

6 Lisbon city gardeners, from horticulture to Landscape Architecture (1840–1960)

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Introduction

During the 20th century, the parks' and gardens' multi-disciplinarity and multi-interest theme was a rare educational purpose at the university level, and the problem of garden success in the city and its intricate multi-dimension issues was seldom tackled in scientific literature. Until the late 20th century garden problems in Portugal were studied and ultimately published through separate themes such as botany (e.g., Palhinha, 1935; Meyer, 1959; Meyer et al., 1960; Tavares, 1967) or the history of garden art (e.g., de Araújo, 1962; Carita et al., 1990).

A more complete answer for the causes of their lasting life seems to require a multi-disciplinary analysis. Few works on the subject have tried to portrait the many aspects that simultaneously address the complexity of garden maintenance and restoration associated with botany, horticulture, the evolution of garden design (e.g., Castel-Branco, 1999), the education for gardeners, the artistic issues that compose the gardens' design, the evolution of political will investing in garden-making, and even the stimulus of scientific knowledge for exchanging and acclimatizing plant species in gardens and parks in Lisbon (e.g., Castel-Branco, 2001).

This research aims at understanding the reasons that have made city gardeners' works in Lisbon rise as a priority in political investment and become a social success, then decline to an almost inexistent urban effort, followed by a new period of rising forces allowing for city gardeners' effective production of qualified parks and gardens in Lisbon. We hypothesize that the introductions in Lisbon, both in the 1840s and in the 1940s, of the know-how, instruction, and experience in horticulture, garden maintenance, botany, and garden art are the backbone for the success, stimulus of a new interest in garden-making development, and the creation of the garden heritage we still have in Lisbon. We confirmed that in both ascending periods, the interest grew, along with instruction, vegetation experiments, new businesses revolving around plant production, innovative garden uses, and risk-taking for new design solutions for urban gardens and parks.

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The emerge of ways of teaching a team of followers played a crucial role in the long-lasting success of gardens as living ecosystems, which take decades to achieve maturity. The transmission of this knowledge is essential for garden's success. Additionally, the dissemination of user guides and good practices contributing to the achievements of lasting gardens complete the work.

Twice in the 120 years of our research, gardens became an important issue in the city design. In both periods, a triple endeavour became evident, contributing to the gardens' lasting lives as a gift to the city through centuries: experience/instruction followed by transmission and dissemination. Through the curriculum of the 22 "gardenists" in Lisbon, studied and selected as agents of the garden movement, these three criteria were organized and became evidence of a trend that confirmed our hypothesis.

Methodology

The experience of managing public gardens¹ in an urban setting was the basis of the research method adopted. The Jardim Botânico da Ajuda (3,8 ha) and the Parque Botânico da Tapada da Ajuda (100 ha) are large areas of semi-public access with main scientific and education roles. They both also offer recreational and conservation activities, and for three decades the authors were involved in various experiments within garden/parks management such as heritage restoration, water management, soil improvement, meccanization, plantation plans, gardeners team building, botanical inventory and data base, seed banks, propagation of native species, and new uses for an historical garden. Data was collected that aimed at improving the upkeep of such landscape units in the core of Lisbon. For this purpose all areas of Landscape Architecture teaching, such as soil science, botany, hydraulics, history of garden art, project, sociology, and drawing, were useful and even became indispensable to understand the needs for a sustainable management of park and gardens. Three factors emerged as seminal for the success of parks and garden managers: i) **instruction**, ii) ways of **transmission**, and iii) means of **dissemination**. Subsequently, with this holistic background we approached the information on professionals who had worked from 1840 to 1960 in Lisbon gardens, and we analyzed their contribution to each of three factors identified: experimentation/instruction (botany, horticulture, landscape architecture), ways of transmission (teaching and research), and means for dissemination (publishing magazines, journals, books, and inventories).

Several published sources were consulted, including Cabral (Cabral, 1940, 1956, 1993), Castel-Branco (Castel-Branco, 1999), Andresen (Andresen, 2003), Soares (Soares, 2021), and Cunha (Cunha et al., 2021), as well as non-published research found in Landscape Architecture degree thesis carried at Instituto Superior de Agronomia, namely Sousa da Câmara (Câmara, 1957). The documents rendered 22 key people and around 30 gardens during the study interval (1840 to 1960). After an extensive bibliographic review, these 22 men (Table 6.1) who were politicians, botanists/horticulturists, head gardeners, agronomists, foresters, painters, and landscape architects, were identified and were so varied we coined the word "gardenist"² for their outstanding achievements within the world of garden

making. With their academical background and/or botanical education, these men have shown a deep understanding of nature and its phenomena, as well as the ability to transmit and disseminate their knowledge and experience for garden-making in Lisbon. As a result, the present gardens under study are a lasting heritage of these gardenists' legacy.

A compared analysis of these gardenists curricula was facilitated by creating *Tables* where the list of the 22 professionals (including relevant information and the respective bibliographic references consulted) in rows crosses the three criteria of their contribution: experience/instruction, transmission, and dissemination. The main trends issued from this analysis led to the results of the research, compiled in Tables 6.2 to 6.5. Their curricula were also examined to identify the ways they acquired and transmitted their knowledge, namely: their background trained in schools and/or empirical knowledge; if they had seen new gardens being built in Europe; establishing schools of gardening; collaborating with local gardeners; writing practical manuals to contribute to the continuity of garden knowledge; and opening offices to design gardens. The dissemination criteria included: publishing books and articles, presenting and preparing exhibitions, or even starting nurseries, etc.

The gardens mentioned in Table 6.1—private gardens and parks, botanical gardens, and public gardens—are directly related to these people and were long-lasting.

Table 6.1 The selected gardenists and gardens during the interval under study, 1840 to 1960 in the city of Lisbon.

<i>Gardenists</i>	<i>Gardens</i>
<p>Politicians: King D. Fernando Saxe-Coburgo-Gotha (1816–1885); Francisco de Melo Breyner—4th Count of Ficalho (1837–1903); Francisco Simões Margiochi (1848–1904).</p> <p>Botanists and Horticulturists: Jean-Baptiste Desiré Bonnard (1797–1861); Friedrich Welwitsch (1806–1872); Jacob Weiss (1815–1898); Edmond Goeze (1838–1929); Jules Daveau (1852–1929); Henri Cayeux (1869–1963); Henri Navel (1878–1963).</p> <p>Head gardeners: Bento António Alves (1796–1878); João Francisco da Silva (s.d.).</p> <p>Agronomists, Foresters, Painters and Landscape Architects: Jorge Gomes de Amorim (1900–1943); José Pulido Garcia (1904–1983); Francisco Caldeira Cabral (1908–1992); Francisco Keil do Amaral (1910–1975); Manuel Azevedo Coutinho (1921–1992); Edgar Sampaio Fontes (1922–2000); Gonçalo Ribeiro Telles (1922–2020); António Vianna Barreto (1924–2012); Álvaro Ponce Dentinho (1924–2014); Manuel de Sousa da Câmara (1929–1992).</p>	<p>Private gardens and parks: <i>Tapada das Necessidades</i>, 1742; <i>Parque Monteiro-Mor</i>, séc. XVIII; <i>Parque das Laranjeiras</i>, 1779; <i>Parque de Santa Gertrudes</i>, 1857 (present <i>Jardim da Fundação Calouste Gulbenkian</i>).</p> <p>Botanical gardens: <i>Jardim Botânico da Ajuda</i>, 1768; <i>Jardim da Escola Politécnica</i>, 1842 (present <i>Jardim Botânico de Lisboa</i>); <i>Jardim Colonial</i>, 1914; <i>Tapada da Ajuda</i>, 1910.</p> <p>Public gardens: <i>Passeio Público</i>, 1766; <i>São Pedro de Alcântara</i>, 1840; <i>Jardim da Estrela</i>, 1852; <i>Campo de Santa Clara</i>, 1862; <i>Jardim de Santos</i>, 1873; <i>Jardim 9 de Abril</i>, 1879; <i>Alto de Santa Catarina</i>, 1883; <i>Praça D. Luís I</i>, 1884; <i>Jardim do Príncipe Real</i>, 1886; <i>Avenida da Liberdade</i>, 1886; <i>Campo Mártires da Pátria</i>, 1886; <i>Passeio do Campo Grande</i>, 1887; <i>Jardim Constantino</i>, 1889; <i>Parque Eduardo VII</i>, 1945; <i>Mata de Alvalade</i>, 1951; <i>Jardim da Capela de S. Jerónimo</i>, 1958; <i>Jardim da Torre de Belém</i>, 1958; <i>Jardim do Castelo de São Jorge</i>, 1959; <i>Parque do Vale do Silêncio</i>, 1968.</p>

