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INDUSTRIAL LANDSCAPE:

A resilient palimpsest
of memory

The case of Lordelo do Ouro Woollen Mills,
Porto, Portugal (1803-2021)



ABSTRACT / RÉSUMÉ

This article discusses the concept of industrial landscape and its geographical and heritage implications, that is, the integration of different and distinctive elements which, combined, are part of the industrialization process of production and cultural transformation. The approach to this concept is an interpretative exercise that covers different contributions of knowledge and aggregates several scientific and social sensibilities. It is an interdisciplinary task open to different methodologies, which combine archive documents, field surveys, and registration of material remains, with GIS technology and georeferencing to visually understand and organize the concept of landscape.

Ce travail aborde le concept de paysage industriel et ses implications géographiques et patrimoniales, c'est-à-dire l'intégration d'éléments différents et distinctifs qui, combinés, font partie du processus d'industrialisation de la production et de la transformation culturelles. L'approche de ce concept est un exercice d'interprétation qui couvre différents apports de connaissances et agrège plusieurs sensibilités scientifiques et sociales. Il s'agit d'une approche interdisciplinaire ouverte à différentes méthodologies qui combinent les documents d'archives, les enquêtes de terrain et l'enregistrement des vestiges matériels, avec la technologie SIG et le géoréférencement pour comprendre et organiser visuellement le concept de paysage.

Lordelo was a parish in Porto, Northern Portugal. Until the mid-twentieth century, it was mainly a rural territory on the outskirts of the city. In 2013 it was integrated into a larger unit named Union of Massarelos-Lordelo.¹ In the nineteenth and twentieth centuries, Lordelo became an important industrial hinterland of Porto. The geographical position of the settlement, near other Northern coastal cities and with access to the Douro River and the Atlantic, gave Lordelo a strategic location in the industrialization process of Porto.

The fast industrial growth of Lordelo, especially until the first half of the twentieth century, was particularly sparse and spontaneous, without central planning or coordination.² Different industrial sectors, such as chemical industry, metallurgy and foundry, textiles, energy and food processing, emerged in different points of the parish and developed in an almost organic way, designing a peculiar landscape that merged the traditional rural characteristics with the new industrial ones.

However, the first woollen mill established in Lordelo can be tracked down to the mid-eighteenth century.³ This mill was followed by another one, built in the early nineteenth century. Both are an example of how a manufactory infrastructure, dated from the Portuguese very early industrialization, can be assumed as a radiated central point of a larger context. At the same time, the industrialization of the area brought new demographic challenges to Lordelo. In this sense, there was a population growth and concentration parallel to the industrial expansion, which demanded new housing solutions. Those solutions, presented at first as philanthropic initiatives, evolved during the twentieth century into more structured social housing programs financed by Porto's municipality.⁴

The deindustrialization process, intensified in the last thirty years, generated new challenges and questions in Lordelo. Among the ruination and loss of industrial infrastructures, there is also a fragmentation of the social landscape of Lordelo⁵ along with an overlap of cultures and landscapes: the original semi-rural way of life was confronted with suburban social unrest, specifically concentrated in the large apartment blocks from the 1960s and 1970s, deeply affected by unemployment. In the meantime, another social layer appeared in the context: the gentrification process. The construction of luxury private apartments brought to Lordelo a new social class, adding another element to the complexity of Lordelo's landscape.

The main objective of this study is to define the physical and non-physical elements that can integrate the concept of Lordelo's industrialization and landscape, registering the different layers of use and reuse of the same places over the past two centuries; in other words, define a contribution to read the significance of all these palimpsests in the understanding of the idiosyncrasies, the continuities, and the ruptures in Lordelo's landscape and identity.

1. See: *Lei nº 11-A/2013 de 28 de Janeiro*, 2013.

2. For all purposes, the concept of the industrial outskirts as "chaotic and disorganized" is being refuted as a middle-class prejudice perception of the working class. Belford, Paul, 2004, "Urban industrial landscapes: Problems of perception and protection," in David Barker and David Cranstone (eds.), *The archaeology of industrialization*, Leeds, Maney Publishing, p. 165-179.

