

Classical Paradigms in Flux

Embellissement and Technological Shift in Nineteenth-Century Paris

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“If you alter the Book, you alter the world”

Umberto Eco, *Foucault's Pendulum*, 1989

If we understand signifiers as symbols that generate and circulate meanings, then we can consider the city as a text—a collection of codes that, once deciphered, orient residents and visitors in space and time. Those who can read signs, signals, and distinguishing marks—whether street names, traffic signals, or the distinctive symbol for a pharmacy—will be able to find their bearings in the web of urban life and its temporal cadences. Roland Barthes described this phenomenon in his 1967 lecture “Semiology and the Urban”: “He who moves about the city, e.g., the user of the city . . . is a kind of reader who, following his obligations and his movements, appropriates fragments of the utterance” and concludes that “the city is writing.”¹ Following this poststructuralist application of the textual paradigm to urban space, signifiers generate references through connection, producing discourses that overlay the city and its formalized mechanisms with a shifting play of meanings and narratives.² From the perspective of art and architectural history,

1 Roland Barthes, “Semiology and the Urban,” in *The City and the Sign*, ed. M. Gottdiener and Alexandros Ph. Lagopoulos (New York: Columbia University Press, 1986), 95.

2 The distinction touched on here between visual communication and cultural codification follows Umberto Eco, *Einführung in die Semiotik* (Munich: Wilhelm Fink, 1972), 24–25. For the semiotic concept of space after the cultural turn, see Sigrid Weigel, “Zum ‘topographical turn’. Kartographie, Topographie und Raumkonzepte in den Kulturwissenschaften,” in *KulturPoetik*, vol. 2 (2002), 151–165.

signifiers and references in the city address the past, present, and future, sometimes referring to other cities both in emulation and rivalry.³ At times, they keep alive the memory of historical identities, while also marking the status and location of their surroundings. A marketplace and cathedral, for example, point to an old city center; office towers and feeder roads suggest a newer district at the outskirts. In this sense, references, whether intentional or not, make up a semantic coordinate system, similar to a texture or a way of speaking, that casts itself interpretively over the built environment, both codifying and continuing the writing of it.⁴ This ambivalence between fixity and non-fixity, which constantly recontextualizes signifiers and references and endows them with shifting moments of meaning, provides the analytical starting point for the following discussion.

Our first area of concern will be the problem of innovation itself, as well as the means, semantics, and references by which innovations prove themselves to be innovations, integrate into existing frameworks, or bridge the gap with the old. Our thematic focus will be on the relationship between the classical canon and urban engineering in early nineteenth-century France. The canon was defined and safeguarded by the Académie and the École des beaux-arts, which controlled the state's architecture curriculum. Beaux-Arts architecture saw itself as building-art, as *architecture savante* (erudite architecture), destined to be applied in prestigious building projects and urbanistic beautification initiatives, known as *embellissements*. Where Beaux-Arts architects intervened, they created buildings and spaces in the classical tradition—a practice that continued well into the second half of the nineteenth century. Besides obtaining positions in the national government and départements, the most qualified graduates of the École des beaux-arts were often recruited by the administration of Paris. Since the 1830s, the city had increasingly commissioned urbanization projects, including what Germans term

3 See Wolfgang Pehnt, *Städtebau des Erinnerns. Mythen und Zitate westlicher Städte* (Berlin: Hatje Cantz, 2021).

4 The post-structuralist perspective presented here appears in nineteenth-century discourse on urbanity, sometimes in the form of *prosopopoeia*, where objects narrate their own history. See, for example, Charles Nodier: "Il n'y a peut-être pas une rue, pas une place publique dans cette vieille ville [de Paris] qui ne rappelât un fait singulier et frappant si ses murailles s'animaient, si elles pouvaient parler." Charles Nodier, *Paris historique. Promenades dans les rues de Paris*, vol. 1 (Paris: Académie Française, 1838–39), 3.

Städtetechnik—infrastructure that ensured hygiene, drinking water supply, sewage disposal, transport, and the like. In the era of industry and engineering, infrastructure and urbanization meant that the city was transformed and radically rebuilt, quite literally from the ground up.⁵ The planning and execution of these measures was not up to the architects alone; they were assisted by a host of surveyors, civil engineers, hydraulic specialists, mechanical engineers, botanists, and many other experts in various domains. Most of these had come up through engineering schools, the most prestigious being the *École polytechnique*.⁶ Urban engineering thus encompassed a cross section of different, even heterogeneous skills and responsibilities, all integrated into a model that united public and private investment. The Place de la Concorde was one prominent, large-scale project of this “innovative milieu” developing in Paris’s central administration at the beginning of the July Monarchy.⁷ Among its attractions was the first large-scale deployment, in 1837–38, of more than 80 gas-powered street lamps. Designed by Beaux-Arts architect Jakob Ignaz Hittorff, the cast-iron creations appear as fluted Ionic columns—thus becoming hybrids (Fig. 17). As befits such a crossing of divergent references, these objects possess a distinctive duplicity: they are *art savant* on the one hand and technology on the other. Furthermore, their

5 For more on engineering and industry as central drivers of urban development in the nineteenth century, see Jürgen Reulecke, *Geschichte der Urbanisierung in Deutschland* (Frankfurt am Main: Suhrkamp, 1985), 49–67 and Christian Kleinschmidt, *Technik und Wirtschaft im 19. und 20. Jahrhundert* (Munich: De Gruyter Oldenbourg, 2007), 13–16. For more on the early phases of Paris’s transformation, see Karen Bowie, ed., *La modernité avant Haussmann. Formes de l’espace urbain à Paris 1801–1853* (Paris: Éditions Recherches, 2001) and H. Hazel Hahn, *Scenes of Parisian Modernity: Culture and Consumption in the Nineteenth Century* (New York: Springer, 2009), 143–156.

6 See André Grelon, “Von den Ingenieuren des Königs zu den Technologen des 21. Jahrhunderts. Die Ausbildung der Ingenieure in Frankreich,” in *Ingenieure in Frankreich 1747–1990*, ed. André Grelon and Heiner Stück (Frankfurt am Main: Campus, 1994), 15–57.

7 On the birth and significance of Paris as a “creative city,” see Peter Hall, *Cities in Civilization: Culture, Innovation, and Urban Order* (London: Weidenfeld & Nicolson History, 1999), 706–745. The idea of the innovative or creative city, with its numerous areas of crossover between art, engineering, and administrative history, formed the basis of a project at the University of Mainz funded by the DFG (Deutsche Forschungsgemeinschaft) and led by Gregor Wedekind and myself, entitled “Mobilier urbain. Objektkultur und öffentlicher Raum in Paris des 19. Jahrhunderts.” Some of the following reflections are owed to that project.

hybridity points both to the symbolic (the classical canon) and non-symbolic (cast iron, coal gas). Also non-symbolic are the technical networks, like the gas supply pipe system, whose linear arrangement partially determined the placement of the street lamps. The Place de la Concorde thus interacts with a technological spatial network whose incompatibility had to be overcome first.⁸ We will return to this point.