Table 6.2 The three politicians' curricula and their contribution according to the three criteria.

6.2. POLITICIANS	
6.2.1. King D. Fernando Saxe-Coburg-Gotha (1816-1885, German) (Ramalho and Costa Ramalho, 1935; Castel-Branco, 2001; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Botanical education in Coburg and Gotha, a strong preparation in art and visited many referenced gardens of Europe. ■ In Portugal, he stood out for his work with his gardener Bonnard in constructing the first Landscape Garden in Portugal (1841), <i>Quinta Real das Necessidades</i>.
Transmission	<ul style="list-style-type: none"> ■ <i>Quinta das Necessidades</i> became a laboratory for some 450 species. ■ Inspired the design of the <i>Parque da Pena</i> in Sintra and served the public gardens of the city of Lisbon. ■ The King commissioned his gardener, Bonnard, at the service of the city, who became both master gardener to the royal house and inspector of the municipality's gardens and public walks. ■ Contributed to the renovation of the <i>Passeio Público</i> and the project of the <i>Passeio da Estrela</i> and the <i>Jardim S. Pedro de Alcântara</i>. ■ Responsible for the first gardening school created in Portugal in 1841, directed by Bonnard. ■ The King's extensive library catalogue included books on botany (e.g. Lineu's fundamental works), natural history, chemistry, pharmacy, practical agriculture, forestry, and journals disseminating horticultural knowledge (e.g. "The Garden").
Dissemination	<ul style="list-style-type: none"> ■ Visits and exchange of plants with other private gardens. ■ Walking with the Royal Family in the city's gardens, introducing this habit in Lisbon. ■ Creation of the <i>Sociedade Flora e Pomona</i>, in 1854, inspired by the Paris, where he was responsible for one of the first Portuguese periodicals of horticulture and gardening - "<i>Flora e Pomona: Jornal de agricultura, horticultura e jardinagem em Portugal</i>".
6.2.2. Francisco de Mello Breyner – 4th Count of Ficalho (1837-1903, Portuguese) (Ramalho and Costa Ramalho, 1935; Tavares, 1967; Castel-Branco, 1999; Cunha et al., 2021; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ He was part of the entourage of King Pedro V and King Luís on their trips to different European courts in 1854 and 1855, where he visited important gardens at the age of 17. ■ He graduated in Botany at the <i>Escola Politécnica de Lisboa</i>, where he was a full professor. ■ He encouraged the increase of studies of the Portuguese flora. ■ As Director of the <i>Instituto Agrícola</i> (1864 to 1877), he created the <i>Jardim Botânico da Escola Politécnica</i> (JBL). ■ With Edmund Goeze, he designed and decided the plantations of the upper deck of the JBL (class), and with Jules Daveau, he made the lower part of the JBL (<i>Arboretum</i>).
Transmission	<ul style="list-style-type: none"> ■ Member of the <i>Academia Real das Ciências</i>, where was First Class President and Vice-President of the Academy. ■ Full member of the <i>Sociedade de Geografia de Lisboa</i>.
Dissemination	<ul style="list-style-type: none"> ■ Published scientific and historical works, about the Portuguese Flora and the history of the introduction of new species in Portugal, such as: "<i>Apontamentos para o Estudos da Flora Portuguesa</i>", (1875); "<i>Useful Plants of Portuguese Africa</i>", (1884); "<i>Colóquio dos Simples e Drogas da Índia by Garcia de Orta</i>", (1891 and 1895).

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Table 6.2 (Continued)

6.2. POLITICIANS	
6.2.3. Francisco Simões Margiochi (1848-1904, Portuguese) (Oliveira Júnior, 1873; Rodrigues, 2020)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Agronomist and forester graduated from the <i>Instituto Geral de Agricultura</i>. ■ Councilor of the <i>Pelouro dos Passeios e Arvoredos of Câmara Municipal de Lisboa (CML)</i> between 1872-75. Highlights: tree planting in the city (recognized by Oliveira Júnior in one of his articles in the “<i>Jornal de Horticultura Prática</i>” in 1876); and played an active role in defending green spaces (such as the transformation of <i>Passeio Público</i> into a boulevard). ■ Chairman of the CML administrative committee.
Transmission	<ul style="list-style-type: none"> ■ He formed a specialized library, acquiring around 57 books and engravings. ■ He was part of the commission appointed in 1882 to choose the species to plant in Avenida da Liberdade. ■ As provider of Casa Pia created, in 1895, the <i>Escola Prática de Agricultura da Real Casa Pia</i> in Lisbon and a course for horticultural gardeners. ■ In 1898 he founded the <i>Real Sociedade Nacional de Horticultura</i> of Portugal and as president, organized exhibitions and a gardening course.
Dissemination	<ul style="list-style-type: none"> ■ Launched a magazine, “<i>Boletim da Real Sociedade Nacional de Horticultura</i>”, the most important publication of the 19th century aimed at the general public. ■ Published works such as: “<i>Duas palavras ácerca da Avenida da Liberdade</i>” (1886); “<i>A luzerna: sua cultura e vantagens</i>” (1870); “<i>Assumptos agrícolas</i>” (1901).

Table 6.3 The seven botanists’ and horticulturists’ curricula and their contribution according to the three criteria.

6.3. BOTANISTS AND HORTICULTURISTS	
6.3.1. Jean-Baptiste Desiré Bonnard (1797–1861, French) (Viterbo, 1906; Castel-Branco, 2001; Rosa, 2013; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ He was hired for <i>Quinta das Necessidades</i>, by King D. Fernando, due to his knowledge of plant acclimatization. ■ Together with the King, he was responsible, in 1841, for the construction of the first Landscape garden in Portugal. ■ Creation of the field of experimentation and plant acclimatisation. ■ Distinguished himself as a master gardener in the public gardens of the capital, sharing his knowledge of the art of gardens. ■ Worked in the gardens at the <i>Palácio das Laranjeiras</i> (owned by the Count of Farrobo) and <i>Palácio Daupiás</i> in Alcântara (owned by the Count of Alcochete).
Transmission	<ul style="list-style-type: none"> ■ Taught at the <i>Quinta das Necessidades</i> gardening school. ■ Was co-owner of the <i>Companhia Horticola Lisbonense</i> nursery, in partnership with Bento Alves.