3. *Registo das cartas que a Junta do Commercio destes Reinos, e seus Dominios, fez escrever pelo seu secretario aos executores, e administradores das diferentes fabricas, espalhadas pelo Reino* [Record of the letters that the Board of Trade of these Kingdoms and their Domains had its secretary write to the executors and administrators of the different factories throughout the Kingdom], 1771, Arquivo Nacional Torre do Tombo (ANTT).

4. Gonçalves, Eliseu, 2018, "A República e a questão social da habitação no rescaldo da guerra (1918-1933)" [The Republic and the social housing issue after WW1], in Ricardo Costa Agarez (ed.), *Habitação, cem anos de políticas públicas em Portugal, 1918-2018* [Social housing, 100 years of public policies in Portugal], Lisboa, INCM, p. 41-82.

5. Fernandes, José Alberto V. Rio, 1998, "Desindustrialização, terciarização e reestruturação territorial: o caso do Porto" [Deindustrialization, tertiarization, and territorial restructuring, the case study of Porto], *A indústria portuense em perspectiva histórica: Actas do Colóquio* [Porto's industry in a historical perspective: Congress proceedings], Porto, 1997, Centro Leonardo Coimbra – Faculdade de Letras da Universidade do Porto / Leonardo Coimbra's Centre – Faculty of Arts and Humanities, University of Porto (CLC-FLUP), p. 445-457.



The starting point of this exercise is exactly the starting point of Lordelo's industrialization: the former woollen mills, seen here as a model of the establishment, evolution, deindustrialization, ruination, and current oblivion of Lordelo's industrial culture.

METHODOLOGY

From the point of view of history's methodology, gathering several written sources was an important part of the process, mainly to define a more precise chronological sequence around the foundation and activity periods of the mills.

Still, regarding the historical sources, the mills' complex in Lordelo was an important strategic crossing point in two specific war backgrounds: the Peninsular War, particularly in 1809, and the 1832-1834 Civil War in Portugal. Those events negatively affected the mills' structures. Several soldiers and officers were barricaded there, and some of them wrote and published their journals, war memories, and maps, which are now precious information sources to understand the spatial organization of the area.

From a material perspective, the analyses of the structures have to deal with the fact of this area being very dynamic from an urban point of view and being under property-development pressure. From the archaeological point of view, these transformations were not entirely negative—something can always be learned from the demolitions.

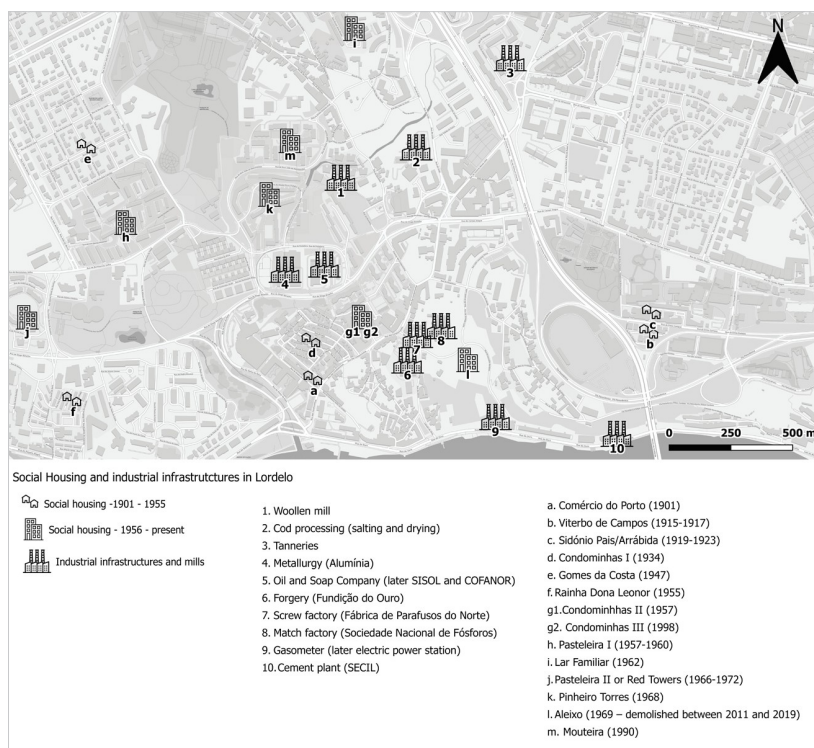
Firstly, when the remaining woollen mill was dismantled, in 2007, the city's archaeologists were called and a brief excavation of the site was completed, and the results were published in a report.⁶ This allowed recording the dismantling of the structures and verifying the different layers of construction. Secondly, a new architectonic project for the area was designed to integrate parts of the mill structures, and it also uncovered other features of the area, namely the Lordelo Brook, a small watercourse that was buried under the early twentieth-century buildings.

