main features which connote both architecture and landscape from a morphologic and perceptive point of view is a broadly shared need at the international level. This need is also shared by the authors of these works, who consider the

* Corresponding author. Tel.: +39 051 20 96170; fax: +39 051 20 96171.

E-mail address: patrizia.tassinari@unibo.it (P. Tassinari).

¹ Patrizia Tassinari supervised the study and revised the text.

² Daniele Torreggiani and Stefano Benni jointly set up the methodology and carried out all the research phases and analyses and wrote the text.

³ Enrica Dall'Ara carried out the physiognomical analysis of the architectural features, and Giovanni Pollicino carried out part of the metric surveys based on the methodology defined by Torreggiani and Benni.

identification of physiognomical characteristics of historic buildings an essential phase within their FarmBuiLD model [9].

In the last decades, several international authors have focused on the study of landscape visual perception [24–26]. They have transferred the theories and results of the *Gestalt* psychology from a single object to a “complex scene”, from art and architecture [27,28] to landscape. Some authors made specific reference to the visual impact of transformations and developed design criteria to make new constructions appropriately blend into the landscape through their architectural composition and/or proper insertion in the development site. They based these criteria on the analysis of key *visual elements* of landscape and its components: *colour, texture, form, strength lines*, and others related to compositional issues, such as *scale* and *spatial character* [29,30].

Among the main aspects many authors mentioned proper *siting*, with reference both to natural landform and organization of the farmyard, together with *shape and form, volume distribution, material, colour, and texture* at the building scale [30–37]. In some cases, the research is supported to various extents by analyses aimed at assessing the social perception of the formal aspects of rural buildings in relation to landscape [31,32,38–40].

Several authors [21,34,41–47] have studied the relations between function and spatial articulation of farmsteads and single buildings, with the aim of identifying the historic rural building typologies. Nevertheless, they argued that *material, colour* and other aspects related to *form* always play a central role [48–54].

The results of the analysis of the state of art here summarized allowed us to express the above-mentioned identification of a possible frame of the essential physiognomical characteristics of rural buildings [9] through a set of quantitative and qualitative variables, capable – if considered jointly – of supporting a comprehensive architectural analysis.

Among these physiognomical characteristics, this work focuses on the main aspects related to *form*, which proved of general and priority importance within the overall balance of the architectural evaluations [27].

The first feature considered was the *compactness/articulation of the volume*, depending both on the number of building bodies which make up the architectonic organism and are distinguishable from the outside, and the way they are combined.

Moreover, also the *horizontality/verticality* feature proved of primary importance in defining the general volume composition: this feature, to be assessed mainly with reference to the prevailing planimetric dimension of the building, is perceived depending not only on the size attributes of the building, but also on compositional aspects (shape and distribution of openings in outside walls, finishing elements, and so on).

Other aspects that contribute to define the volume composition are both the quantitative ratio and formal composition of *enclosed and open portions of the volume*. They can make the building appear compact, solid and closed, or vice versa transparent, “light”, open, almost poised in the air within the surrounding landscape, or rather as an articulated association of these characteristics.

Another essential physiognomical feature of *form* is the *figure-ground* ratio, affected by the *openness/closure of perimeter surfaces*. This aspect is useful not only for the architectural characterization of a single building, but also for a broader research aimed at analysing its surrounding landscape, by interpreting the relations between buildings and their “backgrounds” within the landscape scene.

3. Materials and methods

The FarmBuiLD research model considers several interconnected analytic and interpretative phases, organized into groups representing the main modules of the model (Fig. 1).

The modules of *physiognomical characterization* (P) and *functional characterization* (F) of rural buildings aim at providing the in-depth analyses focusing on a *case study* (CS) with fundamental analysis tools; moreover, they directly contribute to the goal of the study by means of their general value. The *physiognomical characterization* (P) module allows to formulate the *analytical-design parameters* based on the definition of the above-mentioned essential *physiognomical characteristics* and further validation and calibration carried out on specific study cases. This paper presents a first experimental application of the proposed parameters through illustrative examples, since the full discussion of the study cases will be the subject of future works. The *functional characterization* (F) module analyzes the contemporary functional needs of farm buildings, based on a review of the technical and scientific literature in the field.

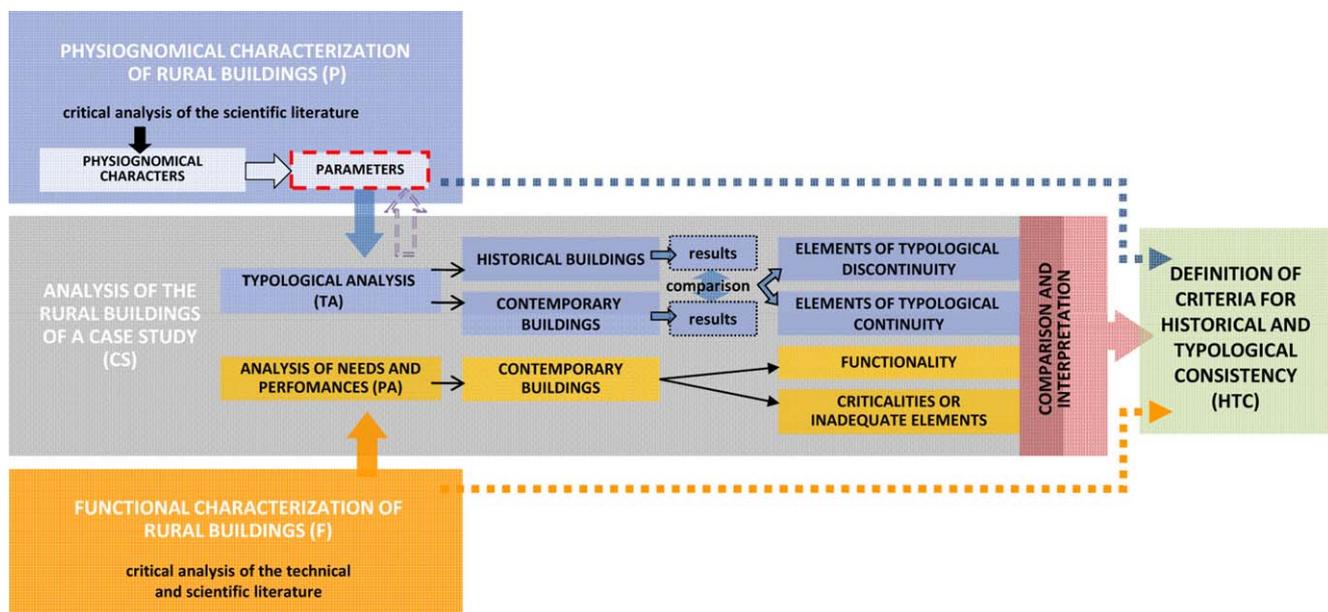


Fig. 1. The structure of the analytical and meta-design research model proposed by the authors [9]. The “parameters” are discussed in this work.

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