FORUM

Railways as Portals of Globalisation: The Case of the Portuguese Mainland and Colonial Rail Networks (1850–1915)

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In der Literatur über Eisenbahngeschichte werden Eisenbahnbahnen üblicherweise als Motoren des Fortschritts und der Moderne, als Pioniere der Zivilisation, Eroberer von Raum und Zeit, einzigartige Förderer von Migrationen und des Güterfernverkehrs oder als Werkzeuge des Imperiums bezeichnet. Weniger häufig werden sie als Agenten der Globalisierung dargestellt. In diesem Beitrag wird analysiert, wie die Eisenbahn die Rolle als Förderer der globalen Ströme in Portugal und auf dem Territorium ihrer ehemaligen Kolonien Angola, Mosambik und Goa (Indien) übernahm, obgleich die Entwicklung des Nationalstaats und das Wachstum nationalistischer Gefühle (kennzeichnend für die zweite Hälfte des 19. Jahrhunderts und die ersten Jahre des 20. Jahrhunderts) diese Flüsse behinderten. Dabei wird das Konzept der Globalisierung in einem sehr weiten Sinn verwendet: Es werden nicht nur Handels- und kommerzielle Bewegungen inbegriffen, sondern auch der transnationale / grenzüberschreitende Verkehr von Ideen, Fachwissen, Fähigkeiten, Kapital, Arbeitern, Pendlern und Touristen. Die Methodik basiert auf dem Konzept der Portale der Globalisierung, wie sie von Matthias Middell und Katja Naumann definiert wurden. Es wird auf die vorhandene Literatur über portugiesische Eisenbahnen und eine Vielzahl von Quellen angewendet, einschließlich technischer Berichte von portugiesischen Festland- und Kolonialbehörden und verschiedene Statistiken des Eisenbahnbetriebs.

Literature about railway history usually describes railways as promoters of progress and modernity, pioneers of civilization, conquerors of time and space, unrivalled promoters of migrations and long-distance freight haulage or tools of empire. Not as frequent is their depiction as agents of globalization. In this paper, I analyse how railways took on the role of promoters of global flows in Portugal and the territory of its former colonies of Angola, Mozambique and Goa (India), albeit the development of the Nation-State and the growth of nationalistic feelings (that characterized the second half of the nineteenth century and early years of the twentieth century) hampered those fluxes. In my analysis, the concept of globalization is used in a very broad sense, including not only trade and commercial movements, but also the transnational/cross-border circulation of ideas, expertise, skills, capital, workers, commuters, and tourists. The methodology I used is based on the concept of portals of globalization, as defined my Matthias Middell and Katja Naumann, which is applied to the existing literature about Portuguese railways and a wide array of sources, including technical reports by Portuguese mainland and colonial authorities and assorted statistics of railway operation.

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1. Introduction: Methodology and Research Object

The nineteenth and early twentieth centuries witnessed a large expansion of land and maritime transport networks that promoted traffic, commerce, migrations and financial flows to unprecedented levels.[1] Simultaneously, it observed the rise of nationalisms and the concept of Nation-State. The national dimension offered by the Nation-State presented itself as the most efficient way to exert sovereignty and it prevailed over any other spatial dimension (local, regional, continental, and international).[2]

For the study of these conflicting processes, the concept / methodology of "portals of globalisation" is very useful. The term was used by the first time by Ekberg in a 2003 paper about the role of airports as globalising infrastructures, where social and cultural values were entirely redefined.[3] Nonetheless, it was Middell and Naumann who developed a broader definition. In their 2010 article, they defined portals of globalisation as "those places that have been centres of world trade or global communication, have served as entrance points for cultural transfer, and where institutions and practices for dealing with global connectedness have been developed."[4] In these sites, one can observe not only commercial or financial transactions, but also exchanges of ideologies and social / cultural / symbolical constructions that challenge the very core of national agendas, with bidirectional fluxes that promote transcultural encounters and where local / global agents / actors influence each other.[5]

Following in the footsteps of Middell and Naumann's work, other researchers analysed different historical contexts of globalisation and added to the original definition of the concept. Maruschke highlighted the high density of global connections as a defining trait of those portals;[6] Baumann stressed how they gather the necessary conditions for the creation of globalising processes;[7] Baumert and Herren recalled that global fluxes within portals of globalisation may be controlled or restricted by national regulations or transnational / international agreements.[8]

1 P. Bairoch, Commerce extérieur et développement économique de l'Europe au XIXe siècle, Paris 1976, pp. 33–36; D. R. Headrick, The Tentacles of Progress. Technology Transfer in the Age of Imperialism, 1850–1940, New York 1988, p. 23.

2 M. Geyer, Portals of Globalization, in: W. Eberhard and C. Lübke (eds.), The Plurality of Europe. Identities and Spaces, Leipzig 2010, p. 513; M. Middell and K. Naumann, Global History and the Spatial Turn: From the Impact of Area Studies to the Study of Critical Junctures of Globalization, in: Journal of Global History 5 (2010), p. 162.

3 B. Ekeberg, Life in Transit – A Global Condition, in: Topia. Canadian Journal of Cultural Studies 9 (2003), pp. 83–96.

4 Middell and Naumann, Global History, p. 162.

5 Ibid., pp. 162–163.

6 M. Maruschke, Zones of Reterritorialization: India's Free Trade Zones in Comparative Perspective, 1947 to the 1980s, in: Journal of Global History 12 (2017), p. 422.

7 C. Baumann, Introduction, in: C. Baumann (ed.), Universities as Portals of Globalization. Crossroads of Internationalization and Area Studies, Leipzig 2014, p. 7.

8 S. C. Baumert, University Politics Under the Impact of Societal Transformation and Global Processes – South Africa and Stellenbosch University, 1990–2010, Ph.D. Thesis, Leipzig University and Stellenbosch University, 2014, p. 4; M. Herren, European Global Studies: The Historicity of Europe's Global Entanglements with a Focus on Interdisciplinary Research, in: M. Herren et al. (eds.), Potentials and Challenges of Global Studies for the 21st Century, Bern 2014, p. 11.

