

# Traditional colours and coatings in the colonial cities of Minas Gerais: case study in Tiradentes

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## Abstract

Currently, heritage safeguard actions are recognized as an important part of global sustainability agendas. Among the topics that have acquired relevance, is the study of colours and historical coatings, research field with important references in Portugal. In addition to the concern with the historical heritage in Portuguese territory, Portuguese institutions demonstrate the concern with the heritage that is the result of the diffusion (and miscegenation) of Portuguese culture around the world. Among the most important of these heritages are the colonial villages of Minas Gerais, Brazil: their landscapes, which find risks of de-characterization, demonstrate the clear reference to the Portuguese constructive way and its adaptation to the "new" context. Therefore, the purpose of the Thesis is to investigate the constructive techniques of these cities, with emphasis on the study of colours and coating materials. The literature review conducted so far has shown: (i) the importance of these elements to the visual identity of the historical centres of Minas Gerais and to their heritage value, (ii) the scarcity of information on the traditional Brazilian colours and coatings and the neglect of important matters. In the next stage of the investigation, the city of Tiradentes will be used as a case study. At the end of the work, it is intended to contribute to the knowledge of this heritage and provide recommendations for its conservation.

**Keywords:** Colours and coatings; Colonial architecture; Minas Gerais heritage.

## 1. Introduction

Currently, heritage safeguard actions are recognized as an important part of global sustainability agendas, at a time when new approaches and specialized subjects are emerging in academic and scientific studies. Among the topics that have acquired relevance in last decades, is the study of colours and historical coatings.

In previous studies, it was found that among European countries, Portugal is in an important position between productions in this field of research. Since the decade of 1980, characterization studies of historical surfaces are carried out at National Laboratory of Civil Engineering (LNEC). In chromatic studies, are important the

investigations developed by Aguiar (1999), Casal (2009), Providência (2014), among others. Simultaneously, relevant works contemplate the principles of colour perception and colour interaction with space and architecture, such as the investigations carried out by the authors Loução (1992), Silva (1999), Durão (2000) e Pernão (2012).

In addition to the concern with the historical heritage in Portuguese territory, Portuguese institutions demonstrate the concern with the heritage that is the result of the diffusion (and miscegenation) of Portuguese culture in different regions of the world.

In 2006 and 2010, institutions such as Icomos Portugal and University of Coimbra promoted two important international meetings designated World Heritage Portuguese Origin

(WHPO), in which were founded the principles of networked oriented to the conservation of Portuguese-influenced heritage in the world.

Also, Calouste Gulbenkian Foundation since 1958 dedicates attention to these historical testimonies, and in 2007 began a project of systematization of these heritages, which is currently ongoing through the online portal Heritage of Portuguese Influence (HPIP).

Among the most important of these heritages are the colonial villages of Minas Gerais, which emerged in the early eighteenth century, after the discovery of gold in Brazil. They are whole landscapes that demonstrate the clear reference to the Portuguese constructive way and its adaptation to the "new" environmental, social and economic context.

Despite their importance, the colonial cities of Minas Gerais face constant risks of de-characterization, among others, arising from intense tourist exploitation.

Therefore, the purpose of the Thesis is to investigate the constructive techniques of these cities, with emphasis on the study of colours and coating materials.

At the end of the work, it is intended to contribute to the knowledge of this heritage and provide recommendations for its conservation. Finally, it is believed that the results will positively impact the context of global heritage culture, since knowledge and its transmission are instruments for preservation.

## 2. Methodology

The methodology of this research was built through a literature review on the previously performed chromatic studies. The scientific studies at the doctoral level were prioritized and the methods with the greatest contribution to the purpose of this investigation were selected.

Therefore, based on the authors Aguiar (1999), Lenclos & Lenclos (1999), Naoumova (2009), Casal (2009), Teles (2010), Pernão (2012) and Providência (2014), the phases of

the investigation and the tasks to be performed were planned, as described below:

**The first phase** consists of historical research on the colonial cities of Minas Gerais, through bibliographic, documentary and iconographic research on scientific platforms, historical archives and libraries in Portugal and Brazil. The purpose of this phase is to describe the built environment of the villages in the eighteenth century, their occupation process, building techniques and construction materials. In sequence, the research will focus on the colours and coatings. In addition to the eighteenth century, it is important to know the use of these elements along the next centuries, until current times, and how the National Institute of National Historical and Artistic Heritage (IPHAN Brazil) influenced the aesthetic treatment of historical centres of Minas Gerais, after they were classified.

Among the main objects of study are the architectural sites classified by IPHAN: São João Del-Rei, Mariana, Serro, Tiradentes, Paracatu and Sabará, besides Ouro Preto, Congonhas and Diamantina, which have heritage also classified by Organization of the United Nations for Education, Science and Culture (UNESCO).

**The second phase** consists on the accomplishment of the case study at the historical centre of Tiradentes. The choice for Tiradentes is justified by its historical importance, the quality of its architectural collection and the coherence of its urban and landscape set. According to Tirapeli (2006) Tiradentes is among the most harmonious colonial urban centres in Brazil, and as states Maia et. al. (1978), Tiradentes stands out much more by its urban set than by isolated monuments (the opposite to what occurs in most of the cities of Minas Gerais).

The historical centre that integrates the city of Tiradentes is the area of interest for this research, since it presents the traditional urban layout and concentrates the oldest buildings, with about 150 constructions.

