

Harbinger of progress: Portuguese illustrated journal *O Occidente* in the late nineteenth century (1878-1899)¹

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Abstract. In the second half of the nineteenth century, Portugal undertook in its mainland and colonial territories an ambitious modernising programme based on technoscientific grounds. From the late 1870s onwards, such programme was widely advertised in *Occidente*, the most important illustrated journal of the time that published several drawings of original photographs. In this paper, I will analyse the imagery based on authentic photography related to technoscientific activities in Portugal and its colonies, using a methodology that combines semiotics with photojournalistic analysis. I claim that *Occidente*, by publishing drawings of photos, was crucial to create an image of Portugal as a modern, technoscientific, and imperial nation, before the development of halftone printing and photojournalism.

Keywords: photography; science; technology; engineering; medicine.

[es] Heraldo del progreso: el periódico ilustrado portugués *O Occidente* al final del siglo XIX (1878-1899)

Resumen. En la segunda mitad del siglo XIX, Portugal emprendió en sus territorios continentales y coloniales un ambicioso programa de modernización fundado en bases tecnocientíficas. Desde finales de la década de 1870, dicho programa fue ampliamente publicitado en *Occidente*, la revista ilustrada más importante de la época que publicó varios dibujos de fotografías originales. En este artículo, analizaré las imágenes basadas en fotografías auténticas afines con actividades tecnocientíficas en Portugal y sus colonias, utilizando una metodología que combina la semiótica con el análisis fotoperiodista. Afirmo que *Occidente*, al publicar dibujos de fotos, fue crucial para crear una imagen de Portugal como una nación moderna e imperial, antes del desarrollo de la impresión *halftone* y del fotoperiodismo.

Palabras clave: fotografía; ciencia; tecnología; ingeniería; medicina.

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1. Introduction

During the second half of the 19th century, Portugal invested in technoscientific systems to develop its mainland (and overseas) territories and bring it closer to other European nations. In this paper, I will analyse the contribution of a Portuguese newspaper of the time, *Occidente*, to announce that effort and create an image of Portugal as a modern and imperial nation, through the reproduction of drawings of photographs.

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1.1. Context and goals

In the 19th century, science and technology were the gauge that measured nations' worth (Adas, 1989). Those countries who did not invest were considered backward and placed in the ominous technoscientific periphery (Shils, 1975: 9-13). Until 1900, different Portuguese governments and private entrepreneurs contributed to create a railway and road networks, build schools and hospitals, modernise warfare, promote scientific knowledge, etc. (). In the 1870s, this programme was transferred to the colonies, to better exploit their economic potential and to consolidate Portugal's presence in those territories (Carneiro et al, 2021).

This process was accompanied and publicised by the press. One publication was *O Occidente: Revista Ilustrada de Portugal e do Estrangeiro* (The West: Illustrated Journal of Portugal and Abroad), which I analyse in this paper. I will focus on the drawings of photos of science, technology, engineering and medicine (hereafter STEM), published in that journal, since its first issue to 1899, when the publication of those illustrations was discontinued, replaced by the printing of photographs with halftone.

I will use a combination of content analysis in photojournalism with semiotics to illustrate the message conveyed and the myths created by the propagandistic nature of *Occidente*. I aim to contribute to the debate about representations of *progress* and to the state of the art about the history of Portuguese illustrated journals.

Recently, different authors have contributed to this field. Costa and Serén (2004) wrote a detailed history of *Ilustração Portuguesa*, a magazine published throughout the twentieth century. Santos (2009) looked at *Occidente's* pictures' contribution to the creation of representations about Europe. More recently, Martins (2014) analysed colonial depictions in the illustrated press and their role in the construction of images of the Empire in the mainland. Finally, Sousa (2017a, 2017b) elaborated a detailed history of the origins of Portuguese illustrated press, since the mid-1830s. None have looked in detail into technoscientific representations in illustrated journals, a gap that I aim to fill with this paper.

1.2. Primary source and methodology

Portuguese illustrated journals, like *Occidente*, were a phenomenon of the beginning of the 19th century, resulting from the influence of similar British and French (and to a lesser extent Spanish) publications and the use of wood engravings to print pictures. By the end of the century, illustrated journals had become increasingly popular throughout Europe (Beegan, 2008: 31; Charnon-Deutsch, 2005; Mainardi, 2017: 34; Sousa, 2017a: 215, 218). Like in other countries (Mainardi, 2017: 35), in Portugal, the illustrated press became the greatest tool to disseminate information until the electronic age.

Occidente was published between 1878 and 1915, twice a month until 1880 and thrice a month thenceforth.³ It was a private enterprise, founded by wood engraver Caetano Alberto Silva (who financed its creation), artist Manuel Macedo (manager), poet Chaves Azevedo (columnist), and engineer Brito Rebelo (editor). It covered a wide variety of current affairs and it had correspondents across Portugal and a few abroad. Its circulation figures were not impressive, but it had distribution agents around Portugal, in the colonies, and abroad.⁴ Its price was steep, but affordable: 120 réis/number or 2600 réis/yearly subscription.⁵ In perspective, a typographer working in Lisbon earned 1800 réis/day (Martins, 1997: 486). *Occidente* is considered the most important Portuguese illustrated journal in the late 19th century that revolutionised illustrated journalism due to its profuse use of imagery (Sousa, 2017a: 219-222). For this reason, it was particularly relevant in reaching the illiterate, which accounted for most Portuguese population. Moreover, it was common that readers read out loud the texts for those who could not read (Tengarrinha, 2013: 865-866). The format of *Occidente* stimulated flipping through its pages and looking at the pictures rather than perusing its contents. Often, images operated independently of texts. By repeating and accumulating similar pictures, the journal did not inform the readers as much as it spread propaganda and influenced one's views, creating larger communities with shared beliefs – in the case at hand, by inculcating an idea of *progress* based on technoscientific grounds (cf. Beegan, 2008: 14-15, 23-24; Costa; Serén, 2004: 71, 90). What is more, *Occidente* published many different images, but it gave a large importance to drawings of photographs.

Photography was practiced in Portugal since the 1850s, as a business, a work tool, and a hobby. Its reproduction in the press was not feasible for technical and financial reasons until the late 19th century (Sena, 1998: 40-69). The solution was wood engraving. A tracer drew a copy of the photo, which was carved by an engraver in a wooden block, which could be combined with typesetting to obtain large amounts of copies (Sousa, 2017b: 576).

Engravers at *Occidente* excelled in this work and the publication of drawings of photographs became a distinguishing trademark of the journal (Sousa, 2017a: 233). Moreover, its editors always highlighted in the

³ Available online: hemerotecadigital.cm-lisboa.pt.

⁴ *Occidente*, specimen, 1877, 4; no. 1231, 10-3-1913, 60.

⁵ Approximately 3.5 and 70-80 current US dollars, respectively. For the exchange rate from réis to pounds, see Mata, 1993. To convert pounds to current US dollars, see www.measuringworth.com/calculators/exchange/result_exchange.php (accessed 14 October 2019).

captions that an image was drawn from a photograph, stressing that the scene depicted was real and not a product of the drawer's imagination (Martins, 2014: 101). The tracer could add some details to the originals, but he could not change them drastically, since the photographic proof could easily contradict him. Figures 1 to 4 compare copies (right) and originals (left).

