



RESEARCH ARTICLE

Building green urban expertise: politicians, agronomists, gardeners and engineers at Lisbon City Council (1840–1900)

Ana Duarte Rodrigues* 

Centro Interuniversitário de História das Ciências e Tecnologia, Faculdade de Ciências, Universidade de Lisboa, 1749–016 Lisboa, Portugal

*Corresponding author. Email: amnrodrigues@fc.ul.pt

Abstract

Focusing on Lisbon's green urban renewal under the liberal regime between 1840 and 1900, this article shows how the construction of green urban infrastructure became a part of the liberal agenda for modernizing the capital. The history of Lisbon's nineteenth-century public gardens and parks and tree-lined avenues has received scant attention, but this article reveals the pioneering role played by Lisbon City Council Department of Gardens and Green Grounds and the subsequent creative adaptation of Parisian green urban renewal programmes to Lisbon. These two phases corresponded to the leadership of different professional groups – gardeners and engineers, whose authority derived not only from their expertise but from their role in the making of scientific authority. Finally, this article highlights how the value ascribed to engineering as being more 'techno-scientific' than gardening dictated the outcome of the rivalry between gardeners and engineers with the eventual demise of the Department of Gardens and Green Grounds.

Introduction

During the second half of the nineteenth century, the first public garden in the country for citizens – the Estrela Garden – was built, the boulevard-like Avenida da Liberdade was opened and the competition for the Park of Liberty project was launched. The Campo Grande area was intended to be the lungs of Lisbon; 20,000 trees were planted along the streets and in the gardens of squares – and plazas. This development was in keeping with the city's growth to the north;¹ its population rose from 169,823 inhabitants in 1860 to 356,009 in 1900 (Figures 1 and 2).²

¹Table of the afforestation of Lisbon in 1858, by species of trees: Arquivo Municipal de Lisboa (AML), correspondence received by the department, 1834–64, PT/AMLSB/AL/CMLSB/UROB-E/23/cx. 48 DO SGO, 1858; and the statement by S. Viterbo, 'A jardinagem em Portugal', in *O Instituto. Revista Científica e Litteraria* (Coimbra, 1907), 291.

²J.V. Serrão, *História de Portugal, 1851–1890*, vol. IX (Lisbon, 1986); O. Ferreira and T. Rodrigues, 'As cidades de Lisboa e Porto na viragem do século XIX – características da sua evolução demográfica: 1864–1930', *Revista de*



Figure 1. Map of Lisbon, 1833. Lisbon drawn by W.B. Clarke, London, 47 Paternoster Row: Baldwin & Cradock. Biblioteca Nacional de Portugal, CC 595 V.

In Portugal, liberalism was the catalyst for Lisbon's modernization.³ After a civil war in which absolutists were ranged against liberals (1832–34), the latter's victory and the accession to the throne of Queen Mary II in 1834 finally provided the political stability required for progress in reform to be undertaken in the country and in its capital, Lisbon. This study emphasizes the liberal ideology as opposed to the *ancien régime* as it was this antagonism between the two forces that led to the creation of public spaces for all citizens, namely public gardens. This ideology was different from British liberalism, which was driven by the Whigs and strongly connected with industrialization and capitalism. It also differed from French liberalism, as it did not result from a revolution even though it was also driven by opposition to the values of the *ancien régime*. Liberalism in Portugal was a political

História, 12 (1993), 299–301. The first seven censuses of the Portuguese population were in 1864, 1878, 1890, 1900, 1911, 1920, 1930, plus the extraordinary census of 1925.

³On Portuguese liberalism, see M. de F. Bonifácio, *Seis estudos sobre o liberalismo português* (Lisbon, 1991); A.P. Mesquita, *Liberalismo, democracia e o contrário: um século de pensamento político em Portugal (1820–1930)* (Lisbon, 2006); L. Loia, *Liberalismo constitucional, 1826–1926: o pensamento político de Luís de Magalhães* (Lisbon, 2008); D. Justino, *Fontismo: liberalismo numa sociedade iliberal* (Alfragide, 2016). In this period, Lisbon's urban history has been foremost studied from the perspective of art history. See R.H. da Silva, 'Lisboa romântica, urbanismo e arquitectura, 1777–1874', NOVA University of Lisbon Ph.D. thesis, 1994; and J.-A. França, *Lisboa física e moral* (Lisbon, 2008).



Figure 2. Map of Lisbon, in *O Século*, Lisbon, 1906. Biblioteca Nacional de Portugal, CC 1323 R.

movement of the nineteenth century driven by the desire to maintain monarchy but with a Constitutional Charter. It was focused on constraining abuses of power from elites, but it became, above all, anti-clerical. There was never a liberal party, but several factions of liberals, the most important of which formed the Regenerator Party and the Historic Party respectively, which in 1876 joined forces to become the Progressive Party, corresponding to today's left-wing progressive liberals.⁴ Both liberal parties contributed to the greening of the capital by creating public spaces for the citizens, who could enjoy a more bourgeois lifestyle.

This article argues that the liberal agenda for Lisbon included not only the construction of grey infrastructure,⁵ with which we are familiar from the historiography, but also green infrastructure.⁶ In order to modernize the city and improve

⁴J.M. Sardica, 'Os partidos políticos no Portugal oitocentista (discursos historiográficos e opiniões contemporâneas)', *Análise Social*, 32 (1997), 557–601.

⁵On the construction of the techno-scientific nation by engineers, military men and politicians, see T. Saraiva, 'Inventing the technological nation: the example of Portugal (1851–1898)', *History and Technology*, 23 (2007), 263–71; A.C. de Matos, 'Gas industry and urban modernisation: Lisbon in the 19th and 20th centuries', *Fundación de los Ferrocarriles Españoles*, 2009; M. Macedo, *Projectar e construir a nação: engenheiros, ciência e território em Portugal no século XIX* (Lisbon, 2012); M.P. Diogo and A.C. de Matos, 'Going public: the first Portuguese national engineering meeting and the popularization of the image of the engineer as an artisan of progress (Portugal, 1931)', *Engineering Studies*, 4 (2012), 185–204.

⁶Grey infrastructure refer to railways, sewage and other technical infrastructure, while green infrastructure refer to the making of public parks, boulevards, tree-lined streets, squares and all public spaces that include botanical species. The terms grey and green infrastructure have been used by the history of

its citizens' well-being, Lisbon City Council undertook a series of municipal reforms, including founding the Department of Gardens and Green Grounds in 1840.⁷ The scope of these reforms extended beyond the urban developments generally associated with nineteenth-century urban modernization, such as the construction of grey infrastructure and architecture, industrialization, enhanced means of circulation, the growth of street life, crime and leisure, all interconnected with growth in urban populations territories.⁸ This article explores the ways in which liberalism led to the inclusion of public gardens, boulevards, and tree-lined streets in modern Lisbon.