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Table 6.3 (Continued)

6.3. BOTANISTS AND HORTICULTURISTS	
Dissemination	<ul style="list-style-type: none"> ■ Collaborated with the <i>Sociedade Flora e Pomona</i>. ■ In 1854, he coordinated the 1st Exhibition of Flowers and Plants of the <i>Sociedade Flora e Pomona</i> at the Passeio Público. ■ Published works such as: “<i>Horticulture et Arboriculture. Végétaux introduits dans les cultures du Jardin Royal des Necessidades depuis sa restauration</i>”, (1852); the catalogue “<i>La Compagnie Horticole</i>”, (1854–55). ■ Promoted Portuguese plant production in France, to sell the products acclimatised here, together with Bento Alves.
6.3.2. Friedrich Welwitsch (1806–1872, Austrian) (CML, 1853; Oliveira Júnior, 1873; Viterbo, 1906, p. 185; Ramalho and Costa Ramalho, 1935; Tavares, 1967; Dolezal, 1974; Castel-Branco, 1999; Cal, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Graduated in medicine at the University of Vienna. ■ Settled in Portugal, where he was appointed botany trainer at the <i>Escola Politécnica</i>. ■ Conservator of the <i>Jardim Botânico da Ajuda</i> (JBA), when integrated in the <i>Escola Politécnica</i>. ■ In 1844, he took over the management of <i>Quinta do Lumiar</i> (<i>Parque Monteiro-Mor</i>) from the Duke of Palmela. ■ He was part of the expedition to Angola, which he led between 1853–61. In this mission, his most famous discovery was <i>Welwitschia mirabilis</i> (1859), a desert plant.
Transmission	<ul style="list-style-type: none"> ■ Devoted himself to floristic and phytogeographic research in Portugal. According to Gonçalo Sampaio (1865–1937), from the <i>Faculdade de Ciências da Universidade do Porto</i>, he was the most knowledgeable foreign botanist of Portuguese plants.
Dissemination	<ul style="list-style-type: none"> ■ He had relationships with horticulturists and gardeners in Europe, and he maintained these relationships with gardeners and directors in Lisbon. ■ He dedicated some of his discoveries to personalities, such as: <i>Machadoa</i> (to Joaquim Machado); <i>Faroa</i> (to Lapa Faro); <i>Alvesia</i> (to Bento Alves). ■ Published works such as: “<i>Cultura do algodão em Angola</i>”, (1861); “<i>Sertum angolense sive stirpium quarundam novarum vel minus cognitarum in itinere per angolam et benguelam observatarum: descriptio iconibus illustrata</i>”, (1869).
6.3.3. Jacob Weiss (1815–1898, Swiss) (CML, 1852, 1853; Viterbo, 1906; Rodrigues, 2020; Cal, 2021; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Trained at the <i>Jardin des Plantes</i> in Paris, as a horticulturist and gardener specialising in ornamental herbaceous plants. ■ Arrived in Portugal in 1847 to work for the Duke of Palmela at <i>Paço do Lumiar</i>. In 1853 he was promoted to director of the gardens, a position he held until his death. ■ Between 1866–70 directed the construction of the <i>Parque de Santa Gertrudes</i>, owned by Eugénio de Almeida (currently the <i>Jardim da Gulbenkian</i>). He used trees from French nurseries, introducing new species to Lisbon. ■ Was hired by the CML to manage the municipal nurseries. ■ Was invited to join several experts committees: in 1851 the committee to improve the <i>Passeio Público</i>; in 1852 the committee to inspect the state of the trees on the <i>Passeio Público</i>; and in 1882 the committee in charge of the tree planting on the <i>Avenida da Liberdade</i>.

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Table 6.3 (Continued)

6.3. BOTANISTS AND HORTICULTURISTS	
Transmission	<ul style="list-style-type: none"> ■ Collaborated with the <i>Sociedade Flora e Pomona</i>. ■ Donated 14 books to the <i>Pelouro de Passeios e Arvoredos</i> library in 1898.
Dissemination	<ul style="list-style-type: none"> ■ Participated in horticultural exhibitions as an award-winning participant and as a jury. ■ As a horticulturist, he stood out in obtaining cultivars, such as the <i>Caladium</i>, advertised in the <i>Jornal de Horticultura Practica</i>.
6.3.4. Edmond Goeze (1838–1929, German) (Viterbo, 1906; Ramalho and Costa Ramalho, 1935; Tavares, 1967; Cal, 2021; Cunha et al., 2021; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Trained and was a gardener at the <i>Jardin des Plantes</i>, in Paris, and at the Royal Botanic Gardens Kew, in London, and maintained correspondence with their directors, Joseph Descaine (1807–1882) and Dalton Hooker (1817–1911). ■ In 1866, by recommendation of José do Canto (1820–1898), he was hired by the Universidade de Coimbra, where he remained until 1873. ■ He took part in a botanical expedition to the island of S. Miguel in the Azores, where he discovered several private gardens, rich in plant diversity, including the property of José do Canto. ■ He was the first head gardener at <i>Jardim Botânico da Escola Politécnica</i> (JBL) and played an important role in this enriching of the botanical collection, having gathered a large number of species, mainly from the Azores, and from the botanical gardens with which he maintained close collaboration (Paris, London, Berlin and Hamburg).
Transmission	<ul style="list-style-type: none"> ■ Contributed to the exchange and dissemination of known species in the Azores. ■ Sends 200 rare species to the <i>Jardin des Plantes</i> and around 1500 species of plants and seeds to the Royal Botanic Gardens Kew.
Dissemination	<ul style="list-style-type: none"> ■ Collaborated in several publications, such as: “<i>Jornal de Horticultura Prática</i>”; “<i>The Gardens</i>”; “<i>Linnaea</i>”; “<i>Sonntags</i>”. As a result of the botanical expedition to the island of S. Miguel, in the Azores, in 1867, he published “<i>A Ilha de São Miguel e o Jardim Botânico de Coimbra</i>”.
6.3.5. Jules Daveau (1852–1929, French) (Viterbo, 1906; Ramalho and Costa Ramalho, 1935; Tavares, 1967; Rodrigues, 2020; Cal, 2021; Cunha et al., 2021; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Trained at the <i>Jardin des Plantes</i> and worked at the Museum of Natural History in Paris. ■ In 1876, in Lisbon, he succeeded Goeze, assuming the position of head gardener of the JBL, until 1892. ■ Installed the irrigation system and created waterfalls and streams, in JBL. ■ The Count of Ficalho commissioned him to conduct botanical explorations in Portugal, and between 1876–92 Daveau dedicated himself to the study of the Portuguese Flora. ■ In 1882, he was part of the commission created to choose the species to plant in <i>Avenida da Liberdade</i>. ■ Record of 1886, Daveau offers plants to the municipal gardens (e.g. offer of 162 plants of various species for <i>Praça da Alegria</i>).