In fact, the technological shift of the Place de la Concorde seamlessly integrated into the framework of classical urban beautification (*embellissement*), whose core features were symmetry, axuality, and a semantics of the classical (Fig. 18).⁹ The *embellissement* itself culminated in a prominent reference to Rome: the motif of the centrally placed obelisk flanked by fountains pays homage to St. Peter's Square and honors the academic principle of *aemulatio* (emulation).¹⁰ The visual primacy of *embellissement* explains why the Place de la Concorde's "technological shift" has found its way into neither art history nor the history of technology. And yet, the beautification of Paris in the nineteenth century cannot be separated from the classical canon, nor can it be properly discussed without considering developments in engineering and technology.¹¹ Rather, it demands that we concentrate on the intersection of

8 On the concept of technology as an system going beyond isolated (symbolic) artifacts and instruments, see Thomas P. Hughes, "The Evolution of Large Technological Systems," in Wiebe E. Bijker, Thomas P. Hughes, and Trevor Pinch, eds., *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (London: The MIT Press, 1987), 45–76.

9 On the central category of *embellissement*, which defined France's early urban design, see Sophie Descat, "L'embellissement urbain au XVIIIe siècle. Éléments du beau, éléments du sublime," in *Les arts des Lumières. Essais sur l'architecture et la peinture en Europe au XVIIIe siècle*, ed. Claire Ollagnier (Paris: ghamu, 2019), 127–142, as well as Alexis Joachimides, *Die Ästhetik der Stadt. Städtebau in Bordeaux und Edinburgh 1730–1830* (Berlin: Deutscher Kunstverlag, 2021). On the history of the Place de la Concorde, see Solange Granet, *La place de la Concorde* (Paris: Ministère de l'Éducation Nationale, 1963) and the exhibition catalogue *Paris erwacht! Hittorffs Erfindung der Place de la Concorde* (Köln: Wallraf-Richartz-Museum & Fondation Corboud, 2017).

10 See Salvatore Pisani, "Monument wird Mobiliar. Zur Transformationsgeschichte der Place de la Concorde in der Julimonarchie," in *Skulptur und Platz. Raumbesetzung, Raumüberwindung, Interaktion*, ed. Alessandro Nova and Stephanie Hanke (Berlin: Deutscher Kunstverlag, 2014), 315–332, esp. 327.

11 The relevant discursive history, i.e. the web of relationships between architecture and engineering in architectural theory, has been outlined many times; see especially

these two historiographic fields—art and engineering—which continue to pay little attention, or respect, to one another.

The relationship between art and engineering in the nineteenth century, according to Sigfried Giedion's influential thesis, was one of insurmountable opposition. As Giedion writes, "From the beginning of the [nineteenth] century two opposed attitudes . . . face each other in France: the *École des Beaux-Arts* is confronted by the *École Polytechnique*."¹² However, when we examine this issue in the context of urbanization and municipal building administration—that is, within actual building practice—a considerably different picture emerges: art and engineering became creolized and entangled in manifold new configurations. To analyze these hybrid formations, we must maintain a dual perspective that does not simply conflate the history of practice with that of discourse.¹³

While the new intermarriage of art and engineering may have been accepted in the practical realities of everyday work, the representatives of high art and culture categorically rejected it. It is unnecessary to go further into this well-researched discursive territory.¹⁴ A few key examples will suffice. For the *Beaux-Arts* establishment, mixing of art with engineering constituted an impermissible transgression of normative boundaries—a moral failure resulting from the degradation of artistic standards to the level of utilitarian and consumer goods. A paradigmatic example is the painter Jean-August-Dominique Ingres's vehement objection to proposed reforms of the *École des beaux-arts* in 1863. Regarding the idea of turning the *École* into a school of applied arts with a clear practical orientation, Ingres wrote: "Now

Ulrike Schuster, *Stadtutopien und Idealstadtkonzepte des 18. und 19. Jahrhunderts am Beispiel der Großstadt Paris* (Weimar: arts + science weimar, 2003).

12 Sigfried Giedion, *Space, Time, and Architecture: The Growth of a New Tradition* (Cambridge: Harvard University Press, 1954), 210. The relationship between engineering and art has since proven to be a dynamic and multifaceted field of study, as is shown by an anthology at the intersection of media theory and visual studies: Oliver Ruf and Lars C. Grabbe, eds., *Technik-Ästhetik. Zur Theorie techno-ästhetischer Realität* (Bielefeld: transcript, 2022).

13 For a purely discursive analysis, see Héléne Lipstadt and Harvey Mendelsohn, *Architecte et ingénieur dans la presse. Polémique, débat, conflit* (Paris: C.O.R.D.A., 1980).

14 See the still seminal work of Georg Maag, *Kunst und Industrie im Zeitalter der ersten Weltausstellungen. Synchronische Analyse einer Epochenschwelle* (Munich: Fink, 1986).

they want to mix art with industry. Industry! We do not want it.”¹⁵ This strident reaction from the Beaux-Arts movement’s chief ideologue exemplified resistance against a threatened unification of the irreconcilable, and hence the erosion of the classical canon and the elitism of France’s premier training ground for artists and architects. For the Beaux-Arts establishment, nothing less was at stake than their claim to establish and safeguard the standards of classical art. Unlike for the Romantics, however—and herein lies a crucial distinction—technology and engineering did not act as an alternative canon.¹⁶ While the Romantics insisted on exceptionalism, engineering inherently embraced functionality and means-end rationality. Accordingly, the concept of singularity is foreign to engineering, while relationality and normalism are immanent to it. We will return to this point as well.

This essay takes as its starting point the openness of engineering to integration with art, and conversely, art’s limited receptiveness to integration with engineering. In the first section, I discuss how classical paradigms became both fixed and amplified during the era of archaeological classicism. This helps explain why academic art and the engineering of infrastructure remained in tension despite numerous instances of convergence and comingling. The second section will look at a productive resolution of this divergence through hybrid forms, taking Paris’s cast-iron street furnishings as an example. My focus will be on a cross-sectional analysis of *embellishment* and urban engineering, for which I will combine historical and systematic approaches.