Moreover, this article argues that the construction and management of green infrastructure was the subject of internal dispute between two Lisbon City Council services – the Department of Gardens and Green Grounds and the Technical Division. Between 1840 and the 1880s, Lisbon's green urban renewal was driven both by councillors and the gardeners of the Department of Gardens and Green Grounds, who achieved an unprecedented degree of influence in Portugal.⁹ Municipal gardeners displayed a deep sense of public service, and were acknowledged as experts by botanists and politicians to such an extent that they participated in decision-making processes regarding Lisbon's renewal of gardens and green grounds. In contrast, in Paris the construction of green infrastructure was led by the French engineer Jean-Charles Adolphe Alphand (1817–91).¹⁰ However, in 1869, the arrival in Lisbon of the Portuguese engineer Frederico Ressano Garcia (1847–1911), who had studied at the *École des Ponts et Chaussées*, changed the course taken by the department. Garcia became head of

technology, environmental history and urban history. See, for example, Y. Depietri and T. McPhearson, 'Integrating the grey, green, and blue in cities: nature-based solutions for climate change adaptation and risk reduction', in N. Kabisch, H. Korn, J. Stadler and A. Bonn (eds.), *Nature-Based Solutions to Climate Change Adaptation in Urban Areas. Theory and Practice of Urban Sustainability Transitions* (Cham, 2017), 91–109; A. Bassi, A. Cuéllar, G. Pallaske and L. Wuennenberg, *Stormwater Markets: Concepts and Applications* (Ottawa, 2017), 3. Blogs dedicated to environmental issues have also discussed cities' infrastructure by using these terms. See, for instance, J. Talberth and C. Hanson, 'Green vs. gray infrastructure: when nature is better than concrete', Blog of the World Resource Institute, 19 Jun. 2012; J. Talberth, E. Gray, L. Yonavjak and T. Gartner, 'Green vs. gray: nature's solutions to infrastructure demands', Blog of the Ecology Global Network, 14 Mar. 2013.

⁷*Synopse dos principaes actos administrativos da Camara Municipal de Lisboa no anno de 1840* (Lisbon, 1841), 11.

⁸C. Hamlin, *Public Health and Social Justice in the Age of Chadwick: Britain, 1800–1854* (Cambridge, 1998); M.V. Melosi, *The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present* (Baltimore, 2000); B. Highmore, 'Street life in London: towards a rhythm analysis of London in the late nineteenth century', *New Formations*, 47 (2002), 171–93; L. Nead, *Victorian Babylon: People, Streets and Images in Nineteenth-Century London* (New Haven, 2005).

⁹A.D. Rodrigues, 'O que é um jardineiro? Nomes, privilégios e funções de hortelãos e jardineiros na Idade Moderna em Portugal', *Tritão*, 1 (2012), 299–308.

¹⁰The bibliography on Parisian renewal has focused on Haussmann and only a few works are dedicated to Alphand, who led the construction of green infrastructure and was the mayor of Paris from 1867. On Alphand, see A. Komara, 'Measure and map: Alphand's contours of construction at the Parc des Buttes Chaumont, Paris 1867', *Landscape Journal*, 28 (2009), 22–39; G.F. Shapiro, *The Promenades of Paris: Alphand and the Urbanization of Garden Art, 1852–1871* (Philadelphia, 2015); R. Hopkins, *Planning the Greenspaces of Nineteenth-Century Paris* (Baton Rouge, 2015); M. Audouy, J.-P. Le Dantec, Y. Nussaume and C. Santini (eds.), *Le grand Pari(s) d'Alphand – Création et transmission d'un paysage urbain* (Paris, 2018).

the Technical Division in 1874, resulting in administrative solutions which reflected the developments in France, stemming from the empowerment of engineers and landscape architects to the detriment of gardeners.

This article seeks to build bridges between the urban history of science and gardens and landscape studies. Following Sven Dierig, Jens Lachmund and J. Andrew Mendelsohn, the article demonstrates how the Department of Gardens and Green Grounds represented an institution that offered a stable environment for the co-construction of science and the city, highlighting how the municipal nurseries and the construction of green infrastructure contributed to producing scientific knowledge about horticulture and botany, including its large-scale application in the city. Dierig *et al.* argued that urban expertise was a negotiated outcome between politicians and appointed experts. This article widens the conceptual framework put forward in *Science and the City*¹¹ in order to include gardeners alongside engineers and doctors as experts. Drawing on concepts of centre and periphery, it further demonstrates how the appropriation of the French model was the result of a succession of local negotiations, emphasizing the role of circulation and situated knowledge in the co-construction of Lisbon's green infrastructure.¹² Michèle Dagenais and Pierre-Yves Saunier claimed that 'municipal experience should be more central to urban studies'.¹³ In Lisbon, it was not a king or a landscape architect but municipal employees who had the power and ability to shape the city's green infrastructure by designing, building and maintaining it.

Recent scholarship has acknowledged the importance of experts in the history of science and of engineers in the history of technology. Historians of science have stressed the role played by experts in mediating knowledge transfer between the scientific and municipal realms and, therefore, in guiding action.¹⁴ What has been less widely recognized is that gardeners were among these experts, participating in decision-making processes, and were agents of modernization on the ground. The history of technology has emphasized the role of engineers as harbingers of modernity, as their knowledge was considered more scientific by central and local political powers on account of their education in technical universities; they became the leading actors in the construction of grey infrastructure.¹⁵ But this

¹¹S. Dierig, J. Lachmund and J.A. Mendelsohn, 'Introduction: toward an urban history of science', *Osiris*, 2nd series, 18 (2003), 1–19.

¹²D. Livingstone, *Putting Science in Its Place: Geographies of Scientific Knowledge* (Chicago, 2003).

¹³M. Dagenais and P.-Y. Saunier, 'Tales of the periphery: an outline survey of municipal employees and services in the nineteenth and twentieth centuries', in M. Dagenais, I. Mayer and P.-Y. Saunier (eds.), *Municipal Services and Employees in the Modern City: New Historic Approaches* (Abingdon, 2016), 13.

¹⁴C. Rabier (ed.), *Fields of Expertise: A Comparative History of Expert Procedures in Paris and London, 1600 to Present* (Newcastle, 2007); H.M. Collins, 'Expert systems and the science of knowledge', in W.E. Bijker, T.P. Hughes and T.J. Pinch (eds.), *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge, MA, and London, 2012); D. Rodogno, B. Struck and J. Vogel (eds.), *Shaping the Transnational Sphere: Experts, Networks and Issues from the 1840s to the 1930s* (New York and Oxford, 2015); H. Collins, R. Evans, D. Durant and M. Weinel, *Experts and the Will of the People: Society, Populism and Science* (Cham, 2019).

¹⁵Among the prolific works on this topic, see R.A. Buchanan, 'Science and engineering: a case study in British experience in the mid-nineteenth century', *Notes and Records of the Royal Society of London*, 32 (1978), 215–23; *idem*, *The Engineers: A History of the Engineering Profession in Britain, 1750–1914* (London, 1989); A. Picon, *L'invention de l'ingénieur moderne: l'École des ponts et chaussées, 1747–1851*

article highlights how engineers also built green infrastructure – a subject that has received scant attention from historians.¹⁶

Finally, historical analysis of garden and landscape studies has provided a vast literature on public gardens and parks¹⁷ as well as on boulevards, avenues and *allées* as a new paradigm of urban expertise.¹⁸ However, no field of study has sufficiently focused on the municipal teams behind the introduction of public gardens and the construction of green infrastructure in nineteenth-century cities, except for the work on Alphand.¹⁹ This article demonstrates how the liberal agenda included constructing green infrastructure as a means not only of transforming public space but also the public sphere, resulting in the cultivation of a new kind of citizen adhering to the values of the liberal bourgeoisie.

