

## The Infrastructural Sublime:

### The opaque scales of reservoirs in contemporary infrastructure landscapes

Lars Rolfsted Mortensen

Infrastructures are the bedrock of contemporary society but attract far less attention than their societal and environmental importance merits. Infrastructures are typically made visible through maps or diagrams, and despite their omnipresence in our shared landscape, they are rarely consciously experienced, neither spatially nor aesthetically. In recent years, infrastructures have become more present in politics and media following the Chinese dominance of critical raw materials<sup>1</sup> and the tragic war in Ukraine. However, the general notion of infrastructure is – as the prefix *infra* suggests – still outside the scope of most people’s everyday perception.

As liminal places in daily life, the photographs presented in the exhibition and this essay show a few selected infrastructures, which emerge with sublime characteristics through their grand scale, their geometric clarity, or their distinct presence in the landscape. The sublime signifies an aesthetic experience that inspire both awe and terror – something which at once overwhelms and frightens us. Perceiving infrastructures through the trope of the sublime is relevant, because it holds the potential to unlock the full scale and reach of the forces we harness through our technological capacities.

The extent of infrastructures can be difficult to grasp. In our part of the world, we unassumingly travel through and along them every day and take their readily available utilities for granted with little consideration. We may condemn the solar fields’ or wind farms’ occupation of our shared landscape, but infrastructures often only become widely visible when we experience their breakdown.<sup>2</sup> Delineating a definition of infrastructures is thus tricky, and understanding their networked, widespread presence in contemporary landscape breaks the boundaries of common concepts of place and locality. Infrastructures permeate all layers of modern society as a double-edged sword – at once instrumental to the necessary green transition, yet at the same time degrading ecological systems. Anthropologist Brian Larkin has defined infrastructures as:

*“[...] built networks that facilitate the flow of goods, people, or ideas and allow for their exchange over space [...] They comprise the architecture for circulation, literally providing the undergirding*

*of modern societies [...] But infrastructures also exist as forms separate from their purely technical functioning [...] They emerge out of and store within them forms of desire and fantasy [...] wholly autonomous from their technical function.*”<sup>3</sup>

The last part of the quote is a significant recognition of both the political, environmental and spatial charge of infrastructures. This brings them into the territory of the sublime as the stuff of nation building desires as well as the source of a number devastating catastrophes in recent history.<sup>4</sup> The geographical extent of these disasters prove how infrastructures breach typical concepts of place because of their networked interdependency across both regional and national scales.<sup>5</sup> Diverse infrastructural networks are intimately connected to one another, adding to the complexity of their functionality, the consequences of their potential breakdowns, and to their cultural meaning. Finally, many of the infrastructural artefacts shown in this essay will outlast our buildings and cities by centuries and become enduring, unintentional monuments of our epoch, which unequivocally assert them as heritage objects and landscapes.<sup>6</sup>

Returning to the images, my artistic research practice focuses on rendering visible such unseen elements of contemporary landscape. Through photographic exploration and interpretation, I examine spatial and aesthetic characteristics of liminal heritage objects. My practice is methodically anchored in Bernd & Hilla Becher’s oeuvre,<sup>7</sup> and theoretically in the phenomenological aesthetics of Hans-Georg Gadamer and his conception of the image proper, which charges the image with the potentiality to transform and expand the meaning of the depicted.<sup>8</sup> As such, I consider my artistic research a continuation of a long tradition dedicated to the aesthetic and critical examination of the remnants and unintended monuments produced by our culture.<sup>9</sup>

The exhibited photographs are framed without a visible horizon and with the subject taking up the entirety of the image. This allows the spectator to focus on both the space, the geometry, and the distinct intersection with the landscape. All photographs are composed with gravity in the centre of the frame, which aid the continuous visual reading of the images, which have been photographed in a span of 13 years across Denmark, Switzerland, Italy, Finland and Japan. The images show different types of reservoirs within infrastructural systems. In my previous work, I have established a taxonomy for infrastructural networks consisting of *nexuses*, the transformers and distributors of energy and materials, *arteries*, the corridors for transport, and *reservoirs*, which describe the various