In this sense, portals of globalisation may include schools, fairs, quarantine stations, book stores, workshops, construction sites, religious missions, and any other place that registers global interconnections. Additionally, portals of globalisation need not be physical places; they can also include economic / financial or military interventions and cultural innovations.[9]

Of course, railways can also be included in this list.[10] Hyslop, in his study about the Durban harbour, argued that they acted as promoters of globalisation.[11] However, railways can also be portals of globalisation themselves, as they were crucial promoters of regional and international exchanges.[12]

In this paper, I will use the concept of portals of globalisation to analyse the frictions between globalisation and nationalism, using as research object the railways Portugal built in its European territory and in its overseas domains (Angola, Mozambique, and India).[13] Even though these two contexts are completely different in administrative, economic, and geographical terms, one cannot be fully understood without the other. The experience Portuguese technocrats gathered with railway construction in the mainland was subsequently transferred to the colonies. Moreover, the evolution of railway building in the colonies had implications in the mainland's finances, politics and diplomacy.

Portugal began the construction of railways in its mainland in 1853 in Lisbon. In the colonies, the laying of rails commenced in 1881 in Goa (India).[14] In the eve of the First World War, the metropolitan network had grown to around 3,000 km; in the Portuguese overseas domains, track mileage reached 3,500 km.[15]

9 For a general overview of the uses of portals of globalisation, see: H. S. Pereira, Portais de globalização: portos e caminhos de ferro no contexto colonial português (1870–1910), in: Revista Portuguesa de História 49 (2018), pp. 255–273. Further readings include: A. Bashford (ed.), Quarantine: Local and Global histories, Basingstoke 2016, p. 10; J. M. Brophy, Bookshops, Forbidden Print and Urban Political Culture in Central Europe, 1800–1850, in: German History 35 (2017) 3, pp. 403–430; G. Castryck, Ex-Centring the Global: Liminality and Interconnectedness in Urban Kigoma, in: M. Middell (ed.), Self-Reflexive Area Studies, Leipzig 2013, p. 62; G. Castryck, Introduction – From Railway Juncture to Portal of Globalization: Making Globalization Work in African and South Asian Railway Towns, in: Comparativ 25 (2015) 4, p. 7; G. Castryck and N. Sieveking, Introduction: Performing Space in Urban Africa, in: Africa 84 (2014) 1, pp. 1–16.

10 Castryck, Introduction, pp. 7–16.

11 J. Hyslop, Durban as Portal of Globalization: Mines, Railways, Docks and Steamships in the Empire of Otto Siedle's Natal Direct Line, c. 1879–1929, in: Comparativ 25 (2015) 4, pp. 35–50.

12 Castryck, Introduction, pp. 7–16; G. Castryck, The Belgian Base at Kigoma's Railhead (1820s–1930s). Territorial Ambivalence in an Inland Indian Ocean Port, in: Comparativ 25 (2015) 4, p. 78.

13 For a preliminary study about colonial ports and railways as portals of globalisation, see Pereira, Portais.

14 M. F. Alegria, A organização dos transportes em Portugal (1850–1910). As vias e o tráfego, Lisbon 1990, p. 249; I. J. Kerr and H. S. Pereira, India and Portugal: The Mormugão and the Tua Railways Compared, in: Anne McCants et al. (eds.), Railroads in Historical Context, Porto 2011–2013, vol. 2, p. 183.

15 Ministério das Colónias, Estatística dos Caminhos de Ferro das Colónias Portuguesas de 1888 a 1911, Lisbon 1913; N. Valério (ed.), Estatísticas Históricas Portuguesas, Lisbon 2001, p. 373.

Figure 1: The Portuguese mainland network in 1914. Source: sharemap.org and own making

Railways in Portugal and its empire exhibit the contradiction between globalisation and nationalism. Portugal invested in railways to attract to its mainland harbours the bulk of traffic flowing between the Old and the New Worlds.[16] The same strategy was envisaged for the colonies, where railways should tap into the endless repositories of richness Portuguese authorities imagined in the colonial hinterlands and conduct them to the global markets of commodities.[17] At the same time, railways should promote a technological-based nationalism in the mainland and affirm Portuguese presence in the overseas territories that were coveted by other, more powerful, European nations.[18]

16 Alegria, A organização, p. 485.

17 V. Alexandre and J. Dias, O Império Africano 1825–1890, in: J. Serrão and A. H. O. Marques (eds.), Nova História da Expansão Portuguesa, Lisbon 1998, vol. 10, pp. 39–48.

18 B. J. N. Marçal, Um império projectado pelo "silvo da locomotiva". O papel da engenharia portuguesa na apropriação do espaço colonial africano. Angola e Moçambique (1869–1930), Ph.D. thesis, Universidade NOVA de Lisboa, 2016, pp. 459–461; T. Saraiva, Inventing the Technological Nation: The Example of Portugal (1851–1898), in: History and Technology 23 (2017) 3, pp. 263–273.

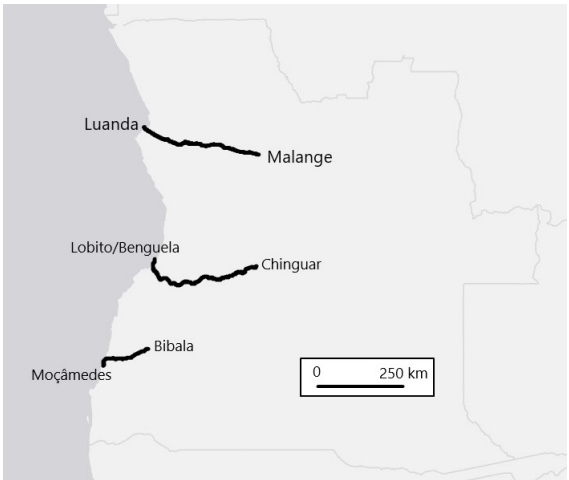

Figure 2: The Angolan railway system in 1914. Source: sharemap.org and own making

Figure 3: The Mozambican railway system in 1914. Source: sharemap.org and own making