This article traces the path of six actors – two councillors, two gardeners and two engineers – and three of the great works carried out by the Department of Gardens and Green Grounds – the Estrela Garden, the Avenida da Liberdade and tree-lined streets. The departmental works took place in two stages, with the construction of the boulevard Avenida da Liberdade between 1879 and 1886 marking the transition from one phase to another. In the first phase, the gardeners had the power to make decisions, and the leading works of the department, such as the Estrela Garden, were carried out by Lisbon City Council employees. In the second phase, the French influence was stronger, and engineers replaced gardeners as the driving force behind gardens and the management of green grounds. Two councillors, with different profiles, are associated with these two phases: the agronomist Francisco Simões Margiochi, a leading figure in horticulture and gardening in Portugal, and Viscount Carriche, who was unable to cope with the rise of the French-educated Portuguese engineer, Ressano Garcia. The outcome of this

(Paris, 1994); *idem*, 'Engineers and engineering history: problems and perspectives', *History and Technology*, 20 (2004), 421–36.

¹⁶A. Komara, 'Concrete and the engineered picturesque: the Parc des Buttes Chaumont (Paris, 1867)', *Journal of Architectural Education*, 58 (2004), 5–12; U. Strohmayer, 'Urban design and civic spaces: nature at the Parc des Buttes-Chaumont in Paris', *Cultural Geographies*, 13 (2006), 557–76; A. Picon, 'Nature et ingénierie: le parc des Buttes-Chaumont', *Romantisme*, 150 (2010), 35–49; O. Hochadel and L. Valls, 'Civic nature: the transformation of the Parc de la Ciutadella into a space for popular science', in O. Hochadel and A. Nieto-Galan (eds.), *Barcelona. An Urban History of Science and Modernity, 1888–1929* (London, 2016), 25–45; Audouy et al. (eds.), *Le grand Pari(s) d'Alphand*.

¹⁷H. Conway, *People's Parks* (Cambridge, 1991); *idem*, *Public Parks* (Princes Risborough, 1996); R. Rosenzweig and E. Blackmar, *The Park and the People* (Ithaca, 1992); H. Schenker, *Melodramatic Landscapes: Urban Parks in the Nineteenth Century* (Charlottesville, 2009); A.D. Rodrigues, 'Greening the city of Lisbon under the French influence of the second half of the nineteenth-century', *Garden History*, 45 (2017), 224–50.

¹⁸H.W. Lawrence, 'Origins of the tree-lined boulevard', *Geographical Review*, 78 (1988), 355–74; J. Winter, *London's Teeming Streets 1830–1914* (London, 1993); A.B. Jacobs, E. Macdonald and Y. Rofé, *The Boulevard Book: History, Evolution, Design of Multiway Boulevards* (Cambridge, MA, 2002); H.W. Lawrence, *City Trees: A Historical Geography from the Renaissance through the Nineteenth Century* (Charlottesville and London, 2008); F.R.V. Monteiro, *The Modern Avenue: Avenue des Champs-Élysées, Regent Street, Avenida da Liberdade* (Casal de Cambra, 2015); M. Johnston, *Trees in Towns and Cities: A History of British Urban Arboriculture* (Oxford, 2015); *idem*, *Street Trees in Britain: A History* (Oxford, 2017); A. Collantes de Téran et al., *Las alamedas. Elemento urbano y función social em ciudades españolas y americanas* (Seville, 2019).

¹⁹Audouy et al. (eds.), *Le grand Pari(s) d'Alphand*.

struggle over gardens ended with the application of the Haussmannian administrative model²⁰ in Lisbon and resulted in the closure of the Department of Gardens and Green Grounds and the integration of gardening services under the Technical Division in 1903.

The golden age of the Department of Gardens and Green Grounds: negotiated decisions between councillors and gardeners

The *New Traveller's Guide of Lisbon* showed how greatly the city had changed by the 1870s.²¹ At that time, it was comparable to the foremost advanced European capitals with its gardens and plazas recalling Paris, Madrid or Milan.²² Foreign visitors also highlighted these boulevards and gardens as markers of modernity. One traveller from Paris, arriving in Lisbon by train, was astonished at the busy station and rapidly growing population but was especially impressed by the boulevards radiating out from the Avenida da Liberdade and the public gardens that spanned the city in 1899.²³ Both nationals and foreigners shared the perception of the triumphant role played by gardens, walks and groves in Lisbon's modernization, enabling the stroller to benefit from its landscapes and views.

The idea of a modern Lisbon proved so successful that in 1906 the professor and writer Zacharias d'Aça published a book entitled *Modern Lisbon* in which he listed all 'the progress we have made in recent times and which bring us closer to the leading nations of Europe'.²⁴ It was clear to contemporaries that Lisbon was undergoing a modernization process which included the construction of railway stations, modern hospitals, water supply and sanitation systems and public lighting but also the green infrastructure made up of public gardens, boulevards and tree-lined streets. It is this holistic view of modernity that has fallen beyond the scope of historiography with its tendency to emphasize circulation and acceleration in the pace of everyday life, the construction of grey infrastructure, the city's growth in population and the scale and development of industry.²⁵

Following the civil war (1832–34) between liberal forces and defenders of the Constitutional Charter and those defending the king's absolute powers, the victory of the liberals and the accession to the throne of Queen Maria II marked the victory of the nation and the citizen. Since the beginnings of liberalism in Portugal, several parties identified with the liberal ideology and gradually gained representation in parliament, but it was only in the 1850s that the rotating parties of the

²⁰S.W. Sawyer, 'Définir un intérêt particulier parisien. Les élections et l'administration municipale de Paris au milieu du XIXe siècle', *Annales. Histoire, Sciences Sociales*, 64 (2009), 407–33; P. Pinon, 'La création d'un service des Promenades et Plantations', in Audouy et al. (eds.), *Le grand Pari(s) d'Alphand*, 90–2.

²¹J.C. Machado, *Novo guia do viajante em Lisboa: Cintra, Collares, Mafra, Batalha, Setúbal*, 3rd edn (Lisbon, 1872).

²²*Ibid.*

²³A. Dry, *Vers l'Occident. Nord du Maroc, Andalousie, Lisbonne* (Paris, 1899), 255.

²⁴Z. d'Aça, *Lisboa moderna* (Lisbon, 1906).

²⁵This occurred in the international historiography mentioned in n. 6 but also regarding studies on Lisbon: Silva, 'Lisboa romântica'; França, *Lisboa física e moral*; Ferreira and Rodrigues, 'As cidades de Lisboa e Porto'; de Matos, 'Gas industry'.