storages of both energy and materials.<sup>10</sup> The photographs show three different types of reservoirs: 1) dams that withhold vast reservoirs of water for hydropower, Dixence [fig. 7] and Mauvoisin [fig. 1] in Switzerland and Vajont [fig. 5] in Italy; 2) industrial cathedrals for different substances, Brønshøj water tower [fig. 10] and Valby gasholder [fig. 3] in Denmark, Tokyo underground discharge channel [fig. 11] in Japan, and the Onkalo repository for final disposal of nuclear waste [fig. 8] in Finland; and finally, 3) quarries, the Carrara marble quarries in Italy [fig. 2, 6, and 9] and the Carrières d'Arvel [fig. 4] in Switzerland, where limestone, gravel and sand are produced.

The images of the three dams all share an immense scale and geometric clarity as well as a stark intersection with the landscape in which they are situated. Geometrically, the images of Mauvoisin [fig. 1] and Dixence [fig. 7] show the difference between double-curved arch dams, which distribute the pressure of the reservoir into the surrounding mountains, and the gravity dam, which on its own upholds the unfathomable pressure of the reservoir – in the case of Dixence 400 mio. m<sup>3</sup> of water behind the 285m tall dam, making it the world's tallest gravity dam.<sup>11</sup> Controlling such forces within the complex alpine geology and ecosystems is fraught with risks. The Vajont disaster [fig. 5] is among the worst dam catastrophes in history. In the pursuit of heroic national ambitions of energy independence in post-Mussolini Italy, the 262m Vajont dam was the tallest in the world when it was finished in 1960. However, during the filling of the reservoir the authorities' negligence of geologists' consecutive warnings about neighbouring Mount Toc's geological instability led to a huge landslide, where 2,5km of the mountain side sled into the reservoir on October 9<sup>th</sup>, 1963. The high velocity landslide pushed a massive 100m tall tsunami wave over the top of the dam, which caused a devastating flood in the Piave valley, killing almost 2000 people instantly.<sup>12</sup> The Vajont dam itself was barely damaged, leaving it to posterity as a monument to political hubris.

The scale of the forces unleashed in the catastrophe is impossible to fully grasp. Thus, going back to the notion of scale from a visual standpoint, the full extent of the dams' vastness, both physically and metaphorically, becomes *opaque* due to the scarcity of image elements that have reference to the scale of the human body. This visual trait is shared with the images of Valby Gasholder [fig. 3] and Tokyo underground discharge channel [fig. 11]. The colossal, circular interior of the gasholder is almost entirely devoid of any objects that indicate its size. The deep reflection on the inside comes from oil that allowed the piston to travel from top to bottom and regulate pressure. This gives the interior of the gasholder an otherworldly quality akin to nacre. The Tokyo underground

discharge channel is the world's largest underground flood water diversion facility. The density of the rounded, elongated columns and their exaggerated capitals give the impression that this abstract cathedral withstands massive forces. Intersected by rivers that run through the city in artificial concrete tunnels and canals, Tokyo has become vulnerable to floods. The flood water chamber is pivotal to the protection of greater Tokyo during the monsoon season.

The quarries in Carrara and Carrières d'Arvel form the third variant of reservoirs. They share the characteristically enormous and opaque scale with the industrial cathedrals and majestic dams, but they differ significantly in being excavated from the landscape rather than constructed within it. This sets them apart in both being the matter and shaping the spatial envelope in the same gesture. The quarried materials stand out of the mountains in a manner directly mirroring the quarrying tools as well as the end products. In the case of Carrières d'Arvel [fig. 4], the mountain appears to be crumbling into the different granular piles of limestone fractions. In Carrara [fig. 2 and 6], the distinctly terraced and faceted uncovering of the mountain range's marble core reflects the dimensions and weight of the largest marble block that can be loaded and transported by the mining trucks down the narrow, winding roads.