2. A Globalised Idea of Progress

Even before construction, railways were a result of transnational circuits of knowledge transfer. Portuguese engineers attended prestigious engineering schools since the 1820s, more notably the *École* Nationale des Ponts et Chaussées, in Paris.[19] In the 1830s–1840s, they were joined by several of their countrymen who fled the Portuguese political instability. All could observe first-hand the sublime of trains that travelled across the European countryside. The wonder before these technical accomplishments became evident in the Portuguese parliamentary debates of the second half of the nineteenth century.[20]
These men did more than just behold the expansion of railway grids in Europe. Many attended engineering schools, where they acquired technical skills and brought them back home with them. Additionally, they engaged closely with the Saint-Simonianist ideology,[21] a movement that considered science and technology as the most driving forces for social change and proposed the construction of large transport networks to enhance circulation of people, goods, and capital. In Europe and North America, science and technology became the gauge to measure each nation present value and past worth, and to affirm Western dominance over the territories and peoples of Africa and Asia. In this sense, railways, in particular, were deemed the personification of progress and the best tool to unify distant countries, promote cooperation and peace, and create civilisations of circulation.[22]
Portuguese engineers took these beliefs back to Portugal, where, together with the political elites, they envisioned a plan to build railways from the Portuguese harbours in the coast to the frontier with Spain and thence to France. Until 1888, five transnational tracks were built across the border with Spain,[23] which attests their faith in a utopia of a "global brotherhood of economic integration."[24] From the late 1870s onward, Portuguese technocrats sought a similar goal in the colonies, connecting the harbours of Angola, Mozambique and India to their hinterlands.
Both plans followed the Saint-Simonianist creed and the practical examples provided by other nations that sought to capture a sizable portion of international traffic and direct it to their transport systems. Belgium set its rail network towards the border to attract

19 A. C. Matos, Asserting the Portuguese Civil Engineering Identity: The Role Played by the École des Ponts et Chaussées, in: A. C. Matos et al. (eds.), The Quest for a Professional Identity: Engineers between Training and Action, Lisbon 2009, p. 180.
20 H. S. Pereira, A política ferroviária nacional (1845–1899), Ph.D. thesis, Universidade do Porto, 2012, pp. 82–153.
21 M. C. de Macedo, Projectar e Construir a Nação: Engenheiros e Território em Portugal (1837–1893), Ph.D. thesis, Universidade de Coimbra, 2009, p. 5. Matos, Asserting, pp. 180–185.
22 M. Adas, Machines as the Measure of Men. Science, Technology, and Ideologies of Western Dominance, Ithaca, NY 1989, p. 134; E. van der Vleuten, Understanding Network Societies. Two Decades of Large Technical System Studies, in: E. van der Vleuten and A. Kaijser (eds.), Networking Europe. Transnational Infrastructures and the Shaping of Europe, 1850–2000, Sagamore Beach, MA 2006, p. 289.
23 H. S. Pereira, The Technodiplomacy of Iberian Transnational Railways in the Second Half of the Nineteenth Century, in: History and Technology 33 (2017) 2, pp. 178–186.
24 N. Sinha, Railway Imperialism. A Small Town Perspective on Global History, Jamalpur, 1860s–1900s, in: Comparativ 25 (2015) 4, p. 31.

international traffic to Anvers, while Switzerland drilled the Saint Gothard tunnel to maintain its status as a through-transit country in Central Europe.[25] In the imperial setting, colonial powers used railroads to exploit and control the hinterlands of its ports.[26]

3. Entering the Global Money Markets

Construction of railways demanded massive amounts of capital that Portugal did not have. In the first half of the nineteenth century, political instability limited the exchequer's credit and rendered investments in private companies too risky. In 1854, Portugal adhered to the gold-standard, which promoted the country as an attractive target for foreign direct investment and allowed it to easily raise capital through State bonds, placing it in the global circuits of finance.[27]

In the 1850s, the London Stock Exchange was the main source of capital for the Portuguese railway programme. English financiers supported the first companies that operated in Portugal (Central Peninsular and South Eastern). From the early 1860s onwards, after a succession of disappointments with British capital, Portugal turned to French investors, who controlled the three important firms of the system: Companhia Real (founded in 1860, with the support of House Camondo, managed a network with more than 1,000 km), Companhia da Beira Alta (1878, Société Financière de Paris, operated the most important transnational track, from Figueira da Foz across the border to Salamanca), and Compagnie pour la Construction et Exploitation des Chemins de Fer à l'Étranger (ran short narrow-gauge tracks around Aveiro).

Portuguese capital entered these financing schemes as well, backing the formation of three small companies that operated short narrow-gauge lines in the Portuguese countryside (Companhia do Porto à Póvoa e Famalicão, Companhia de Guimarães and Companhia Nacional).

The State also played a relevant role in the system, either by subsidising private companies or operating new tracks itself (by the end of the nineteenth century, public railway sector accounted for 40 per cent of total mileage).[28] Money for these investments was raised with State bonds issued mainly in London and Paris.[29]

Overseas, the presence of British money was overwhelming. In the late 1870s, in Goa, the Duke of Sutherland, one of the wealthiest men in the City of London, promoted

25 B. v. d. Herten, M. v. Meerten and G. Verbeurgt, Le Temps du Train. 175 ans de chemins de fer en Belgique, Louvain 2001, pp. 38–82; J. Schueler, Travelling Towards the "Mountain that has borne a State". The Swiss Gotthard Railways, in: Vleuten and Kaijser, Networking Europe, p. 71.

26 R. Lee, Potential railway world heritage sites in Asia and the Pacific, in: Working Papers in Railway Studies 5 (1999), p. 15.

27 L. A. Santos, A crise financeira de 1891: uma tentativa de explicação, in: Análise Social 36 (2001) 158/159, pp. 188–189.

28 Minho and Douro lines, connecting Porto to the northern and eastern frontier with Spain, and South and Southeastern lines, from Barreiro, across the Tagus from Lisbon, to the southern provinces of Alentejo and Algarve (Alegria, A organização, pp. 305–326).

29 A. L. Vieira, A política de especulação: uma introdução aos investimentos britânicos e franceses nos caminhos-de-ferro portugueses, in: Análise Social 24 (1988) 101/102, pp. 723–744.

the formation of the West of India Railway Company, which capital was fully raised in London.[30] In the 1880s, the concessionaire of the Luanda-Ambaca / Malange line (built in 1886–1899) raised its capital issuing bonds in London.[31] In Mozambique, American and English investors backed the construction of the line from Lourenço Marques (now Maputo) to the Transvaal (1886–1895). After the nationalisation of the line in 1889 by the Portuguese government and a long legal dispute that ended in 1900, Portugal paid a compensation of GBP 1,000,000, raised in Paris.[32] Further North, a railway linking the harbour of Beira to Rhodesia (now Zimbabwe) was built in the 1890s under the financial umbrella of the British South Africa Company with money raised in the London Stock Exchange.[33] In 1902, the railway from the harbour of Lobito / Benguela in the coast of Angola to the frontier with Belgian Congo was granted to an Aberdonian businessman, Robert Williams, who was funded by a British firm, Tanganyika Concessions.[34] A few years later, English capital financed the construction of a new line in Mozambique towards Nyasaland across the Zambezi valley.[35]

The Portuguese government also invested directly in railway building in the colonies, in two short lines, either directly by the State budget (the Moçâmedes line in southern Angola) or through a Portuguese bank loan (the line from Lourenço Marques to Swaziland).[36]

4. A Globalised Stage of Construction

Construction yards promoted the establishment of global communications and cultural transfers, as they attracted different agents/actors from assorted nations.

