Envisioning the industrial present: pathways of cultural learning in Luxembourg (1880s–1920s)

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ABSTRACT
This article examines how and to what extent Luxembourg society was “exposed” to visual representations of the prospering steel industries and labour and working-class culture(s) from the 1880s until the 1920s – a period of massive industrialisation – and how it thus gradually “learned to labour”. Indeed, modern visual media were seen as ideal catalysts for the circulation, transmission, and production of meaning, since they were considered to be appealing, objective, direct, and capable of inspiring the imagination. The article takes the reader through various mundane moments and events of industrial enculturation (annual funfair, slide lecture, vocational school, etc.) and engages with different “technologies of display” (photographs, fair albums, postcards, scale models, etc.) that subtly calibrated, conveyed, and inculcated the new industrial reality “through the eye” and, in the process, (re)produced national identifications. By zooming in on these different “visual encounters” with industry and by bringing these isolated encounters together in one story, the article (re)constructs a “learning route” – one among many possible pathways through this huge dynamic field of learning resources (or, “cultural ecology”) – and thus suggests how (informal) “cultural learning” might have taken place at the time. While accompanying us on this journey, the reader gains insights into how this field of resources evolved and how the industrial present was (re)framed, visually performed, and (re)configured over time.

Introduction
A photograph taken by the Luxembourg dentist and amateur photographer Jean-Baptiste “Batty” Fischer (1877–1958) serves as a starting point for this article (Figure 1). Shot at the annual funfair in the Limpertsberg quarter of the city of Luxembourg in 1901, it shows a wooden scale model that was designed to “explain” and probably “introduce” the mining...
Most Luxembourgers at the time were only vaguely aware of iron ore mining in Luxembourg – while the first mines had opened in the 1850s and the mining business was booming from the 1870s onwards, it remained generally unknown and was not yet part of a developing national narrative, as it employed mainly foreigners (German and Italian labourers) and as the industrial activities were primarily situated in the south of the country. It is very likely that the Prussian exhibitor – we know this from Fischer’s description on the back of the picture – attended the Luxembourg funfair to recruit workers or, given the primarily middle-class audience, engineers for the flourishing mining companies in Luxembourg and the Greater Region, the “culture area” consisting of Luxembourg, Wallonia (Belgium), the Saarland (Germany), and Lorraine (France).

Despite the funfair’s atmosphere – entertaining, busy, and stimulating to the senses – the little spectacle of a model resembling a doll’s house seems to have evoked curiosity and produced a kind of visual enjoyment, attracting (mainly male) adults and children. The exhibitor, while explaining the industrial processes, steered the gaze of the audience and, by

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2See also Norbert Etringer, Die Schobermesse: So war sie früher [The Schueberfouer: what it was like in the past] (Luxembourg: Editions Emile Borchette, 1992), 96.

3The idea of addressing the middle classes also resonated with the dissatisfaction of the nationalists, as the presence of the guest workers, including in higher positions, had generated unease and resentment. The young state, the nationalists postulated, had to provide its own skilled workers. See Frederik Herman, “Forging Harmony in the Social Organism: Industry and the Power of Psychometric Techniques,” History of Education 43, no. 5 (2014): 592–614, esp. 597.

4Mark Q. Sutton and E. N. Anderson, Introduction to Cultural Ecology (Lanham, MD: Altamira, 2010), 15.
means of his gestures and a pointer, guided them through the three-dimensional model. By seeing the scale model of the mine and hearing the explanation, the spectators could gain insight into what normally remained underground, “situate themselves in it”, and identify with the mineworkers’ activities.

**Struggling for identity and learning to labour**

This idyllic picture triggered our interest in how the general public and Luxembourg society was introduced and exposed to the prospering industries and labour and working-class cultures at the turn of the nineteenth to the twentieth century and how it “learned to labour”. Much later than its neighbouring countries (Belgium, France, and Germany), Luxembourg underwent a rapid but peaceful industrialisation process between the 1880s and 1920s. We will argue that the “visual” played a significant role in this process of “cultural learning”, as it enabled “fictional journeys”, away from the city (in)to the mines or steel plants – excursions that, in turn, may have triggered a kind of “social and national imaginary” and, as such, helped establish “imagined communities”. In other words, it allowed the spectators to imagine their social existence, to redraw the boundaries of individual and collective identity, and to become horizontally connected and part of the big prosperous industrial enterprise and the nation. Indeed, in the period under investigation, industrialisation and nation-building became intertwined processes. At the time, Luxembourg struggled with a major identity crisis while facing massive industrial developments that produced radical changes in society (in terms of demography, urbanisation, social structure, etc.) and necessitated new answers and approaches. The young nation – fully independent since 1890 – tried to shape its own identity in concordance with as well as in contrast to its larger

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8Similar strategies were applied in the landscape writings of the time; see Anne-Marie Millim, “Schooling the Gaze: Industry and Nation-building in Luxembourgish Landscape-writing, 1900–1940,” *Journal of European Studies* 44, no. 2 (2014): 151–69. In her inspiring article, Millim examines how landscape writers at the beginning of the twentieth century elevated industrial processes, landscapes, etc. to the realm of art by writing about the prospering industries, thus shaping “collective symbols” and establishing a shared national narrative.

9See also Elizabeth Edwards, *The Camera as Historian: Amateur Photographers and Historical Imagination, 1885–1918* (Durham, NC: Duke University Press, 2012), 236.

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9Paul E. Willis, *Learning to Labour: How Working Class Kids Get Working Class Jobs* (London: Saxon House, 1977).