Finally, the Onkalo repository for nuclear waste [fig. 8] brings infrastructures into an almost geological time scale. The image shows the encapsulation plant and the specific radiation shielded chamber, in which spent fuel rods will soon be robotically inserted into copper canisters used for final disposal in the geologically stable bedrock 450m below the surface – for the next hundreds of thousands of years.<sup>13</sup> When the entire repository has been filled with spent fuel in the next century, all holes and tunnels will be filled with bentonite and the entire underground facility sealed off with concrete. The final step is to remove all overground facilities, effectively attempting to hide any trace of the nuclear waste for posterity and thus revealing that any communication with future civilisations has been deemed too risky.<sup>14</sup>

This *opaque scale* that characterises most of the images – whether in terms of indeterminate size or time beyond our epoch – inspire a classical awe and apprehension distinctive of both a Burkean<sup>15</sup> and Kantian<sup>16</sup> sublime. Most explicitly in Onkalo, but similarly with the quarries and dams, the cataclysmic consequences are either potentially – or actually – seeping to the outside world. Finland must be lauded for being the first and only country in the world to invent a solution to their nuclear

waste, but even though the science governing the decision making around the Onkalo repository's design and operation is state-of-the-art, it is a daunting prospect to project the contemporary moment's knowledge so far into the unknown future. The Carrara quarries in the Apuan Alps date back to Roman times and are on UNESCO's tentative world heritage list. The quarrying methods have been drastically optimised in recent decades, ramping up production to a whopping 1 billion tonnes a year,<sup>17</sup> which causes severe environmental problems in the downstream valleys, where silt, sludge and landfills have increasing ecological repercussions.<sup>18</sup> Similarly, large dams cause far-reaching disruption and degradation of alpine ecosystems, both upstream and downstream, due to the obstruction of hydrological flows and silt transport.<sup>19</sup> Last, but not least, the pictured gasholder [fig. 3] was a replacement for the original Valby Gasværk, which exploded in a devastating event in 1964, where locals feared it was a nuclear blast.<sup>20</sup>

In all cases, whether actualised or still latent, these infrastructures are at once the backbone of vital societal function, yet at the same time also the nucleus of what Rob Nixon has termed *slow violence*.<sup>21</sup> This spans the full emotional and aesthetic range of the sublime experience. Whereas the Kantian sublime is followed by comprehension in *sensus communis*, the subject matter and aesthetic content in this essay suggest a cognitive progression similar to what Emily Brady has termed *the environmental sublime*, which is founded upon humility and, crucially, knowledge about the human condition as inseparably intertwined with the earth's ecosystems.<sup>22</sup> Although the necessary knowledge of the potentiality of the depicted infrastructures is not accessible through the images alone, it can – through the enlightenment of comprehension – catapult the spectator back into a Burkean terror. Thus, to trace and carve out the analytical category of the *infrastructural sublime*, it describes the aesthetic potentiality to uncover new, transformative knowledge from the intersection between nature's geological and ecological systems, and the harnessing of power found in the often-unseen reservoirs of infrastructural landscapes.<sup>23</sup>

The exhibited prints are made from drum-scanned analog 4x5" Kodak Portra film as well as digital captures. Technical cameras from Linhof and Cambo were used with Rodenstock optics.



Figure 1. Lars Rolfsted Mortensen, Mauvoisin I, 2017, pigment ink on cotton paper (180 x 120cm)



Figure 2. Lars Rolfsted Mortensen, Carrara Fantiscritti I, 2025, pigment ink on cotton paper (180 x 120cm)



Figure 3. Lars Rolfsted Mortensen, Valby Gasholder I, 2012, pigment ink on cotton paper (180 x 120cm)



Figure 4. Lars Rolfsted Mortensen , Carrières d'Arvel II, 2017, pigment ink on cotton paper (120 x 150cm)



Figure 5. Lars Rolfsted Mortensen, Vajont V, 2024, pigment ink on cotton paper (120 x 150cm)



Figure 6. Lars Rolfsted Mortensen, Carrara Ravaccione I, 2025, pigment ink on cotton paper (120 x 150cm)



Figure 7. Lars Rolfsted Mortensen, Dixence II, 2017, pigment ink on cotton paper (120 x 150cm)



Figure 8. Lars Rolfsted Mortensen, Onkalo I, 2025, pigment ink on cotton paper (120 x 150cm)