15 Jean-Auguste-Dominique Ingres, Réponse au rapport sur l’École impériale des beaux-arts, adressé au Maréchal Vaillant, ministre de la maison de l’Empereur et des beaux-arts, Paris, 1863, 4: “Maintenant on veut mêler l’industrie à l’art. L’industrie! Nous n’en voulons pas!” For more on this affair, see Alain Bonnet, *L’enseignement des arts au XIXe siècle. La réforme de l’École des beaux-arts de 1863 et la fin du modèle académique* (Rennes: Presses Universitaires de Rennes, 2006) and Amandine Diener, *Enseigner l’architecture aux Beaux-Arts (1863–1968). Entre réformes et traditions* (Rennes: Presses Universitaires de Rennes, 2022).

16 The conflict between the Beaux-Arts and the Romantic school, which began in the 1820s, is customarily treated through the rivalry of the two schools’ main representatives. See Andrew Carrington Shelton, “Ingres versus Delacroix,” in *Art History*, vol. 23, no. 5 (2000), 726–742.

A Short Introduction to the (Il)logical Classical Reference System

A typical attribute of classical or classicist art is that it refers back to antiquity, or at the least to one of its renaissances. The Beaux-Arts style's aspiration to the universal and essential is exemplified by Jean-Auguste-Dominique Ingres's painting *The Apotheosis of Homer*, which even his contemporaries characterized as a "manifeste en l'honneur de l'art antique" (Fig. 19).¹⁷ Homer, the blind father of poets, sits enthroned in the center of the painting, appearing as the embodiment and starting point of the classical tradition.¹⁸ The flock of artists surrounding him forms an idealized genealogy, beginning with the lyric poet Pindar and the sculptor Phidias—who deferentially offer Homer a lyre and a hammer—and extending to the seventeenth-century artists depicted in the foreground, including Racine, Corneille, Poussin, and Molière. With their gazes and gestures directed toward the father of poets, his disciples serve as visual guides, literally pointing the way to Homer. The painting depicts filiation as a central category of the classical reference system; Ingres himself described the figures gathered about the throne as "les enfants d'Homère."¹⁹ Individual interactions—on the left, the black-robed Raphael extends his right hand to the painter Apelles, while the toga-clad Virgil lays his arm amicably across Dante's shoulder—represent internal acts of reference, creating a fraternal bond between figures from antiquity and post-antiquity.²⁰ When Raphael appears as the reincarnation of Apelles and Dante as that of Virgil, signifiers themselves beget more signifiers in a per-

17 Paul Delaborde, "Homère déifié, dessin de M. Ingres," in *Revue des deux mondes*, vol. 57 (1865), 775–781, here 778.

18 The ceiling painting was commissioned and produced in 1827 for the newly established Musée Charles X in the Louvre; see Sébastien Allard, *Le Louvre à l'époque romantique. Les décors du palais (1815–1835)* (Lyon: Fage, 2006), 79–85 and Yoo-Kyong Lee, "Ingres au salon de 1827. L'Apothéose d'Homère," in *Bulletin du Musée d'Ingres*, vol. 82 (2010), 79–98. For more on the political appropriation of antiquity with regard to Ingres, see Uwe Fleckner, "Die Wiedergeburt der Antike aus dem Geist des Empire. Napoleon und die Politik der Bilder," in *Napoleon und Europa. Traum und Trauma*, Exhibition catalog, ed. Bénédicte Savoy (Bonn: Prestel, 2011), 101–115.

19 See Paul Delaborde, "Homère déifié, dessin de M. Ingres," in *Revue des deux mondes*, vol. 57 (1865), 775–781, here 777.

20 These acts of referencing continue through discourse when, for example, an article on Ingres's *The Apotheosis of Homer* in the *Revue encyclopédique* states that Apelles

petuation and continual validation of Homer's timeless authority. The acts aggregated in this process—transmission, appropriation, transformation, veneration, and exemplification—not only stabilize and perpetuate the object of reference (Homer, father of poets), but unfold into their own referential universe characterized by perpetual rebirth (renaissance).

In Ingres's painting, classical doctrine begins (Latin *principium*) with Homer, who would endure even through the “dark” era of the Middle Ages as a maxim and benchmark. Homer is that which cannot exist: the beginning without beginnings, following nothing, referencing nothing. He possesses the mystery of divinity, as indicated by the temple in the background dedicated to him. To his divine origin are owed the eternal laws of classicism, which he transmitted into human temporality.²¹ Like the Catholic doctrine of *extra ecclesiam nulla salus* (no salvation outside the Church), classical art rests on a principle of rigorous exclusion, maintained by the cult of Homer's disciples. To the extent that classicism withdraws to a position of internality, it erects immovable borders that permit no external references. Classicism defines itself as an inviolable doctrine through this fundamental claim.

Ingres's *Apotheosis of Homer* envisions that fusion of Hellenism and contemporaneity held dear by the Beaux-Arts school and Western Europe more generally at the turn of the nineteenth century. Yet when we look at many other revivals of antiquity—from the Italian Renaissance to the French Baroque and Weimar Classicism—we notice that each refers to a different version of antiquity. Thus, while the signifier “antiquity” clearly points toward the depths of European history, it has no fixed facticity. On the contrary, transformation studies now widely recognize that the act of referencing antiquity simultaneously creates, alters, and renews the very object being referenced.²² Reference and reception exist in a bidirectional relationship.

took Raphael's hand “pour l'amener auprès d'Homère”; cited in Lee, “Ingres au salon de 1827,” in *Bulletin du Musée d'Ingres*, 96.

21 See Christoph Asmuth, *Subjekt und Prinzip. Philosophie des Anfangs* (Berlin: Logos Verlag, 2017) on the principle of incipience and its foundational meaning for systems of reference.

22 See Christoph Asmuth, *Interpretation – Transformation. Das Platonbild bei Fichte, Schelling, Hegel, Schleiermacher und Schopenhauer und das Legitimationsproblem der Philosophiegeschichte* (Göttingen: Vandenhoeck & Ruprecht, 2006), 15–18 and Hartmut Böhme, “Einladung zur Transformation,” in

Antiquity did not consist of fixed facts for Ingres either. Three decades later, he sketched a new graphic revision of his Homer painting; in this version, he doubled the number of Homer's disciples and made significant alterations—especially to the painting's architectural backdrop (Fig. 20).²³ In place of the Ionic *peripteros*, he introduced a four-columned, polychrome *prostylos* featuring a mixture of Ionic capitals and Doric entablature. This temple backdrop, despite its rule-breaking incongruities, was subsequently elevated to the status of a new norm. The main impetus for this reassessment was a publication from 1851 in which Jakob Ignaz Hittorff exhaustively reconstructed the ancient color scheme of a Greek temple with mixed architectural orders (Fig. 21).²⁴ Hittorff had no qualms about basing his reconstruction on the scanty remains of buildings and foundations—which is why we must conclude that this colorful antiquity was both discovered and fabricated by archaeology. To the extent that the archaeology of the Beaux-Arts movement was based on something that itself had no basis, the nineteenth century effectively created its own antiquity. However, to infer from this that its reconstruction was arbitrary would be to misunderstand the logic and practice of classical referencing. As much as Hittorff's results were not based on solid evidence, they adhered to a reconstruction methodology endorsed by the Académie des beaux-arts. It is important to note that the Académie's director, Quatremère de Quincy, developed and authorized an archaeological process by which gaps in the fragmentary record of antiquity could nevertheless be filled in controlled manner. A brief outline of this approach: Quatremère de Quincy believed that the “restitution” of fragmentary or even absent artifacts was possible if archaeological evidence and written records underwent

Transformation: Ein Konzept zur Erforschung kulturellen Wandels, ed. Hartmut Böhme, Lutz Bergemann, et al. (Munich: Wilhelm Fink, 2011), 7–37, esp. 8–10.