10See also Katharina Schembs, “Education through Images: Peronist Visual Propaganda between Innovation and Tradition (Argentina, 1946–1955),” *Paedagogica Historica* 49, no. 1 (2013): 90–110; Natasha Macnab, Ian Grosvenor and Kevin Myers, “Moving Frontiers of Empire, Travel and Transformation through Technologies of Display,” *Paedagogica Historica* 49, no. 6 (2013): 769–795; Karin Priem and Geert Thyssen “Puppets on a String in a Theatre of Display? Interactions of Image, Text, Material, Space and Motion in The Family of Man (ca. 1950s–1960s),” *Paedagogica Historica* 49, no. 6 (2013): 828–845.

11Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (1983; repr. London: Verso, 2006). See also Arjun Appadurai, *Modernity at Large: Cultural Dimensions of Globalization* (Minneapolis, MN: University of Minnesota Press, 1996). In this context, Appadurai also refers to “communities of sentiment” (p. 8), that is, groups that share feelings and emotions.

12Luxembourg partly became independent with the Treaties of London of 1839 and 1867, but it was only in 1890 – with the abolition of the personal union between The Netherlands and Luxembourg (1815–90) – that it became a fully sovereign nation state.
neighbours and to (re)produce national identifications that justified and legitimised its sovereign existence and fostered cultural self-confidence. Industrialisation was considered an ideal stepping stone to the construction of national identity. The creation of a national identity/imaginary based on industrial progress presupposed a “collective awareness” and shared knowledge about the blossoming mining and steel industries – an awareness that was not yet widespread amongst all social classes at the time. More comprehensive approaches were needed to inform the Luxembourg population about the “modern” industries and the socio-economic advantages of industrialisation, including the benefits of social-industrial “by-products” such as welfare work and industrial betterment. Incidentally, precisely by obscuring the violent details of industrialisation and stressing the philanthropic and social-welfare character, industrialists attempted to recruit workers, build workers’ loyalty, and assure the goodwill of the new working class at a time when the neighbouring countries went through a period of labour unrest.

This knowledge transfer and calibration, transmission and inculcation of a national imaginary, or “industrial enculturation”, took place explicitly in the training centres set up by the young industries to cope with the challenges of industrialisation. More specifically, the opening of the mines and the establishment of new steel plants as well as the fast evolution of the manufacturing procedures used in the mining and metallurgical industries required more qualified workers than were available at the time. Luxembourg had previously been primarily an agrarian society and thus could not immediately call upon a broad population of workers. It is within this context that local authorities, captains of industry, and other stakeholders set up a diversified network of vocational training initiatives (e.g. apprenticeship centres, advanced evening classes for workers, language courses for immigrants), where the future “army of workers” would acquire systematically the necessary mental representations (knowledge, beliefs, etc.), patterns of behaviour, and skills required

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13The construction of a Luxembourg “culture” and the negotiation of a Luxembourg national identity took place along a continuum ranging from openness to closedness towards other cultures. The discussion that took place at the time with regard to the language issue is quite illustrative. From the very beginning, the question of Luxembourgian national identity was discussed along with the issue of language. Two opposite parties can be distinguished: on the one hand, you had the advocates of a mixed culture (Mischkultur), characterised by the appropriation of German and French elements and the acceptance of a multilingual (French, German, and Luxembourgish) society; on the other hand, there were the defenders of a more purist understanding of national identity (for example, long-established, old-stock Luxembourgers (Stackletzebuerger)). See, for instance, Anne Rohstock and Thomas Lenz, "The Making of the Luxembourger: Histories of Schooling and National Identity in the Grand Duchy," *Encounters on Education* 12 (2011): 61–76, esp. 63–4.

14See also Millim, "Schooling the Gaze"; Rohstock and Lenz, "The Making of the Luxembourger"; and Baumann, "Nation-state, Schools and Civil Enculturation".

15See Millim, "Schooling the Gaze", 151.

16See also Elspeth H. Brown, "Welfare Capitalism and Documentary Photography: N.C.R. and the Visual Production of a Global Model Factory," *History of Photography* 32, no. 2 (2008): 137–51.

17At the time, scepticism, distrust, and anxieties about industrialisation proliferated rapidly. See, for instance, Philipp Blom, *Alleen de wolken: Cultuur en crisis in het Westen, 1918–1938* [Fracture: life and culture in the West, 1918–1938] (Amsterdam: De Bezige Bij, 2014); Frederik Herman, Karin Priem, and Geert Thysen, "Körper_Maschinen? Die Verschmelzung von Mensch und Technik in Pädagogik, Industrie und Wissenschaft [Body_machines? The Fusion of humans and technology in education, industry and science]," *Jahrbuch für Historische Bildungsforschung* 20 (2015): 47–75; and Pit Péporté, Sonja Kméc, Benoît Majerus, and Michel Margue, *Inventing Luxembourg: Representations of the Past, Space and Language from the Nineteenth to the Twenty-First Century* (Leiden: Brill, 2010).

18The neighbouring countries, where the industrial revolution had commenced somewhat earlier, were plagued by social unrest and general strikes in the first decades of the twentieth century; see, for example, Anne Steiner, *Le temps des révoltes: Une histoire en cartes postales des luttes sociales à la Belle Époque* [The time of revolts: a postcard history of the social struggles of the Belle Époque] (Paris: L’Échappée, 2015). Important strikes in Luxembourg took place in 1912 (Italian workers in Differdange), 1917, and 1921; see, for example, Gilbert Trausch, *Contributions à l’histoire sociale de la question du Luxembourg, 1914–1922* [Contributions to the social history of the Luxembourg question, 1914–1922] (Luxembourg: Saint-Paul, Société Anonyme, 1974).