Portuguese constitutional monarchy assumed a definitive identity.²⁶ After 1834, the liberals were divided into two groups: one supported the 1822 Constitution and the other the 1826 Constitutional Charter that secured the king greater power than set out in the Constitution.

Nevertheless, it was clear that the country had to compensate for the decades of political turmoil since the French invasions in 1807. Efforts were focused on the attainment of the goals of equality before the law, socio-economic justice and even new standards of 'civilization'.²⁷ Consequently, Lisbon City Council took upon itself responsibility for promoting the major municipal reforms that would endow the city of Lisbon with structural and civilizational improvements designed to foster citizenship.

In 1834, as soon as the liberals came to power, they carried out the first administrative reform with the direct election of municipal bodies. The first members of Lisbon City Council were elected. There were 13 councillors distributed in four areas – works, meat, administration and health. However, there was still no correspondence between a councillor and a department.²⁸ This reform was considered insufficient in itself to modernize Lisbon. Therefore, the reorganization of Lisbon City Council in 1840 included several new departments to deliver public services: *sidewalks* catered for the need to pave the city; *lighting* dealt with the illumination of public spaces; *cleaning* was for clearing away the filth and detritus that accumulated in the city due to the lack of piped water and sewage systems; *water* was for supplying water to the population and curbing water shortages; *markets* regulated the sale of food products; *cemeteries* managed the serious public health problem caused by the lack of proper burial sites; *slaughterhouses* regulated meat sales; *fire-fighting* protected property and lives, especially in the neighbourhoods composed largely of wooden buildings; *health and the Hospital of S. Lázaro* cared for the sick and lepers and, finally, the *treasury* supervised and regulated the budgets of all the other departments.²⁹

According to the liberal agenda, modernization of the capital was to include both grey and green infrastructure, so the Department of Gardens and Green Grounds was also established following the reorganization of the city council in 1840. This development can be compared with the progress of municipal reform in Britain, but not in France, which only embarked on similar projects in 1855.³⁰ However, in Britain the creation of green infrastructure was accompanied by the construction of sanitation systems (drinking water and sewage) due to the perception that the environment impacted on public health.³¹ In Paris, parallel developments occurred in the 1850s–1860s, but in Portugal they were separate enterprises. Whilst the Department of Gardens and Green Grounds was founded in 1840, the

²⁶Mesquita, *Liberalismo, democracia e o contrário*; Loia, *Liberalismo Constitucional*; Justino, *Fontismo*.

²⁷C.N. da Silva, 'Conceitos oitocentistas de cidadania: liberalismo e igualdade', *Análise Social*, 14 (2009), 533–63.

²⁸E.F. de Oliveira, *Elementos para a história do município de Lisboa*, vol. I (Lisbon, 1887), 41.

²⁹*Ibid.*; M.G. Martins, *A evolução municipal de Lisboa: pelouros e vereações* (Lisbon, 1996), 25; P.J. Fernandes, *As faces de proteu: elites urbanas e o poder municipal em Lisboa de finais do século XVIII a 1851* (Lisbon, 1999), 167–89.

³⁰Audouy et al. (eds.), *Le grand Pari(s) d'Alphand*, 34–7.

³¹Hamlin, *Public Health*; Melosi, *Sanitary City*.

sanitation system was only built in the 1860s and sewers were not provided by a private company until the 1880s.³² The liberal idea of modernity required the embellishment of a city still struggling with the ruins left by the 1755 earthquake.³³ At this stage, greening the city was more redolent of aesthetic aspirations than public health concerns.

When it was founded, the department was responsible for the old Passeio Publico (Public Promenade). This was the first public garden in Lisbon, commissioned by the marquis of Pombal in 1764 but with paid entrance and was therefore never considered as a 'garden for all' by the liberals. The department also inherited the garden of São Pedro de Alcântara, begun in 1834, and the city's two groves – one on the eastern side and the other on the western side of the city. The early period of the department was characterized by a lack of substantive action – there were few gardens to care for, a small staff of around 20 workers and an allocated budget of 2.629\$190 réis (the former Portuguese currency).³⁴ However, gardens and gardeners became increasingly important at Lisbon City Council over the next 40 years, the budget almost quadrupling in 1869 (9,571\$400 réis) before peaking at 15,362\$360 in 1883. At the same time, the number of employees increased tenfold from 20 to 200, while the number of gardens, public parks and green grounds under its management was constantly being expanded.³⁵ The department Regulation was issued by Councillor Ricardo Teixeira Duarte in 1859.³⁶ This stipulated in detail all the roles of the different actors involved in the department, from the gardener to the labourer, and the salaries of employees – a steward (\$800 réis), tool keepers (\$360 réis), porters, guards, night guards (all \$300 réis), workers (\$280 réis per day). A misdemeanour would incur the loss of a day's pay. The gardener (1\$000 réis per day) received the highest salary and took orders directly and exclusively from the councillor, who was not paid for this position.³⁷ These wages were increased by similar proportions in 1874.³⁸ The Regulation also included rules on opening and closing the gardens, the appropriate uniforms for guards and porters, and whether animals were allowed into the gardens, as well as the respective terms and conditions.

The pioneering civilizational actions of the Department of Gardens and Green Grounds began in the Estrela Garden, which was inaugurated in 1852 (Figure 3). This garden constituted a paradigm of liberal intentions and actions, and formed a backdrop for the implementation of all technical and scientific expertise behind the reintroduction of nature into the city, to educate different audiences and

³²A.F. da Silva, 'Thirsting for efficiency: technological and transaction-cost explanations for the municipalisation of water supplies', in A.D. Rodrigues and C.M. Marin (eds.), *The History of Water Management in the Iberian Peninsula between the 16th and 19th Centuries* (Cham, 2020), 89–110.

³³Silva, 'Lisboa romântica'.

³⁴*Synopse*, 1840, 114. 1,000 réis was equivalent to £7,67; H.M. Filho, 'Exchange rates of the mil-reis (1795–1913)', Munich Personal RePEc Archive, 5210 (2007), 16.

³⁵AML, session of Lisbon City Council, 17 Jan. 1884.

³⁶Regulamento do pelouro dos Passeios e Arvoredos', in *Annaes do Municipio de Lisboa*, 43, Jul. 1859, 355–9.

³⁷This data corresponds to the salaries earned in 1859. AML, correspondence, 1834–64, PT/AMLSB/AL/CMLS/UROB-E/23, Cx. 48 do SGO, doc. 7.

³⁸*Orçamento geral da CML para o ano económico de 1874–1875* (Lisbon, 1875).



Figure 3. Detail of Lisbon's plan with the Estrela Garden, 1904–11. Arquivo Municipal de Lisboa, PT/AMLSB/CMLSB/UROB-PU/05/03/053.

morally uplift the citizen.³⁹ In the Estrela Garden, there was no admission fee; this was a garden for all.⁴⁰

The Estrela Garden was constructed during the Regeneration and while the Regenerator Party⁴¹ was in government, but other gardens and green grounds were implemented by Progressives, who could be described by today's standards as left-wing progressive liberals.