23 There is ample literature on the revised version of the painting, under the title *Homère déifié*; see Louis-Antoine Prat, *Ingres* (Paris: 5Continents, 2004), 92; Georges Vigne, “L'Apothéose d'Homère ou l'Antiquité apprivoisée,” in *L'illusion grecque: Ingres & L'Antique*, ed. Pascale Picard-Cajan, (Montauban, Arles: Actes Sud, 2006,) 180–88, esp. 187–88. Exhibition catalog; and *Ingres: Lettres 1841–1867: De L'Âge d'or à Homère déifié*, ed. Daniel Ternois, vol. 2 (Paris: Honoré Champion, 2016).

24 See Salvatore Pisani, “Der Bildatlas. Jakob Ignaz Hittorff und Ludwig Zanth ‘Architecture antique de la Sicile, 1827,’” in *Das Buch als Entwurf. Textgattungen in der Geschichte der Architekturtheorie. Ein Handbuch*, ed. Dietrich Erben (Paderborn: Wilhelm Fink, 2019), 284–309.

a mediologically regulated reconstruction process of analogy and comparison. Where the record no longer provided visual evidence, Quatremère de Quincy readily advocated using imagination.²⁵ This could be managed, he maintained, according to a strictly systematic procedure of comparison and analogy, guaranteeing a credible reconstruction of Greek artworks.²⁶ The crux of this procedure is clear to see: what masquerades as plausible derivation equally depends on a recreation of the signifier. In other words, the gaps in the historical record spur on a manufacturing of signs that originate not only in antiquity, but also in the process of reconstruction itself, and thus in the present.

Academic and Archaeological Amplification of Reference to the Classical

Until well into the twentieth century, the process of reconstruction described above represented the capstone of the elite training at the Beaux-Arts school. Winners of the annual Grand Prix de Rome were awarded with a stay of several years at the Villa Medici in Rome, an offshoot of the French academy.²⁷ Before returning to France, where government positions beckoned, these scholarship recipients received their final educational polish by completing archaeological reconstruction designs known as *envois de Rome*. The little-known *envoi de Rome* completed by Maurice Boutterin in 1913 serves as an illustration. His design shows the villa of the Roman emperor Tiberius on

25 See my remarks in Pisani, “Der Bildatlas,” 296–298.

26 For more on the analogies and premises of this concept in idealist aesthetic theory, particularly Kant’s subordination of imagination to the control of reason, see Dieter Mersch, “Imagination, Figuralität und Kreativität. Zur Frage der Bedingungen kultureller Produktivität,” in *Kreativität*, ed. Günter Abel (Hamburg: Felix Meiner Verlag, 2006), 344–359.

27 See Pierre Pinon and François Xavier Amprimoz, *Les Envois de Rome. Architecture et archéologie*, (Rome: École française de Rome, 1988) and, most recently, Luigi Gallo, “Pour échauffer le génie’. Séjour à Rome des Grands Prix d’architecture sous l’Empire,” in *Bâtir pour Napoléon. Une architecture franco-italienne*, ed. Letizia Tedeschi, Jean-Philippe Garric and Daniel Rabreau (Brussels: Mardaga, 2021), 132–45.

the island of Capri—but not as it ever actually appeared (Fig. 22).²⁸ In fact, the ancient cliff-side villa in Bouutterin's *envoi* oscillated indistinguishably between fact and fiction, between reconstruction and invention. Bouutterin incorporated elements reflecting a fin-de-siècle image of antiquity. Even the choice of the villa of Tiberius—a Roman emperor who, in the last decade of his life, retreated from Rome's political sphere to an island in the Bay of Naples, supposedly to indulge in a licentious life of luxury—already signals a decadent aesthetic. Bouutterin addressed an image of antiquity sketched by Suetonius in *The Twelve Caesars*, while also referencing visions popular in French visual arts and literature since the 1850s, and in “sword-and-sandal” films since 1900.²⁹ The colossal composition (2 x 4.5 meters) is indeed based on a floor plan excavated in 1835 at the heart of the building complex, yet all the surrounding facilities (terraced architecture, hippodrome, tree-lined parks, processional avenues) sprang purely from the artist's imagination and education. Domed buildings, temple porticos, and triumphal arches all belong to the repertoire of antiquity as much as they do to the Beaux-Arts—but they simply never existed at the villa of Tiberius.³⁰ To the extent that Bouutterin's design blurs the line between antiquity as the referenced source and

28 See Vincent Jolivet, “Maurice Bouutterin (1882–1970). Palais de Tibère à Capri, 1913,” in *Italia Antiqua. Envois de Rome des architectes français en Italie et dans le monde méditerranéen aux XIXe et XXe siècles*, Exhibiton catalog, ed. Annie Jacques, Stéphane Verger, and Catherine Virlovet (Paris: École nationale supérieure des beaux-arts, 2002), 268–79.

29 See Dominique Païni, “Peindre l'instant d'après ou Gérôme cineaste,” in Jean-Léon Gérôme (1824–1904). *L'histoire en spectacle*, Exhibiton catalog, ed. Laurence Des Cars (Paris: Skira, 2010), 333–39; and Adrian Stähli, “Screening Pompeii: The last days of Pompeii in cinema,” in *The last days of Pompeii: Decadence, apocalypse, resurrection*, Exhibiton catalog, ed. Victoria C. Gardener Coates et al. (Malibu: Getty Publications, 2012), 78–87. The mythologizing of the ancient Tiberius reached its apex in the middle of the twentieth century when Edwin Cerio, a historian of the island of Capri, sardonically proclaimed that Tiberius was “the myth of the orgy everlasting”; Edwin Cerio, *Capri: Ein kleines Welttheater im Mittelmeer* (Capri, 2013), 8 [originally published in Italian as *L'ora di Capri*, (Capri: Insula Editrice, 1950)].