Even though Portuguese engineers had acquired the skills to build and operate railroads, in the 1850s–1860s, Portugal entrusted construction and operation to foreign technicians (British and French). Portuguese engineers were employed in other activities: they planned the investment programme in the Conselho Superior de Obras Públicas (the advisory board of the ministry of Public Works), they negotiated the contracts with the operators, they surveyed the land looking for the best route, and they inspected the contractors work. Only when foreign engineers failed, did Portuguese technicians stepped in and managed the work, but only temporarily until the government found another foreign expert to resume the task.[37] From the 1870s onwards, Portuguese engineers played a more relevant role in the sector. They directed the construction and operation of State

30 Kerr and Pereira, India, pp. 171 and 176–177.
31 Marçal, Um império, p. 245.
32 Ibid., pp. 302–315.
33 J. Lunn, Capital and Labour on the Rhodesian Railway System, 1888–1947, London 1997, pp. 26–34.
34 T. S. Lopes and V. C. Simões, Foreign Investment in Portugal and Knowledge Spillovers: From the Methuen Treaty to the 21st Century, in: Business History, forthcoming, DOI: 10.1080/00076791.2017.1386177.
35 Marçal, Um império, p. 362.
36 Ibid., pp. 317 and 391–393.
37 M. Pinheiro, Cidade e Caminhos de Ferro, Lisbon 2008, pp. 166–167.

railways and they even took managing positions in private operators:[38] in 1872, engineer Espregueira was nominated general-manager of Companhia Real, and in 1883, engineer Almeida Pinheiro became director of Companhia Nacional.[39] Foreign engineers were still hired to work in Portugal (they excelled in the construction of the Beira Alta line in 1878–1882),[40] thus maintaining a flow of knowledge transfer from the European centre to its periphery.

In the imperial scenario, British expertise dominated until the end of the nineteenth century. The construction of the Mormugão, Lourenço Marques, and Beira railways fell under the responsibility of English engineers: Hawkshaw, Son & Hayter and Ernest Sawyer in India; Thomas Tancred and the Pauling brothers in Mozambique. Portuguese experts surveyed the land and overlooked their foreign comrades work, but that was all.[41]

In the beginning of the twentieth century, there was an effort to rely exclusively on nationals to build new railroads (Moçâmedes and Swaziland),[42] but it was quite impossible to prohibit the entrance of foreign technicians: in Angola, a British team of experts (John Metcalfe, Douglas Fox, and the Paulings) was hired to build and operate the Benguela line.[43]

The work-yards became dynamic sites to establish global flows of technical knowledge. Even when they were not directing construction, Portuguese engineers worked closely with their foreign colleagues, learning new skills and practising those they acquired during training. Foreign influence became especially visible in technical terms that entered Portuguese language from its English or French original: jim crow (jargon for rail straightener) became *genicró* (ʒənikrɔ); gauge (distance between rails) became *gue*[*i*]*ja* (gɐ[i]ʒɐ); sleepers turned into *chulipas* (ʃuˈlipɐʃ) and train into *trem* (ˈtrɐ̃j).[44] French terms like *tirefond* (chair screws) became *tira-fundo* (tirɐˈfũdu), while *éclisse* (fishplate) entered directly into the Portuguese lexicon.

Foreign influence was also crucial in the introduction of narrow-gauge railways in Portugal, a low-cost solution to build lines in hilly regions. In 1874, Companhia do Porto à

38 Macedo, Projectar, pp. 193–230; A. C. Matos and M. P. Diogo, From the École des Ponts et Chaussées to Portuguese Railways: The Transfer of Technological Knowledge and Practices, in: M. Pinheiro (ed.), Railway Modernization: A Historical Perspective (19th–20th centuries), Lisbon 2009, pp. 86–87.

39 H. S. Pereira, Contributo para a análise da elite tecnocrática portuguesa de Oitocentos: esboço biográfico do engenheiro Manuel Afonso Espregueira (1833–1917), in: História: Revista da FLUP 4 (2017) 7-2, pp. 78–79; H. S. Pereira and J. M. L. Cordeiro, Protagonistas: Almeida Pinheiro, José Beça e Dinis Moreira da Mota, in: H. S. Pereira (ed.), A Linha do Tua (1851–2008), Porto 2017, pp. 135–140.

40 H. S. Pereira, Um estrangeiro na inauguração da linha da Beira Alta, in: Revista de História da Sociedade e da Cultura 12 (2012), p. 352.

41 Kerr and Pereira, India, pp. 178–189; Marçal, Um império, pp. 234–244, 280–315 and 330–342. Only the Ambaca railroad was built under the supervision of Portuguese engineers.

42 H. S. Pereira, Identidade e Tecnologia: o caminho de ferro da Suazilândia (1900–1914), in: Anais de História de Além-Mar 18 (2017), pp. 143–176. H. S. Pereira, O caminho de ferro de Moçâmedes: entre projeto militar, instrumento tecnodiplomático e ferramenta de apropriação colonial (1881–1914), in: Revista de História da Sociedade e da Cultura 18 (2018), pp. 157–183.

43 Marçal, Um império, p. 416.

44 This word was used in nineteenth-century Portugal, but it fell out of use, replaced by *comboio*. It is still widely used in Brazilian Portuguese, though.