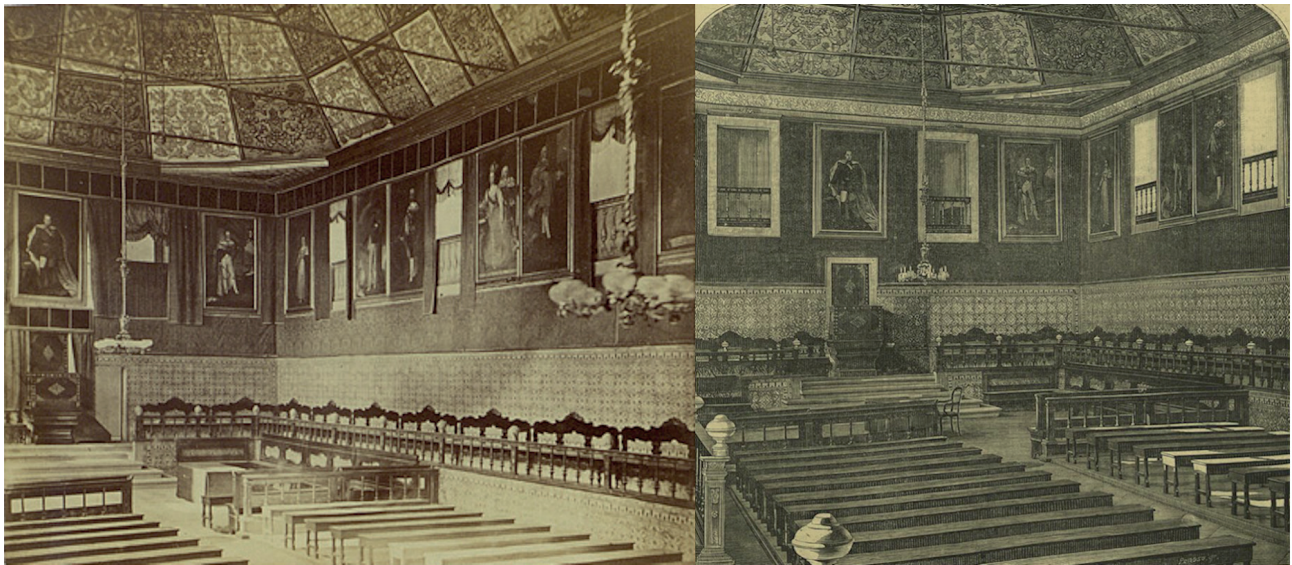


Figure 1 – Room of *Capelos* of the University of Coimbra

Sources: *Panorama Fotografico de Portugal*, no. 5, 15-2-1870; *Occidente*, no. 57, 1-5-1880, 65

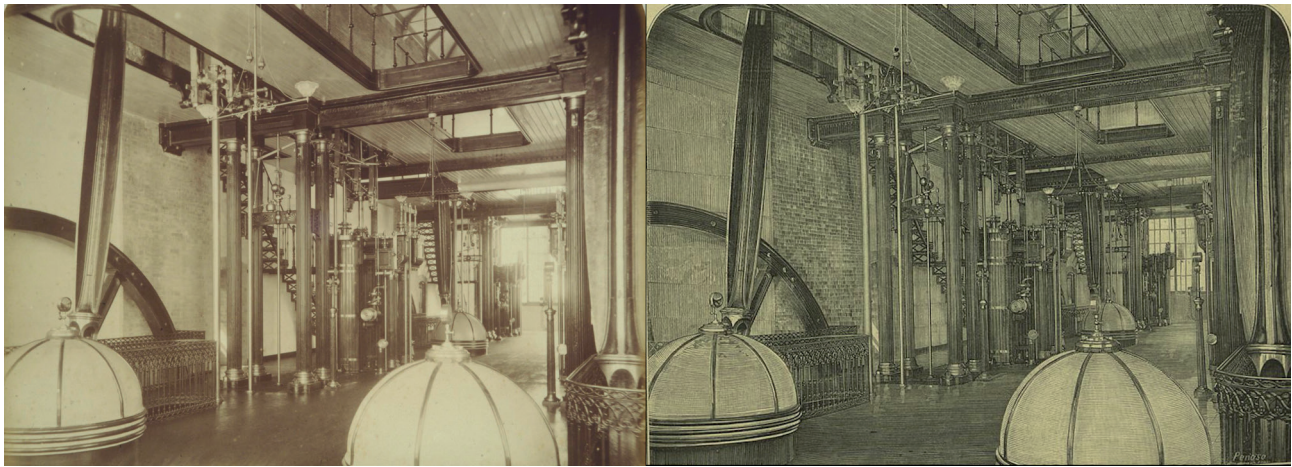


Figure 2 – Engine room of Lisbon's water supply system

Sources: Arquivo Fotográfico da Câmara Municipal de Lisboa, PT/AMLSB/ORI/000796;
Occidente, no. 70, 15-11-1880, 70

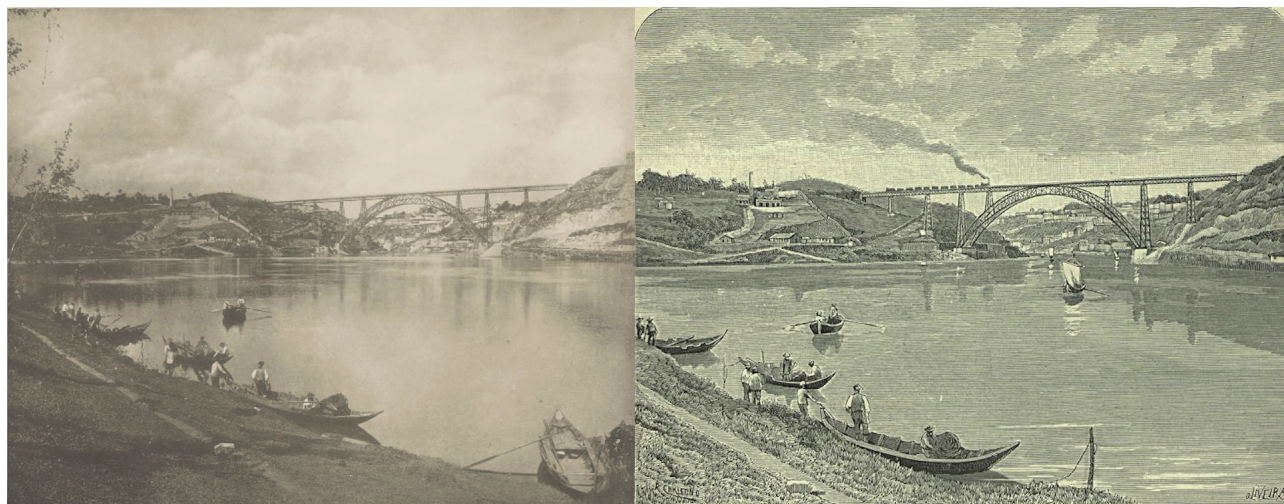


Figure 3 – *Maria Pia* Bridge in Porto

Sources: Private archive, Emil Biel, *Album Phototypico de Vistas da Cidade do Porto; Occidente*, no. 419, 11-8-1890, 181

