

## 21 Telephone, Color Chart, Napkin

### Logistical Legacies of the Bauhaus

Matthew Hockenberry

From the moment it was established, the Bauhaus was a site of investigation into not only art and design but the possibilities of a new means of creation—one founded on experiments into distribution, mobility, and assembly. From Walter Gropius’s adaptation of architecture for the age of machines to László Moholy-Nagy’s “telephone pictures,” the Bauhaus provided insights into the nature of operation in the modern world. In the formation of his school, Gropius spoke of the “universal unity” that would replace the dualistic conception of the creative and creation. But, as I will suggest, one of the legacies of this unity was the radical distribution of productive practice through the instruments of modernity.<sup>1</sup> In its wholehearted embrace of modernity’s constraints, and the new infrastructures of design and distribution it employed, the logistical legacy of the Bauhaus leaves behind a form of production that is, if not suspect (in the case of Moholy-Nagy’s *Telephonbild*), at the very least obfuscating and instrumental. This chapter reflects on the logistical legacies of the Bauhaus and their implications for the future of making, not only in artistic practice but in industrial manufacture. This is evident not only in the practice of later artists like Andy Warhol, Sol LeWitt, Tony Smith, and Donald Judd, but in contemporary productions ranging from Atelier Van Lieshout’s Almost Perfect Chair—designed on a cocktail napkin and sent, without instruction, for production in China—to the idea of digital assembly itself.

### Toward a Universal Unity

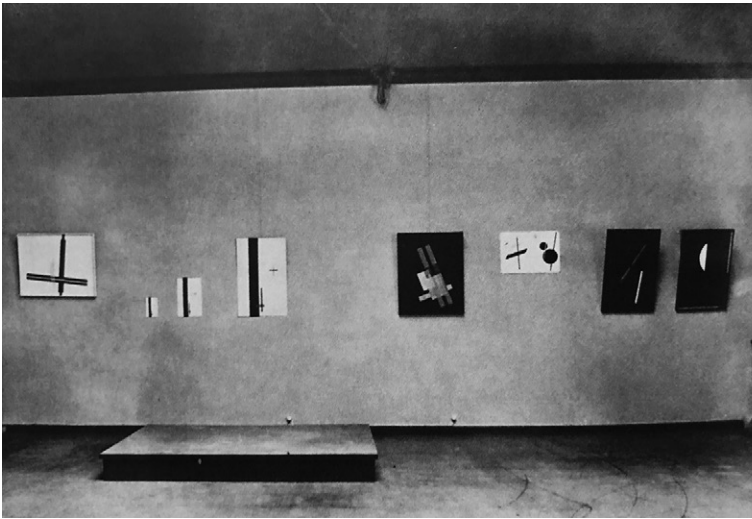
While its beginning was perceived, by the Weimar establishment, as radical, the early years of the Bauhaus followed from Gropius’s desire not to abandon the legacy of artistic practice but rather to infuse it with the rigor of craft—to dispense with “art for art’s sake” and its arrogant snobbery. It would also bring an orientation toward the more mechanical ends of modern production. In the earliest days such an outcome may

have seemed surprising. After all, Gropius wrote, “mechanized work is lifeless, proper only to the lifeless machine.” So long as the machine “remains an end in itself rather than a means of freeing the intellect from the burden of mechanical labor, the individual will remain enslaved and society will remain disordered.” This was reflected, at least initially, in the appointment of the expressionist Johannes Itten to teach the *Vorkurs*, the preliminary instruction from which all Bauhaus students would begin.<sup>2</sup> And while this arrangement seemed to place the Bauhaus as a bridge between the romantic legacy of expressionism and the rational rigor that would come to define the New Objectivity, Itten and Gropius came into conflict over the direction of the course. When Itten left in late 1922 it created the opportunity for Josef Albers to be appointed, a responsibility he shared with the Hungarian artist László Moholy-Nagy.

