

CONNECTING THREADS: DUCHAMP'S READYMADES AND *LARGE GLASS* PROJECT IN CONTEXT, 1913—14

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ABSTRACT

In 1963 Duchamp described his vertical installation of three Readymades at the Pasadena Art Museum as “readymade talk of what goes on in the *Large Glass*.” Elsewhere, he spoke of the Readymades as “vehicles for unloading ideas,” and during the years 1912-15 his mind was filled with ideas as he invented the “playful physics” for his techno-scientific allegory of quest, *The Bride Stripped Bare by Her Bachelors, Even* [*The Large Glass*] (1915-23). This essay argues that the “ideas” being unloaded in the Readymades were rooted in his extensive study of contemporary science and technology as well as the biographical experience of his stay at Herne Bay on the English seacoast during August 1913. Readymades addressed include the *Bicycle Wheel, With Hidden Noise, Paris Air, and Fresh Widow*. Central themes include string or thread, traced from his preoccupation with tennis during his holiday, and the impact of the electrical spectacle of the illuminated Pier Pavilion at Herne Bay.

KEYWORDS

Duchamp, Readymades, *Large Glass*, Science, Ether physics, Herne Bay, Electrical lighting

In a 1966 interview Marcel Duchamp told Otto Hahn, “The Readymades are completely different from the *Large Glass*. I made them without any object in view, with no intention other than unloading ideas.”¹ A crucial question is what were those ideas Duchamp was “unloading”? Most writing on the Readymades has emphasized their basic stylistic critique of artistic touch and notions of taste. Yet, in the years in which he developed the notion of the Readymade, 1913-1914, Duchamp was deeply engaged with a wealth of ideas, as he made hundreds of preparatory notes for his *Large Glass, The Bride Stripped Bare by Her Bachelors, Even*, the work he would execute between 1915 and 1923 (Fig. 3.2). If Duchamp told Hahn and others that the *Glass* and the Readymades were “completely different,” he also stated to Walter Hopps at the time of his 1963 retrospective at the Pasadena Art Museum that the vertical installation of three



Fig. 3.1
 Marcel Duchamp, *Box in a Valise*, 1941. Philadelphia Museum of Art, The Louise and Walter Arensberg Collection [Deluxe edition, Series A, 1943]. © Succession Marcel Duchamp 2018 / ADAGP, Paris / Artists Rights Society (ARS), New York 2018.



Fig. 3.2
 Marcel Duchamp, *The Bride Stripped Bare by Her Bachelors, Even (The Large Glass)*, 1915-23. Oil, varnish, lead foil, lead wire, and dust on two glass panels, 277.5 × 175.9 cm. Philadelphia Museum of Art. Bequest of Katherine S. Dreier, 1952. © 2018 The Philadelphia Museum of Art/Art Resource /Scala, Florence.

Readymades was “readymade talk of what goes on in the *Large Glass*.”² Duchamp had first suggested such an arrangement and connection in his 1941 *Box in a Valise* of miniature reproductions of his works (Fig. 3.1). There he carefully placed the three miniature Readymades *Paris Air* (1919), *Traveler’s Folding Item* (1916), and *Fountain* (1917) adjacent to the upper, middle, and lower sections of the *Large Glass*. This essay explores the relationship of the Readymades to Duchamp’s work on the *Large Glass* project during one of his most fertile periods of invention, 1913-14.

While the painstaking fabrication of the *Large Glass* contrasts starkly with the simple act of choosing or minimal alteration of a Readymade, the two activities are rooted in the same historical moment of 1912-15, when the artist was moving beyond Cubist painting and seeking, as he said, to “put painting once again at the service of the mind.”³ As demonstrated in my study of Duchamp’s extensive notes for the *Large Glass*, in *Duchamp in Context: Science and Technology in the Large Glass and Related Works* (1998), his project was deeply rooted in developments in contemporary science and technology.⁴ The result was what Duchamp termed the “Playful Physics” of the *Large Glass*.⁵ And it is increasingly clear that the witty responses he made to science and technology in the *Glass* extended as well to the Readymades—surrogate objects from the everyday world on which he could “unload” certain of the many ideas he was exploring.

The years 1913-14 were a critical moment for Duchamp’s redefinition of himself as an artist making art, as he said, as if he had “cut his hands off.”⁶ Determined to avoid the artist’s touch and taste celebrated by his Puteaux Cubist colleagues, in this period he created both his *3 Standard Stoppages* (Fig. 3.6) and the *Bicycle Wheel* (Fig. 5.4), alternative forms respectively, of painting and sculpture.⁷ The first pure Readymade followed in 1914 in the *Bottle Rack* or *égouttoir*—a “de-dropper” or “de-taster,” playing on the French words *goutte* (drop) or *gout* (taste) (Fig. 6.2).⁸ Those developments of 1913-14 occurred in the wake of an important biographical experience for Duchamp in August 1913, when he spent the month in Herne Bay, England, on the British seacoast. As this essay will argue, both the artist’s engagement with science and technology and his August 1913 Herne Bay experience played a critical role for the developing *Large Glass* project and for the Readymades.⁹