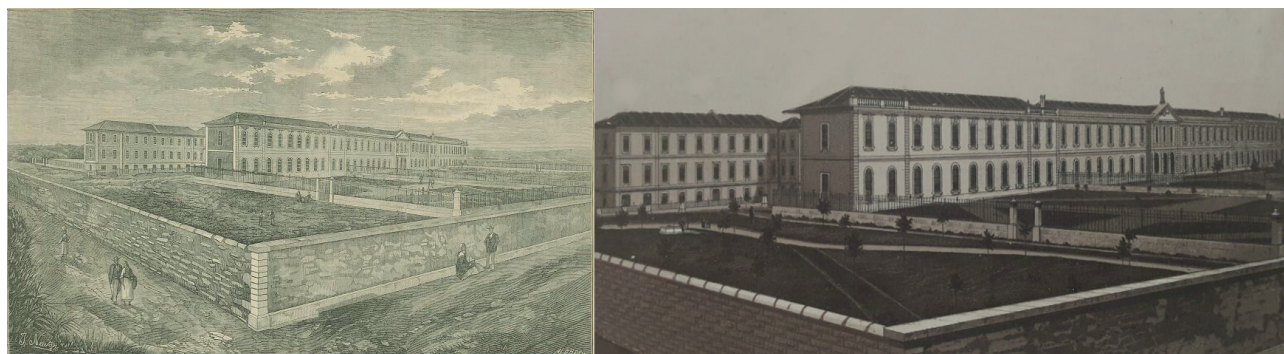


Figure 4 – *Conde Ferreira* asylum

Sources: Private archive, Belém & C.^a, *Porto*, c. 1888; *Occidente*, no. 156, 21-4-1883, 92

Occidente borrowed some of the alleged objectivity of photography to increase its trustworthiness among its readers (Flint, 2000: 1; cf. Martin, 2006: 43-44). In the 19th century, photography was considered completely objective (Schwartz; Ryan, 2003: 8). As a product of science and technology, it would “repress the wilful intervention of the artist-author and [...] put in its stead a set of procedures that would [...] move nature to the page through a strict protocol, if not automatically” (Daston; Galison, 2007: 121). This objectivity was more assumed than real. Photos were staged by their author and therefore they presented “a deceptive appearance of naturalness and transparency concealing an opaque, distorting, arbitrary mechanism of representation” (Mitchell, 1986: 2). In the case of drawings of photos, one must add the layers of representation provided by those involved in the process: tracers, engravers, and printers (Sousa, 2017a: 217). Nonetheless, its alleged objectivity turned it into an ideological tool (Kelsey, 2016: 90).

For this paper, I gathered 289 drawings of photos published in *Occidente* that depict activities of STEM.

using the methodology of Benetti (2007: 112-113): (1) systematic observation of the iconographic discourse of the periodical; (2) categorisation of the images in sets with similar characteristics (in this case, STEM); (3) selection of representative images of each category; (4) iconographic examination. Stages (1) and (3) are self-explanatory, but (2) and (4) require some detailing.

With respect to the former, the proposed categorisation may be controversial, as the categories are not easily defined. For the purposes of this paper, I use the categories in the following terms. *Science* includes infrastructures devoted to research, teaching or outreach (laboratories, universities, museums), except for healthcare, which are included in *medicine*; it comprises landscapes and portraits of Africa and Africans, considering that photography was considered a scientific tool of geography, anthropology, and ethnography (Rocha; Matos, 2019: 167-172). *Engineering* encompasses large works (bridges, tunnels, stations, city halls, churches) and cityscapes. Finally, *technology* covers artefacts (steamers, weaponry, machinery) and industrial products.

Regarding stage (4), I argue that neither photos nor drawings are neutral nor their meaning self-evident. Contrariwise, they are “enigmas, problems to be explained” that “must be understood as a kind of language instead of providing a transparent window on the world”. Moreover, they are embedded in the culture in which they were produced (Daniels; Cosgrove, 1988: 2). To interpret them, I use Barthes’ (1972: 109-156) framework that distinguishes the signifier (the object portrayed), the signified (the message conveyed), and the sign (the myth created). Images usually hold different meanings, but there is always one that prevails (Jackson, 1984: 12). To determine which stands out, I analyse the texts associated with the pictures, “as constituent images of its meaning” (Daniels; Cosgrove, 1988: 1).

2. Quantitative appraisal of the sample

The 289 photo drawings of STEM in *Occidente* account for roughly 10% of all images published, which follows the trend of Portuguese photography of the time (Pinheiro, 2006: 124-125). Engineering is the category most depicted (126 items or 44%), followed closely by science (93-32%). Technology (53-18%) and medicine (17-6%) lag behind (chart 1).

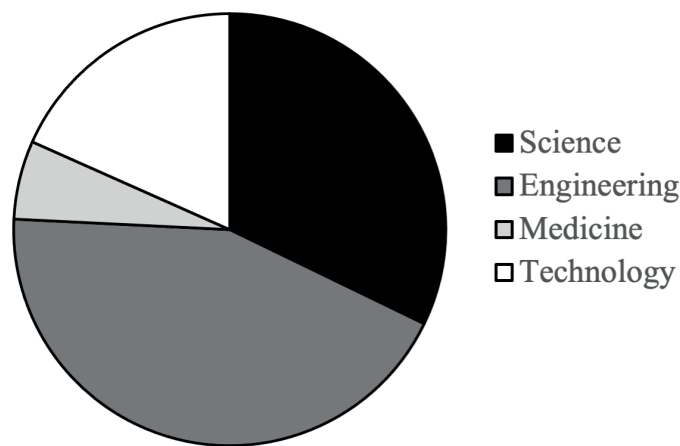


Chart 1 – Distribution of the sample per category
Source: Own making

The evolution of the publication of drawings of STEM is illustrated in chart 2. A peak in 1881-1882 (extending to 1885) is evident. These were the years of the construction of the Douro and Beira Alta railways, two important lines traversing Portugal’s midsection from the coast to the frontier. The overall optimism regarding the investment in technoscience that characterised the 1880s (Pereira, 2018) justifies these numbers. Contrarily, the 1890s were a time of crisis and disappointment with *progress* (Pereira, 2019), which was more timidly mentioned in the journal.

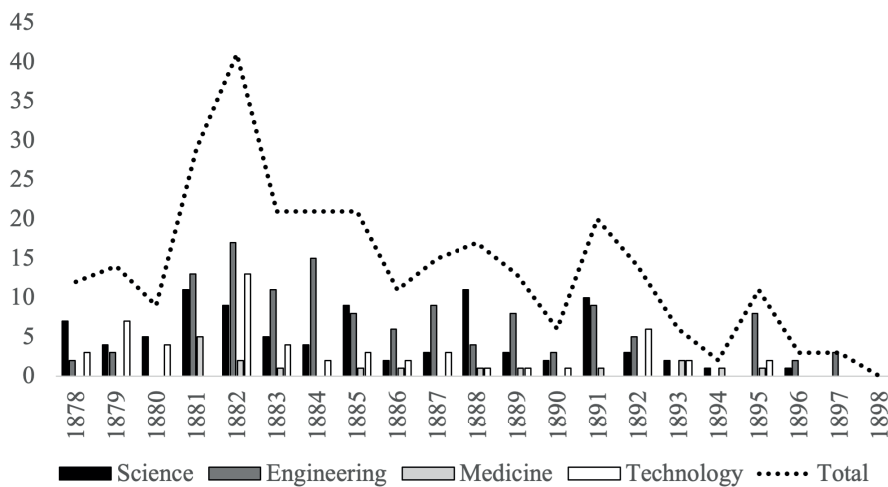


Chart 2 – Distribution of the sample per category per year
Source: Own making

Regarding geographical distribution, most drawings depict locations in the Portuguese mainland (chart 3). Angola (especially Luanda) and Mozambique (Lourenço Marques, present day Maputo) were well represented in the sample, but the same cannot be said about other smaller colonies (only 9% of the images portray Guinea, Cape Verde, S. Tomé, Goa or Macao). The display of Portuguese technoscientific prowess outside Portugal (world fairs) is also under-represented. A closer look into the distribution of pictures within the mainland illustrates that most images depict Lisbon, which is not surprising, considering it was the capital of the nation and the empire. The second city of Portugal, Porto, is well-represented as are some areas of the Douro and Beira provinces. Again, the construction of the Douro and Beira Alta railways justifies these figures. Other provinces have just a few drawings, while the Algarve has none (chart 4).