Albers eliminated the expressionistic tendencies that had characterized Itten’s teaching in favor of experimentation and objectivity. It was an instrumental approach to the productive process, where no single method (or material) stood as the answer to any particular problem. “Ours is an economically oriented age,” he wrote, where “economic form arises out of function and material.” It is only natural, he suggested, that the study of material—the attempt to come to terms with form—would proceed from an understanding of function.<sup>3</sup> Albers challenged students with materials as varied as paper, wire mesh, corrugated cardboard, glass, tin foil, and plastic, and he encouraged them to plan with an “economy of form measured in relation to the anticipated expenditure of material and labor.”<sup>4</sup> It reaffirmed the commitment to “economy, speed and efficiency” that had not only led Gropius to the idea of the “factory-made building” but had produced this new school in its image.<sup>5</sup>

### Telephone Pictures, Telephone Programs

One of the questions for the Bauhaus was how to respond to the rationalism that had increasingly come to define industrial practice. The 1920 *Dada Almanac* derided this seemingly absurd reality, suggesting that through technologies like telecommunication, any painter who suffered from an “aversion to manual labor” could just as well *order* pictures and have them fashioned by a carpenter.<sup>6</sup> In response, Moholy-Nagy would write an account claiming to have done exactly that, presenting the results of a 1922 experiment in “telephonic reproduction” at the Der Sturm gallery in Berlin. In place of a carpenter he brought in a sign factory, ordering, by telephone, five paintings on porcelain. At one end of the line sat Moholy-Nagy, with, he wrote, the factory’s color chart before him as he sketched paintings on graph paper. At the other sat the factory supervisor, who “took down the dictated shapes in the correct position.” As



**Figure 21.1**

Exhibition view of Moholy-Nagy's *Emaille* series, 1922, and his notice in *Der Sturm*, 1924.

### Emaille im Februar 1924

In dieser Zeit der fabrikmäßigen Produktion und der technischen Exaktheit streben wir auch danach, Werke der bildenden Kunst mit vollkommener Präzision auszuführen. Unter den neuen Arbeiten, die ich im Februar im Sturm ausstelle, zeige ich eine Reihe von Emaillbildern, die auf maschinellen Wege hergestellt worden sind. Diese Art der Bildherstellung kommt allerdings nur für Arbeiten in Betracht, die mit dem Willen zur präzisen und unpersönlichen Technik geschaffen wurden. Werke dieser Art kann man auf der Grundlage der Ostwaldschen Farbentafeln und eines Maßnetzes jederzeit in der Fabrik herstellen lassen. Man kann sie also sogar telefonisch bestellen.

Meine Ausstellung zeigt auch die Partitur-Skizze einer mechanischen Exzentrik, die durch die Synthese von Form, Bewegung, Licht (Farbe) und Ton an die Stelle des heutigen Theaters treten will. Da die heutigen Film-, Variété- und Theaterdirektoren ihr Publikum gewiß nicht falsch einschätzen, kann dieser Entwurf zunächst nur Ausstellungs- statt Ausführungsobjekt sein.

L. Moholy-Nagy

a pattern of production and means for artistic endeavor, it was, the artist would celebrate, "like playing chess by correspondence."<sup>7</sup>