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Table 6.3 (Continued)

6.3. BOTANISTS AND HORTICULTURISTS	
Transmission	<ul style="list-style-type: none"> ■ Around 1877, he began a seed and plant exchange programme in the garden and published the first <i>Index seminum</i> with 1559 species (greatly benefited by Goeze's activity). ■ Was a corresponding member of the <i>Real Sociedade de Horticultura</i> of Portugal from 1899.
Dissemination	<ul style="list-style-type: none"> ■ In addition to his gardening work, he contributed over 50 papers and studies on the Portuguese Flora in scientific publications. He published works in several magazines, such as: "<i>Revue Horticole</i>" (e.g. "<i>Les Jardins de Lisbonne</i>", 1879) and in the "<i>Buletin de la Societé Botanique de France</i>".
6.3.6. Henri Cayeux (1869–1963, French) (Viterbo, 1906; Tavares, 1967; Cal, 2021; Cunha et al., 2021; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Son of a nurseryman, he trained at the <i>École Nationale d'Horticulture in Versailles</i> and at the <i>Jardin des Plantes</i> in Paris. ■ He stood out as a specialist in the field of plant propagation. ■ In 1892, hired as JBL's head gardener until 1909, Cayeux dedicated himself to introducing and cultivating ornamental plants in the garden (e.g. <i>Rosa</i>, <i>Hydrangea</i>, <i>Dahlia</i>, <i>Iris</i>, <i>Chrysanthemum</i>). ■ Creator of new hybrids such as <i>Dombeya x cayeuxii</i> and <i>Rosa Bela Portuguesa</i>. ■ Worked in the gardens of Count of Burnay (1838–1909), Luís Sommer and Henrique Mendonça.
Transmission	<ul style="list-style-type: none"> ■ Member of: <i>Société Nationale d'Horticulture de France</i>; <i>Association des anciens élèves de l'École Nationale d'Horticulture de Versailles</i>; <i>Société d'Horticulture d'Alger</i>. It should be noted that he was one of the leading French plant breeders in the first half of the 20th century. ■ Founder of the <i>Société des Chrysanthemistes Français</i> and the <i>Sociedade de Horticultura of Portugal</i>. ■ Recognized as one of the leading French plant breeders of the first half of the 20th century.
Dissemination	<ul style="list-style-type: none"> ■ From 1894 to 1898, he organized annual <i>Chrysanthemum</i> exhibitions in the greenhouse of the JBL. ■ Published articles in several periodicals: <i>Le Jardin</i>, <i>Revue Horticole</i>, <i>Buletin de l'association des anciens élèves de l'École Nationale d'Horticulture de Versailles</i>, <i>Revue Horticole de l'Algérie</i>; and <i>Boletim da Real Sociedade de Horticultura de Portugal</i>.
6.3.7. Henri Navel (1878–1963, French) (Morembert, 1965; Tavares, 1967; Cal, 2021; Cunha et al., 2021; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Trained at the <i>École Nationale d'Horticulture de Versailles</i>. ■ Held various positions: Head Gardener at the Whiteley Institute of Horticulture (1899–1901); Gardener at the Royal Botanic Gardens Kew (until 1902); he worked in the greenhouses of the <i>Jardin Colonial de Nogent Sur Marne</i> (1902–1906) and was head of cultures in the colonial section of the <i>École Supérieure de Commerce de Nantes</i> (1906). ■ In 1909 he was hired to replace Cayeux, becoming the 4th JBL head gardener until 1920. ■ Supervised the transfer of the <i>Jardim Colonial of Quinta das Laranjeiras</i> to the nearby <i>Palácio de Belém</i> in 1910, where he was responsible for the colonial flora, from the <i>Jardim Colonial</i> in Lisbon (currently <i>Jardim Botânico Tropical</i>), until 1917.

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Table 6.3 (Continued)

6.3. BOTANISTS AND HORTICULTURISTS	
	<ul style="list-style-type: none"> ■ Managed gardens on private <i>Quintas</i>, such as Monserrate (owned by Francis Cook) and <i>Junqueira</i> (owned by Count of Burnay). ■ In 1919 he headed the agricultural mission of the <i>Sociedade de Fitopathologia</i> for emigration to the islands of S. Tomé and Príncipe and Portuguese Guinea, where until 1922 he was responsible for plantations (e.g. cocoa, coffee, sugar cane, banana trees), leading thousands of workers.
<i>Transmission</i>	<ul style="list-style-type: none"> ■ Was a scholar who supported the scientific community in advancement of horticulture. ■ President of the <i>Académie Nationale of Metz</i>, between 1953–54. ■ Was distinguished by the French and Portuguese governments.
<i>Dissemination</i>	<ul style="list-style-type: none"> ■ Published in Paris in 1921: “<i>Les principaux ennemis du cacaoyer aux îles de San-Thomé et de Príncipe</i>”.

Table 6.4 The two head gardeners’ curricula and their contributions according to the three criteria.

6.4. HEAD GARDENERS	
6.4.1. Bento António Alves (1796–1878, Portuguese) (CML, 1853; Viterbo, 1906; Rodrigues, 2020)	
<i>Instruction/ Experience</i>	<ul style="list-style-type: none"> ■ A gardener who learned from Bonnard and worked as a master gardener for the CML’s <i>Pelouro de Passeios e Arvoredos</i> (1856–59). ■ He worked in the gardens of <i>Paço do Lumiar</i>, where he met the naturalist Welwitsch, with whom he learned. ■ In 1871 Bento Alves offered three specimens of <i>Araucaria</i> (<i>Araucaria excelsa</i>, <i>A. bidwilli</i> and <i>A. cookii</i>) from the nursery of his <i>Quinta</i> in Portela to the Lisbon gardens. ■ Was part of the commission responsible for inspecting the condition of the trees in <i>Passeio Público</i> (1852).
<i>Transmission</i>	<ul style="list-style-type: none"> ■ Was co-owner of the <i>Companhia Hortícola Lisbonense</i> nursery, in partnership with Bonnard. ■ In 1852 Bento Alves, driven by King Fernando II, they created together with Welwitsch and Councilor Aires de Sá Nogueira the <i>Sociedade Hortícola, Pomicola e Florícola</i> known as <i>Flora e Pomona</i>.
<i>Dissemination</i>	<ul style="list-style-type: none"> ■ Published articles about the <i>Quinta do Lumiar</i> (e.g. “<i>Plantas Florestaes e de ornamento naturalizadas na quinta do Lumiar</i>”, 1858). ■ Launched the catalogue “<i>La Compagnie Horticole</i>”, which promoted Portuguese plant production in France, to sell national products.

(Continued)

Table 6.4 (Continued)

6.4. HEAD GARDENERS	
6.4.2. João Francisco (s.d., Portuguese) (CML, 1852; Castel-Branco, 2001; Rosa, 2013; Rodrigues, 2020; Cal, 2021; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ A gardener who started as an apprentice at <i>Quinta Real das Necessidades</i>, in 1851 he was already a municipal gardener. ■ Takes up the role of Master Gardener in the <i>Pelouro de Passeios e Arvoredos</i> (c.1869 to 1886). ■ Participates in constructing two 19th century gardens in the city, the <i>Passeio da Estrela</i> and <i>Jardim do Príncipe Real</i>. Contributed to the design and planting of the small Romantic public gardens, created in the capital: <i>Campo de Santa Clara</i> (1862); <i>Santos</i> (1873); <i>9 de Abril</i> (1880); <i>Praça da Alegria</i> (1881); <i>Alto de Santa Catarina</i> (1883); <i>Praça D.Luís</i> (1884); <i>Praça das Flores</i> (s.d.); <i>5 de Outubro</i> (s.d.); <i>Constantino</i> (1889); and <i>Campo Santana</i> (s.d.). ■ During the reignancy of the 1st Viscount of Carriche, he went to France to learn to handle the tree transplanting machine acquired by the CML, with the head gardener of the <i>Potager Du Roi</i>, in Versailles. ■ Although there is not much information about him, João Francisco was part of the team of five technicians – Councilor 1st Viscount of Carriche, Daveau, Weiss, João Francisco and Margiochi – created in 1882 to choose the species to plant in the <i>Avenida da Liberdade</i>.
Transmission	
Dissemination	

Table 6.5 The ten agronomists', foresters', painters', and landscape architects' curricula and their contributions according to the three criteria.