Póvoa imported it from the Welsh Fairlie Engine Company. A few years later, Portuguese engineers, Xavier Cordeiro and Sousa Brandão, visited France, Italy and Switzerland to acquire new skills to expand the Portuguese network to the hilliest areas of the country and the colonies.[45]

Besides engineers, work-yards were teeming with gangs of hundreds of petty contractors, foremen, and labourers that did most heavy and pick-and-axe labour. These men and women, hailing from different backgrounds and nationalities, also promoted globalisation and circulation of expertise in the lower ranks of construction.[46] In the mainland, in the Northern line (Lisbon–Porto), Italian and Irish drillers used their previous experience in the tunnel under the Thames to build the tunnel of Albergaria through what was at the time deemed a mountain of sand and water.[47] In the railway from Porto to Salamanca (Douro line), many tasks were assigned to Spanish, French, German, and Italian contractors, as there were not enough Portuguese skilled labourers available.[48] The same happened in the South and South-eastern railways, where Spanish and British contractors were hired to lay the rails to the southern regions of Portugal.[49] In the North-eastern province of Trás-os-Montes, Galician workers, managed by Catalan contractors built a small narrow-gauge track to Bragança.[50] Like in other contexts,[51] many stayed in the area, married, and brought up a family locally.[52]

Overseas, Spanish, French, British, Belgian, German, Italian, Swedish, Russian, Greek, American, and Indian workers could be found across the colonial work sites, besides, of course, Portuguese navvies and African natives.[53] The circulation of natives – a common trait in other colonial areas[54] – also occurred in the Portuguese colonies. The Benguela railway was built by workers from Senegal, Liberia, Sierra Leone, Ghana, Congo, Guinea, Cape Verde, and South Africa.[55] In Mozambique, natives from the northern province of Zambezi were brought south to work in the construction of the Swaziland railway. They

45 H. S. Pereira and B. J. Navarro, The implementation and Development of Narrow Gauge Railways in Portugal as a Case of Knowledge Transfer (c. 1850–c. 1910), in: The Journal of Transport History 39 (2018) 3, pp. 355–380, DOI: 10.1177/0022526618791726.

46 On the importance of labour as promoter of globalisation, see S. Boonen and J. Lagae, A City Constructed by "des gens d'ailleurs". Urban Development and Migration Policies in Colonial Lubumbashi, 1910–1930, in: Comparativ 25 (2015) 4, pp. 52–53; J. Monson, Moving Goods in Kapiri Mposhi, Zambia: The Scaffolding of Stability in TAZARA's Dry Port, in: ibid., p. 88; Sinha, Railway Imperialism, pp. 18, 22 and 29.

47 A. S. Rosário, O túnel de Albergaria, in: Boletim da CP 36 (1964) 148, pp. 11–13.

48 Macedo, Projectar, p. 209.

49 H. S. Pereira, Rede férrea alentejana revisitada (1845–1899), in: P. Petrov et al. (eds.), Avanços em Literatura e Cultura Portuguesas Da Idade Média ao século XIX, Santiago de Compostela, 2011, p. 479.

50 H. S. Pereira, Os Beças, João da Cruz e Costa Serrão: protagonistas da linha de Bragança, Porto 2014, p. 48.

51 Boonen and Lagae, A City, pp. 62–64.

52 M. O. Lage, O. Silva and M. Silva, Demographics of the Tua Valley: Evidences from Parish Record Books During the Construction of the Railway (1878–1897), in: McCants et al., Railroads, vol. 3, pp. 218–222.

53 Marçal, Um império, pp. 239, 392 and 417–419.

54 Boonen and Lagae, A City, p. 53.

55 Marçal, Um império, p. 417.

did not adapt to the colder weather of the region and they fell ill frequently.[56] In India, workers from Ceylon and Afghanistan flocked to Goa to build the Mormugão railway.[57]

5. Promoting Global Trade Flows

Portugal did not have basic raw materials to build and operate railroads. Portuguese coal and iron were of poor quality and were not mass produced. Only timber and rock were relatively abundant. In Africa, ore deposits were still untapped. Most infrastructure components (rails, fastenings, bridges and viaducts pieces) and rolling stock were not produced internally. Therefore, these materials had to be imported. Throughout the nineteenth and early twentieth centuries France, Britain, Belgium, and Germany were the main suppliers of railways both in Portugal and in the colonies.[58] Considering that Portugal did not possess a strong manufacture industry, the nationality of the technology and raw materials for railways was not a major concern, which contrasts clearly with industrial nations, like Britain, that fought against the globalisation of supplies to its colonies.[59]

The know-how to manufacture some of the rail components slowly entered the country. From 1860 onwards, Portuguese firms began manufacturing small utensils for the sector (spikes, splints, treenails, fishplates) and since the 1870s Companhia Real's workshops and those of the State started making their own wagons. Locomotives and coaches were never produced in Portugal in the nineteenth century,[60] although one Portuguese engineer, Dinis da Mota, became famous for assembling in Portugal a steamer his employer (Companhia Nacional) bought from the Kessler factory, surprising the German technicians when they arrived in Portugal to set the engine up.[61]

When the lines were operational, they reinforced their role as portals of globalisation, although they did not serve every region of the kingdom and the Empire equally.[62] By the end of the nineteenth century, Portuguese railways in the mainland transported 2,706,000 t, 15-fold the value registered in 1868 (the first included in the official statistics). In the eve of World War I, the grand total reached almost 6,000,000 t.[63] The net-

56 Arquivo Histórico Ultramarino (AHU), box 1576 1L, report 30 July 1907.

57 J. B. A. Gracias, Caminho de ferro e porto de Mormugão, Bastorá 1940, pp. 249 and 269–70.

58 Marçal, Um império, p. [419]; Pereira, O caminho; M. Pinheiro, A construção dos caminhos-de-ferro e a encomenda de produtos industriais em Portugal (1855–1890), in: Análise Social 24 (1988), 101/102, pp. 749 and 762.

59 Sinha, Railway, p. 31.

60 Production of coaches began in Portugal in the first years of the twentieth century (F. M. C. Pedreira, Material Circulante, in: A. Antunes et al. [eds.], 1910–2010: o Caminho de Ferro em Portugal, Lisbon 2011, pp. 76–77; Pinheiro, A construção, pp. 751–752).

61 J. M. L. Cordeiro, The Man Behind the Tua Railway: Chief Engineer Dinis Moreira da Mota, in: McCants et al., Railroads, vol. 2, p. 285.

62 For an assessment of the efficiency of the Portuguese mainland network, see L. E. Silveira et al., Population and railways in Portugal, 1801–1930, in: The Journal of Interdisciplinary History 42 (2011) 1, pp. 29–52. No such study exists for the colonies, but areas that did not benefit from railways were certainly larger.