As concerns the geographic methodology used in this study, the essential method was the application of a digital historic georeferencing process. Or, better said: link(ing) spatial information contained in an unstructured document to spatial entities from a structured database.⁷ A gathering of spatial documents and sources was conducted, to link the unstructured spatial information in a comprehensive synthesis, in this case, mostly presented as photographs, maps, and other images, namely from the Porto's City Archives (Arquivo Histórico Municipal do Porto – AHMP) and the Portuguese Photographic Archives (Centro Português de Fotografia – CPF).

The result of this synthesis is a base map with the distribution of the different industrial sectors in Lordelo, as well as the social housing. This map and its key are used with the text, to contextualize the other sources, such as photographs, plans, and/or image overlay of historic geo-representation over the current terrain. That allows for a clear perception of where exactly some of the geographic and lost human-made structures were located in the historic representations. Those georeferenced maps can be used to understand the original locations of the archaeological remains, including the industrial structures.

6. Argüello Menéndez, José Jorge, and Sara Alexandra Mendes Peixoto, 2007, *Relatório preliminar dos trabalhos arqueológicos na fábrica de lanifícios de Serralves* [Preliminary report on archaeological work at the Serralves woollen mill], Porto, Câmara Municipal do Porto / Porto's Municipality (CMP).

7. Budig, Benedikt, 2018, *Extracting spatial information from historical maps. Algorithms and interaction*, Würzburg, Würzburg University Press, p. 4.



Keymap with social housing and industrial infrastructures in Lordelo – 1800-2021. Design: ©Mário Bruno Pastor

Overall, the methodological approach to our case study intends to be a micromodel for the application of different scientific and technological sensibilities to the same subject, even if the subject itself can be considered very diverse and, in many ways, still in transformation. These cross references between archaeology and the disciplines that directly deal with the present were clearly expressed as archaeology of the present,⁸ and it is in that direction, following the over-materiality of Lordelo's constructions, that the landscape began to emerge.

DEVELOPMENT – HISTORICAL BACKGROUND

The rural environments and landscape of Lordelo were fundamental for the installation of the first mills. In the eighteenth century, a city law banned the development inside Porto's urban area of any activity that could pollute water courses and springs.⁹ This forced some of the first entrepreneurs to move to the outskirts to install their units. That was the case with Francisco Xavier Arantes and with the Domingos and Pedro Martins Gonçalves brothers, the men that built a woollen mill near the banks of Lordelo Brooke. The geographic situation was a determining factor to the industrial activities, not

8. Olivier, Laurent, 2013, "The business of archaeology is the present," in Alfredo González-Ruibal (ed.), *Reclaiming archaeology: Beyond the tropes of modernity*, London and New York, Routledge, p. 117-129.