6.5. AGRONOMISTS, FORESTERS, PAINTERS, AND LANDSCAPE ARCHITECTS	
6.5.1. Jorge Gomes de Amorim (1900–1943, Portuguese) (Antunes, 2019; Câmara, 2021; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ A Forestry engineer who joined the CML from 1938–43 as head of the 6th Division – <i>Repartição de Arborização e Jardinagem</i> (RAJ) and dedicated himself to the management and maintenance of green spaces. ■ Financed by CML, visited Germany in 1938–39 to acquire machines to transplant trees; as well as France, Belgium, Holland and Luxembourg to study various services related to the afforestation of parks and gardens, roads and streets, fertilisation, plants and seeds, irrigation of trees; he also visited the Hofstandbloem Exhibition in The Hague. ■ Was responsible for the gardening and tree-planting work at <i>Praça do Império</i>, in 1940, for the Portuguese World Exhibition.
Transmission	
Dissemination	<ul style="list-style-type: none"> ■ In 1941, published “<i>Jardins municipais: conferência</i>” as part of the 2nd National Exhibition of Floriculture.

(Continued)

Table 6.5 (Continued)

6.5. AGRONOMISTS, FORESTERS, PAINTERS, AND LANDSCAPE ARCHITECTS	
6.5.2. José Pulido Garcia (1904–1983, Portuguese) (Antunes, 2019; Câmara, 2021; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Agronomist, forestry engineer, and employee of CML, he stood out as head of the RAJ. ■ Collaborated with the first landscape architects to join CML staff: Manuel de Azevedo Coutinho (1948) and Gonçalo Ribeiro Telles (1950). ■ Was responsible for installing green spaces in the city, such as the <i>Parque Florestal de Monsanto</i> and the <i>Jardim do Castelo de São Jorge</i>. ■ Worked on constructing the municipal nursery at <i>Quinta do Conde de Arcos</i> and remodelled several nurseries by introducing new techniques. ■ Responsible for the: expansion, improvement and new plantations in the <i>Estufa Fria</i> and the creation of <i>Estufa Quente</i>; creation of the <i>Mata de Alvalade</i> and <i>Mata Madre de Deus</i>; restoration of <i>Avenida da Liberdade</i> after Underground construction, <i>Avenidas Fontes Pereira de Melo</i> and <i>Avenida da República</i>; and reconstruction of <i>Campo Grande</i> and <i>Parque Eduardo VII</i>.
Transmission	<ul style="list-style-type: none"> ■ He has collaborated in creating the practical course for gardeners, which took place in <i>Vila Correia</i>.
Dissemination	<ul style="list-style-type: none"> ■ In 1940 published “<i>A reconstituição da Tapada de Mafra</i>” and in 1961 the lecture “<i>A Vegetação de Lisboa e os seus parques e jardins</i>”.
6.5.3. Francisco Caldeira Cabral (1908–1992, Portuguese) (Castel-Branco, 1999; Andresen, 2001; Andresen and Tostões, 2003; Antunes, 2019; Câmara, 2021; Soares, 2021)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ An Agronomist graduated from the <i>Instituto Superior de Agronomia</i> (ISA) in 1936, and Landscape Architect graduated from the <i>Technische School</i> of Berlin, in 1939. ■ In 1935, he received an invitation to occupy the position of head of the <i>Repartição dos Jardins e Cemitérios</i> of CML (which he did not accept). ■ Responsible for directing the JBA, where he carried out his training report (1936). ■ The Institute for High Culture awarded him a scholarship to study Landscape Architecture in Berlin. ■ His landscape architecture projects were based on ecology, maintenance, and aesthetics. Its projects covered different areas of intervention: public gardens; historic gardens; private farms and gardens; agricultural planning and development projects; Spatial and rural landscape planning and landscape integration of infrastructures; and research and development (e.g. mission to promote floriculture on the island of Madeira, 1973–78). The <i>Estádio Nacional</i> (1938–40) is referred to as an emblematic project.

(Continued)

Table 6.5 (Continued)

6.5. AGRONOMISTS, FORESTERS, PAINTERS, AND LANDSCAPE ARCHITECTS	
Transmission	<ul style="list-style-type: none"> ■ Founder of the teaching of Landscape Architecture in Portugal. In 1942, the course of Landscape Architecture for Agronomists and Foresters was launched. ■ In 1953, created the <i>Centro de Estudos de Arquitetura Paisagista</i> (CEAP) at ISA. ■ According to Teresa Andresen, Caldeira Cabral intended to create a gardening school at the JBA in collaboration with the CML and even prepared a typewritten document. ■ The University of Évora awarded him the degree of Doctor Honoris Causa in 1980, as did the Technical University of Hannover in 1971. ■ In 1958, he was elected Vice-President of the International Federation of Landscape Architects (IFLA) and, four years later, unanimously elected President. ■ His merit was publicly recognized through the attribution of the degree of <i>Grande Oficial da Ordem da Instrução Pública</i> (1982) and the <i>Grã Cruz da Ordem do Infante D. Henrique</i> (1989).
Dissemination	<ul style="list-style-type: none"> ■ The creation of the teaching of Landscape Architecture in 1942 allowed the systematic transmission of gardening knowledge, which Caldeira Cabral's disciples continued for 80 years with the systematic dissemination of Landscape Architecture in five Portuguese Universities (<i>Lisboa, Évora, Vila Real, Faro, Porto</i>). ■ Published several of his studies, such as: "<i>Construção de Jardins</i>", (1963); "<i>História de Arte dos Jardins</i>", (1962); "<i>A Árvore</i>", (1960); e "<i>Os Fundamentos da Arquitetura Paisagista</i>", (1993).
<p>6.5.4. Francisco Keil do Amaral (1910–1975, Portuguese) (Tostões, 1992; Andresen, 2001; Andresen and Tostões, 2003; Tostões and Guimarães, 2013; Antunes, 2019; Câmara, 2021; Soares, 2021)</p>	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Painter graduated, in 1936, from the <i>Escola de Belas Artes de Lisboa</i>. ■ In 1937, he won the competition for the Portuguese Pavilion at the Paris International Fair. ■ From 1939–49 worked as an urban planner at CML. ■ In 1939, he went to visit the: parks of Paris, London, Amsterdam and The Hague; the Stuttgart exhibition; and the afforestation of some sections of German highways. ■ He was the author of projects such as: <i>Parque Eduardo VII, Parque Florestal de Monsanto</i> and <i>Jardim Campo Grande</i>. ■ In the atelier, he designed: the Portuguese International Fair (1953) and the Lisbon Underground (1949–59). ■ Was consultant on several projects, namely: Museum of the Calouste Gulbenkian Foundation (1958); Baghdad Football Stadium in Iraq (1961); urban plan for the Tróia Peninsula.
Transmission	<ul style="list-style-type: none"> ■ He taught the Art and Architecture course at the <i>Universidade Popular</i> (1943) and at the <i>Instituto de Arte e Decoração</i> (IADE). ■ Received the Municipal Architecture Award in 1951 and the Valmor Prize in 1962, both distinctions for individual housing projects in <i>Restelo</i>.