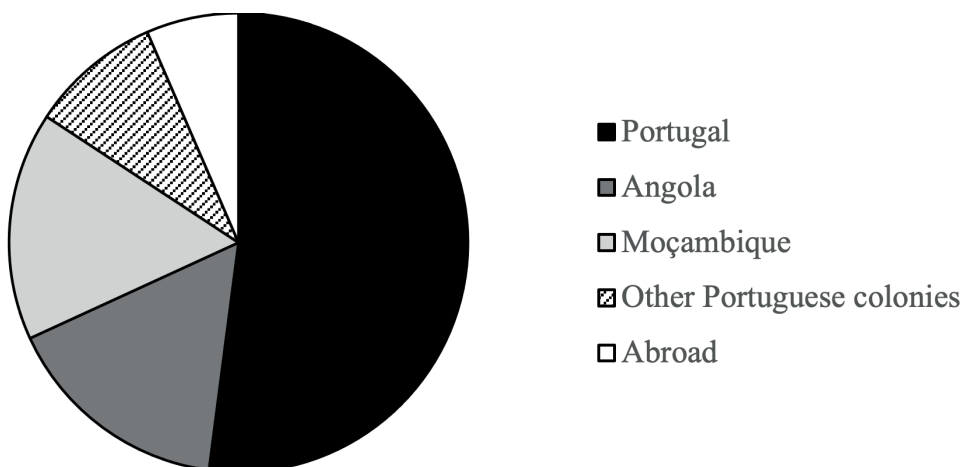


Chart 3 – Geographical distribution of the drawings
Source: Own making

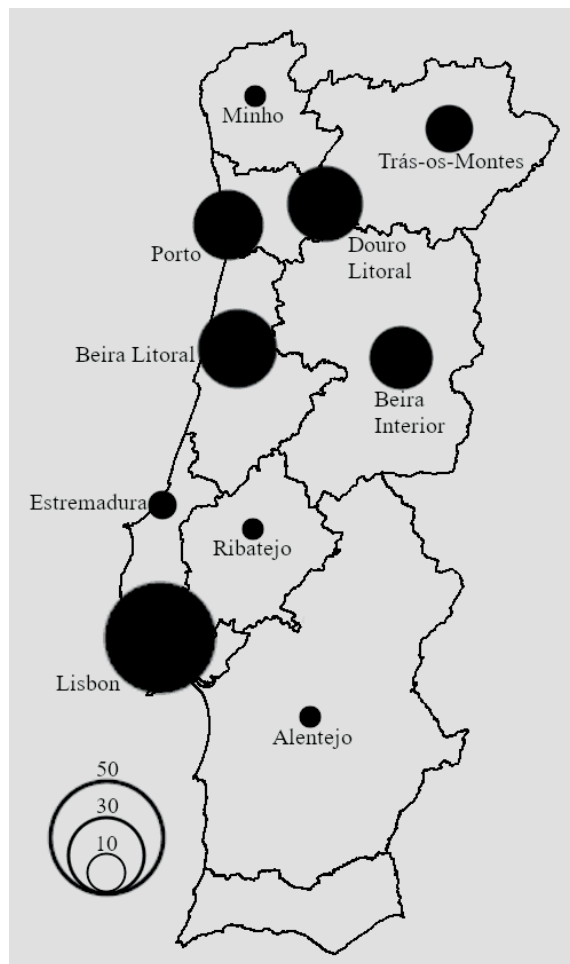


Chart 4 – Geographical distribution of the drawings by provinces in the Portuguese mainland
Source: Historical Atlas (atlas.fcsh.unl.pt) and own making

Authors of the original photographs drawn in *Occidente* often are not identified (in 127 occasions). In the rest of the sample, I identified 43 photographers, four of them accounting for more than 60% of the pictures: Francisco Camacho, Cunha Moraes, Emil Biel, and Francesco Rocchini. All were relevant photographers in Portugal during the second half of the 19th century (Pavão, 1990: 26-27; Serén, 2001: 54-69).

3. Technoscientific representations in *Occidente*

3.1. Commonalities: *progress, modernity, civilisation*

The main aspect visible across the sample is a message of *progress*. The title itself pointed in that direction: *Occidente* (West) meant Europe and Europe meant *modernity* and *civilisation* (Ribeiro, 2002: 111; Santos, 2009: 11).⁶ French influence is palpable, especially that of Saint-Simonianism and its belief in the power of science and technology (and images) to direct social change (cf. Laak, 2010: 27; Mainardi, 2017: 44). Saint-Simonianism was popular amongst Portuguese engineers, who engaged with it during their training in French schools (Macedo, 2012: 60).

Many images depicted Portuguese scientific institutions (universities, laboratories, libraries, museums, observatories) accompanied by texts describing their history (figure 1).⁷ Each played a different role in the path of progress.

In the 19th century, education was a synonym of *civilisation*, especially in a country like Portugal where 90% of the population was illiterate (Santos, 2009: 21). Therefore, solemn images of universities, institutes, and schools were frequent. In 1892 *Occidente* praised St. Joseph's workshops in Porto, for its efforts in regenerating the poorest through a mixture of education, work, and faith.⁸ Institutions of higher education were even more commended. It was the case of the Institute of Agriculture that taught how to increase agricultural yield, which could interest not only farmers, but also investors and public administrators.⁹ This was especially important if we remember that many in Portugal advocated the specialisation of the country in the production of agricultural products or a stronger investment in the sector (Cardoso, 2001: 45). The University of Coimbra and the Polytechnic School of Lisbon were often portrayed in *Occidente*, listed amongst the best universities in Europe.¹⁰

Engagement with scientific research was frequently reported by the journal. Images of the Botanic Gardens of Coimbra, the Geology Section of Lisbon, the observatory and laboratories of the Polytechnic School of Lisbon illustrated the investment made in science.¹¹ Often, the images included strange and complex objects to the eyes of the commoners, adding to the mystical aura surrounding scientific institutions. This was accompanied by a complex and secretive language, including strange denominations (hygrometer August, udometer Babinet, anemograph Casella) and technical mumbo-jumbo unfathomable to most readers: how a ship was powered by two low pressure inverted steam engines with a total power of 500 nominal hp and 3,200 effective hp; or how bridge Maria Pia was erected 62 m above the hydrographic zero.¹²

Outreach activities were also a concern, with images and descriptions of Lisbon's zoo, the museums of Coimbra, or the decision to hold academic ceremonies in Portuguese (and not in Latin), so that general public could attend and learn from them.¹³

The development of sanitary conditions and health infrastructures were too a part of the modernisation processes followed by *civilised* nations (Porter, 1999). Some news pieces of *Occidente* announced the opening of new hospitals in different regions of Portugal or the colonies.¹⁴ Other accounts compared circumstances before and after the construction of new hospitals. Situation in Lourenço Marques prior to the improvement of sanitary conditions was "truly horrible, indecent, shameful," whereas in the mainland the new hospitals were far more hygienic, ventilated, and salubrious than before.¹⁵

Arguably the best examples of modernity came from images of technical artefacts and engineering works that embodied the "technical sublime," the pleasure of observing a moving machine, as a symbol of Man's

⁶ The importance of the titles of illustrated journals is well documented. Mainardi (2017: 37-38) explains how in the French journal *Le Magasin Pittoresque*, the word *magasin* had a double *entendre* of periodical and store that provided intellectual goods and images.