19Herman, "Forging Harmony in the Social Organism".
to function optimally as a member of an industrial culture.\textsuperscript{20} In addition to these formal initiatives – which were mainly aimed at a selected public – there were also more informal, mundane, and subtle learning processes that were addressed at the public at large. The first photograph (Figure 1) depicts such an informal and almost banal moment of enculturation during the annual funfair. Textual and visual explanations were central to these cultural practices by which knowledge was constructed and meaning was circulated, conveyed, and produced. In other words, a “visual pedagogy”, which would produce imagined encounters with industry with the aid of, among other things, illustrative language\textsuperscript{21} photography, and scale models, was thought to be the ideal pathway towards “industrial enculturation”.

**Making the present more present**

It is within this context that “new” technologies of display – photography and later film, as sources and channels for the circulation of meaning\textsuperscript{22} – became the means par excellence to appeal to the masses, not least because of their immediacy, clarity, and transparency.\textsuperscript{23} Already at the end of the nineteenth century, it “was understood that photography could address the audiences directly by means of easily legible indexical traces with which viewers could connect and position themselves, perhaps by projecting the self into the space of the image”.\textsuperscript{24} Photography could bring the industries to the less industrialised areas and thus enabled industry “to meet the beholders halfway”.\textsuperscript{25} Moreover, photography as well as film made tangible what otherwise remained invisible to the naked eye (through, for example, techniques of enlargement, slow motion, or “freezing” fast and complex industrial processes) and made it possible to guide the spectator’s gaze (for instance, through the focus and the angle of the lens).\textsuperscript{26} Another advantage of the visual, which may have further contributed to the use of photography, is the fact that the visual was able to bridge the gaps between native and non-native speakers as well as the literate and illiterate parts of the population and thus became, as it were, a kind of lingua franca. This is particularly true in the case of multilingual Luxembourg (with German, French, and Luxembourgish as official languages and Italian as the main language of immigrant workers). Finally, photographic data could be “apprehended directly in the imagination”.\textsuperscript{27} The generated visual imaginings – “constituting a field of historical [and contemporary] imaginations in which multiple forms of national and cultural consciousness could interact, ebb and flow” – would foster the formation of identities.\textsuperscript{28}

By the second half of the nineteenth century, industry – more specifically, industrial landscapes, factories, machines, industrial processes, products, employees, and welfare work – had become an important motif in photography.\textsuperscript{29} It can even be said that the industrialised

\begin{itemize}
\item \textsuperscript{20}See Michael Rhum, “Enculturation,” *The Dictionary of Anthropology* (Oxford: Blackwell, 1997), 149–50.
\item \textsuperscript{21}Millim, in “Schooling the Gaze”, speaks of “geografictional” writing or, in other words, the use of language – rich in imagery – that evokes and cultivates mental images.
\item \textsuperscript{22}Paul du Gay, Stuart Hall, Linda Janes, Hugh Mackay, and Keith Negus, *Doing Cultural Studies: The Story of the Sony Walkman* (London: Sage, 1997); and Stuart Hall, ed., *Representation: Cultural Representations and Signifying Practices* (London: Sage, 1997).
\item \textsuperscript{23}See Edwards, *The Camera as Historian*, 236.
\item \textsuperscript{24}Ibid., 236.
\item \textsuperscript{25}See Walter Benjamin, *Illuminations: Essays and Reflections* (New York: Schocken, 1969), 220.
\item \textsuperscript{26}Ibid.
\item \textsuperscript{27}Edwards, *The Camera as Historian*, 236.
\item \textsuperscript{28}Ibid., 123.
\item \textsuperscript{29}For the sake of completeness, it needs to be mentioned that photographs depicted not only the advantages but also the disadvantages and anxieties (for example, accidents and social unrest) that resulted from industrialisation.
\end{itemize}
countries at the time developed a quite uniform repertoire of images (made according to a set of established representational norms). Some time later, and clearly informed by and partly modelled after similar initiatives in neighbouring countries, Luxembourg started “imag(in)ing” its own industrial present. A first analysis of the large body of images documenting the industry at the time as well as their consumption reveals that these images migrated throughout society via different modern technologies (e.g. photo printing, slide projector) and channels (e.g. newspapers, corporate brochures, photographic albums, school books, postcards, posters) and were exhibited at both private and public sites of display (e.g. vocational schools, local exhibitions, funfairs). These images subsequently became the basic structural elements of a visual canon that resonated more strongly than ever before because mechanical reproduction enabled fast and infinite repetition. The repetition of this motif inscribed the industrial in the collective (visual) memory, created “mythscapes”, or shared mental “memoryscapes” and transformed industry from something distant and alien into a cultural commonplace. Luxembourg became a “memoryland” littered with industrial beacons.

**Guided visual encounters**

In the following section, we will explore a variety of visual encounters with industry – dispersed in time and space, directed at different audiences, and mediated by different technologies of display. By doing so, we will guide you through a huge dynamic cultural “meshwork” around which all kinds of cultural elements fused – a “cultural ecology” which provided innumerable points of connection, or nodes, where different agents, deliberately or not, fixed and re-inscribed meanings, and where different audiences gained experiences and created meanings. This ever-shifting meshwork is the framework in which “cultural learning” – here, “industrial enculturation” – took place and in which identities were (re) constructed and permanently “redistributed”. Thus, cultural learning is here conceptualised as “making a way – among the innumerable routes – through a dynamic cultural meshwork” (purposeful or not), while utilising the available resources (or not). As it is impossible to

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10See, for instance, Denis Woronoff, *La France Industrielle: Gens des ateliers et des usines, 1890–1950* [Industrial France: workshop and factory workers, 1890–1950] (Paris: Editions du Chêne, 2003); Klaus Tenfelde, *Bilder von Krupp: Fotografie und Geschichte im Industriezeitalter* [Images of Krupp: photography and history in the industrial age] (Munich: C. H. Beck, 2000); and Elvire Perego, “Die Stadt-Maschine: Architektur und Industrie [The city-machine: architecture and industry]” in *Neue Geschichte der Fotografie* [New history of photography], ed. Michel Frizot (Cologne: Köünstmann, 1998), 196–223.