(Continued)

Table 6.5 (Continued)

6.5. AGRONOMISTS, FORESTERS, PAINTERS, AND LANDSCAPE ARCHITECTS	
Dissemination	<ul style="list-style-type: none"> ■ Presented conferences and published several articles in specialist magazines, as well as books, such as: “<i>A arquitetura e a vida</i>”, (1942); “<i>A moderna arquitetura holandesa</i>”, (1943); and “<i>O problema da habitação</i>”, (1945).
6.5.5. Manuel Azevedo Coutinho (1921–1992, Portuguese) (Andresen, 2003; Câmara, 2015)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Agronomist and landscape architect, graduated from ISA, in 1948, with the final work “<i>O Jardim Botânico da Ajuda</i>” and was the first landscape architect trained in Portugal by the school of Caldeira Cabral. ■ Started working as a Landscape Architect at CML in 1950. ■ Author of projects of gardens and avenues in <i>Alvalade</i>, <i>Avenida Guerra Junqueiro</i>, <i>Avenida da Igreja</i>, designed the <i>Jardim da Praça de Londres</i>. ■ Responsible for the renovation of the municipal nurseries.
Transmission	<ul style="list-style-type: none"> ■ Teaches at ISA between 1950 and 1953.
Dissemination	
6.5.6. Edgar Sampaio Fontes (1922–2000, Portuguese) (Andresen, 2003; Câmara, 2015)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Agronomist and landscape architect, graduated from ISA, in 1951, with the final work “<i>A vinha na paisagem do Minho</i>”. ■ Joined CML landscape architects’ team in 1953, holding directive positions up to: Chief of RAJ (1970–76); to Director of DSTE (1982–89). ■ His design projects include Bairro da <i>Encarnação</i>, <i>Parada dos Prazeres</i>, <i>Bairro do Grilo</i>, <i>Estufa Fria</i>, and <i>Parque Eduardo VII’s Upper Area</i>.
Transmission	<ul style="list-style-type: none"> ■ He began teaching at ISA in 1957 and became assistant professor until 1974, and as guest professor from 1977/78. ■ Co-founded the “<i>Associação Portuguesa dos Arquitectos Paisagistas</i>” in 1976 and served in leadership positions. ■ Represented Portugal at the IFLA from 1965 to 1977, later coordinating IFLA activities in the Mediterranean zone. ■ Received an award from the “<i>Associação Industrial Portuguesa</i>” for the project of recovery and landscaping of the Secil quarries, in 1987.
Dissemination	<ul style="list-style-type: none"> ■ Was recognized for expertise in floriculture, especially roses, and participated, as a jury and/or president, in national and international rose competitions. ■ Authored books and articles on landscape recovery, planning, and horticulture (e.g. “<i>Recuperação paisagística das pedreiras. Caso da Secil</i>”, 1986).
6.5.7. Gonçalo Ribeiro Telles (1922–2020, Portuguese) (Andresen, 2003; Saraiva, 2004; Cunha, 2014; Câmara, 2015)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Graduated as agronomist and landscape architecture at ISA, in 1950, with the final work “<i>Um caso concreto de Ordenamento Paisagístico. Estudo de três herdades no concelho de Coruche</i>”.

(Continued)

Table 6.5 (Continued)

6.5. AGRONOMISTS, FORESTERS, PAINTERS, AND LANDSCAPE ARCHITECTS	
	<ul style="list-style-type: none"> ■ Worked at CML from 1953 to 1960, designing over 60 public spaces, notably contributing to urban expansion during the 1950s. ■ As a private practice designer he undertook around 350 projects, including the Fundação Calouste Gulbenkian gardens in collaboration with Vianna Barreto. ■ Played a key role in landscape planning and design, contributing to the city plans of Lisbon and Coimbra.
<i>Transmission</i>	<ul style="list-style-type: none"> ■ Established the Landscape Architecture program at the University of Évora, in 1976, and served as a professor and degree coordinator ■ Active in politics, became as Minister of State and Quality of Life in the 8th Constitutional Government of Portugal and launched the National Ecological Reserve Act protecting fragile landscapes and seaside areas. ■ Honoured with significant degrees and recognition for his contributions to environmental and landscape preservation, including: “<i>Grã-Cruz da Ordem Militar de Nosso Senhor Jesus</i>” (1988); “<i>Grã-Cruz da Ordem da Liberdade</i>” (1990); and “<i>Grã-Cruz da Ordem do Infante D. Henrique</i>” (2017). ■ Received the Sir Geoffrey Jellicoe Award for Landscape Architecture in 2013.
<i>Dissemination</i>	<ul style="list-style-type: none"> ■ Authored 4 books and more than 100 articles on: Landscape Planning, Environment, Urbanism, Visual Analysis, Landscape, Design, Agriculture, Resource Management, Education and Politics.
6.5.8. António Vianna Barreto (1924–2012, Portuguese) (Andresen, 2003; Barreto, 2011; Câmara, 2015)	
<i>Instruction/ Experience</i>	<ul style="list-style-type: none"> ■ Graduated as a Forest and Agronomy engineer, and in landscape architecture, from ISA, in 1952, with the final work “<i>O Parque de Monsanto e a cidade de Lisboa</i>”. ■ Joined the technical staff of the CML, in 1953, becoming the first landscape architect to work for the government, holding various leadership positions in the CML. ■ His projects in Lisbon include the landscape design of: Fundação Caloute Gulbenkian, <i>Jardim da Torre de Belém</i>, <i>Cidade Universitária</i>, and the terraces of Hotel Ritz. ■ Coordinated the report “<i>Defesa da Paisagem</i>” in 1962, which laid the foundation for territorial planning figures like the National Ecological/ Agricultural Reserves (REN and RAN).
<i>Transmission</i>	<ul style="list-style-type: none"> ■ Taught: territorial planning at <i>Instituto Superior Técnico</i> (1979 and 1980), <i>Universidade de Évora</i> (1981–84); <i>ISA</i> (1984–88). ■ Member of APAP and served in leadership positions. ■ Received the prestigious “<i>Prémio Valmor</i>” in 1975 for the garden project at Fundação Calouste Gulbenkian. Recognized with commendations from Ministerial Dispatches in 1957 and 1975; and awarded the <i>Prémio Quercus</i> in 2009.
<i>Dissemination</i>	<ul style="list-style-type: none"> ■ Authored books (e.g. “<i>O Enquadramento da Torre de Belém</i>”, 1956), articles in specialized articles (e.g. “<i>Sede e Museu da Fundação Calouste Gulbenkian</i>”, 1969, in <i>Arquitectura</i>), and technical reports (e.g. “<i>Ordenamento Paisagístico do Algarve</i>”, 1969, DGSU).

(Continued)

Table 6.5 (Continued)