⁷ *Occidente*, no. 49, 1-1-1880, 1 and no. 566, 15-9-1894, 212 describe the history of the Universities of Coimbra and Évora.

⁸ *Ibid.*, no. 484, 1-6-1892, 121 and 124.

⁹ *Ibid.*, no. 128, 11-7-1882, 155.

¹⁰ *Ibid.*, nos. 393, 21-11-1889, 260, 447, 21-5-1891, 113 and 510, 21-2-1893, 44.

¹¹ *Ibid.*, nos. 100, 1-10-1881, 221; 141, 21-11-1882, 260-261; and 434, 11-1-1891, 12-13.

¹² *Ibid.*, nos. 67, 1-10-1880, 160; 176, 1-8-1883, 176; 285, 21-11-1886, 260.

¹³ *Ibid.*, nos. 57, 1-5-1880, 65; 212, 11-11-1884, 249; 237, 21-7-1885, 165.

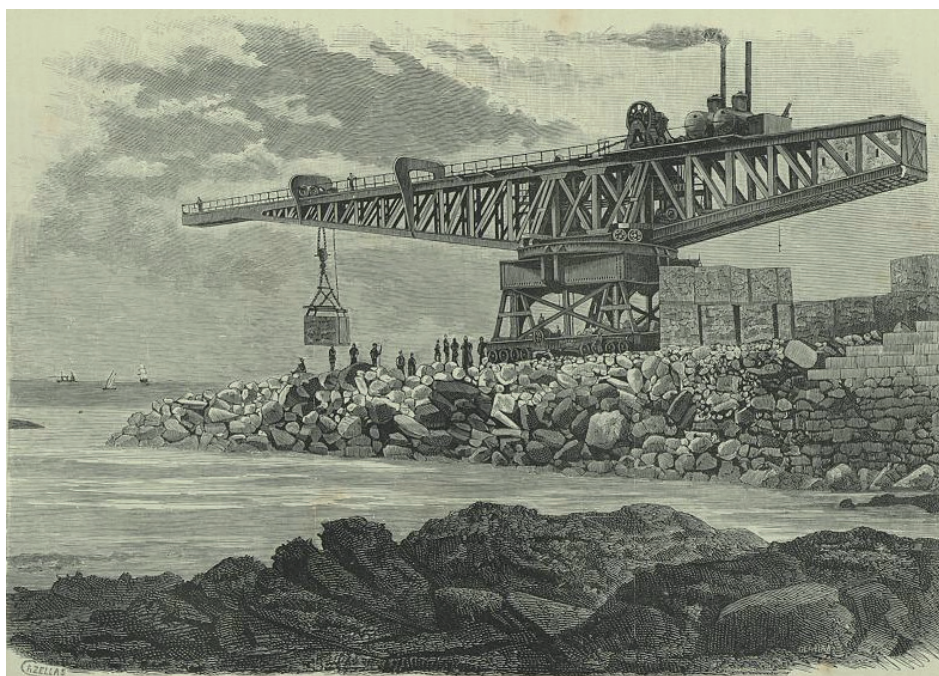
¹⁴ *Ibid.*, nos. 90, 21-6-1881, 141; 284, 11-11-1886, 256; and 467, 11-12-1891, 277.

¹⁵ *Ibid.*, nos. 85, 1-5-1881, 100; 105, 21-11-1881, 261; and 522, 21-6-1893, 141.

ingenuity (Kasson, 1976: 162-168). These could include small undertakings like new public or private buildings (city halls, associations, telegraph stations, theatres)¹⁶, or large works and machinery.

Images of bridges illustrate this well, evidencing the monumental size of structures and their geometric features, which contrasted with the surrounding unruly environment (cf. Fortier-Kriegel, 2005: 98). The message conveyed by the drawing was strengthened by texts that classified bridges (built abroad by prestigious manufacturers) as monuments of modern *civilisation* (especially in the colonial context) and conquests of modern engineering, and their inaugurations as festivities of labour that celebrated the victory of Man's resourcefulness over nature.¹⁷ Bridges were indeed civilising works (Dreicer, 2000: 139).

Machines were the true vehicle of the technical sublime and therefore a favourite of *Occidente's* editors. Figure 2 illustrates one of those wondrous apparatuses, but a more expressive example was published in 1886, depicting the gigantic crane, aptly named *Titan*, used in the construction of the new harbour of Porto (figure 5). Its gargantuan dimension and power were enhanced by the Lilliputian size of the men surrounding it and the stone blocks it was carrying. The description added to the magnificence of the picture, by combining technical details with lavishing expressions: weighing in at 450 t, with 60 m of length and two 50 hp steam engines, it was a true monstrosity harnessed by a single man in the operating room that could easily lift 50 t stone blocks.



[FALTA] Figure 5 – Works in the harbour of Leixões, the crane *Titan* (translation of original caption)
Sources: *Occidente*, no. 259, 1-3-1886, 53

Trains and locomotives, as pioneers of civilisation (Adas, 2006: 79-80), and most important vehicles of the technical sublime, had a strong presence in the journal. Their portraits illustrated the easiness with which they traversed geographical obstacles that for centuries had encumbered mobility in Portugal. The texts highlighted the speed that replaced the slowness of stagecoaches or the danger of river transport, and how trains would gather all villages of the country in the “banquet of civilisation.”¹⁸

3.2. Commonalities: technoscientific determinism

The message of progress was ushered by a deep faith in the technical fix, in STEM as irresistible forces for societal development and key solutions for socio-political and economic problems (Johnston, 2018: 621). The opening of cross-border rail links was greeted with large enthusiasm, as the consummation of the transnational civilisations of circulation promised by Saint-Simonianism. The technoscientific expertise behind the water supply system of Lisbon (different images besides figure 2 illustrated different stages of water collection and distribution) would place the city alongside Paris, Bordeaux, or Lyon in terms of hygiene and salubriousness. In Africa, a public works expedition led by engineers (depicted with their tools of the trade) was considered

¹⁶ *Ibid.*, nos. 91, 1-7-1881, 148; 142, 1-12-1882, 272; 227, 11-4-1885, 84; 363, 21-1-1889, 21; 494, 11-9-1892, 204.

¹⁷ *Ibid.*, nos. 14, 15-7-1878, 108; 229, 1-5-1885, 100; 297, 21-3-1887, 68; and 419, 11-8-1890, 181. For the relevance of inaugurations for large technical systems, see Nye, 1999: 65.

¹⁸ *Occidente*, several numbers between August and December 1882, and February and September 1884.

the first step to a prosper future to the colonies.¹⁹

Any governmental hesitation (or public disinterest) in science or public works (especially in the colonies) was met with harsh criticism and accompanied by pictures that either evinced the state of abandonment of the overseas territories (hinting at the same time to their economic potential) or showed good examples of colonial infrastructures that should be replicated.²⁰

3.3. Commonalities: *civilising* the sacred heritage of overseas domains

Occidente divulged portrayals of colonial territories, considered tokens of the magnificent days of the 15th and 16th centuries, inseparable from the motherland - the myth of the sacred heritage (Alexandre; Dias, 1998: 93-97).