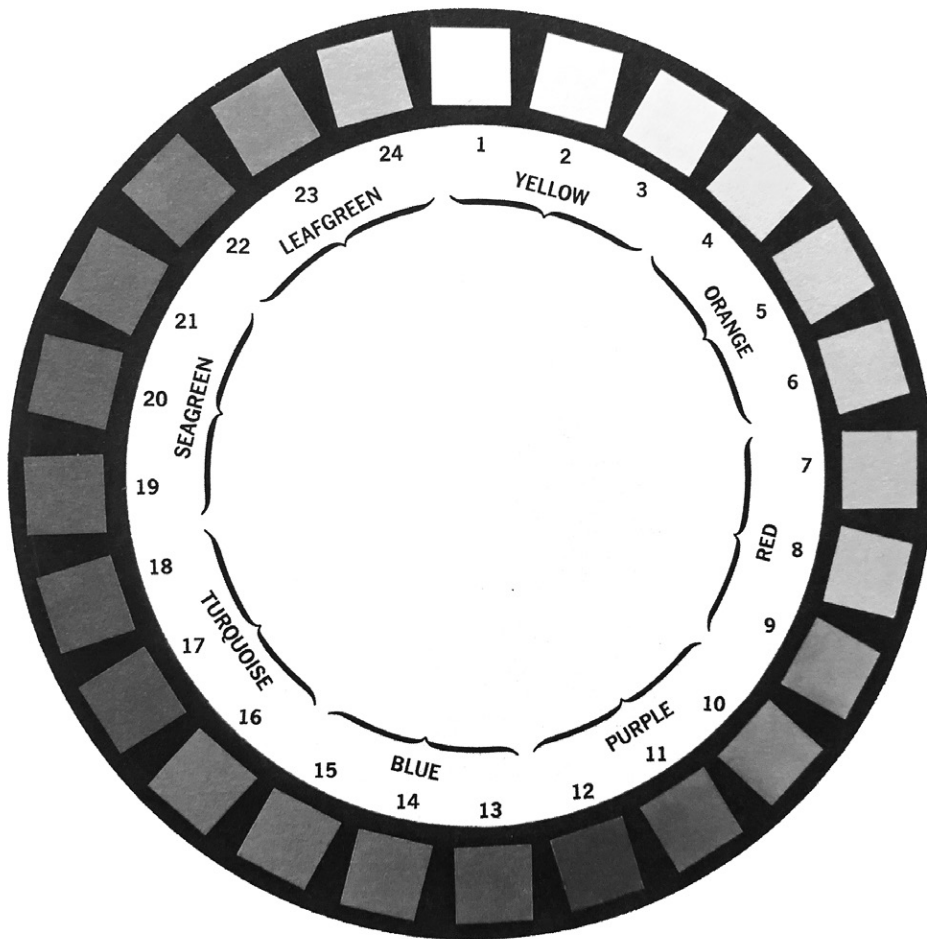
This is striking given contemporary conditions, in which the very structures of digital assembly depend entirely on these sorts of programmatic fabrications. But technologies like the telephone do not become the foundation of a new kind of productive practice all on their own. Just as one cannot (reasonably) play chess without common knowledge of the board and all the pieces, so Moholy-Nagy's work required an understanding of the ensemble necessary for its coordination. It required, as John Durham Peters might put it, its own complement of *logistical media*—the sort of standards defined not by content but their ability to orient and index in space and time.<sup>8</sup> Despite Moholy-Nagy's comparison, there was nothing quite as recognizable as a chessboard here. Of all the material mediators sprawling out of his account, the most prominent seemed to be the otherwise mundane color chart. But in spite of its unremarkable appearance, it was not only a more *contemporary* creation than the telephone; it was a necessary condition for the entire enterprise. Indeed, while the telephone provided the infrastructure through which logistical signals could be sent, the color chart offered a manifest representation of the sort of systems necessary for decoding them. On its own, the chart would prove a significant instrument for Bauhaus artists (see also Arnold, this volume). Coupled with the capabilities of contemporary industrial practice, and the

sort of standardization of form required of them, it was emblematic of the logistical legacy that would come to *define* Bauhaus instruction, from Itten to Albers to Moholy-Nagy himself.<sup>9</sup>

As Bruno Latour has noted, “by telephone,” and by telephone alone, “you and a salesperson *cannot* match samples of wallpaper.” Without standards, systems, and fixed references—here those that array the color spectrum and number it accordingly—rational coordination would be impossible. For any device to operate remotely, to increase the effective range of productive operation beyond the immediate scale of conventional human assembly, it must be compiled with a particular structure of system in mind. So while one cannot match colors by telephone, one *can* “based on a color chart the salesperson has given ... select a reference number.” In Moholy-Nagy’s account, Wilhelm Ostwald’s chart becomes the first of many Latourian immutables, marvelously mobilized in a “comprehensive system” of control.<sup>10</sup> Here is Gropius’s “universal unity,” not as some abstraction, but in the potential of these protocols to carry with them representations accessible to the new programming of creation.