6.5. AGRONOMISTS, FORESTERS, PAINTERS, AND LANDSCAPE ARCHITECTS	
6.5.9. Álvaro Ponce Dentinho (1924–2014, Portuguese) (Andresen, 2003; Câmara, 2015)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Graduated in Forestry and Landscape Architecture, in 1959, with the final work “<i>Modulação na composição das estradas</i>”. ■ Joined CML in 1959, collaborating on urban planning projects ■ While at CML’s GEU, contributed to urban development design with squares in the garden city of <i>Olivais, Chelas, Marvila</i>, and the hillside of <i>Restelo</i>. ■ Undertook urban and territorial planning projects in Portugal: Algarve Spatial Plan (1965) and the Municipal Master Plan for Lourenço Marques (1969) presently Maputo, in Mozambique.
Transmission	<ul style="list-style-type: none"> ■ Served as assistant professor in the Landscape Architecture course at ISA from 1964 to 1967. ■ Actively participated in IFLA International Congresses and was named honorary secretary during the 1970s. ■ Member of the “<i>Centro Nacional de Cultura</i>”.
Dissemination	<ul style="list-style-type: none"> ■ Authored articles in specialized magazines (e.g. “<i>Arranjo dos espaços exteriores</i>”, 1964, in <i>Arquitetura</i>) and other periodicals (e.g. “<i>Bairros construídos ao abrigo do Decreto-lei 42 454 no período de 1961 a 1969</i>”, 1971, in <i>Boletim GTH</i>).
6.5.10. Manuel Sousa da Câmara (1929–1992, Portuguese) (Andresen, 2003; Câmara, 2015; Cunha, 2015; Sousa da Câmara, s.d.)	
Instruction/ Experience	<ul style="list-style-type: none"> ■ Agronomist and landscape architect, graduated from ISA, in 1957, producing the project “<i>A Tapada Real de Vila Viçosa – Anteprojecto do seu ordenamento paisagístico</i>”. ■ Worked in CML (1961–71), where he designed parks, gardens and squares such as: <i>Mata de Alvalade; Parque do Vale do Silêncio; Praça das Flores</i>; and <i>Jardim da Estrela</i> renovation. ■ Established a private practice <i>Gabinete de Projetos Sousa da Câmara, Lda.</i>, in 1982, and led numerous groundbreaking investigations and projects in Lisbon, including urban planning in several neighbourhoods. Pioneered biological engineering methods, computer-assisted design, and geographical information systems applied to landscape architecture. Developed original models and computer programs for use in your own studio (e.g. Model to calculate the man/power necessary for the maintenance of the public garden system).
Transmission	<ul style="list-style-type: none"> ■ Taught at ISA (1976–88) contributing significantly to landscape architecture education; and at the <i>Escola de Belas Artes de Lisboa</i>, in the graduate program in Urban Studies. ■ Active member of professional associations and received recognition from CML for his work on the new “<i>Acessos da nova Ponte sobre o Tejo</i>”.
Dissemination	<ul style="list-style-type: none"> ■ In 1965, an exhibition: “<i>Seminary of Landscape Architecture</i>” in Fundação Calouste Gulbenkian. ■ Authored several articles (e.g. “<i>O turismo e a Paisaem</i>”, 1951, in <i>Agros</i>) and technical reports (e.g. “<i>Informação sobre o custo de construção de espaços verdes urbanos</i>”, 1969, <i>GTH</i>).

Results

The local expertise pertaining to horticulture and water management in Portugal was significantly enhanced during two periods of garden expansion in Lisbon by two trends. The first was a growing political will to follow the international park movement, while the second corresponds to the introduction of a systematic knowledge of horticulture and gardening from various European countries in the 1840s and later from Germany beginning in the 1940s, during which the empirical knowledge of exotic plants, derived from Portuguese voyages across the oceans, became strengthened and professionalized.

Throughout the research period (1840–1890), Portuguese “gardenist” leaders hired experts from France, Austria, Switzerland, and Germany to work in Lisbon gardens—conditional on each having a thorough understanding of plants, horticulture, and gardening. Notably, all seven foreign gardenists discussed herein held diplomas from renowned European schools, reinforcing the essential preparation required for managing the complex activities of urban parks and gardens in Lisbon (Table 6.3). Later, King D. Fernando’s strategy to promote gardens included the renovation of the central promenade, *Passeio Público*, coupled with his penchant for promenading with his family in this new venue, thereby creating there a new tradition for social gatherings in public gardens (Table 6.2).

The case of Count of Ficalho is unique, as he belonged to the Portuguese aristocracy but actively sought training as a botanist. Credited in large part with creating the second botanical garden in Lisbon, Ficalho approached the project with a strong emphasis on scientific botanic experimentation, coupled with innovative garden design; indeed, his contributions led to a rapid increase in the number of plant species in Lisbon, particularly palms and other exotic varieties (Table 6.2).

By comparing the documents of this period, we have identified a rise in interest for gardens and parks in the period from 1840 to 1890—both in the city and in private realm. After this vibrant period in the history of garden-making in Lisbon, however, further innovations and even maintenance of existing landscapes suffered a strong setback. This drift was likely promoted by the Portuguese bankruptcy of 1892 and the instability that led to the republic replacement of the monarchic system in 1910 and the First World War (1914–1918), in which Portugal was involved. Gardenists seem to have disappeared from the records of the early 20th century. The loss of the articulated efforts—be they municipality, academy, or private—in this period of economic and political instability led to the extinction of the “*Pelouro dos Passeios e Arvoredos*” (Department of trees and promenades) and the suspension of two main park projects: *Parque Eduardo VII* and *Campo Grande*, which were only to be completed in 1938 when Keil do Amaral was tasked with the redevelopment of Lisbon’s green spaces.

The beginning of the 20th century was characterized by both economic and political instability, which took its toll on Lisbon’s green spaces. It wasn’t until the 1940s that an interest in public gardens once again took root. In fact, this decade also witnessed the arrival of the skilled Portuguese landscape architect Cabral and the painter Keil do Amaral, which gave impulse to the political intention led by José Pulido Garcia (Table 6.5).

Discounting those periods of instability and inertia, the gardenists of Lisbon can be viewed as wonderfully influential in shaping the city's landscape heritage, leaving behind an impressive botanical and landscape legacy. Initially hired to work in botanical gardens and scientifically-oriented private gardens, where they laid the foundations of professionalism in this realm, they contributed to the dissemination of knowledge and practice in the municipality in various ways: by introducing and acclimatizing new plant species, advancing horticulture techniques, publishing botanical works, establishing herbaria and *Index seminum*, collaborating in specialized journals, organizing and participating in plant exhibitions, and creating a new professional degree, which responded to the needs of greening Lisbon in the second growing period of the 1940s and 1950s.

The success of plant experimentation and knowledge transmission in Lisbon played a pivotal role in the image of the city and in garden-making as a practice. For example, the collaboration between Bonnard (Table 6.3) and João Francisco (Table 6.4) resulted in the creation of the Passeio da Estrela. Consider also the robust exchange of plants and seeds between botanical gardens, private properties, and the municipality; as a result, public areas such as Passeio Público, Estrela, and Campo Grande received new species of blooming trees (*Jacaranda mimosifolia* and *Tipuana tipu*) that changed the image of the city with the creation of vibrant coloured public gardens that became favoured recreation destinations for the local population.

The second boom in the 1940s was led by Francisco Caldeira Cabral who established the first degree of Landscape Architecture at the School of Agriculture (present Instituto Superior de Agronomia) in 1942 from where he himself held a 5-year degree as an agronomist. From 1936–1939 he studied at the Institute for Garden Design (Institut für Gartengestaltung) at the College of Agriculture (Landwirtschaftlich-Gärtnerische Fakultät), whose Landscape Architecture curriculum he later adopted at the Lisbon School of Agriculture, while also adding location-specific aesthetic, ecological, and project preparation for his students. The 1950s marked a new era (Andresen, 2003) for gardenists and their work, notably six Portuguese agents of transmission—Manuel Azevedo Coutinho, Gonçalo Ribeiro Telles, António Vianna Barreto, Edgar Sampaio Fontes, Álvaro Dentinho, and Manuel de Sousa da Câmara (Table 6.5)—who can be credited with expanding the diaspora of Landscape Architecture in the growing and increasingly modernist city of Lisbon. We include the impact of their gardens in the comparative table and confirmed that they introduced major changes in professionalizing the field of horticulture and garden-making in Lisbon, in the maintenance and machinery used in parks, and in creating a new era in Portugal's urban design, parks conservation, ecological legislation, and academic training protocols.