9. Oliveira, Joaquim Morais, 1998, "A Fábrica de Lanifícios de Lordelo" [The woollen mill of Lordelo], *A indústria portuense em perspectiva histórica: Actas do Colóquio* [Porto's industry in a historical perspective: Congress proceedings], Porto, CLC-FLUP, 1997, p. 81-94.



only for its proximity to the Douro (the major commercial route of Porto), but also because the first industrial developments in the region were based on waterpower, and Lordelo Brooke was the main source of power.

Arantes and Martins's mill was the first industrial structure in Lordelo. It was already in operation in 1771.¹⁰ The last record of the mill dates from 1813. In that year, it was described as working in poor conditions and decaying.¹¹ The mill employed 33 workers, which made it the fourth largest mill in Porto at the time.¹²

There are no geographic or cartographic references for this mill. However, its location can be inferred using different sources and crossing distinct references, including historical cartography and historical records of land and property transmission.¹³

The second industrial unit implanted in Lordelo was also a woollen mill, the Fábrica do Plácido (built between 1803-1805 by Plácido Lino).¹⁴ This unit is considered the main (and, for the last 200 years, the only one) woollen mill in Lordelo (refer to legend 1 on chart). Its location is well known and part of its infrastructures remains today. It was the first mill in Portugal with complete mechanical woollen machinery, which included spinning and carding.¹⁵

Another significant aspect of this mill is yet to be fully scrutinized. From the beginning, Lino did not just buy new machinery, he also invested in highly trained professionals. He hired a carding and spinning machine engineer, registered in 1813 as an American citizen.¹⁶ His name was Jonathan Mallallow, which was a well-known family name (sometimes spelled Mallalieu) associated with the wool industry in Manchester and in the Pennines.¹⁷

The development of this mill is better understood by cross-analyzing visual sources and written documents. The meaning of the numbers appearing on the figures is as follows:

- 1 – Original mill area,
- 2 – 1908 pavilions,
- 3 – 1918-1921 structures,
- 4 – Water tank (built over an 1833 fortification).

10. *Registo das cartas que a Junta do Commercio destes Reinos, op. cit.*

11. *Mapa das Fabricas da Comarca do Porto* [Chart of the mills in Porto's district], fs. 18-22, ANTT.

12. Cordeiro, José Manuel Lopes, 2002, "Fontes para a história da indústria portuense, I: o mapa das fábricas de 1813" [Sources for the history of Porto's industry. I: The chart of the mills from 1813], *Cadernos do Noroeste*, vol. 19, nos. 1-2, p. 201-242.

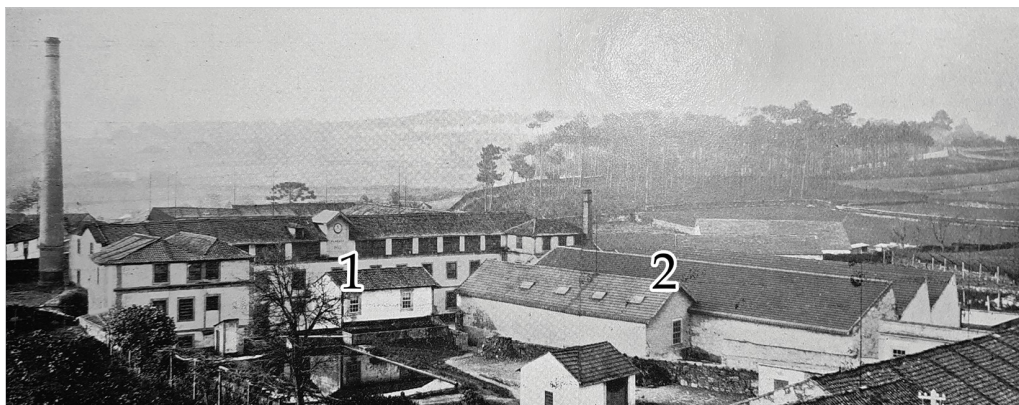
13. There are no previous studies dedicated to the Domingos, Martins & Cia. woollen mill. Only a few references directly quoted from a 1781 Royal Permit, and the *Relaçam* [Report] of 1788 and the *Mapa das Fabricas* [Chart of the mills] of 1813, both early industrial inquiries of the *Junta do Commercio*.