11Zsuzsanna Böröcz and Luc Verpoest, eds., *Imag(in)ing Architecture: Iconography in Nineteenth-Century Architectural Publications* (Leuven: Acco, 2008).

12Duncan S. A. Bell, “Mythscapes: Memory, Mythology, and National Identity,” *British Journal of Sociology* 54, no. 1 (2003): 63–81.

13Daniel S. Friedrich, *Democratic Education as a Curricular Problem: Historical Consciousness and the Moralizing Limits of the Present* (New York: Routledge, 2014), 91.

14Sharon MacDonald, *Memorylands: Heritage and Identity in Europe Today* (Abingdon: Routledge, 2013).

15Tim Ingold, “Bindings against boundaries: entanglements of life in an open world,” *Environment and Planning A* 40, no. 8 (2008): 1796–1810. Thanks to Françoise Poos for this reference.

16A cultural ecology can be understood as the complex interdependencies that have shaped the demand for and the production of these cultural offerings, encompassing the creators, producers, presenters, sponsors, participants as well as the materialities and spatialities involved. See Ann Markusen, Anne Gadwa, Elisa Barbour, and William Beyers, *California’s Arts and Cultural Ecology* (San Francisco: James Irvine Foundation, 2011), 10. Edensor speaks of an ever-shifting cultural “matrix”, a multi-dimensional, dynamic composite of networks; see Tim Edensor, *National Identity, Popular Culture and Everyday Life* (Oxford: Berg, 2002).

17See Edensor, *National Identity, Popular Culture and Everyday Life*, 30.

18Compare this with the concept of “learning ecologies” – comprising the processes and sets of contexts, relationships, and interactions that provide opportunities and resources for lifelong learning, development, and achievement; see Norman J. Jackson, ed., *Learning for a Complex World: A Lifewide Concept of Learning, Education and Personal Development* (Bloomington, IN: AuthorHouse, 2011). See also John Blewitt, *The Ecology of Learning: Sustainability, Lifelong Learning and Everyday Life* (London: Earthscan, 2006).
map all the learning experiences onto the industrial reality at the time or, in other words, to reconstruct the pathways individuals made through this cultural ecology during their lifetime, we selected some “banal” and ephemeral encounters, because we believe – with Billig, Edensor, and others – that imaginaries/identities are not least “developed within” and “sustained by” the local and the everyday.39

More specifically, we zoom in on concrete contemporary photographic images of industry (albums and illustrated postcards; see Figures 2, 3, 4) and images depicting specific “technologies of display” (brochures and scale models; see Figures 1, 5, 6) in order to gain insight into how the industrial present was actually framed, (visually) performed, and (re)configured in Luxembourg from the 1880s to the 1920s.40 In doing so, we touch upon the following questions: What was actually depicted/displayed? Why was it depicted/displayed? How, when, where, and for whom was it depicted/displayed? Who made these images? Incidentally, photographs of Luxembourg industry – by photographers such as Charles Bernhoeft (1859–1933) and Jacques Marie Bellwald (1871–1945) – can be described as avant-garde and archetypical at the same time. These photographers were pioneers as far as they introduced the industrial motif in Luxembourg; however, while doing so, they largely followed the pictorial tradition developed in the industrialised world and thus contributed to the above-mentioned visual canon.

In dealing with these photographs we used a combination of different methodological approaches: a first approach is based on the presentational quality of photographs and uses images as physical traces of actual events or as documentary testimonies of what happened at the time. A second approach looks at photographs as (cultural) representations or “as metaphors for something that is beyond the subject photographed”.41 Finally, a third, more overarching and entangled approach analyses images “within the interlocking fields of context, communication, application, and reception”,42 as “active agents” performing in “networks of social connections” and “fluctuating networks of meaning”.43 In other words, we deal with images as carriers of factual knowledge and as sources and conveyors of meanings, which have to be described and interpreted within their specific contexts and during their different life stages,44 from their conception, to their “placing”45 and migration

39See, for instance, Michael Billig, Banal Nationalism (London: Sage, 1995); and Edensor, National Identity, Popular Culture and Everyday Life.

40We focus on this time span, since this was the period when – along with the growth of industry – visual conveyors and the distribution of industrial motifs increased in Luxembourg, before the image of industry changed fundamentally during the interwar period. See Ira Plein, “Beautiful Luxembourg, Steel Works and a Swimming Pool” (paper presented at the conference Films That Work. The Circulations of Industrial Cinema, Frankfurt/Main, December 15–18, 2015).

41Minor White, “Equivalence: The Perennial Trend,” PSA Journal 29, no. 7 (1963): 17–21. See also Erwin Panofsky, “Zum Problem der Beschreibung und Inhaltsdeutung von Werken der bildenden Kunst [On the problem of describing and interpreting the contents of works of fine arts],” in Ikonographie und Ikonologie: Theorien, Entwicklung, Probleme. Bildende Kunst als Zeichensystem [Iconography and iconology: theories, development, issues. The fine arts as a semiotic system (Vol. 1)], ed. Ekkehard Kaemmerling (Cologne: DuMont, 1979), 1: 185–206; and Erwin Panofsky, “Iconographie und Ikonologie [Iconography and Iconology],” in ibid., 1: 207–24.

42See Rosalind Pollack Petchesky, “Fetal Images: The Power of Visual Culture in the Politics of Reproduction,” Feminist Studies 13, no. 2 (1987): 263–92, quotation on 286.

43See, for instance, François Poos, “Hidden Images: The Making of a National Family Album” (PhD diss., Photographic History Research Centre, Faculty of Art, Design and Humanities, De Montfort University, Leicester, 2016).