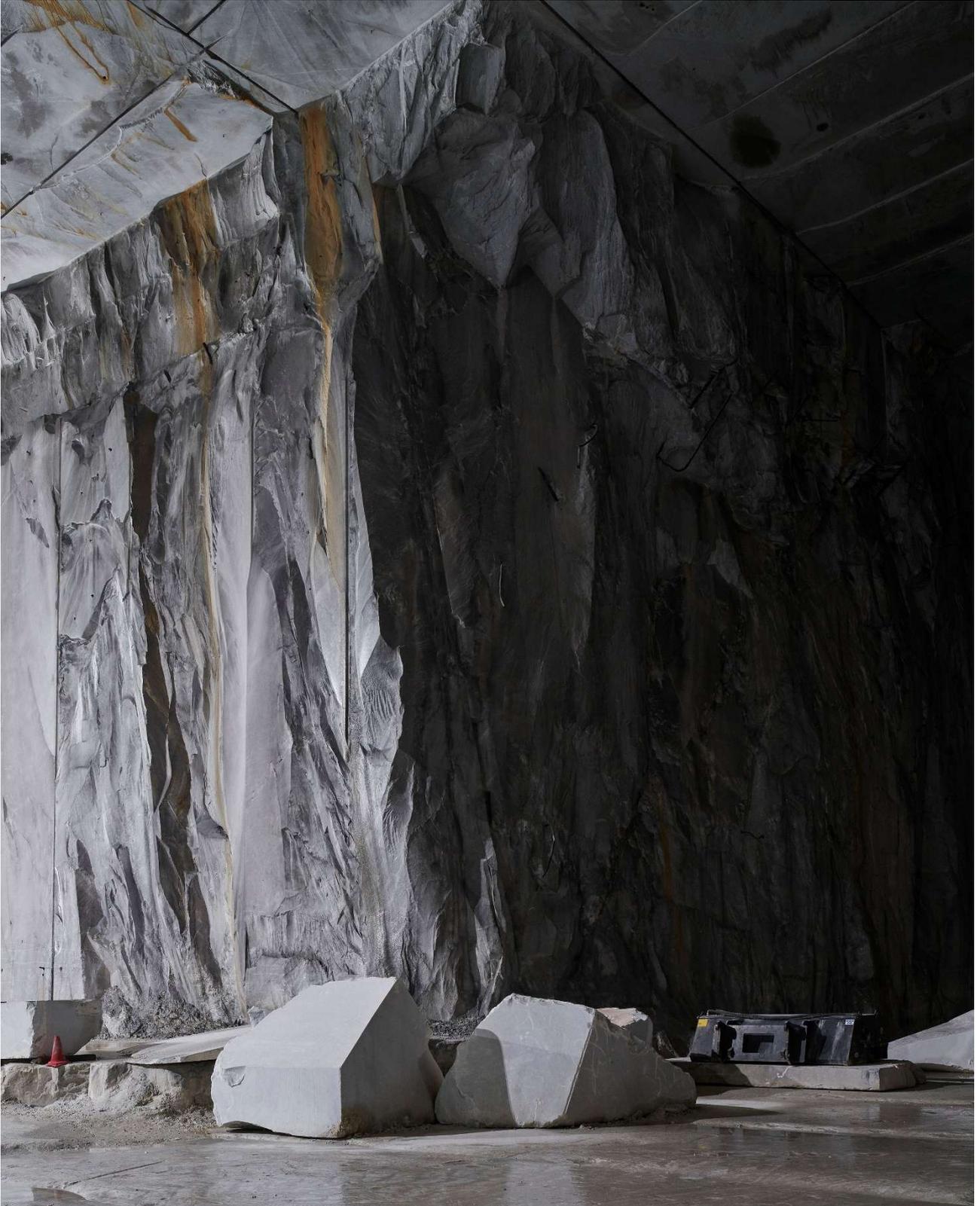


Figure 9. Lars Rolfsted Mortensen, Carrara Cathedral I, 2025, pigment ink on cotton paper (120 x 150cm)



Figure 10. Lars Rolfsted Mortensen, Brønshøj Water Tower I, 2017, pigment ink on cotton paper (120 x 150cm)



Figure 11. Lars Rolfsted Mortensen, G Cans II, 2015, pigment ink on cotton paper (120 x 150cm)

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## Bio

Lars Rolfsted Mortensen is Assistant Professor at the Royal Danish Academy, Centre for Sustainable Building Culture, where he also serves as Head of the MA programme Cultural Heritage, Transformation and Conservation. His research focuses on recent heritage, with particular emphasis on post-war industrial and infrastructural heritage, engaging with the boundaries of what is conventionally defined as heritage. Lars employs photography as a central research method to examine and disseminate the spatial and aesthetic qualities of liminal heritage objects and landscapes. He has contributed to the theoretical and methodological development of photography as empirical material within the phenomenological research tradition.