30 See Clemens Krause, *Villa Jovis. Die Residenz des Tiberius auf Capri* (Mainz: Philipp von Zabern, 2003) on the reconstruction of Tiberius's villa according to current structural and archaeological criteria.

antiquity as reinterpreted through nineteenth-century eyes, Tiberius's villa becomes something it never was in historical reality.³¹

When judged by archaeological architectural standards, these *envoi* drawings must be rejected, as they embody the post-factual principle of blurring—or not even attempting to establish—the boundary between fact and fiction.³² In fact, we can better appreciate them through the lens of artistic research, an anti-academic approach.³³ This new, anti-orthodox research methodology is characterized by its refusal to objectify its subject matter, instead opening it up like a cabinet of curiosities, thereby relying on the power of the aesthetic. For the purposes of artistic research, the architect acts as an artist. Rather than compete with archaeology as a field of positive science, they produce aesthetic knowledge that disregards attempts at verification or rational discourse.³⁴ Boutterin used exaggeration to uncover an essential feature of the object he depicted, only a faint glimmer of which can be seen in the ruins themselves. Instead of showing what archaeology can verify and

31 These remarks follow the concept of transformation as elaborated by Lutz Bergemann, Martin Dönike, Albert Schirrmeister, Georg Toepfer, Marco Walter and Julia Weitbrecht, *Transformation. Ein Konzept zur Erforschung kulturellen Wandels* (Munich: Wilhelm Fink, 2011), 39–56.

32 This does not apply equally to all of the envois; rather, it describes a tendency that gained increasing prominence in the second half of the nineteenth century. See the summary in *Roma antiqua. Grandi edifici pubblici: Envois degli architetti francesi (1786–1901)*, Exhibiton catalog (Rome: Edizioni Carte segrete, 1992). Reference amplification, whether achieved through particularly opulent reconstructions or exceptional illustration techniques, is especially characteristic of the envois of Charles-Alfred Leclerc (Baths of Trajan, 1871), Edmond Paulin (Baths of Diocletian, 1880), Georges Chedanne (Pantheon, 1891), and Alfred Recoura (Circus of Maxentius, 1891). For more on the post-factual as a crisis phenomenon of the factual, see Gary S. Schaal, Dannica Fleuß, and Sebastian Dumm, “Die Wahrheit über Postfaktizität,” in *APuZ. Aus Politik und Zeitgeschichte*, October 27, 2017, <https://www.bpb.de/shop/zeitschriften/apuz/258506/die-wahrheit-ueber-postfaktizitaet/>.

33 See *Künstlerische Forschung. Ein Handbuch*, ed. Jens Badura et al. (Zurich: Diaphanes, 2015).

34 In contrast to academic knowledge production, with its imperatives of verifiability and critical self-reflection, the validation of knowledge plays a subordinate role in artistic research, as evident in many of the envois. See Karin Knorr Cetina, *Wissenskulturen. Ein Vergleich naturwissenschaftlicher Wissensformen* (Frankfurt am Main: Suhrkamp Verlag, 2002).

describe, his reconstructed design prioritizes evoking that which is lost.³⁵ In other words, Boutterin embraces a kind of archaeology that does not disavow its creative relationship to the object of reference, but instead deliberately foregrounds it.

It is not difficult to identify the historical moment of Boutterin's amplification of reference to the classical: the turn of the twentieth century, when the Beaux-Arts movement had long surrendered its claim to aesthetic hegemony. Gothic Revival, iron and concrete architecture, and art nouveau had already established themselves as alternative reference systems in architectural practice.³⁶ Amplifying one's own referential elements represents a proactive strategy in the face of this challenge.

***Embellissement* and Technological Shift, 1835**

Let us now return to the early history of Parisian urban engineering. As I noted earlier, the question of the new is not merely a question of technology: the crucial caesura in the Parisian cityscape was created not by the introduction of coal gas or cast iron, but by the hybrid integration of these technological elements with traditional *embellissement*. The paradigmatic example of this hybridization are the cast-iron gas lamps in the shape of columns, which were installed in 1837–38 in the Place de la Concorde and, later, all along the Champs-Élysées. The lamps' design reflects a specific historical moment when technology wasn't treated as separate from art—instead, the two merged into a novel form. The round iron bars, in particular—which were a product of casting technology and were mass-produced—integrated seamlessly with classical Ionic design elements. On the other hand, the columns' narrow cross-section is proof that antiquity no longer served as the sole reference point. This resulted in a paradox: what was truly new was not the technology,

35 On the theoretical principles governing the interrelationship of showing and reference as they have defined the discourse of analytic philosophy since Wittgenstein, see Willard Van Orman Quine, "Things and Their Place in Theories," in *Theories and Things* (Cambridge, MA: Harvard University Press, 1981), 1–23. See also Willard Van Orman Quine, *The Roots of Reference* (La Salle, IL: Open Court, 1974).

36 On the "referential" changes to Parisian architectural culture directly after 1900, see Giulia Mezzalama, *Cambiare le regole: Questioni di architettura e storia urbana nella Parigi di inizio Novecento* (Rome: Viella, 2013).

but the hybrid forms that, beneath their references to the old, revealed the emergence of the new.

If we ask how this engineering technology became part of Paris's cityscape, we cannot avoid crediting the Beaux-Arts school's role as a Trojan horse.³⁷ While the technology represented progress, it was visually indistinct and unfamiliar, and thus constituted a provocation. When it comes to early technological history, we must therefore reverse the usual argument that canonical forms compensate for the uncertainties brought about by a changing world.³⁸ This compensation theory should be reconsidered, recognizing that the classical model in fact did not decelerate or repress technological progress, as even Giedion claimed, but instead drove innovations that could not have come about without reference to tradition.³⁹ In the end, with the Place de la Concorde, technology became the heart of the city, transitioning from referential rootlessness into the semantic space of the "grand narrative" of the modern city.⁴⁰

The technological transition occurring at the Place de la Concorde in 1835 was neither simple nor automatic. The specific challenges of this transformation process are most evident in the immediate run-up to its redevelopment. In 1834, the entrepreneur Isaac-Ami Bordier-Marcet submitted a proposal to the Paris city administration for lighting the Pont de la Concorde (Fig. 23 and Fig. 24). His plans featured suspended oil lamps that would hang above the road and whose tension cables would be attached to iron lattice pillars.

37 For a recent study to this effect, see Michael Kiene, "Jacques-Ignace Hittorff, constructeur savant," in *Les matériaux métalliques. Histoire d'une technique et sauvegarde du patrimoine du 19e siècle*, ed. Matteo Porrino (Gollion: Infolio, 2021), 203–35.