63 Valério, Estatísticas, pp. 372–373.

work was designed to favour international traffic, however transnational flows were never significant. Nonetheless, railways promoted the integration of the Portuguese economy in the global market, in cooperation with harbours (specially Lisbon's). A large portion of the traffic of goods was set between the coast and the Portuguese hinterland.[64] Railways transported goods from the Portuguese hinterland to the harbours from where they entered the global circuits of trade (cork, leather, marble, olive oil, timber and wine). On the opposite direction, imported goods were forwarded to the regions of the Portuguese countryside (grain, fodder, coal, fertilisers, metals, minerals, and sundry manufactured goods).[65]

In the colonies, the first year of operation registered 78,208 t, transported in the lines of Lourenço Marques and Mormugão. By 1900 that figure doubled to 150,474 t but in 1913 a grand sum of 1,507,133 t was registered.[66] An exhaustive exam of the flows of goods of Portuguese colonial railways is yet to be done, but some partial studies and available primary sources seem to indicate these infrastructures ehanced the integration of the overseas domains in the global market.

Mormugão became a valid choice for producers of manganese in southern India, especially in the first years of the 1900s.[67] The port and railway of Lourenço Marques promoted the exportation of gold and minerals from the Transvaalian mines and the migration of Mozambican workers to the Boer territory.[68] From 1899 onwards, the Beira railway became one of the corridors of exportation of Rhodesia (the other being the railway that extended from Salisbury to Cape Town).[69] In Angola, exportation of rubber, coffee, leather and grain was enhanced with the railway of Ambaca / Malange.[70] Similarly, further South, the Moçâmedes line facilitated the transport of sugar, cotton and grain from the Chela plateau to the port of Moçâmedes.[71] Finally, the Benguela line was crucial for the transportation of copper (from the Congolese mines of Katanga), wax and corn (from the hinterland of the province) to the harbour of Lobito / Benguela.[72] Portugal absorbed the bulk of the exports from Angola (average of 88 per cent in 1909–1913), but it is likely that most of these goods were re-exported to other markets. Britain, Germany, Belgium, The Netherlands and Norway were the other destinations.[73]

64 Alegria, A organização, pp. 359 and 470–472; Pinheiro, Cidade, pp. 44–53 and 63.
65 Alegria, A organização, pp. 183–187, 363–387 and 468–482.
66 AHU, pack 52 1G and book 927 1N. Ministério das Colónias, Estatística.
67 Gracias, Caminho, pp. 278–292 and 327–336.
68 F. Bouene and M. Santos, O modus vivendi entre Moçambique e o Transvaal (1901–1909). Um caso de "imperialismo ferroviário", in: Africana Studia 9 (2006), pp. 246–248 and 260-261.
69 AHU, pack 579 1E. Boletim da Companhia de Moçambique (1893–1910). Boletim do Governo do Territorio da Companhia de Moçambique (1911–1915). Boletins Estatisticos do Movimento Comercial e Maritimo no Territorio de Manica e Sofala (1908–1910). Lunn, Capital, pp. 36–41.
70 AHU, packs 2463 1B, 2507 1B, 2559 1B, 2701 1B and 2756 1B.
71 Pereira, O caminho, pp. 77–78.
72 E. Esteves, O caminho-de-ferro de Bengela e o impacto económico, social e cultural na sua zona de influência (1902–1952), in: Africana Studia 3 (2000), pp. 62–63.
73 João Mesquita, Dados estatisticos para o estudo das pautas de Angola, Luanda 1918.

The railways of Mormugão, Lourenço Marques and Benguela were largely dependent of neighbouring regions; in this sense, they acted as subordinate portals of globalisation in a hierarchy where British India, the Transvaal and Congo were the main portals.[74]

In the opposite direction, from Europe to the colonies, went brandy, wine, building materials, clothing, coal, salt, and assorted items that were carried to the colonial hinterland by railways to support the colonisation of Africa.[75] In Angola, Portugal was the main supplier (average of 52 percent in 1909–1913), followed by Britain (23 per cent) and Germany (14 per cent).[76]

Available figures from the colonial harbours and customhouses (Luanda, Lobito / Benguela, Moçâmedes and Beira) also illustrate the evolution of globalising flows promoted by colonial railways (and ports). The movement of the Angolan customhouses rose from 6,646 *contos* (today's USD 193,000,000) in 1888 to 12,570 *contos* (USD 283,000,000) in 1913.[77] Harbours with rail links accounted for an average of 82 per cent of the overall traffic between 1909 and 1913.[78] In Beira, the movement of the port was almost negligible before the arriving of the train, but it escalated to more than 140,000 *contos* (over USD 3,000,000,000) in 1913.[79]

As for the transit of passengers, 300,000 men, women and children rode the Portuguese trains in the maiden year of operation (1856). In 1900, more than 12,000,000 people (over two-fold the Portuguese mainland population at the time) used the railway for their mobility needs, a figure that rose to 19,000,000 in the eve of the First World War.[80] These flows included different types of mobility of a local, regional, national scope: neorealist Portuguese author, Alves Redol, in his 1946 novel, "Porto Manso", identified some of them as "traders, prostitutes, thieves, technicians, an assorted mix of humanity."[81] Migrants looking for work in other provinces of the kingdom or abroad, and workers commuting to their jobs (specially in Porto, Lisbon, and industrial city of Barreiro located in the South bank of the Tagus, opposite to Lisbon) also used the new form of mobility offered by the trains.[82]

For the purposes of this paper, however, one flow is particularly relevant: leisure trips made by tourists, a flux usually associated with portals of globalisation.[83] Railways boost-

74 For hierarchy of portals, see Hyslop, Durban, pp. 36, 38 and 43.

75 AHU, box 301 1H and packs 2463 1B, 2507 1B, 2559 1B, 2564 1B, 2676 1B, 2701 1B and 2756 1B. Pereira, O caminho.

76 Mesquita, Dados.

77 For the exchange rates until the 1891 bankruptcy, 1 conto = 1,000,000 réis = GBP 222.222. See M. E. Mata, As finanças públicas portuguesas da Regeneração à Primeira Guerra Mundial, Lisbon 1993. From 1892 onwards, I used the historical series of exchange rates provided by the Bank of Portugal, https://www.bportugal.pt/EstatisticasWeb (accessed 5 September 2018). For the conversion from GBP to current USD I used the online tool provided by L. H. Officer and S. H. Williamson, https://www.measuringworth.com/calculators/exchange/result_exchange.php (accessed 5 September 2018).