## Notes

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<sup>1</sup> Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No. 168/2013, (EU) 2018/858, (EU) 2018/1724, and (EU) 2019/1020, *Official Journal of the European Union* L 1252 (May 3, 2024), accessed January 15, 2026, [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L\\_202401252](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401252)

<sup>2</sup> Nikhil Anand, Akhil Gupta, and Hannah Appel, eds., *The Promise of Infrastructure* (Durham, NC: Duke University Press, 2018).

<sup>3</sup> Brian Larkin, "The Politics and Poetics of Infrastructure," *Annual Review of Anthropology* 42 (2013): 327–343, esp. 328–29.

<sup>4</sup> Vajont Dam disaster (1963); Chernobyl nuclear meltdown (1986); Fukushima nuclear disaster (2011); Ponte Morandi bridge collapse (2018)

<sup>5</sup> Lars Rolfsted Mortensen, "Infrastructure as Heritage: Exploring the Elsinore Highway as Dissonant Heritage," in *Heritages: Past and Present—Built and Social*, ed. Jana Cirklová and Andrea Marey, AMPS Proceedings Series 35 (2023): 554–566, [https://amps-research.com/wp-content/uploads/2024/04/Amps-Proceedings-Series-35.2\\_2024.pdf](https://amps-research.com/wp-content/uploads/2024/04/Amps-Proceedings-Series-35.2_2024.pdf)

<sup>6</sup> "Dams Generate Hopes and Fears," *Swissinfo*, June 2, 2011, accessed March 30, 2023, <https://www.swissinfo.ch/eng/dams-generate-hopes-and-fears/30373166>

<sup>7</sup> Susanne Lange, *Bernd and Hilla Becher: Life and Work* (Cambridge, MA: MIT Press, 2006).

<sup>8</sup> Hans-Georg Gadamer, *Sandhed og metode: Grundtræk af en filosofisk hermeneutik* (Århus: Academica, 2007 [1960]), 135–37.

<sup>9</sup> Susan Buck-Morss, *The Dialectics of Seeing: Walter Benjamin and the Arcades Project* (Cambridge, MA: MIT Press, 1989).

<sup>10</sup> Lars Rolfsted Mortensen, "Nexus, Artery and Reservoir: A Taxonomy for an Embodied Perception of Infrastructures," in *Design for Resilient Communities: Proceedings of the UIA World Congress of Architects Copenhagen 2023*, 111–124, <http://papers.uia2023cph.org/P3/3708.pdf>

<sup>11</sup> Grande Dixence SA, "How It Works," accessed January 15, 2026, <https://www.grande-dixence.ch/en/how-it-works-30/>

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- <sup>12</sup> Rinaldo Genevois and Monica Ghirotti, “The 1963 Vaiont Landslide,” *Giornale di Geologia Applicata* 1 (2005): 41–52, <https://doi.org/10.1474/GGA.2005-01.0-05.0005>
- <sup>13</sup> “Final Disposal, Long-term safety,” *Posiva*, accessed January 17th, 2026, <https://www.posiva.fi/en/index/finaldisposal/long-termsafety.html?>
- <sup>14</sup> Michael Madsen, “Into Eternity,” 2010. 75min. <https://filmcentralen.dk/grundskolen/film/eternity>
- <sup>15</sup> Edmund Burke, *A Philosophical Inquiry into the Origin of Our Ideas of the Sublime and the Beautiful* (Cambridge: Cambridge University Press, 2014 [1757]).
- <sup>16</sup> Immanuel Kant, *Critique of Judgment*, trans. Werner S. Pluhar (Indianapolis: Hackett, 1987 [1790]).
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