Turning first to the larger context of Duchamp’s scientific interests, a few words about *The Bride Stripped Bare by Her Bachelors, Even* (Fig. 3.2) and its notes are necessary, since therein lies the record of the themes he was exploring. While Duchamp

considered the *Large Glass* his “hilarious picture,” its overall theme was a techno-scientific allegory of quest, using the newest science and technology to embody the unsuccessful sexual quest of the Bachelors below for the unreachable Bride above.¹⁰ Beginning in 1915 in New York Duchamp worked on two panes of glass to produce his nine-foot tall work, using a variety of unorthodox materials, including lead wire (with which he “drew” the forms), lead foil, mirror silver, dust, as well as conventional oil paint and varnish. In his preparatory notes he ranged through a variety of fields of science and technology to invent the narrative of the *Large Glass*. In particular, electricity and electromagnetism, including wireless communication, proved central to his “painting of frequency,” as he termed the *Glass*.¹¹

According to Duchamp’s notes, a biomechanical Bride (the skeletal form at the left of the upper panel) floats in a gravity-free, four-dimensional realm and triggers the sexual activities of the purely mechanical, three-dimensional, gravity-bound Bachelor Apparatus below by means of her “commands” (Fig. 3.3).¹² The Bachelor Apparatus is made up of the Nine Malic Molds at the left and the Chocolate Grinder at center. Given Duchamp’s references in his notes to the Bride’s “sparks” and “splendid vibrations” as well as her “electrical control” of the stripping (to be carried out by the Bachelors), it is clear that his model for communication in the *Large Glass* was the Hertzian waves of wireless telegraphy.¹³ In the late nineteenth and early twentieth century such waves, along with X-rays, had focused popular attention on the paradigm of the invisible, impalpable ether, thought to fill all space and serve as the necessary medium for visible light as well as the newly discovered ranges of invisible waves.¹⁴ Appropriately, the Malic Molds are filled with an “illuminating gas” like neon, which would light up with the passage of a wireless telegraphy wave: they are thus wired and ready to detect her commands.¹⁵

Turning to the Readymades, Duchamp’s *Bicycle Wheel* of 1913 (Fig. 5.4) functions on several levels in relation to the *Large Glass*, including a connection to the still-dominant idea of the ether. In the *Glass* the Watermill Wheel, which was to provide the electrical energy for the operations of the *Glass*, echoes the large-scale spinning dynamos that were generating electricity in this period and featured prominently in expositions and popular scientific literature.¹⁶ The *Bicycle Wheel* may well reflect those wheels at the domestic scale of the studio, which Duchamp preferred to think of as a laboratory rather than a typical artist’s studio. He had not initially considered the *Bicycle Wheel* a Readymade, explaining

THE BRIDE'S DOMAIN

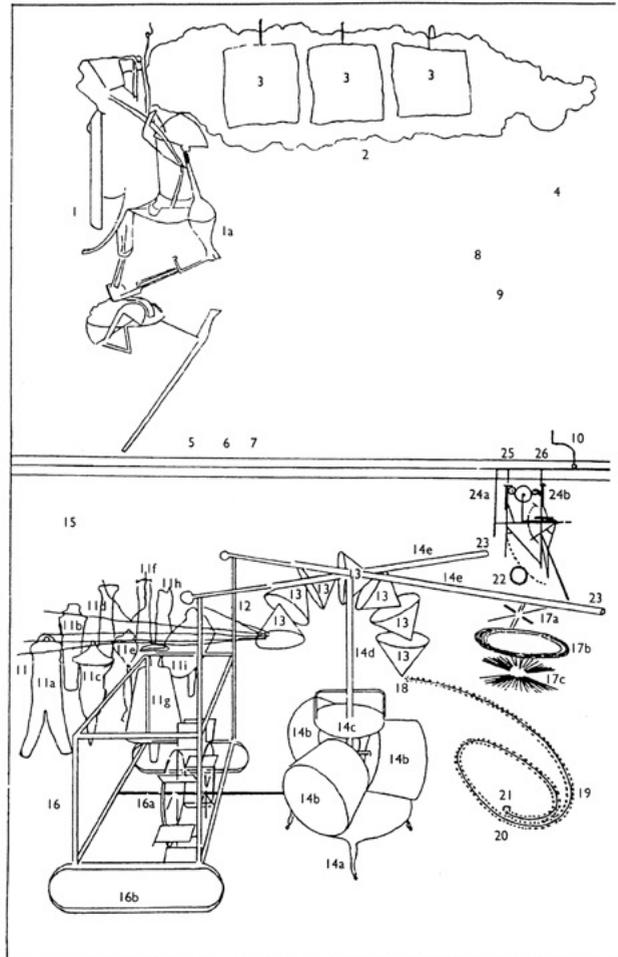
(upper half of the glass):

1. The Bride (*Pendu femelle*, arbor-type)
 - a. Wasp or Sex Cylinder
2. Top Inscription or Milky Way (the cinematic blossoming)
3. Draft Pistons or Nets
4. Nine Shots
5. Bride's garment
6. Region of the Gilled Cooler (isolating plates)
7. Horizon
8. Region of the picture of cast shadows
9. Region of the mirror image of the sculpture of drops
10. Juggler of Gravity (also called the Trainer, Handler, or Tender of Gravity)