14. *Livro do registo das determinações mandadas fazer pela Junta das Obras Públicas desta cidade do Porto* [Register of orders issued by the Public Works Board of the City of Porto] 1794-1834, Arquivo Histórico Municipal do Porto (AHMP).

15. "Breve bosquejo da antiguidade dos lanifícios em Portugal, seu progresso, decadência, ou as causas e dedução das providências que precisam" [A brief overview of the history of woollen products in Portugal, their progress, decadence, or the causes and the application of the necessary measures], April 21, 1821, Arquivo Histórico Parlamentar (AHP).

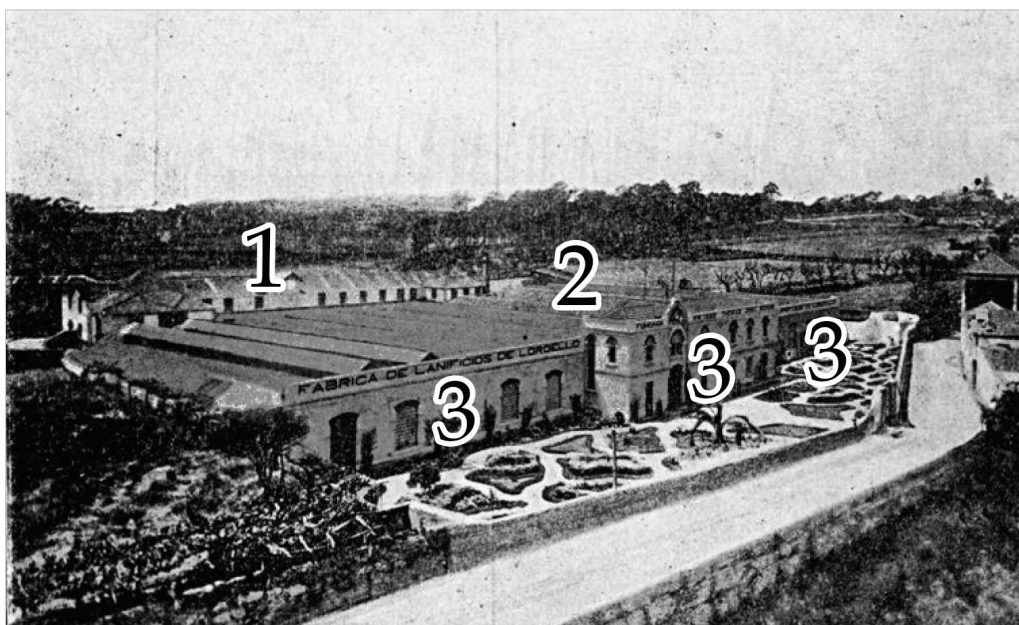
16. Although registered as *American*, he could be an Englishman. At that period, British technicians (and machinery) were forbidden to leave the UK, and forging a fake citizenship was not uncommon. Jeremy, David J., 1977, "Damming the flood, British government efforts to check the outflow of technicians and machinery, 1780-1843," *The Business History Review*, vol. 51, no. 1, p. 1-34.

17. Nevell, Michael, 2008, "The archaeology of industrialisation and the textile industry: The example of Manchester and the South-Western Pennine Uplands during the 18th century (Part 2)," *Industrial Archaeology Review*, vol. 30, no. 1, p. 34-48.