There was a strenuous effort to pass the message that the overseas domains were unexplored and virginal and their inhabitants savages, superstitious, and lazy, a common representation in the West (Adas, 1989: 153 and 170; Martins, 2014: 94-101).

Images highlighted the simplicity (wardrobe, tools), naivety, and exoticness of the natives, which were underscored in the descriptions. Some of these were downright patronising, ridiculing, and dehumanising. None had their real names and life stories published: “there is nothing to say about the biography of the negro Barros [a Portuguese surname, given to a guide]. If he duly fulfils his tasks, he will deserve the recognition of modern civilisation.” In other issues of *Occidente*, a local chief was unremarkable – “he is a *sova* [chief] like any other *sova*” – whereas the attire of a huntsman “is fanciful beyond the extreme of nonsensical and flamboyant.”²¹ Other combinations of image and text were plainly insulting. Portuguese colonial governor Augusto Castilho was particularly outspoken in the accounts that followed photos of Indian living in Mozambique and Mozambican indigenous: “sordid beings, unclean,” “unsurprisingly far from being civilised,” or “spending his days in idleness.”²²

These sentences resonate the racially biased Western perception of superiority over non-Western peoples, especially those in the colonial contexts. This perception was supported by pseudoscientific claims (some of them using photography as pretence empirical data) of scientific racism (Matos, 2013).

The technoscientific imagery of *Occidente*'s engravings contributed to underscore that difference and to consolidate the perception of Western superiority, which could be used to *civilise* the colonies. In this sense, many advocated that *progress* could be introduced in the imperial setting, through the Europeanisation agency of STEM.

Firstly, due to the imagined economic potential of the overseas domains (the *Eldorado* myth, according with Alexandre; Dias, 1998: 93-97). Many images depicted forests, rivers, farms, colonial products, and ports, assuring that the colonies were not a country of ailments and death, and that any investment would certainly be profitable.²³

Others witnessed how some local populations were taking steps towards *civilisation*. Moreover, those who were not could just be forced into it: some images of the Portuguese presence in Guinea were completed by a rather vocal: “the *papeis* [racial slang for the locals] of Bissau need to feel the rigour of our presence,” which called for the need to “punish mercilessly any *Cumeré* [again, slang] that opposes this expansion of life and progress.”²⁴

Finally, any enterprise of the Portuguese, promoting *progress* and *civilisation* in Africa and amongst the Africans (expeditions, exhibitions, schools, engineering works, state buildings), was commended as a token of the imperial vocation of the nation (Martins, 2014: 111-120).²⁵ Farms and farmers were particularly relevant and were advertised as promoters of the wealth of both their owners and the Empire.²⁶ Images of engineering works served the same purpose as “eloquent documents of civilisation in Portuguese Africa.” Ancient fortresses and churches, new palaces or railways were marks of the colonial prowess and *civilising mission* (Jerónimo, 2015) of the Portuguese that contrasted with the “vile spectacle” of the landscape created by the natives.²⁷ Images played the card of juxtaposing the old with the new (figure 6), as “a way of moving into the future by reorienting oneself to the past” (Kelsey, 2016: 80).

¹⁹ Ibid., nos. 30, 15-3-1879, 44; 70, 15-11-1880, 185 and 188; several numbers between December 1883 and September 1884. High expectations about the future impact of railways may be found frequently in *Occidente*. If technology failed (with train derailments, for instance), the machine was never to blame, but the human in the engine shed (ibid., no. 21, 1-11-1878, 165).

²⁰ Ibid., nos. 5, 1-3-1878, 36; 428, 11-11-1890, 252.

²¹ Ibid., nos. 12, 15-6-1878, 93; 241, 1-9-1885, 200; 264, 21-4-1886, 96.

²² Ibid., nos. 93, 21-7-1881, 165; 101, 11-10-1881, 228.

²³ Ibid., nos. 5, 1-3-1878, 336; 23, 1-12-1878, 177; 40, 15-8-1879, 125; 92, 11-7-1881, 156.

²⁴ Ibid., nos. 211, 1-11-1884, 244; 449, 11-6-1891, 136.

²⁵ Ibid., nos. 17, 1-9-1878, 129; 78, 21-2-1881, 48; 99, 21-9-1881, 212; 103, 1-11-1881, 244; 153, 21-3-1883, 69; 157, 1-5-1883, 100; 231, 1-5-1885, 116.

²⁶ Ibid., nos. 300, 21-4-1887, 93; 312, 21-8-1887, 189.

²⁷ Ibid., nos. 74, 11-1-1881, 12; 86, 11-5-1881, 108; 155, 11-4-1883, 84; 167, 11-8-1883, 180; 279, 21-9-1886, 216.

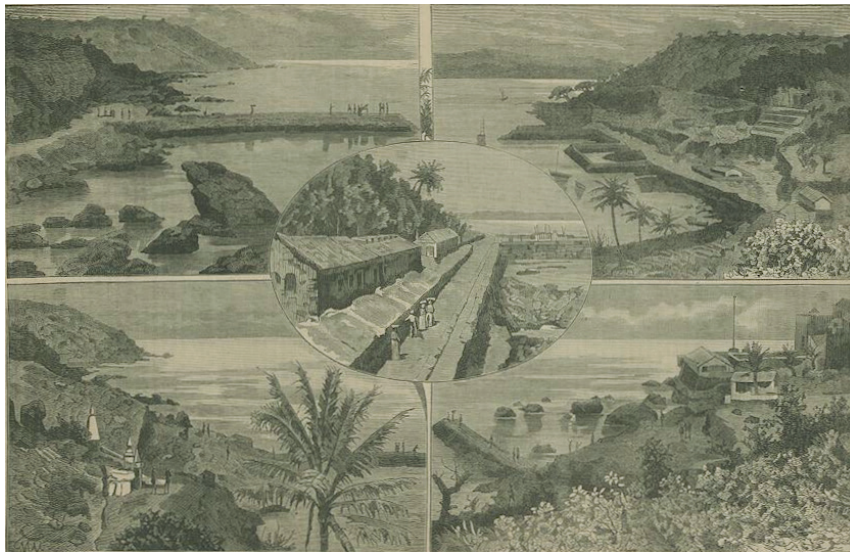


Figure 6 – Portuguese India. Mormugão. Railway works (translation of original caption)
Source: *Occidente*, no. 129, 21-7-1882, 165

Many images equated the colonial entrepreneurship of the Portuguese against that of other nations, claiming that the former *civilised better* than the latter. A text in 1883 argued that despite the plentiful resources of France, the king of Gabon (colonised by the French) was rather *primitive*, whereas the king of Congo (colonised by the Portuguese) was much more *civilised*. Another accused the British of colonising their domains with liquor and enticing discord amongst the native tribes.²⁸

These representations paved the way for a proto-lusotropicalism, that is, the belief that Portugal was a better coloniser than other colonial powers and had an empathic connection with the natives, who preferred the Portuguese to any other colonisers – hence the profusion of photos portraying the natives in an orderly fashion bearing European attires (figure 7).²⁹ Some texts illustrated this belief quite clearly. In 1885, one could read that “African peoples do not accept the tract given by any Europeans other than the Portuguese,” a statement enhanced by an 1891 article that claimed that for some black tribes, *white* equalled *Portuguese*.³⁰

All this contributed to advertise Africa in Portugal as a land with modern structures, “perfectly European,”³¹ where Portuguese settlers could dwell peacefully and prosper, instead of just migrating to Brazil (Martins, 2014: 122-129).