It was the grid of graph paper that served to constitute the site of study for this work, as it did for other Bauhaus artists. As Bernhard Siegert explains, the grid orders a space, making it addressable. Constituting a new world of objects imagined by a subject, it is “a medium that operationalizes deixis.”<sup>11</sup> Rosalind Krauss contends that it was the grid that announced the “will to silence” of modern art—its “hostility” to literature, narrative, and discourse. But while for her it maps “the surface of the painting,” the space it coordinates for Moholy-Nagy is composed by the disjoint geographies of production. As Louis Kaplan has suggested, it is through this that Moholy can sketch the network *itself*.<sup>12</sup> While Krauss argues that the grid walls the visual arts “against the intrusion of speech,” the effect it has here is to open them up, ruling them for transmission *by* speech—a development with profound implications for artists like Warhol and LeWitt.<sup>13</sup> As Walter Gropius put it, “we must know both vocabulary and grammar in order to speak a language; only then can we communicate our thoughts.”<sup>14</sup> As the “universal” connection of the grid separated screen from reality, the language of assembly becomes fixed with form. It does more than merely “resemble the world”—it now reencodes and reassembles it.<sup>15</sup>

It is *this* realization, of a *system* of code and structures that necessarily includes, here, the color chart as *catalog*, graph paper as *order form*, and the telephone as *interface*, that positions Moholy-Nagy’s productive arrangement as the programming language of contemporary assembly. This reconfiguration was not without consequence. With the originary “place where it happens to be” now removed, the “presence in time and space” that had bound means and maker to their otherwise “unique existence” ceased