Lordelo's woollen mill, 1913. Source: *Comercio do Porto Ilustrado*

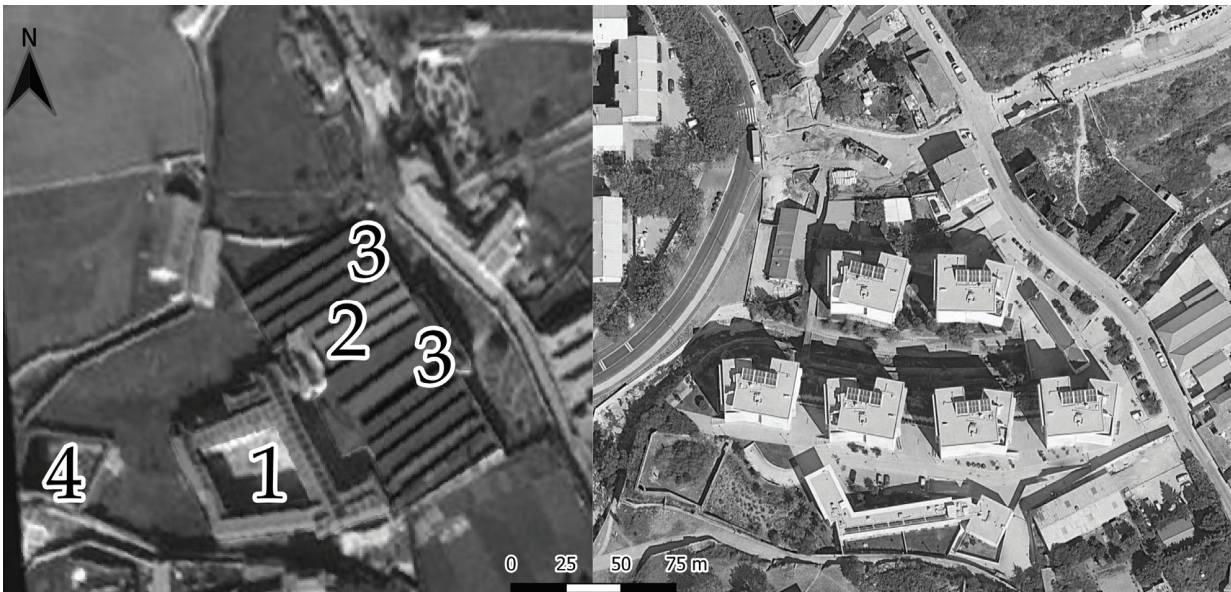
The original (1) complex at the back was always considered part of the original Plácido's mill. However, when closely analyzing the cartographic references of Lordelo, especially the maps produced in the context of the Portuguese Civil War of 1832-1834, the mills' location can be seen as well as the references to F(abrica) do Plácido and Fabrica do Fontana. Despite some cartographic errors, one can understand the maps' features and indications.¹⁸ Consequently, the Fabrica do Fontana located immediately behind the fortified house is very likely to be the former Arantes and Martins' mill.¹⁹ Plácido's original mill is identified in front of São Francisco de Paula convent, near the road, where the 1908 and 1918-1921 pavilions were located (2 and 3) and the 1918 façade (3) remains today.



Lordelo's woollen mill after the 1918-1921 remodelling. Source: Arquivo Histórico Municipal do Porto

18. Historic cartography is not an accurate science. Errors, especially in large-and medium-scale maps, can compromise an exact location of the represented features. In this sense, in digital georeference and map analysis, it is very important to understand the geographic semantics of the location. See: Budig, *Extracting spatial information from historical maps*, *op. cit.*, p. 11-14.

19. Gaudêncio Fontana was the heir of Xavier Arantes (the other partners, the Martins brothers, did not had any living male heir when they died). See: *Dona Rosa Arantes will*, June 20, 1812, AHMP.



Mouteira area, at Lordelo, with the woollen mill georeferenced. Sources: left, 1939 SPLAL flight orthophotograph, Arquivo Histórico Municipal do Porto; right, the same location in 2021, photo ©Mário Bruno Pastor

It is possible that the two woollen mills in the Mouteira area were merged at some point after the war, and reappeared as a single unit in the 1850s.²⁰

This constricted area of North Lordelo was the first layer of an industrial landscape about to be formed.