The main purpose of this phase is to establish the chromatic identity of Tiradentes in two distinct moments: The past (tasks A) and the present (Tasks B), as described below.

**Task A1** identifies pigments, colours, materials and coating techniques used in the construction of the historical centre of Tiradentes, from: (i) data collected in the first phase, (ii) survey of local materials and technologies, seeking to restore the constructive practices, with direct observation, exploratory interviews with specialists from different scientific areas related to heritage conservation (craftsmen, historians, engineers, researchers and others) and consultation on the IPHAN office inventories, in Tiradentes.

**Task A2** consists of screening and selecting buildings where significant material information remains (trace elements of old coating and finishing materials). With authorization from the owner, information about the materials and colours of the successive layers found in their coatings are obtained, through the opening of in-depth windows with the aid of a scalpel. Colour measurements will be carried out with the help of a colorimeter (NCS Colourpin II model) and previously developed data sheet.

The Natural Colour System (NCS) is one of the most widely used colour classification systems in the practice of colour description and it is close to being an International standard. According to Aguiar (1999), it is the official colour standard in some European countries.

**Task B1** determines the study of the current chromatic image of Tiradentes' architecture, through the survey of the local colour palette. To identify the colour palette of a site, the authors Jean-Philippe Lenclos and Dominique Lenclos (1999) use their own concepts of "general palette" and "selective palette": the first refers to most of the visible urban space (roofs, walls and floors) and the second refers to the details that complement and influence the general palette (doors, frames, windows, etc.). Based on this logic, the following elements will be considered: (i) roofs, (ii) floors, (iii) wall facades and details. Colour measurements will be performed with the aid of a colorimeter (NCS Colourpin II model), and, in the case of facades, previously developed data sheet will be used.

**Task B2** consists of screening and selecting buildings with significant information on contemporary coatings and colours in internal spaces. For this task, also with authorization of the owner, it is obtained access to the building for photographic records.

The tasks A2 and B1 will be previously experienced in Portuguese sites for the correction of possible failures, before the field investigation to be carried out in Brazil.

The third phase consists in the study of the chromatic typologies of different periods. As Providência (2014) recommends, according to the architectural typology of Tiradentes, a facade diagram will be developed, to analyse the different combinations that can be performed between the distinct architectural elements, based on the surveys of tasks A2 and B1. The analyses will be complemented using the methodology of Naoumova (2009), with the three criteria described below:

1- The colour palette. Includes analyses on: (i) range of colours (predominant hues); (ii) proportion of light and dark, saturated and neutral, chromatic and achromatic colours; (iii) frequent combinations of colours and types of contrasts between them.

2- Shape (morphology of the facades). Includes analyses on: (i) Identification of the significant morphological elements that received different colours; (ii) arrangements of these elements in groups, according to their position on the facade's surface and according to their function, such as walls (larger facade area) and details (salient elements of shape marking).

3- Interconnection between colour and shape. Includes analyses on: (i) comparison between background colour and details colours; (ii) evaluation of the relation between the colour and the limits of the shapes (whether or not the coloration matches the contours of the formal elements); (iii) proportion of the coloured areas in relation to the elements; (iv) visual effects provided in the facades; (v) existence of textures; and (vi) use of apparent materials.

**The fourth phase** of the research confronts all

the data obtained in the previous phases, in order to develop recommendations for the preservation of historical centres of Minas Gerais and to report the conclusions of the thesis.

### 3. Phase 1: current results

The research activities carried out so far (phase 1) have made it possible to gather the main authors and bibliographical references in the subject of the colonial constructive techniques of Minas Gerais.

However, it was possible to notice the lack of publications on traditional Brazilian coatings. Among the scarce references available, are highlighted the authors Santiago (2007) and Kanan (2008), and on chromatic studies in historical centres, the author Naoumova (2009). The same happens for the publications on the constructive techniques in colonial Brazilian architecture. The main references in the subject, such as Menezes (1964), Reis Filho (1970), Omegna (1971), Vasconcellos (1979 e 1977), Rodrigues (1979), Lemos (1989), Costa (2002), Tirapeli (2006), Bury (2006), Mendes et. al. (2007), Araújo (2010) and Castriota (2012), although important, offer insufficiently detailed information.

On the other hand, the literature review made it possible to organize the available information about the colours and coatings that had not yet been compiled or systematized, providing the understanding of the importance of materials, colours and coatings in the aesthetic composition of colonial architecture. Among the conclusions, it is stated that, in fact, these are the main elements of the visual identity of the cultural heritage of Minas Gerais. However, it is emphasized that this identity results not from the isolated building, but from the architectural set coherence and the final composition of constructions in the landscape.

It is also important to mention that there is clearly in the literature the common sense that in traditional Brazilian colonial architecture, in general, the coated walls are

whitewashed, influencing the neglect of important facts, such as the use of Tabatinga as a constructive technique (and its "yellowish" colour); the existence of distinct "chromatic moments" in colonial architecture (as demonstrated through old pictures of Tiradentes); and the actions of IPHAN in the treatment of coatings and colours, which induce the assumption of the prioritization of aesthetic and stylistic values.

### 4. Conclusions

The research activities developed have shown the relevance of the study subject and the efficiency of the planned methodology, motivating the investigation of the issues mentioned in this work, through the continuity with the next phases, in order to establish invariables in traditional colours and coatings that could help ruling the renovation and preservation of the historical centres of Minas Gerais.

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