44See, for instance, Panofsky, “Zum Problem der Beschreibung und Inhaltsdeutung von Werken der bildenden Kunst”.

45Elizabeth Edwards, “Objects of Affect: Photography Beyond the Image,” The Annual Review ofAnthropology 41 (2012): 221–34, quotation on 221.
through different channels to different (deliberately created) audiences, to their “reception” by these different beholders.46

Transcending the picturesque

As already mentioned, the steel industry as a visual motif still needed to be communicated to the Luxembourg public by the end of the nineteenth century, since the visual imagery of Luxembourg had hitherto been mostly composed of picturesque views of the capital city, rural landscapes, and landmark monuments. The Luxembourg City-based photographer Bernhoeft prominently provided these national motifs.47 He produced multiple photographic albums of Luxembourg and its surroundings, which were addressed mainly to the local bourgeoisie as well as foreign tourists.48 Through his picturesque views, Bernhoeft continued in the pictorial tradition of Luxembourgian painters and photographic precursors, which suggests that he was aware of, and used, a national pictorial continuity as a stable frame of reference.49 Furthermore, he was a talented businessman who possessed a great aptitude for the commercial exploitation of his works and even ran his own printing company. Bernhoeft obtained the title “court photographer” in 1891 and became the first and most important creator of a national photographic memory consisting of portraits of the noble family as well as touristic views of Luxembourg, which were also displayed (and available for sale) in his shop in Luxembourg City.50

With the composition of his album Le Grand Duché de Luxembourg (The Grand Duchy of Luxembourg), published between 1889 and 1891 and dedicated to the future Grand Duke Adolphe, Bernhoeft undertook a significant attempt to broaden the national visual imagery.51 According to Thill, Bernhoeft intended to include images of “all important aspects in Luxembourg with the ambition to shape a national identity”52. The album presented natural/rural and industrial landscapes, historical remains and monuments of art in the Grand Duchy. Industry, however, was only marginally visible in the album, with the new steel plant at Dudelange being the most prominent reference to the steel industry.53 The plate

46Kemp argues, in the context of the fine arts, that every image has an “implied beholder” and that images need to be analysed with a view to their means of communication, their socio-historical context, and their aesthetic proposition in order to understand the formation of perception and identification; see Wolfgang Kemp, “Kunstwissenschaft und Rezeptionsästhetik [Art History and Reception Aesthetics],” in Der Betrachter ist im Bild (The viewer is part of the image) (Berlin: Dietrich Reimer Verlag, 1992), 7–27.
47In 2006 and 2015, a sample of Bernhoeft’s work was displayed at the National History and Art Museum (MNHA) and the Musée Dräi Eechelen in Luxembourg as part of two temporary exhibitions entitled Charles Bernhoeft: Photographe de la Belle Époque [Charles Bernhoeft: Photographer of the Belle Époque] and Images d’un pays souverain: Le photographe Charles Bernhoeft et l’identité luxembourgeoise [Images of a sovereign country: the photographer Charles Bernhoeft and Luxembourg identity]. The exhibition was accompanied by an inspiring catalogue of the same title, edited by Edmond Thill, which we have used extensively as a frame of reference.
48See Peter Fritzen, Fernand Gonderinger, and Edmond Thill, “Catalogue des albums de Charles Bernhoeft [Catalog of the Albums of Charles Bernhoeft],” in Charles Bernhoeft: Photographe de la Belle Époque [Charles Bernhoeft: photographer of the Belle Époque], ed. Edmond Thill (Luxembourg: Imprimerie Centrale S.A., 2014): 621–721.
49Such as, for instance, Bernhoeft’s photographic predecessor Nicolas Maroldt; see Edmond Thill, “De Ludwig Moses à Charles Bernhoeft: La photographie au Luxembourg au XIXe siècle [From Ludwig Moses to Charles Bernhoeft: photography in 19th-century Luxembourg],” in Thill, Charles Bernhoeft, 74f. On the paintings and graphic works of Nicolaz Liez and Jean-Baptiste Fresez, see Edmond Thill, “Charles Bernhoeft: Photographe de la Belle Époque,” in Thill, Charles Bernhoeft, 124.
50Ibid., 158.
51See Fritzen, Gonderinger, and Thill, “Catalogue des albums de Charles Bernhoeft,” 628; Thill, “Charles Bernhoeft,” 138.
52Ibid., 155.
53Bernhoeft’s album included only two further photographs in which the steel industry was part of the landscape view, but not the major motif: “Valée d’Eich: Vue prise du Papierberg” [Eich Valley: view from Papierberg] and “Esch-sur-Alzette.” For the complete list of plates, see Fritzen, Gonderinger, and Thill, “Catalogue des albums de Charles Bernhoeft,” 682–3.
Hauts Fourneaux de Dudelange (Blast furnaces of Dudelange) (Figure 2, composition of two plates, image on the left) showed the steel plant as part of the landscape, almost merging with the village. The soft transition from the factory with its smoking chimneys to the forested background and the cloudy sky aims to carefully integrate the heavy industry into the pictorialist style of landscape views. Comparing this image to the view of Meysembourg Castle, published in the same series (Figure 2, image on the right), the strategy becomes even more obvious. While the castle is photographed from a low angle, in order to capture the reflection in the lake and to create a majestic and dominant position of the castle, the steelworks of Dudelange – photographed from a higher vantage point – are subtly embedded within the landscape. Employing the same retouching technique as for the castle – where it serves to contrast a friendly and painterly clouded sky – Bernhoeft even carefully converted the industrial chimney smoke into nature. The Luxemburger Zeitung, a newspaper that frequently reviewed Bernhoeft’s works, criticised his inclusion of the industrial view in his series of “traditional” Luxembourgian views. The author of the piece saw a lack of homogeneity, calling the industrial view an example of the “latest modern times” that was not appropriate in a series of photographs of ancient monuments. Apparently Bernhoeft seems to have taken this criticism to heart, as he did not include this image in later album series, as he frequently did with other images. It seems that, at least at this point in time, industry was rejected as a motif for a highly sophisticated album designed to picture the country’s cultural heritage and national beauty for the local elite, tourists, and people visiting for business.