38 Herfried Münkler, "Warum Kanon? Wozu Kanon?" (lecture, Nürnberg, January 16, 2012). <https://www.intendanten-gruppe.de/index.php/impulse-und-berichte/warum-kanon-wozu-kanon>. The seminal volume for the present considerations is Theodor W. Adorno, *Ohne Leitbild. Parva Aesthetica* (Frankfurt am Main: Suhrkamp, 1967), esp 7–19.

39 Giedion's weighty invective followed from what he saw as a *Drapierung* ("draping") of technology in Beaux-Arts decor; see Sigfried Giedion, *Bauen in Frankreich, Bauen in Eisen, Bauen in Eisenbeton* (Berlin: Klinkhardt & Biermann, 1928), 3.

40 On *concorde* (national harmony) as the symbolic message of the bourgeois monarchy following the unrest and turmoil of the July Revolution of 1830, see Salvatore Pisani, *Architektenschmiede Paris. Die Karriere des Jakob Ignaz Hittorff* (Berlin: De Gruyter Oldenbourg, 2022), 157–69.

His main argument for the use of traditional hanging lamps was that narrow, cast-iron street lamps would not suffice to light the “*entourage colossal*” (colossal surroundings) of the Pont de la Concorde, especially considering the task of doing justice to the six monumental statues of *grands hommes* displayed there.⁴¹ In view of the plan to erect the Luxor Obelisk on the Place de la Concorde, Bordier-Marcet argued that his proposed cast-iron masts would create an obelisk-like form, providing the necessary coherence in shape and proportion. His project aimed to provide “*éclairage monumentale*” (monumental lightning) for the bridge, which would also serve as a boulevard leading up to the Place de la Concorde. Two years later, in 1836, Hittorff’s justification for installing 20 seven-meter-high lanterns in the shape of rostral columns on the Place de la Concorde was no different: he argued that they would create “*illumination monumentale*” that satisfied the demands of *embellishment*.⁴² Given that these rostral columns and their lighting would ultimately be dwarfed by the expanse of the square,⁴³ Hittorff’s justification—like Bordier-Marcet’s before him—reveals itself simply as a discursive practice through which architects and entrepreneurs alike provided legitimation for new urban technology and its artifacts as they infiltrated the semiotically dense urban landscape.

Technological transformations are generally imaged as a series of exnovations and innovations: the old is made redundant by the new, and there is a clean cut between the two. In fact, the opposite is true. This is partially due to path dependence, which particularly (although not exclusively) involves capital-intensive technologies. Oil lamps, for example, would continue to be

41 On the unexecuted lighting project for the Pont de la Concorde, see the report published in a special edition by Bordier-Marcet in *Figaro* on June 9, 1834: “Souvenirs de l’expérience faite sur le pont de la Concorde pendant l’Exposition de l’Industrie Française, pour l’achèvement monumental et l’éclairage dudit pont.” quotations on p. 2; preserved in Paris, Archives nationales F/13/1246. For a history of the erection (1791) and removal (1837) of the *grands hommes* statues, see Georges Poisson, “Les statues du Pont de la Concorde,” in *Bulletin de la Société de l’histoire de Paris et de l’Île-de-France*, vol. 11 (1985), 173–93.

42 Cited in Granet, *La place de la Concorde*, 110.

43 A further attempt at lighting the Concorde in a monumental style was the electric arch lamp installed in 1844, which was supposed to illuminate the immense expanse of the square using only a single beam of light. See Wolfgang Schivelbusch, *Lichtblicke. Zur Geschichte der künstlichen Helligkeit im 19. Jahrhundert* (Frankfurt am Main: Fischer, 2004), 59.

used in Paris long after the introduction of coal gas.⁴⁴ When Bordier-Marcet clung to the “outdated” technology of the oil lamp and rejected newer, gas-powered lampposts, he was protecting his monopoly on the market of hanging-lamp technology—a field where he was not necessarily an innovator, despite his involvement in its “technological transformation” when it came to *embellishment*.⁴⁵ Rather than assuming a clear break, we ought therefore to imagine multiple paths of technological transformation occurring simultaneously, even when attention naturally gravitates toward novelty.⁴⁶ The innovative technology of gas lighting was ultimately chosen for the Place de la Concorde. Looking at the broader context, this “reorientation” wasn’t solely the architect’s decision; rather, the Paris municipal administration cast the decisive vote.

The history of the Place de la Concorde is indeed deeply connected with that of heavy industry in Haute-Marne, which housed the furnaces where the city’s iron furnishings were cast, as well as that of the gas plants built in the Parisian suburb of Batignolles, which powered Hittorff’s street lamps.⁴⁷ When the architect incorporated industrial elements, he did so at the behest and with the aid of the municipal administration, which—coordinating the entire system—functionally integrated these various structural components. To consider these technological and industrial aspects as mere preliminaries to the production process would be to underestimate the changing conditions whose powerful currents rapidly engulfed urban spaces and cityscapes, beginning to reshape them. The Place de la Concorde marks a conspicuous starting point, in that the linear arrangement of the underground gas pipelines was mirrored in the positioning of the lamps above ground—and in accordance with the principles of *embellissement* (Fig. 18). As the sole visible component of an otherwise invisible infrastructure system, the lampposts also confer non-symbolic, technological qualities onto the symbolic world of

44 See Roger Boutteville, *L’éclairage public à Paris* (Paris: Léon Eyrolles, 1925), 37–38.

45 On Bordier-Marcet as leading manufacturer and entrepreneur in the field of bridge lighting, see the newspaper article “Éclairage des ponts. Appareils Bordier-Marcet,” in *La Pandore*, December 4, 1829.

46 See a critical review by David Edgerton, *The Shock of the Old: Technology and Global History since 1900* (Oxford: Oxford University Press, 2007).

47 On the structure of the chemical and heavy industries in France, see Denis Woronoff, *Histoire de l’industrie en France du XVI siècle à nos jours* (Paris: Seuil, 1998), 226–56.

embellissement.⁴⁸ This perspective invites us to tread differently on the well-worn paths of art-historical urban research and to develop new interdisciplinary questions that cross boundaries with technology studies.⁴⁹

The New, the Norm, and Normalism: Furnishing Haussmann's Boulevards

In 1853, as is well known, Napoleon III delegated the colossal Paris renovation and reconstruction project, the *Grands Travaux*, to Georges-Eugène Haussmann, who had been appointed prefect of the Seine specifically for this purpose. Haussmann placed the city administration and urban space under a decidedly technocratic regime.⁵⁰ Among his first acts were centralizing the municipal building administration and thoroughly reorganizing individual departments. Haussmann entrusted the greening and furnishing of public spaces to the newly created *service des promenades et plantations*, appointing the engineer Adolphe Alphand as its director.⁵¹ Despite the systematic approach underlying all planning and operations, an analysis of the campaign

48 On this innovative integration of architecture with infrastructure since the nineteenth century, see Dietrich Erben, "Infrastruktur, Architektur und politische Kommunikation. Eine Skizze," in *Arch+. Zeitschrift für Architektur und Urbanismus*, no. 239 (2020), 70–79.