**Figure 21.2**

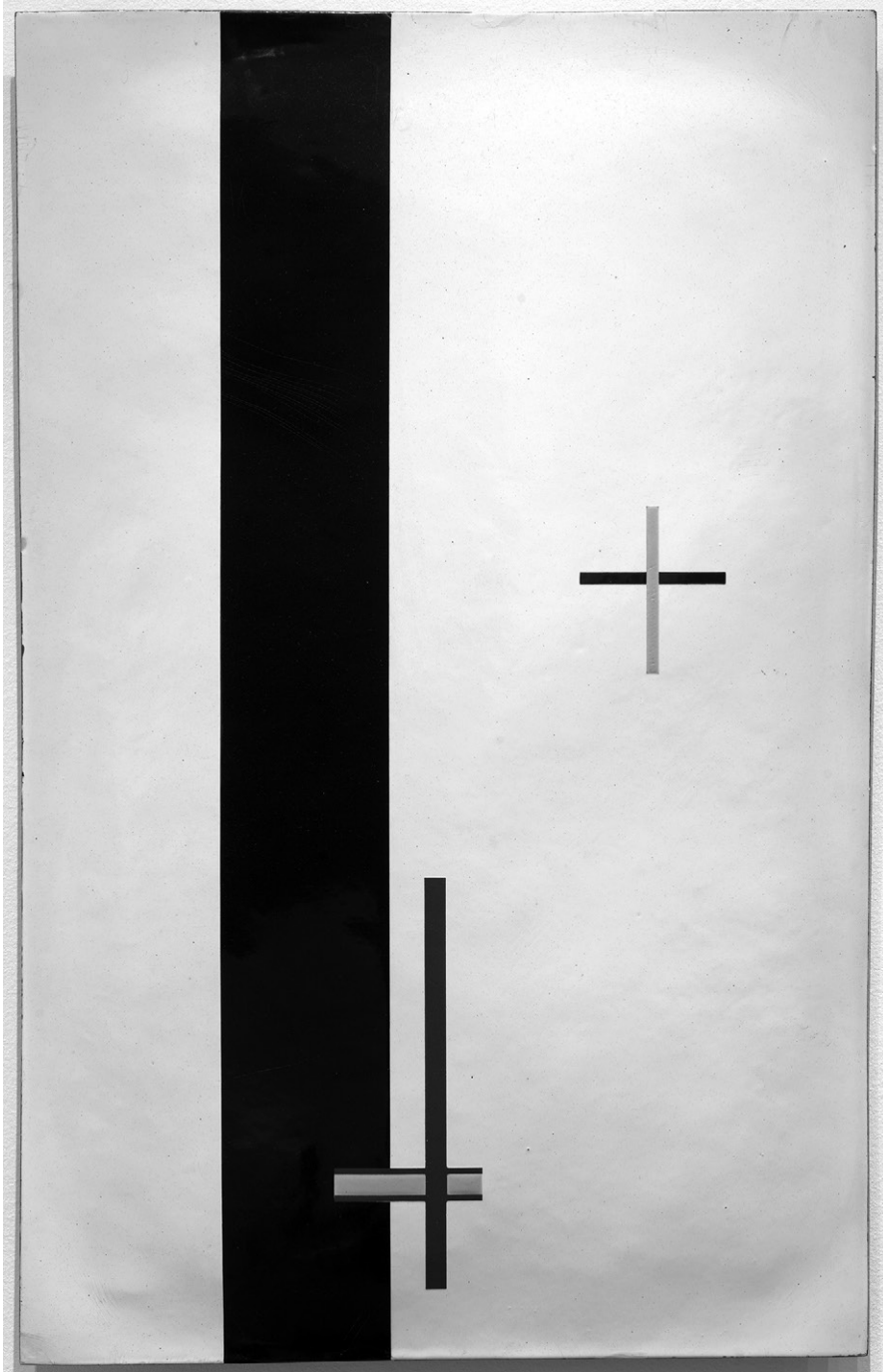
The Ostwald color system plates in *Die Farbenfibel* (The color primer), 1916–1917. (Also plate 18.)

to be.<sup>16</sup> The process of analog production had been marked, literally, by this singular situation, the creation of an original from which descendent copies were produced. Even if printing and pressing brought the idea that there could be “multiple originals,” even if Duchamp’s readymades had questioned the “originality” of the “original,” they’d still rested on the same fundamental conception of process. From the hand of the artist comes the original. From the original there can come only copies. And while Moholy-Nagy’s work may not absent him entirely from this process, it does

seem to remove him from its past articulation. Instead of carving and casting, he has only to determine, “precisely,” the position of his form within the “minute squares” of the graph paper’s grid. The result is a “process of pixelation” that anticipates the mediation of computation, both on the screen that will display its results and on the punched cards that will carefully encode its content. In order to explain the composition over the phone, Moholy-Nagy had to convert “the art work from a physical entity to a description,” producing a new “relationship of semiotic equivalence.” The effect was that the art object would no longer stand as the “result of the hand or the craft of the artist.” Indeed, it is Moholy-Nagy’s decision to call a sign factory—a “fabricator,” “capable of providing industrial finishing and scientific precision,” instead of, say, “an amateur painter”—that attests to this transformation.<sup>17</sup>