Marketing modern industries

It took more than a decade before Bernhoeft produced a photographic album solely dedicated to the steel industry. In 1903, the German-Luxembourgian Mining and Metallurgical
Company commissioned Bernhoeft to photograph its showpiece: its newly established, state-of-the-art plant in Differdange, which included, among other things, a modern, gas-run power station and was one of the world's first steelworks to produce the so-called “Grey beams”. Max Meier, the German plant director of the Differdange steel plant, had landed quite a coup, for Bernhoeft was at the time the Luxembourg court photographer, the official creator of the nation’s imagery. Meier obviously desired to give this project the necessary grandeur. The album’s sophisticated appearance – for instance, its golden letter embossing on the cover page – as well as its material quality underpins this thesis, suggesting that the publication was intended to be an exclusive company gift for fairgoers, customers, shareholders, and distinguished members of Luxembourg society.\(^{57}\) The 29 plates showed all divisions of the steel works, from the ore mine to the final product.\(^{58}\) Given the explicit industrial subject, Bernhoeft prudently adapted the photographic aesthetics.\(^{59}\) For the general views, he chose a composition that allowed the blast furnaces to rise into the sky and – in the view from the southwest\(^60\) – even tower over the church steeple of the hitherto rural village of Differdange, in order to demonstrate the plant’s enormous size. The positioning of the “new power of industry” in the scene bespeaks its importance: from now on, the blast furnaces would be the most significant landmark, representing industry’s grandeur, aesthetics, and promise of progress.

In order to characterise modernity, and the technological progress it brought in its wake, Bernhoeft gradually turned away from the pictorialist conventions and engaged in a much more straightforward style of photography, which can be seen throughout the album (Figure 3 – composition of four plates). Especially when dealing with construction details and technical processes, his compositions played with perspective and geometry. He mastered and utilised the light conditions inside the steel plant and transformed the industrial interior into a “modern cathedral” of technology, flooded with light.\(^61\) He included the “spectacle” of the hot glowing steel bars and fire-breathing converter – omnipresent motifs in the image world of steel-making – and turned the dangerous production processes into a visually aesthetic showpiece which would attract the attention of all kinds of audiences. In addition, two almost identical plates in the 1903 album are dedicated to the huge “Grey Mill”, presenting the industrial process of crushing a massive steel bar into a thinner one, by displaying, in chronological order, a massive bar entering the mill and a thin bar leaving the mill (see Figure 4). This short sequence visualises the technique as well as the power of the modern mill in an easy-to-understand manner. This rather luxurious album – which was intended to elevate the company’s prestige in the eyes of the beholders both at home and abroad – served above all commercial purposes and did not reach different strata of society.

\(^{57}\)See Rolf Sachsse, “Representations of industrial cities in photo books and promotional films of the 1950s and 1960s,” in Zimmermann, Industrial Cities, 325–44.

\(^{58}\)See Fritzen, Gonderinger, and Thill, “Catalogue des albums de Charles Bernhoeft,” 683.

\(^{59}\)Perego states that photographic modernism, which reached its peak in the 1920s, had its beginnings at the construction sites of the second half of the nineteenth century. See Perego, “Die Stadt-Maschine: Architektur und Industrie,” 205. From 1896 onwards, Bernhoeft worked on several assignments for private enterprises, including a limestone quarry (Carrière de Petit Granit de M.M.J. Velge et J. Cornet à Écaussines, 1896), a winery (Mercier Champagne, c. 1900), and a mining company (Société Anonyme Générale des Eaux Minérales de Bel-Val). In addition, he documented the construction of the Pont Adolphe in Luxembourg City in 1900–1903; see Thill, “Charles Bernhoeft,” 361ff.

\(^{60}\)Plate 1 of the album Hauptansicht des Werkes von der Südwestseite (General view of the plant from the southwest), in Fritzen, Gonderinger, and Thill, “Catalogue des albums de Charles Bernhoeft,” 683.

\(^{61}\)See Perego, “Die Stadt-Maschine: Architektur und Industrie,” 196–223.
Figure 3. Charles Bernhoeft, plates from the album Deutsch-Luxemburgische Bergwerks- und Hüt tengesellschaft, Abteilung Differdingen [German-Luxembourgian Mining and Metallurgical Company, Differdange division], 1903. Collection of Musée national de l’histoire et d’art, Luxembourg. Note: Titles of plates (from top left to bottom right): Plate 6: Hochofen-Anlage: Erz-Zufuhr und Begichtung (Blast furnace unit: ore supply and charging), collotype, 18.9 × 27.3 cm; Plate 7: Hochofen-Anlage: Koks-Zufuhr (Blast furnace unit: coke supply), collotype, 18.9 × 27.4 cm; Plate 23: Schienen-Adjustage (Rail finishing), collotype, 18.9 × 27.3 cm; Plate 16: Mitteleisen-Walzwerk in Montage (Assembly of train mill), collotype, 18 × 27.2 cm.