The proposal to establish a public garden in an area near to a part of the city that the court had vacated following the abolition of the religious orders in 1834 was first put forward in 1842. However, because of the political turmoil, it was postponed before its reintroduction a decade later. In 1850, a councillor was appointed exclusively to oversee the Estrela Garden construction work and answer directly to the minister of the kingdom.⁴² The Estrela Garden was inspired by Gabriel Thouin's proposals presented in his *Plans raisonnés de toutes les espèces de jardins*

³⁹On this topic, see A.D. Rodrigues and A. Simões, 'A liberal garden: the Estrela Garden and the meaning of being public', in A. Simões and M.P. Diogo (eds.), *Science, Technology and Medicine in the Making of Lisbon (1840–1940)* (Leiden, forthcoming 2022).

⁴⁰*Annaes*, 1858, 102.

⁴¹More than half of the council presidents of the second half of the nineteenth century belonged to this political formation. Its leaders were Fontes Pereira de Melo (1856–87), António de Serpa Pimentel (1887–1900), Ernesto Rodolfo Hintze Ribeiro (1900–07), Júlio de Vilhena (1907–09) and António Teixeira de Sousa (1909–10). In 1901, the dissidence of a faction led by João Franco gave rise to the Liberal Regenerator Party.

⁴²*Synopse*, 1850, 7.

(1820), the core of the French picturesque style,⁴³ a copy of which was held by the specialized library of Lisbon City Council. Architects from Lisbon City Council, specifically Malaquias Ferreira Leal (1778–1859) and the French gardener Jean Bonnard, who was then the king's gardener, and the municipal gardener João Francisco designed the Estrela Garden. Its lines recalled Paris' Buttes-Chaumont park that opened in 1867; both were clearly inspired by the French picturesque style.⁴⁴

The Estrela Garden later occupied a central place in the hierarchy of the department as stipulated by the department Regulation and new management procedures for its human resources and budget, issued in 1859. Henceforth, the greenhouses, nurseries and, more importantly, the chief gardener were all concentrated at the Estrela Garden. Flowers, plants, seeds and trees were dispatched from here to other gardens, institutions, villages and cities, as well as to the colonies.⁴⁵ Moreover, at a time when public gardens were a showcase for new plants, including the introduction of exotic plants into gardens, the Estrela Garden stood out for its pioneering role in educating visitors. This resulted not only in the exhibition and dissemination of new botanical and zoological news to public audiences but also in its functional role as 'a school of practical gardeners'.⁴⁶ As there were no formal schools for gardeners, despite some attempts to set them up, the department was the most important source of training for aspirant professional gardeners.

In 1869, the department's staff expenditure clearly conveys how the maintenance of the Estrela Garden engaged most of the department's workers, and it was the only garden allocated a permanent gardener. The Estrela Garden also received twice (82,580\$ réis) the budget allocated to the older public garden built by the marquis of Pombal – the Passeio Publico (43,000\$ réis) – even though its area was much smaller and correspondingly reflected the priority attributed to the former.⁴⁷ Symbolically, this encapsulated the victory of the liberals over the *ancien régime*.

This public garden was constructed to meet the needs of families, especially urban middle-class women with children for whom strolling and sitting on park benches had become part of everyday life.⁴⁸ These new public spaces were expected to foster and educate a new kind of citizen, more aware of their duties and rights. In 1882, the Estrela Garden was selected as the site of the first kindergarten in Portugal, the Froebel School, named after the German psychologist, Friedrich Froebel (1782–1852), who advocated that children should go to school before the

⁴³See J.D. Hunt, *Gardens and the Picturesque: Studies in the History of Landscape Architecture* (London and Cambridge, 1994).

⁴⁴Komara, 'Concrete and the engineered picturesque'; Picon, 'Nature et ingénierie'.

⁴⁵'Regulamento'.

⁴⁶Report from 1859, *Arquivo Municipal de Lisboa*, 8, Feb. 1860, 61.

⁴⁷Payroll for the employees of the Department of Gardens and Green Grounds for the week ending on 10 Nov. 1869. AML, Mapas de trabalho e despesa, 1869, PT/AMLSB/CMLSB/OMUN-C/13.

⁴⁸As the abundant iconography of the Estrela Garden highlights, which, for reasons of space, cannot be included within this article. This iconography is published in A.D. Rodrigues, *Horticultura para todos* (Lisbon, 2017), 30–40; and A.D. Rodrigues, *O triunfo dos jardins: o pelouro dos passeios e arvoredos de Lisboa (1840–1900)* (Lisbon, 2020), 431–50.



Figure 4. Portrait of Francisco Simões Margiochi by Pedro Guedes, 1904. Casa Pia de Lisboa – Centro Cultural Casapiano, CPL CCC n° 001560.

age of six and should be cared for like a ‘human plant’.⁴⁹ The construction of the school was not considered a ‘luxury, but an improvement that the city required to expand the intellectual development needed to rise in civilization standard’.⁵⁰

In the 1870s, the actions of the department owed much to the capacity and vision of Francisco Simões Margiochi (1848–1904), the councillor in the Department of Gardens and Green Grounds (Figure 4). Margiochi was an agronomist and had been raised in an intellectual milieu as both his father and grandfather were famous mathematicians and members of the Academy of Sciences of Lisbon. A member of the Regenerator Party, Margiochi married the daughter of one of the wealthiest men in Lisbon and became a prominent member of urban society and politics. Margiochi was a member of the Regenerator Party but also an expert, and hence aware that specific theoretical knowledge was needed for the Department of Gardens and Green Grounds practitioners. Throughout his life, he was an advocate of agriculture and horticulture, having published regularly on

⁴⁹T. Ferreira, ‘Escolas infantis ou jardins Froebel: apontamentos para a sua história em Portugal’, *Froebel: Revista de Instrução Primária*, 1 (1882), 2–3.

⁵⁰AML, session of Lisbon City Council, 16 Mar. 1882.

these topics.⁵¹ As the Department of Gardens and Green Grounds councillor between 1872 and 1875, he played an important role in the city's afforestation, acting as a tree expert at a time when there were no chartered arboriculturists.⁵² Margiochi understood that tree planting was not solely about the city's embellishment but also about improved public health.⁵³ Lists of municipal nurseries as well as records of tree plantings detail the great diversity of tree species introduced to Lisbon, such as mulberry trees, acacias, ailanthus, paradise trees, Canadian poplars, weeping willows, bastard sycamores, cedar, eucalyptus from the *robusta* variety, ash, lotus, Judas trees, paulownias, planes, false pepper trees and elms,⁵⁴ in marked contrast with the strict variety of tree species found in other urban contexts.⁵⁵ Margiochi collected 84 publications in order to found a specialized library of garden art at Lisbon city hall, consisting of works on botany, gardening and horticulture to facilitate and hold to account the subsequent work done by the department's practitioners and other city council professionals as well as their amateur peers. The French influence was mirrored in the department's library, which contained more than 80 per cent of books published in France by French authors.⁵⁶ Margiochi founded the first study programme for gardeners and horticulturists at the Casa Pia charitable orphanage (1886–88) and became the founding president of the Royal Society of Horticulture in Portugal in the later years of his life (1898–1904).⁵⁷ During his presidency, Margiochi again sought to establish a garden study programme.⁵⁸