Each of Moholy-Nagy’s paintings is numbered (*EM 1, 2, 3*) from largest to smallest, otherwise identified only by the material on which the bonded surfaces were made. In this regard each *Emaille* is the same—identical in composition but variable in size. But quite unlike Monet’s sequential paintings, Eduardo Kac points out, these pictures are “not a series.” They were not constituted in sequence or succession, preceding or proceeding from some “original.” They represent the singular result of the same productive act. This “multiplication of the final object in three variations,” Kac suggests, is what is responsible for finally destroying “the notion of the ‘original’ work.” As a signal for the promiscuous potential of mechanical reproduction, this act of assembly has produced objects that stand outside the conventions of the prior productive practice. They are constituted by codes, inscribed by information, and mediated by machines in a way that gestures to the understanding that they were not transmitted, and indeed *could not have been transmitted*, in “the form of an image made by the human hand.”<sup>18</sup> As a consequence, they become “copies without an original,” each a new version with the same proliferative potential as the last.<sup>19</sup> Like Warhol’s silkscreens, they are “‘original’ reproductions,” *programmed* rather than painted.<sup>20</sup> Readied as a new sort of ready-made, they are born without aura. And as such they can be produced (or reproduced) entirely at will—and nothing will seem to have been lost. For Moholy-Nagy, this was the pinnacle of the Bauhaus ideal—that the “constructivist concept,” the “objectivity” of visual production and value, could be “independent of the artist’s inspiration.”<sup>21</sup> “In this age of industrial production and technical exactness,” he wrote, one must strive to produce work with “total precision.” His series at *Der Sturm* offered nothing less than a new “manner of manufacturing,” one possible *only* for “works created with a will to precise and impersonal technique.”<sup>22</sup> But this, the undeniable realization of the Bauhaus’s experiments in distribution, mobility, and assembly, seems all but overshadowed by its startling implications for questions of authenticity, originality, and authorship.





**Figure 21.3**

László Moholy-Nagy, *EM I* (telephone picture), 1923. Porcelain enamel on steel. © The Museum of Modern Art/Licensed by SCALA/Art Resource, NY. (Also plate 16.)

In answering *this* call to the unity of the creative and creation, we find that neither remains intact. Originals are now reproductions. “Impersonal techniques” are entirely removed from the person.

### Logistical Legacies of the Bauhaus

The legacy of these logistical experiments, particularly in their orientation toward the protocols of rational assembly, can clearly be seen in the work of later artists. Andy Warhol would often call himself by the same name he gave to the building where he worked—each, he explained, was a “factory.” By the 1970s it was such a well-ordered one that Warhol needn’t be involved at all. He was so removed from the details of his designs that, as his printer Rupert Smith claimed, anyone could make them. “Even Augusto [the security man] was doing the painting”; they actually called it “art by telephone.”<sup>23</sup> Indeed, in the winter of 1969 the newly established Museum of Contemporary Art in Chicago had announced plans for an exhibition with that very name, with thirty-six artists from the United States and Europe instructed to “relay by telephone” work that could be “executed by an intermediary.” By graph paper and landline, artists like Sol LeWitt plumbed the productive potential of logistical communication. LeWitt’s variation on his wall drawings, for example, gave instructions for a 3,600-square “program.” “Like a composer who writes notes for the pianist,” he explained, his work would be interpreted, compiled, and constructed by a remote draftsman. The museum’s director, Jan van der Marck, avowed a formal realization of the aesthetic possibilities of objective assembly. With an exhibition gathering the work of artists who sought “anonymous or indirect production” by, for example, “sending orders in to factories,” the functional and rationalized design of the Bauhaus was taken up as a product of an artistic practice that was coded, not crafted.<sup>24</sup>

But the most lasting consequence of the Bauhaus’s experiments seems to be in demonstrating the capability of modern media to radically alter the distribution of all sorts of productive practice. As John Brooks writes, the effect of the telephone was not just to produce speech, but to direct it toward an other in “constant demand for immediate readiness.”<sup>25</sup> After all, what had been the first telephone call if not such a demand? “Mr. Watson—come here—I want to see you.” The result, Alexander Graham Bell recorded to his “delight,” had been a ready response to his request. Moholy-Nagy’s contribution tethered this demand to its own assembling force, as the constituent connection for an entire “network of potential relationships among apparatuses”—“activating,” as Brigid Doherty wrote, “from a distance, the factory’s machinery.”<sup>26</sup> This transformation is what connects Moholy-Nagy’s sign factory to contemporary configurations, to





**Figure 21.4**

Back cover of exhibition catalog for “Art by Telephone” (album sleeve for a 33 rpm, 12-inch vinyl record), Museum of Contemporary Art Chicago, 1969.

the aesthetic of global bricolage, the endless versions and varieties that define much of modern assembly. If the transition to the digital is marked by the moment when the model and mold became one, then digital designs seem indebted to this new “manner of manufacture.” After all, how could it matter *where* a specific series of ones and zeros was first assembled, or indeed what they might have been prior to their emanation on the screen?