Figure 4. Charles Bernhoeft, Differdingen. Grey Walzwerk, Letzter Durchgang des Stabes. (Differdange: Grey mill, last passage of the beam), 1906, illustrated postcard, 9 × 13.4 cm. Collection of Fernand Gonderinger, motif from the album Deutsch-Luxemburgische Bergwerks- und Hüt tengesellschaft, Abteilung Differdingen (German-Luxembourgian Mining and Metallurgical Company, Differdange Division) (1903/04).
**Reaching out to the masses**

In 1906, Bernhoeft published the motifs from the Differdange steel plant album as illustrated postcards (Figure 4). He thus caught up with his competitor, the Luxembourian commercial photographer Jacques Marie Bellwald, who had already published illustrated postcards of the steelworks before 1900. Differdange and its steel plants were one of Bellwald’s favourite photographic locations. Incidentally, other photographers, too, at the time found their way to this industrial Mecca. At the turn of the century, the industrial sites had successfully entered the popular/commercial range of Luxembourg motifs, which means that there must have been a considerable “consuming market” and, consequently, some popular interest in industrial developments. Indeed, the novelty and monumentality of industry itself must have lured travellers and citizens to visit the industrial environments and to explore the “arcane realm” of the plants – the interior of the plants and the reality of the working day often remained hidden. The illustrated postcards opened up this whole new world, made the industrial more accessible to the Luxembourg population at large, and created new audiences, including the working classes, which thus became both subject and target group of the photographs.

Indeed, many of these postcards showed workers on a “safe” work floor, “proudly” posing next to finished products and/or simulating workflow activity. The depiction of the workers gave the technological and mechanical industry a “human face” – which may have been one of the reasons why the plant director Meier asked the workers to be present during the interior shots (Figure 4). At the same time, the presence of their bodies into these new temples of progress – the normally isolated “universe of the steel plant”, where workers spent at least twelve hours a day, six days a week – may be said to symbolise the solidarity between the depicted individuals as well as their “proudness of being part of the

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62With the development of low-cost printing techniques for photographs on paper, postcards were the first mass medium of the time; they could be distributed at low cost and reach a mass audience. See Fernand Gonderinger and Edmond Thill, “Les cartes postales illustrées de Charles Bernhoeft [The illustrated postcards of Charles Bernhoeft],” in Thill, *Charles Bernhoeft*, 723–92. See also Karin Walter, “Die Ansichtskarte als visuelles Massenmedium [The illustrated postcard as a visual mass medium],” in Thill, *Schund und Schönheit: Populäre Kultur um 1900 [Trash and beauty: popular culture around 1900],* ed. Kaspar Maase and Wolfgang Kaschuba (Vienna: Böhlau, 2001), 46–61; Steiner, *Le temps des révoltes*, 10; and Thissen, “Representing the Industrial City,” 307. Bernhoeft had published illustrated postcards since the early 1890s, but industrial motifs were rare before he published the album series of Differdange as postcards in 1906; see Gonderinger and Thill, “Les cartes postales illustrées de Charles Bernhoeft,” 784–85. Bellwald had entered this business around 1896; by 1900, more than a dozen photographers had followed in his footsteps; see ibid., 727.

63Claude Lamesch owns an illustrated postcard of the Differdange plant by Bellwald (No. 167) which is dated 1899.

64According to Claude Lamesch – who holds a comprehensive collection of Bellwald’s postcards – Differdange is the fourth most common motif of the more than 1300 postcards that Bellwald published around 1900.

65See Clemens Zimmermann, “Introduction: Industrial Cities – History and Future,” in Zimmermann *Industrial Cities*, 11–25, quotation on 22.

66So far, almost no work has been done on working-class audiences for photography; see Edwards, *The Camera as Historian*, 235–6.

67See, for instance, Brown, “Welfare Capitalism and Documentary Photography,” 137.

68Heavy industries were worlds in themselves, accessible only to the staff while remaining foreign to others (for example, “Universum Krupp” [Krupp universe]); see Fabian Trinkaus, *Arbeiterexistenzen und Arbeiterbewegung in den Hüttenstädten Neunkirchen/Saar und Düdelingen/Luxemburg (1880–1935/40) [Workers’ lives and the labour movement in the industrial towns of Neunkirchen/Saar and Dudelange/Luxembourg (1880–1935/40): Ein historischer Vergleich* (Saarbrücken: Kommission für Saarländische Landesgeschichte, 2014), 322–3.
production processes”. The workers’ bodies also often appeared in close connection to the machinery representing good working conditions, the harmonious co-existence of man and machine, the control of man over machine, and the workers’ expertise in mastering these new technologies. It can, therefore, be said that these commercial visual (re)presentations were an important tool to attribute all kinds of characteristics to the industrial reality and an important frame of reference for the developing working-class identity, acting on the workers’ self-esteem and self-image. Just like the albums, the postcards served the subtle calibration, transmission, and incubulation of a positive image of the modern industries in the eyes of the customers and investors as well as the (future) workforce, as the postcard allowed the workers to reveal their working environment to their acquaintances at home and abroad. The latter must have served the recruitment interests of the company, since the growing industry was in permanent need of labourers and the fluctuation of workers was high.

Learning to see and to feel

These rather informal encounters with industry through albums and postcards – guided only by the focus of the photographer – were almost immediately complemented by more formalised and structured encounters, guiding the viewer’s eye and mind by means of language. This is illustrated by the following excerpt from an illustrated 1916 booklet entitled *A Day at an Ironworks* (Figure 5), the account of a slide lecture given by the engineer Helmut Stäbler at the Differdange plant’s mess hall for employees. The lecture as well as the booklet dealt with the history of steel making and the stages of the production process, from the ore mine to the finished product. The 65 photographs and nine illustrations did not merely serve as decorative illustrations but were closely intertwined with the explanatory text. Concrete references to the photographs and illustrations were made throughout the text, producing constant movement back and forth between the visual and the textual. The more abstract technical descriptions of all kinds of production processes were enhanced by images of the actual site showing the machines and/or buildings in which these processes took place, or by cross sections – purified from dust, smoke, noise, and visual ballast (e.g. black background) and often provided with markers (e.g. arrows) and/or names to guide the reader (Figure 5, image on the left). The illustrations opened up the “black box” of the engine compound and thus allowed the precise allocation of the (sub-)processes. The
slide lecture and the accompanying booklet, however, were not only intended to transmit knowledge, they also tried to shape viewers’ emotions. Referring to a photograph of blast furnaces (Figure 5, bottom right), the text reads: “The image shows the huge iron masses of the ten Differdange blast furnaces. They leave the viewer deeply impressed with the power and beauty of technology.”74 The audience/reader was taught what to see and feel when beholding a view of the plant.