78 Mesquita, Dados.

79 See note 69.

80 Valério, Estatísticas, pp. 372–373.

81 A. Redol, Porto Manso, Lisbon 1946, p. 353.

82 Pinheiro, Cidade, pp. 51, 68–69 and 77; Silveira et al., Population, p. 52.

83 Hyslop, Durban, p. 47.

ed tourism, an activity that until then had little or no relevance at all. Naturally, those leisurely travels included nationals, but foreigners also came to Portugal by rail to visit the Portuguese beaches, spas, and cultural heritage sites.

Small towns like Sintra or Cascais, in the outskirts of Lisbon, became touristic attractions.[84] In Lisbon, the central station of Rossio, with its audacious and progressive architecture, became a lavishing entry point for tourists that arrive in Portugal, coming from France and Spain, in the Beira Alta and Eastern lines in the trains of the Compagnie Internationale des Wagons-Lits (that since the late 1880s operated the Sud-Express route). Right next to the station, travellers could check-in in the luxurious Avenida Palace Hotel (still in operation today).[85]

Further up North, the Beira Alta railway that traversed Portugal in an East-West direction across the central provinces of Portugal since 1882 also brought wanderers from Spain to the beaches of Figueira da Foz. From 1884 onwards, tourists benefited from a brand-new attraction, local theatre Teatro-Circo Saraiva de Carvalho, upgraded to a casino (Grande Casino Peninsular) in 1895.[86]

As time went by, railways added new touristic attractions in Portugal to their offer (beaches, bullfights, castles, cities with important cultural and historical heritage, county fairs, exhibitions, mountain and health resorts, pilgrimages, spas, and so on). Since 1888, the beginning of the publication of the "Gazeta dos Caminhos de Ferro" broadened the advertisement of those places and how to get there by train, occasionally offering promotional tickets to its readers. Inversely, both the Gazette and railway companies also promoted travels abroad. For instance, in 1889, the Companhia Real offered to its users GBP 5 (USD 700) return tickets to visit the World Exhibition in Paris.[87]

Numbers of passenger traffic in the imperial railways are much lower, albeit significant as far as imperial mobility is concerned. The first year of operation (1888) registered 230,000 travellers; in the turn of the century (1900) that figure rose to 305,000, whilst in 1913 almost 750,000 passengers rode the trains in the colonies.[88] The nature of the circulation of people promoted by railways was far more simple than that that occurred in the mainland, albeit it also contributed to a globalising process, as it brought together people from many different origins.[89] Similarly to what happened with goods, flows of passengers followed in two directions: upwards to the hinterlands and downwards to the coast. A recent study speculates that upwards movements were much superior, which

84 Pinheiro, Cidade, p. 77.

85 Ibid., p. 76.

86 I. Vaquinhas, Saber Perdurar. Grandes linhas de evolução do Casino da Figueira (1884–1978), Figueira da Foz 2015, pp. 5–6.

87 E. F. Ribeiro, A Gazeta dos Caminhos de Ferro e a Promoção do Turismo em Portugal (1888–1940), in: Biblio 3W 14, 837 (2009), www.ub.edu/geocrit/b3w-837.htm (accessed 4 September 2018) Saraiva, Inventing, p. 268. The price was steep but affordable to some classes of workers. It was equivalent to 22,500 réis. For instance, a typographer working in Lisbon earned 1800 réis/day. For a worker of the vineyards of Vila Real, however, with a daily salary ranging from 139 to 185 réis, such voyage was an unaffordable luxury (C. A. Martins, Trabalho e condições de vida em Portugal [1850–1913], in: Análise Social 32 [1997] 142, p. 486).

88 AHU, pack 52 1G and book 927 1N. Ministério das Colónias, Estatística.

89 Boonen and Lagae, A City, p. 54.

may suggest that the railway contributed to a European settlement of the Portuguese colonies.[90]

Besides goods and people, railways, which were the result of the globalisation of the idea of progress, promoted themselves the globalisation of ideas. This is also a subject that requires further studies, but it is likely that railways brought with them new concepts, authors, books, and literature, at least if we take into consideration Portuguese diplomat, Eça de Queiroz, writings:

> *railways transported each day torrents of brand new things, ideas, systems, aesthetics, forms, feelings, humanitarian interests… Each morning brought its own revelation, as if they were a new Sun. It was Michelet that arrived in Portugal, and Hegel, Vico and Proudhon; and Hugo, announced as a prophet and a king slayer; and Balzac with his wicked and languid world; and Goethe, vast as the Universe; and Poe, Heine, Darwin – I believe – and so many others!*[91]

6. The Conflict with the Nation-State

The pressures exerted by railways towards the setting of global flows were faced and to an extent contradicted by the emergence of the Nation-State, either during the operation but also during the decision-making and construction processes. In the colonies, the tensions of empire also originated obstacles to globalisation processes.[92]

In the Iberian Peninsula, the Portuguese goal of building the most direct route between Lisbon and the French border clashed with the Spanish agenda that favoured internal traffic rather than transnational freight. The first transnational line opened in 1863 meandered about in the Spanish countryside before arriving to the French border. Moreover, Spain privileged railway construction towards its own harbours instead of building lines towards Portugal. Additionally, after 1870, Madrid realised that the ideology that argued for the union of both nations into one single country was completely unpopular in Portugal and it closed negotiations to build more cross-border links. Until the end of the 1880s, four additional lines were open across the frontier, most of them set by the intervention of private agents. Two were built by a consortium of Portuguese banks (seeded in Porto) that financed the extension of the lines in Spain. However, after the inauguration of these lines, traffic was low, as an adverse fare policy executed by Spanish railway companies diverted freight from those transnational vectors.[93] Globalisation of commerce in Portugal was forced to choose a different route, by sea.[94]

90 Pereira, O caminho.
91 Quoted in: A. C. Matos, Eça de Queiroz: uma biografia, Porto 2009, p. 60.
92 For a handful of examples, see Vleuten and Kaisjer, Networking Europe; Geyer, Portals, p. 513; Herren, European, p. 11; Middell and Naumann, Global, p. 150; Sinha, Railway, pp. 18, 29 and 32.
93 Pereira, The Technodiplomacy, pp. 186–187.
94 Alegria, A organização, pp. 196–212 and 486.