From its inception until roughly 1880, councillors and gardeners were involved in all the decisions regarding the greening of Lisbon. Their involvement is reflected in the status attained by municipal gardeners under the liberal regime. Before the founding of the department, the status of gardeners in Portugal in no way corresponded to that of French gardeners as garden design was determined by the patrons or architects, with the exception of some foreign gardeners working in Portugal.⁵⁹ However, within the context of the liberal urban renewal, municipal gardeners designed gardens and greenhouses, studied in the specialized departmental library, delivered lectures on botany and horticulture to amateur audiences,⁶⁰ supervised the municipal nurseries, the public gardens, the tree-lined streets and avenues, and even travelled to the Potager du Roi in Versailles to discuss horticultural issues with their fellow French professionals.⁶¹ In order to highlight the novel status attained by municipal gardeners, two examples will be briefly explored.

⁵¹Rodrigues, *Horticultura para todos*, 113–66.

⁵²M. Johnston, *The Tree Experts: A History of Professional Arboriculture in Britain* (Oxford, 2021).

⁵³D.O. Junior, 'Chronica', *Jornal de Horticultura Pratica* (1873), 60.

⁵⁴Table of the afforestation of Lisbon in 1858.

⁵⁵Urban space was dominated by elms, both in Paris and London. For example, elms, limes and sycamores are mentioned in Johnston, *Street Trees in Britain*.

⁵⁶All the items of this specialized library are published in Rodrigues, 'Greening the city of Lisbon', 241–5.

⁵⁷A.D. Rodrigues and A. Simões, 'Horticulture in Portugal 1850–1900: the role of science and public utility in shaping knowledge', *Annals of Science*, 74 (2017), 192–213.

⁵⁸*Boletim da Real Sociedade Nacional de Horticultura de Portugal*, 5 (1899), 78; and 7 (1900), 98.

⁵⁹Rodrigues, 'O que é um jardineiro?'

⁶⁰Letter from the amateur Sebastião Estácio da Veiga to the municipal gardener João Francisco da Silva, requiring lessons on botany. AML, correspondence, 1865–1881, PT/AMLSB/AL/CMLSB/UROB-E/23, cx. 49 do SGO, 1865, doc. 15.

⁶¹AML, session of Lisbon City Council, 5 Apr. 1883.

Bento António Alves (1796–1878) was a municipal gardener in 1856 before leaving the department in 1859 to work for private clients such as the dukes of Palmela, about whose garden he published a leading article.⁶² He had a house with a garden on S. José Street and a nursery in the surroundings of Lisbon, where he produced flowers and vegetables that he publicized by catalogue.⁶³ Moreover, he established a company with the French gardener Jean Bonnard to promote and sell plants produced in Portugal to national and foreign amateurs.⁶⁴ Alves was acknowledged by gardeners, naturalists and councillors as an expert. The Austrian naturalist Friedrich Martin Josef Welwitsch (1806–72) considered him the most important horticulturist of his time.⁶⁵ He was so wealthy that he was even able to donate araucaria trees to the Lisbon public gardens in 1871.⁶⁶

João Francisco da Silva spent his entire career at the department, from his apprenticeship through to becoming chief gardener. By 1853, he was already considered a professional and acknowledged by councillors as an ‘intelligent gardener’ before becoming chief gardener in the 1860s. The formal request for a rise in salary stated that not only had he been maintaining multiple gardens in Lisbon but that he had also designed them, his role corresponding to that of landscape architect. This submission stated that João Francisco needed to buy paper, inks, books and engravings to perform his professional activities properly, which was impossible on his low salary.⁶⁷ He was therefore not only a practitioner but clearly someone with ambitions to engage in the theoretical side of garden planning. Moreover, he was very aware of the public service dimension to his work. When contacted by an amateur about the opportunity for botany lessons, he immediately replied that he could not dedicate his time to the benefit of a sole individual.⁶⁸

The municipal gardeners, who had learned their skills on the job, achieved a unique status and reputation in Portugal and they actively participated in decision-making processes. In 1858, when deciding on the renovation of the Passeio Publico, which involved decisions on the planting of tree species and the methods to be followed, the city council appointed a committee composed of João Francisco, the municipal gardener, Julio Levoy Waigel, a horticulturist, Bernard, the king’s gardener, P. Mourier, the gardener of the count of Farrobo, and Jacob Weiss, the Swiss gardener for the dukes of Palmela.⁶⁹ They jointly advocated a radical renovation of the Passeio Publico grove in opposition to the opinion of the forestry engineer from the Institute of Agriculture. The gardeners prevailed and their success reflected the scientific authority they had built up.

⁶²B.A. Alves, ‘Plantas florestaes e de ornamento naturalizadas na Quinta do Lumiar’, *Archivo Rural. Jornal de Agricultura, Artes e Sciencias Correlativas*, 1 (1858), 323–5.

⁶³*Catálogo das plantas e sementes de flores e hortaliças* (Lisbon, 1830 and 1850).

⁶⁴B.A. Alves and J. Bonnard, *Énumération des végétaux cultivés à Lisbonne (Portugal) par la Compagnie Horticole. 1854 à 1855* (Paris, 1854).

⁶⁵S. Viterbo, *A jardinagem em Portugal* (Lisbon, 1906), 741.

⁶⁶AML, correspondence, 1865–81, PT/AMLSB/AL/CMLSB/UROB-E/23, Cx. 49 do SGO, 1871, doc. 6.

⁶⁷*Ibid.*, docs. 11 and 14.

⁶⁸Letter from the amateur Sebastião Estácio da Veiga to the municipal gardener João Francisco da Silva, requesting botany lessons. AML, correspondence, 1865–81, PT/AMLSB/AL/CMLSB/UROB-E/23, cx. 49 do SGO, 1865, doc. 15.

⁶⁹F. Le Cunff, ‘Parques e jardins de Lisboa, 1764–1932. Do Passeio Publico ao Parque Eduardo VII’, NOVA University of Lisbon M.Sc. dissertation, 2000, 176.

In 1879, Lisbon embarked on a major period of renewal, with renovation work beginning on the Avenida da Liberdade. Since the 1860s, opinions had been expressed in favour of opening up a wide avenue 'continuing from the Passeio Publico to the circumvallation road'.⁷⁰ The desire to transform the Passeio Publico into something different encapsulated the need to build an important communication route, the wish to establish a comfortable and elegant carriage and horse-riding route in the French style as well as the desire to rid the city of the public garden built under the *ancien régime*.