Figure 7 – Municipal school of Quelimane (translation of original caption) in Mozambique
Source: *Occidente*, no. 440, 11-3-1891, 60

²⁸ *Ibid.*, nos. 158, 11-5-1883, 109; 440, 11-3-1891, 60.

²⁹ The theory was developed by Brazilian philosopher, Gilberto Freyre, in the 1930s (Castelo, 1998: 28-35), but is possible to find some practical applications in the late nineteenth century.

³⁰ *Occidente*, no. 223, 1-3-1885, 53.

³¹ *Ibid.*, no. 97, 1-9-1881, 200.

3.4. Commonalities: national skills and private initiative

In the 19th century, STEM were closely related with the rise of a technological nationalism as a medium to unite diverse people, evoke national pride, and legitimise national technical endeavours (Amir, 2007: 283-284). Pictures of the modernisation of the nation were a catalyst for nationalistic feelings (regardless of the nationality of their promoters). Other images had the same effect, highlighting the technoscientific agency of nationals in different contexts. Large public works managed by Portuguese engineers were a cause for pride, as was participating in international exhibitions - “civilising celebrations” (figure 8) – that provided opportunities to praise Portuguese engineers (who designed the pavilions), industrialists (who offered their products), and colonialists (who gathered colonial items).³²



Figure 8 – The Antwerp Exhibition. Rooms of the Portuguese exhibition of the Society of Geography of Lisbon
(translation of original caption)

Source: *Occidente*, no. 241, 1-9-1885, 196

The promotion of technoscientific nationalism was achieved through the publication of drawings of industrial products made by Portuguese manufacturers and labourers, and the places where they were assembled, especially in the years after the British Ultimatum (1890), which motivated a nationalistic response in the field of industry (Teixeira, 1987: 706).³³

Occidente's texts and drawings were very laudatory of Portuguese private initiative, either individual or small groups of entrepreneurs, or larger companies. In other occasions, *Occidente* complimented the resourcefulness of those agents that promoted the construction of bridges, theatres, and commercial associations (figure 9).³⁴

The achievements of colonial private firms (harbours, railways, housing, public buildings, farms, exhibitions, hospitals), were advertised as a good example of Portuguese entrepreneurship that contributed to the Empire.

³² *Ibid.*, nos. 13, 1-7-1878, 97; 45, 1-11-1879, 161 and 164; 471, 21-1-1892, 20-21.

³³ *Ibid.*, nos. 157, 1-5-1883, 100; 265, 1-5-1886, 104; 325, 1-1-1888, 8; 475, 1-3-1892, 56.

³⁴ *Ibid.*, nos. 13, 11-1-1887, 13; 220, 1-2-1885, 28; 351, 21-9-1888, 213; 494, 11-9-1892, 204-205; 581, 15-2-1895, 37.



Figure 9 – The Stock Exchange in Porto (translation of original caption)
Source: *Occidente*, no. 363, 21-1-1889, 21

The commendation of private enterprise was not an acclamation of economic liberalism and free market initiative as much as a criticism against the inactivity of the state. In Portugal in the late-19th century, many expected the government to take a leading role in the construction of infrastructures and in the imperial project. In 1885, the lack of public support to the exhibition of Antwerp was harshly criticised by *Occidente*, whereas the initiative of the Society of Geography of Lisbon was highly commended.³⁵ Reports about private undertakings were both a reminder of the helplessness of the state and a call for private stakeholders to take on the role of modernising agents.

3.5. Specificities: the agency of engineers

Engineers were arguably one of the most influent groups in Portugal during the 19th century, as agents of modernity and domesticators of the wilderness (Diogo, 2003; Diogo, 2009). Such agency is reflected in the pages of *Occidente*, mainly when it came to building railways, especially the Douro and Tua lines, built by Portuguese engineers in two narrow gorges, where the track bed had to be excavated in the valleys' granite ridges. Photos and descriptions of tracks, bridges, tunnels, and the surroundings where they were built stressed the ruggedness of the landscape and the unforgiving challenges it posed to construction. Simultaneously, they underscored the dimensions and costs of the works, highlighting the difficulties of construction in a different perspective. The descriptions emphasised the inventiveness of the engineers involved in the projects. Thanks to their expertise, landforms that once were dangerous transportation routes or unsurmountable obstacles to mobility were overcome and tamed.³⁶ Considering that these lines were built by Portuguese engineers, it also added to the technological nationalism.

³⁵ *Ibid.*, nos. 241 to 247.

³⁶ *Ibid.*, nos. 179, 11-12-1883, 276; 182, 11-1-1884, 12; 473, 11-2-1892, 37.

3.6. Specificities: modern warfare

Investment in technological artefacts and infrastructures was often advertised as a promoter of peace and progress. Nonetheless, despite these cheerful expectations, those objects could be used for military defence in case of war: *si vis pacem, para bellum* (if you want peace, prepare for war). Moreover, up-to-date weaponry was a sign of modernity and progress. It is thus unsurprising to find images of ordnance in *Occidente's* pages, illustrating Portugal's military prowess (figure 10).³⁷ The texts associated to the images underlined the technical advantages of the new weapons (speed of war vessels or reach and reloading speed of artillery), usually in a complicated language that added to the impressiveness of the weapons themselves. Furthermore, war machines were an indispensable tool in the colonial project, to impose the *civilising mission* to the reluctant African tribes.

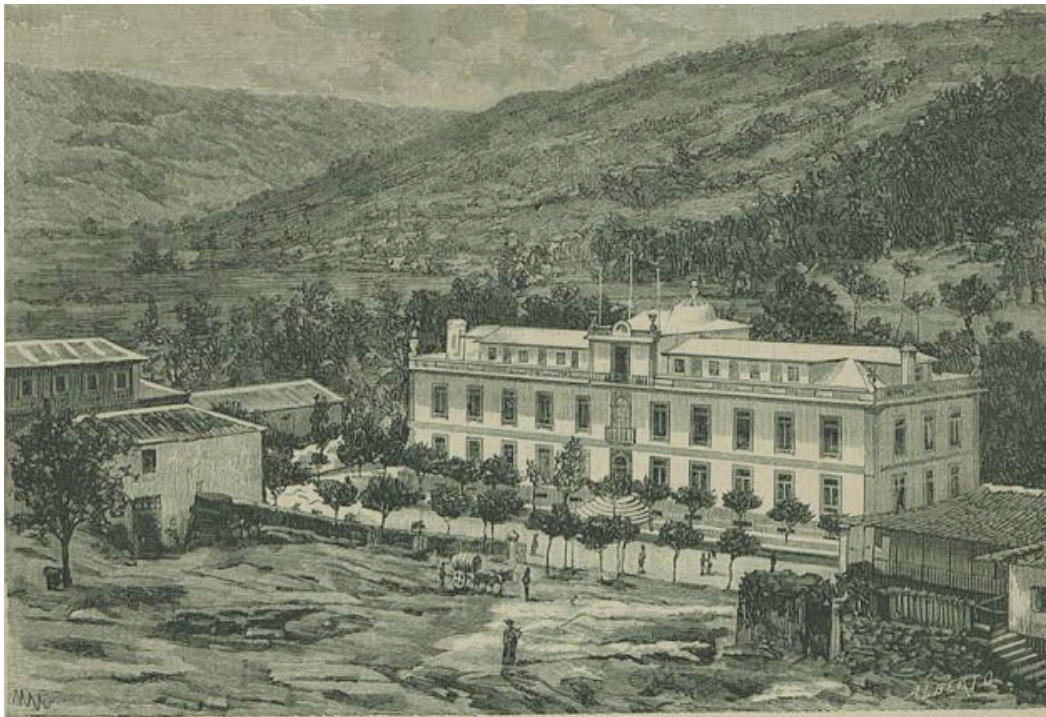


Figure 10 – A battery of the Bom Sucesso fort and Krupp artillery (translation of original caption)
Source: *Occidente*, no. 137, 11-10-1882, 228