49 Discussions of the technological history of the Place de la Concorde typically focus on the removal of the obelisk from Egypt and its erection in Paris in 1836, including the celebratory illustrations of these events on the sides of its plinth. This reveals a fixation on the inherent political messaging related to narratives of progress: "The language of symbols and plans in the technological age [meaning the engravings on the plinth] is the language in which the progress of productive power expresses itself"; see Wolfgang Kemp, "Der Obelisk auf der Place de la Concorde," in *Kritische Berichte*, vol. 7, (1979), 18–29, citation on 28. Erben's work demonstrates how a shift in perspective from urban architectural history toward technological history can provide a breath of fresh air; see Erben, "Infrastruktur."

50 On the Haussmannization of Paris, see Pierre Pinon's essential *Atlas du Paris haussmannien. La ville en héritage du Second Empire à nos jours* (Paris: Parigramme, 2016).

51 On the organization and duties of Alphand's architecture department, see *Le Grand Pari(s) d'Alphand. Création et transmission d'un paysage urbain*, ed. Michel Audouy et al. (Paris: La Villette, 2018) and Chiara Santini, *Adolphe Alphand et la construction du paysage de Paris* (Paris: Hermann, 2020).

to furnish public spaces requires the double vision mentioned above. While model designs for benches, kiosks, and urinals were created by administration architect Gabriel Davioud, responsibility for positioning and arranging them in the urban space lay with various department engineers, foremost among them Emile Grégoire.⁵² Haussmann's administration thus relied on continued interdisciplinary cooperation between the Beaux-Arts and technology. For furnishing the *grands boulevards* and the axis roads leading off of them, the administration also drew on models that had been tested as early as the 1830s and 1840s under the prefecture of Rambuteau.⁵³ What was new, however, was the rigorous systematization and standardization of these measures (Fig. 25).⁵⁴ No longer did any piece of furniture stand alone; each was integrated into an overarching organizational system that was both aesthetic and functional. The system featured furnishings that, reduced to only a few elements, guided correspondingly restricted patterns of behavior. For example: deciduous trees cast shade during the day, inviting passersby to linger on the bench and perhaps read a newspaper purchased at an adjacent kiosk; street lighting extends these activities seamlessly into the evening hours. The technological nature of such an arrangement for daily life lies in its assumption of smooth "proceedings"—consistent functional chains that, when applied to the lifeworld, signal that it can be modelled according to mechanical principles. In addition, urban furniture, unlike monuments and display fountains (*fontaines d'apparat*), did not fulfill any representative function. Rather, it regulated and ensured the functionality of public space, especially the perfectly straight boulevards. And yet, the vocabulary of classical forms (such as cannelures, rosettes, convex moldings, and gables) mark Paris's urban furniture as a further instance of *embellissement*—albeit one into which technological elements like cast iron, seriality, and assembly techniques had been incorporated.⁵⁵

52 Gabriel Davioud architecte (1824–1881), ed. Pierre Lépine (Paris, 1981/1982), 52–53.

53 The surviving catalogue of measures can be seen in "Embellissement du Faubourg Saint-Martin," in *L'Illustration. Journal universel*, vol. 7, no. 179 (August 1, 1846), 340.

54 On the fundamental importance of technical networking principles for cities in the early nineteenth century, see Adrienne van den Bogaard and Cornelis Disco, "Die Stadt als Innovationsknotenpunkt," in *Technikgeschichte*, vol. 68 (2001), 107–132.

55 On the production logic and installation technology of Paris's urban furniture with regard to arrangement and appearance, see Salvatore Pisani, "Mobilier urbain. Infrastruktur-Ästhetik im Paris des 19. Jahrhunderts," in *Technik-Ästhetik. Zur Theorie*

As we have seen, the technological transition was designed from the outset to be inconspicuous, suggesting a sub-politics that counts urban engineering among its tools.⁵⁶ After all, Paris's street furniture did not conceal its role as objects and agents of politically willed social participation.⁵⁷ Normalism was, accordingly, its emblem.⁵⁸

A different chapter, however, begins with the disruptive technological transition of the second half of the nineteenth century. This was marked by the metro and elevated railway projects and the building of the Eiffel Tower, which planted themselves in the city *ex nihilo* and had the public up in arms even before construction began.⁵⁹ Such resistance to and incomprehension of the new can be understood through reference theory: truly novel elements must always be characterized by a non-referenceability; otherwise, they would not be new, but merely a variation of the familiar. Thus, Paris's street furnishings could be "naturalized" into the city space quickly and unproblematically because their "new" technological aspects were connected to established references that produced the necessary normality.⁶⁰ By contrast, the unsettling effect of reference-free innovation was portrayed by Joris-Karl Huysmans, author of *À rebours*, who, in seeing the Eiffel Tower, immediately asked after its purpose: "Ultimately, one has to ask oneself what the purpose of this Tower is. If we consider it separately, isolated from other buildings

techno-ästhetischer Realität, ed. Oliver Ruf and Lars C. Grabbe (Bielefeld: transcript, 2022), 299–316.

56 On the context of "governmentality," see Michel Foucault, *Analytik der Macht* (Frankfurt am Main: Suhrkamp, 2005), 148–74.

57 On the elitist concept of embellissement in the eighteenth century and its categories of magnificence and commodité, see: Voltaire, "Des embellissements de Paris," in *Les Œuvres complètes de Voltaire/The complete works of Voltaire*, vol. 31B (Oxford: Voltaire Foundation, 1994), 213–33.

58 See Agnès Levitte, "Mobilier urbain et design de l'ordinaire," in *La beauté d'une ville. Controverses esthétiques et transition écologique à Paris*, Exhibition catalog (Paris: Pavillon de l'Arsenal, 2021) 460–67.

59 On this historical nexus of problems, see most recently Jean-Marc Hofman, "Une aventure sur les rails," in *Métro! Le Grand Paris en mouvement*, Exhibition catalog, ed. Francis Rambert (Paris: RMN, 2023), 69–79.

60 On the concept of normalism, see Jürgen Link, *Versuch über den Normalismus. Wie Normalität produziert wird* (Göttingen: Vandenhoeck & Ruprecht, 2009).