In 1882, the city council appointed a committee to decide on the species of tree to be planted along the Avenida da Liberdade. Its members included the departmental councillor, the viscount of Carriche, the agronomist and former departmental councillor, Margiochi, the French gardener-in-chief of the Polytechnic School of Lisbon botanic garden, Jules Daveau, Weiss, who had also collaborated with the municipality since the 1850s, and finally the department's own gardener-in-chief, João Francisco da Silva.⁷¹ The committee considered those species known to be well adapted to Lisbon's Mediterranean climate while also taking into account the restructuring of the Passeio Publico, which would release many trees for potential transplantation. However, aware that the theoretical precepts for planting aligned trees in urban spaces recommended cultivating only one species in keeping with the different growth rates and flowering times of different species, they chose to plant only one species on each stretch of the avenue. As the boulevard was divided into 12 plots, this determined the choice of 12 species and, correspondingly, the utilization of trees from the old Passeio Publico.

Lisbon's Avenida da Liberdade highlights how the French model of the Champs Elysée boulevard,⁷² with its two rows of elms, underwent creative adoption by Lisbon City Council while also revealing how gardeners, who up until this point had participated in every decision-making process regarding the greening of the city of Lisbon, were about to be sidelined by engineers (Figure 5).

The fall of the Department of Gardens and Green Grounds: overlapping roles of councillors and engineers

The construction of the Avenida da Liberdade was an undertaking of such magnitude that its construction involved co-ordination between various Lisbon City Council technicians. This provided the opportunity to tear up the city, finally remove debris left over from the earthquake, install more comprehensive water supplies and sanitation systems as well as gas pipes for lighting the city's streets. The authorities decided that the general co-ordination of the works would fall to the council's Technical Division headed by Ressano Garcia.

Ressano Garcia was a Portuguese engineer who had studied at the Polytechnic School of Lisbon before attending the École des Ponts et Chaussées in Paris,

⁷⁰ *Arquivo Municipal de Lisboa*, 210, 1863, 1678.

⁷¹ Committee's opinion on the species to grow on the avenue. AML, correspondence, 1865–81, PT/AMLSB/AL/CMLSB/UROB-E/23, Cx. 49A do SGO, 1882, doc. 50.

⁷² The role model for the Avenida da Liberdade could only be the Champs Élysées as the greatest amount of information arriving at Lisbon City Council dealt with this boulevard. This weakens the theory presented by Monteiro, *The Modern Avenue*.



Figure 5. The Avenida da Liberdade, postcard, c. 1904. Biblioteca Nacional de Portugal, PI 1939 P.

concluding his degree in 1869 and returning to Lisbon in the same year. He was in Paris at the time of the 1867 World Exhibition, for which the main works designed by Haussmann and Alphand had already been completed. Ressano Garcia began his career in Portugal as a professor at the Industrial and Commercial Institute of Lisbon before his appointment as chief engineer by Lisbon City Council in 1874. He undertook work on the General Plan for Lisbon's urban improvement and correspondingly implemented the northward expansion of the city, starting with the construction of the main Lisbon boulevard. Moreover, he was a member of the Progressive Party and became a parliamentary member, a minister and a peer of the kingdom. The Progressive Party inherited the Historic Party in 1876. It was one of the liberal Portuguese parties, but it distinguished itself from its direct opponent, as it intended to reform the Constitutional Charter, and bring to an end the hereditary character of the Chamber of Peers, as well as establish a limit to its elements. In addition, the Progressive Party advocated the improvement of electoral reform by expanding the suffrage, changing the boundaries of the existing single-member constituencies and admitting the representation of minorities. This agenda was utterly contrary to the so-called most conservative matrix of the regenerators, for whom the Constitution should be subject to as little change as possible.⁷³

⁷³The Republican Party appeared in 1872 but had almost no expression until 1890 and was banished from the political regime from 1891 to 1906. It stems from the ideals of the 1789 French Revolution and was founded on the belief that it was not liberalism that republicanism had to displace, but the interpretation that was implemented in the Portuguese Chartist constitutional regime, concerning political, social and economic affairs. Republicanism intended to overcome the commitment institutionalized by the constitutional monarchy, which was biased towards liberal values and wanted to establish a regime based on freedom, equality and fraternity. The party's return to power in 1906 led to the end of monarchy in 1910 and the implementation of the Republic.

Although Ressano Garcia was a member of the Progressive Party, it was under a Regenerator government that the Avenida da Liberdade was built.

Following the successful construction of the Avenida da Liberdade, Ressano Garcia would lead the construction work on the marquis of Pombal plaza, the avenues radiating outwards, as well as the neighbourhoods of Campo de Ourique and Estefânia – all new areas in the north of Lisbon.

The rise of the engineer stemmed from the enormous technological progress in engineering which was transforming people's lives; railways had enabled people to travel at unprecedented speeds.⁷⁴ Moreover, with its ultimate dependence upon mathematics and the sciences, engineering conveyed an authority that knowledge acquired by practice was unable to compete with. Engineers achieved institutional and professional recognition, receiving knighthoods in Great Britain and becoming members of parliament in France and Portugal.⁷⁵ Although engineers still acquired expertise through their own practice, by continuing with the prevailing empirical tradition, engineering was envisioned as an applied science.⁷⁶ Contributing to this state of affairs were the guarantees of probity and expertise provided by the engineering schools of France, comparable even to the pedigree of engineers from the United Kingdom who had advanced the industrial revolution.⁷⁷

The disagreements between the Technical Division and the Department of Gardens and Green Grounds were various and long running. These disputes deepened during the construction of the Avenida da Liberdade as the trees and other plantings fell under the department's tutelage even while the major engineering works were under the supervision of Ressano Garcia. In 1884, an episode involving the felling of trees highlighted the dispute between the two council services, which spilled over into the courtroom and newspapers.

The Department of Gardens and Green Grounds defended its staff, claiming that they had not felled any trees, and accused the Technical Division of having chopped down various trees that might otherwise have been transplanted. The fact that they were chopped down at night only emphasized the guilt of the Technical Division as it seemed they were concealing their actions. The city council refused to accept any responsibility because in 1882 it had nominated a scientific committee to report on the best way to select and transplant trees from the Passeio Publico to the Avenida da Liberdade. However, the decisions and actions of this committee were criticized by Ressano Garcia, who disapproved of its very existence.

The establishment of this committee attracted fierce criticism, as did its subsequent decisions, which reflected the growing influence of engineers within the Technical Division and their antagonism vis-à-vis the Department of Gardens and Green Grounds. First, Ressano Garcia criticized the committee's composition by the department's councillor, the municipal gardener and three other 'gentlemen foreign to the municipal service'.⁷⁸ Moreover, the planting of the avenue did not

⁷⁴Buchanan, *The Engineers*.

⁷⁵Buchanan, 'Science and engineering'; A. Carneiro, M.P. Diogo, A. Simões and M. Troca, 'Portuguese engineering and the colonial project in the nineteenth-century', *Icon*, 6 (2000), 160–75.

⁷⁶Buchanan, 'Science and engineering', 219–21.

⁷⁷Picon, *L'invention de l'ingénieur moderne*; L.R. Berlanstein, 'Managers and engineers in French big business of the nineteenth century', *Journal of Social History*, 22 (1988), 219.