Perhaps it is no surprise, then, that “art by telephone” has given way to *everything* by telephone. In the assembly of the remote factories that define contemporary production, designers find themselves tied to a network as functionally present as it is materially and socially removed. The logistical legacies of the Bauhaus not only animate “lifeless machines” but—with disturbing frequency—the human forces that underlie their undead appearance. It is a power of production that was previously unimaginable, now programmed into protocols that support all manner of anonymous exchange. The first generation of modern “makers” marveled at the unexpected impact of their design decisions. Demands for innovation coupled with the now-familiar refrain of “economy, speed and efficiency” brought to bear supply chains terminating in workers tasked with stitching cases in six seconds or less, or hand-placing connectors for a nickel apiece—with “words, colors, and letters,” all drawn by hand.<sup>27</sup>

But perhaps the most compelling example of this legacy is still to be found in the world of design, with the Almost Perfect (King Kong) chair that was designed by Dutch firm Atelier Van Lieshout in 2005. Its suggestion of a completely turnkey communicative operation begins, not on a grid of graph paper, not in the margins of the global apparatus of production, but within the margins of a cocktail napkin. To achieve the unique aesthetic of the chair’s design, AVL sent a sketch across the network to “an anonymous Chinese company” for final production.<sup>28</sup> An operation that would have previously produced a complex array of processes for a designer to direct (the selection of material, identification of sources, production of detailed technical drawings, models, and prototypes) came here with no such information. The realization of this work suggests that the consequences of production have been themselves redirected. Far from precisely placed pixels, careful details of manufacture are capable of being replaced by a careless slip of the pen, and by factories that must sort out these scribbles. Still, as Michelle Kuo reminds us, even this legacy may not be everything it seems. Like the suspicion that surrounds the veracity of Moholy-Nagy’s experiment with the telephone pictures, the “mythical accounts” of firms like AVL and of artists like Donald Judd employing industrial manufacturing “at arm’s length” are never as aloof as they might appear.<sup>29</sup> The Almost Perfect chair’s unnamed “Chinese company” was not so distant after all—housed in a factory the firm’s partner had established.



**Figure 21.5**

Atelier Van Lieshout, Almost Perfect (King Kong) chair, 2005. Image courtesy of Atelier van Lieshout.

### Acknowledgments

My thanks to Ella Klik, Kate Crawford, and Patrick Davison, to Bernhard Siegert, Lorenz Engell, and the IKKM, and to this book's editors—especially Mike Ananny—for their generous comments and critique.

### Notes

1. Walter Gropius, "The Theory and Organization of the Bauhaus," in Herbert Bayer, Walter Gropius, and Ise Gropius, *Bauhaus, 1919–1928* (New York: Museum of Modern Art, 1938), 20–29.
2. Walter Gropius, "Manifest und Programm des Staatlichen Bauhauses, April 1919," in *Das Bauhaus*, ed. Hans M. Wingler (Cologne: DuMont, 1962), 39–41.
3. Josef Albers, "Werklicher Formunterricht," *Bauhaus 2*, no. 3 (1928), 3–7.
4. Oliver Barker, "Experimentation, Not Replication: Josef Albers and the Vorkurs," *Bauhaus Magazine* 1 (March 2011).