Similar predicaments occurred in the colonies, where railways were counting on international traffic to feed the colonial harbours of Delagoa Bay / Lourenço Marques, Beira (in Mozambique), Lobito/Benguela (Angola) and Mormugão (India). In all these projects, the border appeared as larger obstacle than the highest mountain or the deepest valley. Even though the concept of Nation-State was not as strong as in Europe,[95] the context of the scramble for Africa took European rivalries to the colonial setting. Diplomatic negotiations to build the lines were long and hard, because neighbouring administrations also had ports that could serve as outlets of the colonial hinterlands (Mormugão suffered the competition of Bombay, whereas Beira and Delagoa Bay / Lourenço Marques had to compete with the Cape, Port Elizabeth, Durban and East London, and Lobito/Benguela with Matadi). Additionally, the colonial specificity during the scramble for Africa turned railways into trumps to determine the sovereignty over a given territory. Eventually these disputes were settled by international agreements and the rails were laid.[96] After inauguration, national rivalries diverted traffic from the border, but, as mentioned before, as time went by those lines promoted transnational flows: in Delagoa Bay / Lourenço Marques, these flows were favoured by an economic agreement that supplied the Transvaalian mines with cheap labour from southern Mozambique in exchange for a percentage of traffic directed to the Portuguese colonial harbour; further North, the line that connected Rhodesia with South Africa could not handle all the Rhodesian traffic, which had to be directed to the Portuguese harbour of Beira; in Angola, the Benguela line was the quickest route to the sea offered to the copper mines of Katanga; finally, in India, cross-border traffic flourished when the Portuguese line was leased to the railway company that operated its extension in British India.

Foreign presence overseas was a consequence of the growing globalisation process that different Nation-States tried to avoid or control.[97] From the mid-1890s onwards, Portugal also tried to counter the presence of foreigners (especially the British) in the colonies, as it could jeopardise Portuguese sovereignty on the region. The disputes arisen in these areas were not handled directly by the Portuguese and British State, but by local organisations.[98] In the lines of Goa and Delagoa Bay / Lourenço Marques, fiscal directors frequently countered British engineers and contractors in an effort to affirm Portuguese authority in those areas.[99] The feud was particularly serious in Delagoa Bay / Lourenço Marques, in the process that led to the nationalisation of the line, during which force had to be employed by the local Portuguese authorities against British contractors (who even applied for the help of three vessels of the British Navy docked in the bay).[100] In the provinces traversed by the Beira line (Manica and Sofala), the conflict was set between

95 Hyslop, Durban, p. 38.
96 H. S. Pereira, Fronteiras e caminhos-de-ferro: da quimera saint-simoniana ao desencanto tecnodiplomático (c. 1850–c. 1900), in: Revista de História das Ideias 35 (2017), pp. 227–259.
97 Boonen and Lagae, A City, pp. 54 and 66; Castryck, The Belgian, p. 79; Hyslop, Durban, p. 37.
98 For examples of such disputes in other context, see: Hyslop, Durban, p. 41.
99 Kerr and Pereira, India, pp. 185–186.
100 Marçal, Um império, pp. 302–303.

Cecil Rhodes' chartered, British South African Company, on one side, and Portuguese chartered, Companhia de Moçambique, on the other, each trying to protect its own interests (and hence the interests of their own countries) in the area.[101] As I said before, in the early years of the 1900s, there was a strong effort to use exclusively Portuguese capital and Portuguese know-how in the construction of new colonial railways and to completely bar entrance to foreign agents in Angola. However, this strategy worked for small enterprises only.

7. Conclusion

Portuguese railways illustrate well the contradiction between the creation of globalising flows and the ascension of the Nation-State that characterised the nineteenth century.
In Europe, the decision-making process and operation of transnational rail links (suggested by the Saint-Simonianists to promote circulation and globalising flows) had in the political border of the Nation-State its most unsurmountable obstacle. Different technological agendas (favouring internal or international traffic), opposing economic interests (feeding national harbours), private corporations goals (that favoured longer routes in internal railways towards ports) complicated the setup of fluid cross-border flows. The same obstacles existed in the colonies, where the scramble for Africa contributed to complicate the process even further. Even though imperial railways could favour global flows of capital, people and goods, they were also tools of empire, indispensable to affirm different colonial powers sovereignty over those territories.
Nonetheless, railways were able to overcome these obstacles and act as portals of globalisation, promoting the flow of capital, workers, tourists, settlers, assorted goods (primary, colonial, manufactured), and ideas.
Initially, railways were the result of a global idea of progress based on technology. They were the token that Portugal and its experts were up to date the most modern technical knowledge that was changing the economy and the society of the European and North American nations. By building railways, Portugal was presenting itself as a modern nation, willing to enter in the global concert of technological nations promised by the Saint-Simonianist prophets who trained the Portuguese engineers. In the colonial context, railways proved that Portugal was willing to join the effort of colonising and "civilising" Africa and was indeed an imperial nation.
Construction and operation quickened these intents and hastened global flows. Railways were a capital-intensive industry that required vast sums of money for construction and operation. Benefiting from its adherence to the gold-standard, Portugal also entered the global flows of finance that had its centre in London and Paris. Both were present in the Portuguese investment programme either in the mainland (the latter) and in the colonies (the former).

101 Ibid., pp. 327–341.

Construction of railways brought to Portugal and its imperial possessions thousands of engineers, contractors, and workers from different backgrounds and nationalities that contributed to the transfer of technical knowledge (both in the higher and in the lower ranks of construction) and to increase the diversity of the Portuguese cultural and society: railways brought new terms to the language and new people to the Portuguese demographics.

Operation intensified this globalisation process, by placing Portugal in global trade flows. In cooperation with harbours, railways augmented the circulation of foreign goods in the mainland and the colonies and they facilitated the placement of national and colonial goods in international markets. In this sense, the Portuguese metropolis acted as a guiding force of the colonial globalising flows.[102] Railways also accelerated the communication of ideas that arrived from the European centre to the Portuguese periphery much more quickly than before.

102 About this role of the metropolis, see Hyslop, Durban, p. 39.