During these important periods of garden-making, these *gardenists* also contributed significantly to the written record through both national and international publications. Some of them wrote books and published articles in magazines such as the “*Jornal de Horticultura Pratica*”, an esteemed academic journal issued in Porto (1870–1892), in catalogs, and in technical reports. King D. Fernando also played an important role in establishing the first periodic publication on horticulture and gardening in Portugal, called “*Flora e Pomona: Jornal de agricultura, horticultura*

e jardinagem em Portugal”. Additionally, King D. Fernando and Francisco Margiochi, Councilor of the *Pelouro dos Passeios e Arvoredos*, established specialized libraries that served as important repositories of knowledge (Table 6.2).

Most of these men actively participated in scientific discussion forums, either by establishing them (e.g., King D. Fernando with the *Sociedade Flora e Pomona* and Margiochi with the *Real Sociedade Nacional de Horticultura*) or by being involved in their activities (e.g., Count of Ficalho as a member and president of the *Academia Real das Ciências* and a member of the *Sociedade de Geografia de Lisboa*, and Francisco Caldeira Cabral as a member and president of the International Federation of Landscape Architects). The rise of various garden societies as discussion forums and platforms for knowledge exchange became crucial social meeting points to promote garden knowledge. These forums facilitated the sharing of expertise, disseminating advancements in horticulture and gardening, and contributing to the overall development and improvement of garden practices and landscaping.

The growing interest in plants as aesthetic tools accessible to anyone led to the organization of flower shows imitating those taking place in Britain, France, and Germany. Catalogues and other sources of news and information confirm the success of these garden events in Lisbon at the Tapada das Necessidades and the Tapada da Ajuda. To reiterate, these major horticultural events came to represent important venues for both disseminating knowledge about plant species, as well as conveying the value of public and private gardens (e.g., nursery owners were able to improve their profits significantly by taking part in flower shows).

Regarding the transmission of knowledge, King D. Fernando established the first gardening school in 1841 at the *Real Tapada das Necessidades*, directed by Bonnard; in 1895, Margiochi created the “*Escola Prática de Agricultura da Real Casa Pia*” and introduced a course for horticultural gardeners; José Pulido Garcia contributed to the creation of a practical course for gardeners in *Vila Correia*; and in 1942 Cabral founded the Course of Landscape Architecture for Agronomists and Foresters. The beginning of the teaching of Landscape Architecture in Portugal in 1942 also contributed to the rearticulation of the aforementioned three key factors. A new stage of green spaces in Portugal was inaugurated with the integration of the first generation of landscape architects in the CML staff, from the 1950s on.

In terms of individual achievements, Dentinho, Sousa da Câmara, and Sampaio Fontes—three talented landscape architects—designed a new neighbourhood, Olivais, as a garden city that remains to this day a reference in landscape design. Some new parks have received international recognition, such as the Gulbenkian Foundation gardens designed by Ribeiro Telles and Viana Barreto and the Jardim da Torre de Belém created by the latter. Also, Ribeiro Telles designed 60 green areas in Lisbon. Sousa da Câmara and Azevedo Coutinho also optimized production processes at municipal nurseries.

Conclusions

The key impact of this research is that the art and skill of garden-making and the subsequent maintenance of Lisbon’s parks and green spaces has required (and

continues to demand) the input of qualified professionals at all levels who are prepared scientifically and aesthetically. Increasingly, the city's trees symbolize a critical ecological infrastructure, while parks and gardens in Lisbon serve as open-air meeting rooms for the urban population—showcasing an immense biodiversity and helping to offset increasing temperatures stemming from climate change. These public and private spaces represent a precious legacy from gifted and highly qualified gardenists—a word coined to signify gardeners, botanists, horticulturists, forestry engineers, and landscape architects who are well trained in the work of garden-making, upkeep, and restoration.

We draw our conclusions from the data collected that signify incremental growth in garden expansion, interest, and growing use from the 1840s on and later from the 1940s on. We attribute this growth to i) the formal preparation of gardenists in both instruction and on-the-job experience. Subsequently, the capacity to maintain their urban “experiments” can be attributed to ii) their transmission's strategy through teaching, instructing gardeners, exchange knowledge internationally, and finally through iii) various means of knowledge dissemination: publications, conferences, horticultural events, and the exchange of plants and seeds in-country and abroad.

The art and skill of combining the three factors, which we gleaned from studying the 22 gardenists described in the research, embody the key for the growth and endurance of Lisbon's parks and gardens. Notably, the second boom of garden-making in the city in the 1940s and 1950s can be linked to the establishment of a Landscape Architecture degree at the Technical University of Lisbon, imported from an earlier Germany model, but expanded in terms of science, technology, and engineering to reflect local aesthetic and ecological needs. Much more research, however, is needed on this subject and the role that these three criteria have played in promoting the growth and importance of gardens in the 19th/early 20th century in Lisbon. In closing, we assert that these intertwined factors represent indispensable elements behind the world of garden-making and upkeep.

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Abbreviations

APAP—*Associação Portuguesa dos Arquitetos Paisagistas* (Portuguese Association of Landscape Architects)

CEAP—*Centro de Estudos de Arquitetura Paisagista* (Center for Landscape Architecture Studies)

CML—*Câmara Municipal de Lisboa* (Lisbon City Hall)

DSTE—*Direção dos Serviços Técnicos Especiais* (Direction of Special Technical Services)

GEU—*Gabinete de Estudos de Urbanização* (Urbanization Studies Office)

GTH—*Gabinete Técnico da Habitação* (Housing Technical Office)

- IADE**—*Instituto de Arte e Decoração* (Institute of Art and Decoration)
IFLA—International Federation of Landscape Architects
ISA—*Instituto Superior de Agronomia* (School of Agronomy of Lisbon)
JBA—*Jardim Botânico da Ajuda* (Ajuda Botanical Garden)
JBL—*Jardim Botânico da Escola Politécnica* (current Lisbon Botanical Garden)
RAJ—*Repartição de Arborização e Jardinagem* (Division of Arboriculture and Gardening)
RAN—*Reserva Agrícola Nacional* (National Agricultural Reserve)
REN—*Reserva Ecológica Nacional* (National Ecological Reserve)

Notes

- 1 Cristina Castel-Branco was part of the Management Board of the School of Agronomy (ISA/ULisboa), in charge of the *Tapada da Ajuda* green spaces (1992–1995); and was director of the *Jardim Botânico da Ajuda* (1997–2002). She edited the book “Jardim Botânico da Ajuda” and organized (1993) the submission process to the National Heritage Department (IPAR) for the classification of *Tapada da Ajuda* as cultural landscape, thus defending the land from a high construction and real estate allotments. Ana Luísa Soares was part of the Management Board of ISA/ULisboa, in charge of *Tapada da Ajuda* (2009–2014); and is the coordinator of *Jardim Botânico da Ajuda* (2019–present). She headed the *Project LX GARDENS—Lisbon’s Historic Gardens and Parks* and the publication of the books (“O arvoredo, os jardins e parques públicos de Lisboa (1755–1965)”. With Ana Raquel Cunha she collaborates monthly, in “Revista Jardins”, the leading magazine in the field of gardening in Portugal. Ana Raquel Cunha has co-authored the scientific paper, “Natural and Historical Heritage of the Lisbon Botanical Gardens: An Integrative Approach with Tree Collections”.
- 2 **Gardenist**: the word gardenist was coined to signify people prepared to work for garden making, up-keeping, restoring, and defending their high quality level, including botanists, horticulturists, forestry engineers, agronomists, painters, and landscape architects.

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