5. Éva Forgács, *The Bauhaus Idea and Bauhaus Politics* (Budapest: Central European University Press, 1995).
6. "In principle no difference was made between painting and ironing handkerchiefs. Painting was treated as a functional task and the good painter was recognized, for instance, by the fact that he ordered his works from a carpenter, giving his specifications on the phone." Alexander Partens (a pseudonym for Tristan Tzara, Hans Arp, and Walter Semer), "Dada Art," in *The Dada Almanac*, ed. Richard Huelsenbeck (1920; London: Atlas Press, 1993), 95.
7. László Moholy-Nagy, "Abstract of an Artist" (1944), in *The New Vision and Abstract of an Artist* (New York: Wittenborn, 1947), 79. See also László Moholy-Nagy, "Emaillé im Februar 1924," *Der Sturm* 15 (February 1924).
8. Carolyn L. Kane and John Durham Peters, "Speaking into the iPhone: An Interview with John Durham Peters, or, Ghostly Cessation for the Digital Age," *Journal of Communication Inquiry* 34, no. 2 (2010), 123.
9. Wilhelm Ostwald's *Die Farbenfibel* having been published in 1916.
10. Exchanging, here, the Ostwald color chart for Munsell's. See Latour's description in *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, MA: Harvard University Press, 1987), 227.
11. Bernhard Siegert, *Cultural Techniques: Grids, Filters, Doors, and Other Articulations of the Real* (New York: Fordham University Press, 2014), 98.
12. Louis Kaplan, "The Telephone Paintings: Hanging Up Moholy," *Leonardo* 26, no. 2 (1993), 166.
13. Rosalind Krauss, "Grids," *October* 9 (Summer 1979), 50–64.
14. Gropius, "The Theory and Organization of the Bauhaus."
15. Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, MA: Harvard University Press, 1999), 58–59.
16. Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," in *Illuminations*, ed. Hannah Arendt (London: Fontana, 1968), 217–221.
17. Eduardo Kac, *Telepresence and Bio Art: Networking Humans, Rabbits, and Robots* (Ann Arbor: University of Michigan Press, 2005).
18. Brigid Doherty, "Constructions in Enamel," in *Bauhaus 1919–1933: Workshops for Modernity*, ed. Barry Bergdoll and Leah Dickerman (New York: Museum of Modern Art, 2009), 130–133.
19. Kac, *Telepresence and Bio Art*.
20. The descriptive given by the collection entry for Andy Warhol's *Pepper Pot* (1968) in the Whitney Museum of American Art.

21. Sybil Moholy-Nagy, *Moholy-Nagy: Experiment in Totality* (Cambridge, MA: MIT Press, 1969), xv.
22. Moholy-Nagy, "Emaillé im Februar 1924."
23. Bob Colacello, *Holy Terror: Andy Warhol Close Up* (New York: Cooper Square Press, 1990), 478.
24. Press release, Museum of Contemporary Art, Chicago, September 30, 1969.
25. John Brooks, "The First and Only Century of Telephone Literature," in *The Social Impact of the Telephone*, ed. Ithiel de Sola Pool (Cambridge, MA: MIT Press, 1977); and Kac, *Telepresence and Bio Art*, 33.
26. Doherty, "Constructions in Enamel."
27. See, for example, Andrew "Bunnie" Huang, "Adventures in Manufacturing," in *The Hardware Hacker: Adventures in Making and Breaking Hardware* (San Francisco: No Starch Press, 2017), where Huang reprints a series of blog posts from 2007 detailing his early experiences in mass manufacture.
28. Jennifer Allen, Aaron Betsky, Rudi Laermans, and Wouter Vanstiphout, *Atelier Van Lieshout* (Rotterdam: NAI, 2007), 287, catalog description for the Almost Perfect (King Kong) chair: "Instead of the designer, random and external factors in the production process decided the chair's final appearance. Far from a slick product fresh from the factory, the chair has irregularities, a non-geometrical shape and a handmade look—features that make for a better product."
29. Michelle Kuo, "Industrial Revolution: The History of Fabrication," *Artforum* 46, no. 2 (October 2007), 306–315.