3.7. Specificities: leisure and tourism

Photographs of STEM were used to promote touristic activities in Portugal. The development of leisure travel in Europe may be traced back to the early 1800s (if not earlier), promoted by the expansion of the railway network; in Portugal, the first touristic initiatives had to wait for the final years of the 19th century (Ribeiro, 2009). *Occidente* contributed to the expansion of the sector, by advertising novel attractions created by the new infrastructures associated with modernity. Railways, of course, spearheaded this phenomenon. As promoters of mobility and circulation, they allowed people to travel easily and cheaply to leisurely places of the country. Moreover, they were attractions themselves, allowing travellers to enjoy the “picturesque landscape,” the ridges and terraces of the Douro valley (evident in the drawings), the green meadows and groves of the Minho province, or the uncharted Tua gorge in the northeast of Portugal.³⁸ One technology united the technical sublime with vacation: a funicular in Braga, connecting in an unusual slope the city with the sanctuary of Bom Jesus.³⁹

The most advertised new form of leisure related to health establishments created or improved during the late 19th century, especially spas (figure 11). Photos and texts combined quaint descriptions of the landscape with scientific reports that vouched for the effectiveness of the treatments provided, to motivate people to visit the springs at Vidago, Pedras Salgadas, Estoril, or Torres Vedras. For instance, the text about Vidago emphasised the scientific analysis of its waters that attracted the king of Portugal and even British citizens living in Bombay, and that were sold and exhibited all over the world –the writer concludes that “Vidago might become the

³⁷ *Ibid.*, nos. 32, 15-4-1879, 61; 67, 1-10-1880, 160.

³⁸ *Ibid.*, several numbers between December 1883 and September 1884; no. 473, 11-2-1892, 37.

³⁹ *Ibid.*, no. 121, 1-5-1882, 101.

Portuguese Vichy.” Many stressed the easiness to travel to the springs, as they were served by railway – yet another combination between science and technology to promote tourism.⁴⁰

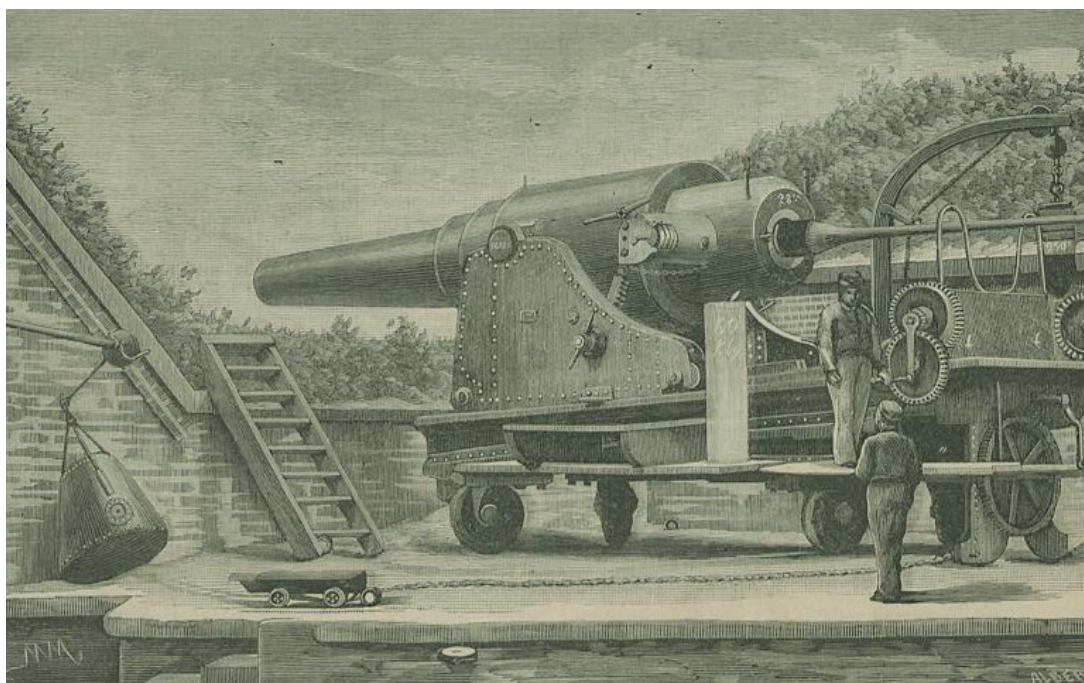


Figure 11 – Spa establishment in Vidago (translation of original caption)
Source: *Occidente*, no. 130, 1-8-1882, 176

Conclusion

The images I analysed in this paper provide an excellent sample to understand the divulgation of large technoscientific systems in Portugal and the relevance of one illustrated journal, *Occidente*, and its propagandistic dimension, to achieve that goal, before the development of halftone printing and photojournalism.

Occidente's role was threefold: (1) it promoted photography of STEM, as photographers knew that their work could be publicised and reach a larger audience; (2) it accustomed its readers (or viewers), spread throughout the country to the imagery of what was then considered *modernity* and *progress*, and to the objectivity promised by photography; (3) it disseminated the faith in the technical fix, as a deterministic path towards development.

According with the signifier of each set of photos in each category, different *signifieds* (messages) were transmitted. All contributed to the creation of the sign/myth that Portugal was becoming a modern and technological nation, even though most of the images focused on pockets of innovation in the two major cities of the country (Porto and Lisbon). With speedy and reliable communications, up-to-date weaponry, sage academic institutions, and health, sanitary, and leisurely services, similar to those that functioned in the European core nations, Portugal was gradually pushing itself away from the technological periphery towards its centre, which should be a cause for national pride (whether their promoters were private or public agents). *Occidente* commended these efforts regardless of the political party in government, as its allegiance was with *progress* and not with any political agenda.

Part of that modernisation effort was directed to the overseas domains, especially those in Africa, considered remembrances of the glorious age of the Discoveries. *Occidente* pushed for a narrative that described colonised peoples as backwards, *uncivilised*, and incapable of exploiting the natural resources of their own territories, which justified the presence and agency of Portuguese colonisers. Moreover, the implementation of technoscientific systems in Africa was part of the *civilising mission* self-imposed by European imperial nations, which Portugal also took for itself to be considered as such. This constituted a different ground to portray the nation as modern and technologically prone, able to compete with more powerful countries in the scramble for Africa. Parallely, it created the myth of a special connection between the Portuguese and the African natives that a few decades later was theorised in the lusotropicalist ideology. There was a self-perceived uniqueness in the national colonial project, which granted a sort of moral superiority over other colonial powers.

In sum, the imagery communicated by *Occidente* contributed to build an iconographic referential of Portugal in the final quarter of the 19th century, even though the divulgation of such construct was restricted

⁴⁰ *Ibid.*, nos. 130, 1-8-1882, 176; 570, 21-10-1894, 244; 592, 5-6-1895, 124.

by the natural limitations of circulation 19th century journals faced. Portugal was presented as a modern and progressive nation that embraced STEM as indispensable tools to build its future, without cutting its ties to its past of seafarers and pioneers in Africa.

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