Something similar must have happened with the audiences who saw the huge innovative and sophisticated scale model – a cross section of a steel plant – depicted in Figure 6. This image was taken at the Institut Emile Metz, which was established as a vocational school in 1914 in Dommeldange (Luxembourg) as part of a wide range of initiatives connected to the steel company ARBED (Aciéries Réunies de Burbach-Eich-Dudelange). We know it to be one of the school’s showpieces, whose visual effects – especially its light and smoke effects – captured the eye and the attention of apprentices, workers, and the general public alike.75 The manufacturing process and its machines are presented in an aesthetic and appealing way. The cross section, used to explain the manufacturing process, made it possible to “freeze” the continuous chain and thus to concentrate on the “symbols of human genius”76 – that is, the cathedrals of industrialisation with their overwhelming machinery and chimneys touching the sky (or, in the scale model, protruding beyond the board’s edge). The model may be said to exalt technical modernity and mechanical progress and enabled the new landmarks to become sources of local and civic pride.

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74 ibid., 13.
75 Some of the institute’s facilities, such as its library and swimming pool, were open to adult workers of the factory to which it was annexed. The institute also frequently opened its doors to the general public in order to show off its “innovative model practice”; see Herman, “Forging Harmony in the Social Organism”.
76 See Enrico Prampolini, “The Aesthetic of the Machine and Mechanical Introspection in Art,” *Broom: An International Magazine of the Arts* 3, no. 3 (1922): 235–7, quotation on 233.
Conclusion

In order to gain insight into how Luxembourg turn-of-the-twentieth-century society “learned to labour” and got acquainted with the prospering industries at the time, we zoomed in on a disparate field of visual encounters with industry. At first sight disconnected (for instance in time and space), these encounters are, nevertheless, entangled within what Markusen et al. have called a cultural ecology. In other words, they constitute moments of “conveying meaning”, “imagination”, and “meaning making” or, in other words, “learning opportunities” which were feeding into the ever-changing field of “learning resources”. By contextualising these different encounters, we gained a first insight into how this ecology took shape and evolved. More specifically, our explorative journey along some of the many possible “visual encounters with the industrial present” has revealed several things: over time, all kinds of actors got involved in the development of this ecology (e.g. exhibitors, photographers, and engineers); different intentions were at play (e.g. artistic, commercial, and educational); and different audiences were addressed (e.g. fair visitors and apprentices in vocational schools), with some “pathways within the cultural ecology” being rather exclusive, as some of the resources were in principle only available to a select public (e.g. luxurious fair albums). Additionally, the migrating “technologies of display” as well as the emergence of new media extended the cultural ecology tremendously (e.g. every single illustrated postcard could produce encounters with the industrial present). More important, these depictions of industry – which made industry an object of visual interest – transformed the industrial present by magnifying the industry, isolating certain aspects, and encouraging the viewers and spectators to look, understand, and feel in certain ways.

77Markusen et al., California’s Arts and Cultural Ecology.
78See Svetlana Alpers, “The Museum as a Way of Seeing,” in Exhibiting Cultures: The Poetics and Politics of Museum Display, ed. Ivan Karp and Steven D. Lavine (Washington, DC: Smithsonian Institution Press, 1991), 25–32, quotation on 25.
Further, this ecology can be characterised by the term “musealisation” of the industrial reality: the preservation, collection, and exhibition of the present, or, in other words, “present presencing.” While exploring this cultural ecology and “experiencing an adventure in cultural learning,” we have tried to uncover some of the epistemic traces that have come to shape and underpin a (individual and collective) dynamic “museum without walls” dedicated to industrial reality; a mental space which collects all the visual images and experiences (knowledge, feelings, emotions, etc.) accumulated over time, with every encounter enabling a permanent dialogue among all these different experiences. As our article has shown, the appropriation and internalisation of the “industrial present” in the individual and collective memory is “not exclusively the result of well considered master plans, by which scheming elites intentionally wanted to manipulate the populace.” So far, substantial research effort has been devoted to how these grand designs (school curricula, museums, etc.) engaged with identity construction. Histories of education that focus on cultural learning should, however, also account for the numerous and various small designs – often working in the background, but no less powerful for that – and for the different trajectories people may have followed through a cultural ecology contingent on time and context.

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79We use the concept of “musealisation” – coined by Joachim Ritter (1963) and further elaborated by Hermann Lübbe and Odo Marquard in the early 1980s – in a slightly different sense from its original definition; see MacDonald, Memorylands, 137–8, quotation on 137. See also Peter M. McIsaac and Gabrielle Mueller, Exhibiting the German Past: Museums, Film, and Musealization (Toronto: University of Toronto Press, 2015), 9ff. MacDonald uses the concept of “past presencing” in her book Memorylands, 17.

80See the panel proposal on “Adventures in Cultural Education”, organised by Ian Grosvenor (ISCHE 37, Istanbul University, Turkey, June 24–27, 2015).

81André Malraux, Le musée imaginaire [The imaginary museum] (Paris: Gallimard, 1965).

82See Baumann, “Nation-state, Schools and Civil Enculturation,” 9.

83See also Kevin Myers and Ian Grosvenor, “Cultural Learning and Historical Memory: A Research Agenda,” Encounters in Theory and History of Education 15 (2014): 3–21.
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