. . . it offers no meaning, it's absurd."⁶¹ Despite, or exactly because of, this semantic void, Huysmans proceeded to furnish the 1889 exhibition structure with an incoherent conglomeration of references in the spirit of neo-baroque zest for metaphor: the Eiffel Tower was a lightning conductor, "an Arc de Triomphe of industry," "a Tower of Babel," "a work from the forges of Vulcan," "a Cyclopean thunderbolt," "a spider's web of metal," "a piece of lace made from cast-iron," a factory chimney, birdcage, demijohn, hollow obelisk, the apotheosis of a bridge pile, an oil drilling rig, the skeleton of an excavator, and a spire without bells (the latter because its church would worship only capital).⁶² We might conclude that objects without precedent, such as the Eiffel Tower, are like unoccupied signifiers onto which incessant layers of meaning can be grafted in a city that is, above all, "writing." For Roland Barthes, returning to our opening theme, the Eiffel Tower was an empty sign that said everything and nothing, producing only the unclassifiable and the elusive.⁶³

61 J.-K. Huysmans, *Certain Artists (Certains)*, trans. Brendan King (UK: Dedalus, 2021), ch. 7, 198, iBooks.

62 Huysmans, *Certain Artists*, ch. 8, 194–96.

63 Roland Barthes, "The Eiffel Tower," in *The Eiffel Tower, and Other Mythologies*, trans. Richard Howard (New York: Hill and Wang, 1979), 3–17. The French original was first published in 1964: Roland Barthes, *La Tour Eiffel* (Paris, 1964).



Fig. 17.
Cast-iron lamppost on the Place de la
Concorde in Paris, designed by Jakob Ignaz
Hittorff (1836). Photograph by Charles
Marville, c. 1850. © Musée Carnavalet, Paris.



Fig. 18.
View of the Place de la Concorde in Paris. Photograph by the Neurdein brothers,
c. 1890. © École nationale supérieure des beaux-arts, Paris.

Fig. 19.
Jean-Auguste-Dominique Ingres, *The Apotheosis of Homer*, 1827. © Musée du Louvre, Paris.

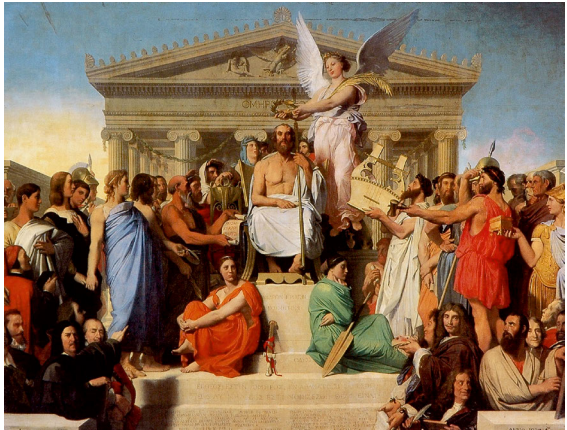


Fig. 20.
Jean-Auguste-Dominique Ingres, *Homer Deified*, c. 1860.
Location unknown.



Fig. 21.
Jakob Ignaz Hittorff, *Reconstruction of Temple B at Selinunte (Temple of Empedocles)*.
From: Jakob Ignaz Hittorff, *Restitution du Temple d'Empédocle à Sélinonte, ou l'architecture polychrome chez les Grecs* (Paris, 1851), plate II.

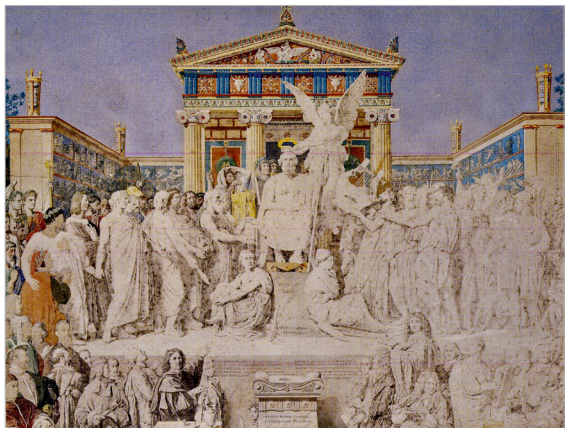




Fig. 22. Maurice Boutterin, *Envoi de Rome* depicting the Villa of the Emperor Tiberius on Capri, 1913. Paris, École nationale supérieure des beaux-arts © École nationale supérieure des beaux-arts, Paris.

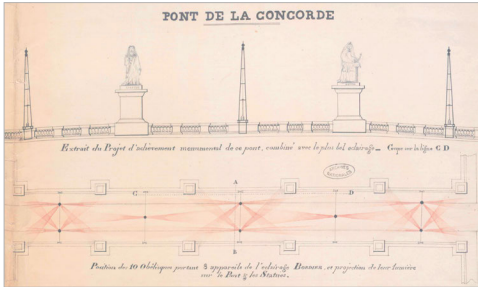


Fig. 23. Lighting project for the Pont de la Concorde, design by Isaac-Ami Bordier-Marcet, 1834. View of the cast-iron lattice masts and grands hommes statues, with a plan view of the lighting. © Archives nationales, Paris.

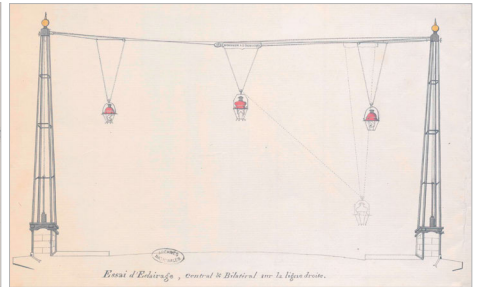


Fig. 24. Lighting project for the Pont de la Concorde, design by Isaac-Ami Bordier-Marcet, 1834. View of the lattice masts with proposed hanging lamp installation. © Archives nationales, Paris.

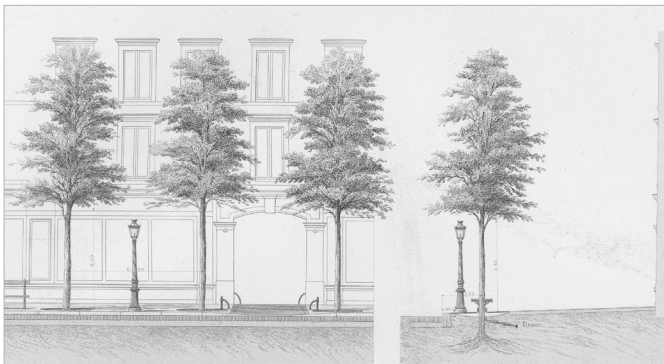


Fig. 25. Model design for the furnishing of a Parisian boulevard. From: Adolphe Alphand, *Les promenades de Paris* (Paris, 1867–1873; detail).