LANDSCAPE

Traditionally, the definition of landscape and its elements were normally divided into two comprehensive groups: natural landscape and human-made landscape. The contents of the landscape are the result of the organic relationship between those groups. As suggested by Carl Ortwin Sauer, it is from the selection of those contents, its features, that the character of the landscape emerges, and then can be placed in a system.²¹

In this sense, the landscape is a constructed concept, articulated with the definition of patrimony (rather than heritage), distinct from the study of history and memory, although those two components, following the basis of this article, can and should be the starting points to the conceptualization of Lordelo's landscape.²² Thereby, the contents of an industrial landscape are mainly the items that can be correlated with the industrialization process: mills, warehouses, transportation facilities and structures, and social housing.

20. *Contracto Social da Comp.ª da Fabrica de Lanifícios de Lordello* [Social contract of Lordello's Wollen Company], October 3, 1853, Arquivo Distrital do Porto (ADP).

21. Sauer, Carl Ortwin, 1996, "The morphology of landscape," in John Agnew, David N. Livingstone, and Alisdair Rogers (eds.), *Human geography: An essential anthology*, Oxford and Massachusetts, Blackwell Publishers Inc., p. 296-315.

22. Morisset, Lucie K., 2010, "Patrimony, the concept, the object, the memory, and the palimpsest: A view from the history of architecture," *Journal of the Society for the Study of Architecture in Canada*, vol. 35, no. 2, p. 53-62. The notion of heritage, in an English language perspective, is more attached to a material and static point of view; on the other hand, patrimony, both in French and Portuguese "patrimoine" and "património," is a more dynamic concept, it is an intellectual construction and creation of criteria about the heritage per se.

Since the early twentieth century, Lordelo had the most intensive programs and experiences for social housing. This cluster of public housing is evidence of different concepts of social habitation during the last century. From the simple cottage family-type houses, like Bairro do Comercio do Porto, Viterbo de Campos, and Sidónio Pais (see a, b and c on photos and chart), to the large and depersonalized vertical apartment blocks, like the Pasteleiras and Aleixo (see h, i, and j), social housing in Lordelo is another key element to understand the landscape and the social patterns of the region. The comparison of present and early-1970s aerial photographs allows a bird's eye perspective of the intensity of changes in the same areas.



Northwestern view of Lordelo. Sources: Centro Português de Fotografia, 1970, and ©Google Earth, 2021

DISCUSSION AND CONCLUSIONS

The imagery of Lordelo shows an intensive urban (re)organization and deindustrialization. In the 1970s, all the industries indicated were in business, except for the 1856 gasometer (no. 9 on illustration). However, in 1996 only Alumínia (no. 4) and COFANOR/SISOL (no. 5) were in production. The vast majority of those industries were not in operation anymore, most of them having filed for bankruptcy, and a few having moved to other locations.²³ Alumínia and COFANOR/SISOL were demolished between 2019 and 2021, although they had been inactive and in ruins since the early 2010s. Most of the buildings of these industries were lost in the last twenty years, and survived just as mere stripped fragments of an overwhelming memory. Only the woollen mill kept part of its 1918 façade and, notably, the Soap Company's chimney.

The constructive motion over the previous layers of occupation generates a sense of oblivion and uprooting, which is being overlapped by new upper-class housing and services, promoting a gentrification process that does not handle well with the different worlds of Lordelo.

These tensions drift partly from the loss of memory of the remaining materiality of the industrial landscape of Lordelo. Understanding that lost materiality, or rescuing the intangibility from obsolescence, can rearrange a new form of attachment and shared identity over the conflicts in Lordelo.

23. Fernandes, "Desindustrialização, terciarização e reestruturação territorial," *op. cit.*, p. 446-449.