⁷⁸AML, correspondence, 1865–81, PT/AMLSB/AL/CMLSB/UROB-E/23, Cx. 49A do SGO, 1884, doc. 26.

accord with the committee's opinions.⁷⁹ Instead, Ressano Garcia maintained that all the trees to be sourced from the Passeio Publico were to have been transplanted to a nursery, awaiting the completion of work on the avenue for later transplanting. However, this did not happen in time and the Technical Division simply decided to advance with the works. Garcia accused the department of not taking the necessary steps to enforce the committee's guidance and thus did conflicts and losses arise.⁸⁰

From 1884 onwards, Ressano Garcia's involvement in garden management brought him into conflict with the councillor for the Department of Gardens and Green Grounds, Isidoro Tomás de Moura Carvalho (1825–87), the 1st viscount de Carriche. The viscount had been departmental councillor since 1878 and would be reappointed successively until his death. On 17 January 1884, the viscount de Carriche openly questioned whether he or Ressano Garcia was in charge of overseeing the department's works.⁸¹ The mayor asserted that the councillor always took the decisions regarding gardens and groves. The only difference was that instead of transmitting his orders to the gardener, he would hand them to an engineer in the Technical Division, who had meanwhile been given responsibility for the green infrastructure on the Avenida da Liberdade.

From 1884 on, Ressano Garcia assumed responsibility for most matters related to gardens and groves⁸² and clearly performed the duties of the departmental councillor; the boundaries between the services were permeable. By 1886, Ressano Garcia was in charge. The success attained through the construction of the Avenida da Liberdade strengthened his position on the city council both as a technician and as a politician. Therefore, the members of the new committee with powers of decision over the tender competition launched for the Park of Liberty due to be built at the top of the avenue were selected by Ressano Garcia. The committee was dominated by engineers, forest engineers and architects, and not by gardeners as in earlier periods.⁸³

The French landscape architect Henri Lusseau received the commission, reflecting the prestige of the new engineering professions. The difference between landscape architects and gardeners also relied on a different kind of education, acquired in an institution and not by practice.⁸⁴ However, the relationship between Lusseau and Lisbon City Council was never easy, and his project was never implemented.⁸⁵

⁷⁹Opinion of the commission appointed by the CML to deliberate on the species to be planted on the Avenue. AML, correspondence, 1865–81, PT/AMLSB/AL/CMLSBUROB-E/23, Cx. 49A do SGO, 1882, doc. 50.

⁸⁰AML, correspondence, 1865–81, PT/AMLSB/AL/CMLSBUROB-E/23, Cx. 49A do SGO, 1884, doc. 26.

⁸¹AML, session of Lisbon City Council, minute of 17 Jan. 1884.

⁸²Damage to the grove caused by wood merchants on the 24 de Julho Avenue; by the Telephone Company on the Avenida da Liberdade; and a disturbance in the Estrela Garden. AML, correspondence, 1880–89, PT/AMLSB/AL/CMLSBUROB-E/23, Cx. 50 do SGO, 1886, docs. 16, 17 and 58.

⁸³The committee included the engineer António Maria de Avelar, the city council's architect José Luís Monteiro, the forest engineer Pedro Roberto da Cunha e Silva, Ressano Garcia and Jules Daveau: Le Cunff, *Parques e jardins de Lisboa*, 177–9.

⁸⁴Luisa Limido, 'La formation des architectes-paysagistes depuis Jean-Pierre Barillet-Deschamps', in Audouy *et al.* (eds.), *Le grand Pari(s) d'Alphand*, 75–89.

⁸⁵Rodrigues, 'Greening the city of Lisbon', 232–7.

Ressano Garcia's goals extended not only to building boulevards and parks but also to reforming Lisbon City Council itself. He strove for a Parisian style of administration. In Paris, at the Prefecture du Seine (equivalent to the Parisian city council), Haussmann appointed Alphand, an engineer who had also studied at the Parisian school, *École des Ponts et Chaussées*, to become head of the Department of Gardens and Promenades. Haussmann privileged engineers as he believed their technical culture and territorial management skills were crucial to implementing his vision for the municipality.⁸⁶ Following the 1859 reorganization of the Prefecture du Seine, Alphand held several services in his tutelage, and it was this 'global and systematic' management of urban space⁸⁷ that Ressano Garcia wanted to implement in Lisbon. In 1903, he succeeded in reforming the Lisbon municipal services, and garden management was transferred to the Technical Division.⁸⁸ The Department of Gardens and Green Grounds was swallowed up by the Technical Division and did not reappear until 1940.

Conclusion

This article has highlighted a less familiar aspect of the modernization of cities in the nineteenth century. In addition to the construction of grey infrastructure, the acceleration of the pace of life, the introduction of amenities such as public lighting, piped drinking water and sewage services, the construction of green infrastructure was also seen as mandatory for hygiene, public health and enrichment in order to cater for the everyday lifestyles of the urban middle classes, as in other capitals of Europe. The construction of green infrastructure was a prerogative of the liberals who, in reorganizing Lisbon City Council in 1840, established the Department of Gardens and Green Grounds, alongside other departments deemed essential to the city's modernization. The fact that the Department of Gardens' budget was greater than that for primary education demonstrates the value attributed to this facet of the city by the liberals.

Finally, the originality of this case-study lies in the fact that the construction of green infrastructure, including the public gardens and tree-lined streets that branched out across the city, was initially in the hands of gardeners. Lisbon's municipal gardeners achieved the status of experts and were recognized as holders of special scientific and technical knowledge. They participated in all the decisions that guided such actions and were responsible for managing the entire department, answering exclusively to the councillor. However, this situation changed with the construction of the Avenida da Liberdade, the Lisbon boulevard, which took place under the supervision of an engineer trained at the *École des Ponts et Chaussées*. From the 1880s onwards in the construction works and in the organization of the city council's services, the French influence became ever more visible.

During the first phase, the French influence on Lisbon City Council was primarily reflected in the appropriation of the picturesque French style, through the work

⁸⁶C. Santini, 'Construire le paysage de Paris. Alphand et ses équipes (1855–1891)', in Audouy *et al.* (eds.), *Le grand Pari(s) d'Alphand*, 37.

⁸⁷Santini, 'Construire le paysage de Paris', 38.

⁸⁸AML, session of Lisbon City Council, 2 Jan. 1904.

of the French gardener Jean Bonnard, who was already working for the king of Portugal, as well as in books such as Gabriel Thouin's *Plans raisonnés de toutes les espèces de jardins* (1820). However, in the second phase, it was the influence of the Parisian urban renewal carried out by Haussmann and Alphand that impacted on the council. A Portuguese engineer, who had studied at the leading Parisian school, Ressano Garcia brought technical expertise, and came to be seen as the harbinger of progress, especially following the success he achieved with the construction of the Avenida da Liberdade. However, his decision to place the gardens under the tutelage of the Technical Division and his great projects for the Park of Liberty and Campo Grande turned out to be failures. They were only completed under the Estado Novo dictatorship and the results fell far short of his initial plans. The closure of the department brought about the end of the power and influence of gardeners and the direct importance of gardens, with the dominance of engineers assured when all services were gathered under the umbrella of the Technical Division in 1903.

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