THE BACHELOR APPARATUS

(lower half of the glass):

11. Nine Malic Molds (or Eros's Matrix) forming the Cemetery of Uniforms and Liveries
 - a. Priest
 - b. Delivery Boy
 - c. Gendarme
 - d. Cuirassier (cavalryman)
 - e. Policeman
 - f. Undertaker
 - g. Flunky (liveried servant)
 - h. Busboy
 - i. Stationmaster
12. Capillary Tubes
13. Sieves or Parasols (within are the Drainage Slopes)
14. Chocolate Grinder
 - a. Louis XV chassis
 - b. Rollers
 - c. Necktie
 - d. Bayonet
 - e. Scissors
15. Region of the Waterfall
16. Glider (Chariot or Sleigh)
 - a. Water Mill Wheel
 - b. Runners sliding in a groove
17. Oculist Witnesses
 - a. Oculist Charts
 - b. Oculist Charts
 - c. Oculist Charts
18. Region of the Butterfly Pump
19. Toboggan (or Corkscrew or Slopes of Flow)
20. Region of the Three Crashes (or Splashes)



21. Weight with nine holes
22. Mandala (a magnifying glass to focus the splashes)
23. Marbles
24. Boxing match
 - a. First ram
 - b. Second ram
25. Region of the sculpture of drops
26. Region of the "Wilson-Lincoln effect"

The diagram is based on Marcel Duchamp's etching *The Large Glass Completed*, 1965. No. 10 and nos. 18–26 are elements that were not completed in the *Large Glass* (1915–23).

Fig. 3.3

Diagram of components of Duchamp's *Large Glass*, from Ann Temkin, Susan Rothenberg, and Michael Taylor, *Twentieth Century Painting and Sculpture in the Philadelphia Museum of Art*, Philadelphia, 2000 (loose-leaf insert).

later that he “enjoyed looking at it, just as [he] enjoy[ed] looking at the flames dancing in a fireplace.”¹⁷ But the motion of a *Bicycle Wheel* also had a direct connection to science in this period, at the hands of one of the most prominent international scientists of that moment, British physicist Sir Oliver Lodge. Lodge was the most vocal champion of the ether space of this period, writing extensively on the subject in popular articles as well as books that were regularly translated into French.¹⁸ Duchamp had actually taken a job as a librarian at the Bibliothèque Ste.-Genève in 1913 and was reading extensively on contemporary science—both in the library but also in the extensive popular literature on X-rays, radioactivity, and the ether.

In order to transmit vibrating electromagnetic waves, the mysterious, space-filling ether required two seemingly contradictory properties. In order to transmit waves, it must be as rigid as an elastic solid; yet, it must also be rarefied enough to flow through the interstices of matter and allow the free motion of bodies through it.¹⁹ In this period, the ether was also being touted as the possible source of matter itself, in the form of spinning vortices of ether. As Lodge explained in his widely reprinted and translated 1908 essay, “The Ether of Space”:

How is it possible for matter to be composed of ether? How is it possible for a solid to be made out of a fluid? A solid possesses the properties of rigidity, impenetrability, elasticity, and such like; how can these be imitated by a perfect fluid such as the ether must be? The answer is, they can be imitated by a fluid in motion; [...]

A wheel of spokes, transparent and permeable when stationary becomes opaque when revolving, so that a ball thrown against it does not go through, but rebounds. The motion only affects permeability to matter; transparency to light is unaffected. [...] This is a case of kinetic rigidity.²⁰

Duchamp, who was in the process of fashioning himself as an artist-engineer rather than a painter, could thus demonstrate in his studio a principle of the very latest physics, while at the same time evoking the Watermill Wheel of the *Large Glass* and a flickering fire. In his association of bicycles and the ether, Duchamp was following his mentor, French writer Alfred Jarry, who had relied on the characteristics of ether as both rigid and rarefied in hypothesizing how one might construct a time machine,

for which he proposed gyrostats mounted on a bicycle frame.²¹ The *Bicycle Wheel* may also demonstrate the visual and verbal punning Duchamp incorporated so richly into the *Large Glass* and Readymades. A wheel (*roue*) mounted on a stool (*selle*) evokes the name of Raymond Roussel, the other French writer who, along with Jarry, served as a crucial model for the artist by drawing on contemporary science and technology.²² In Roussel's case, it had been the creative wordplay and invention in works such as his play *Impressions d'Afrique*, which Duchamp saw in 1912, that served as a major stimulus for the generation of humorous, scientifically grounded ideas for the *Glass*.²³

In the midst of his work on the notes for the *Large Glass* in 1913, Duchamp traveled to the British coastal resort of Herne Bay to spend the month of August as the chaperon of his younger sister, who was studying English. Like an artist's residency, this period gave Duchamp plenty of time for reflection on his project and introduced him to several new experiences that would make their way into the *Large Glass* and, ultimately, the Readymades. The most memorable sight for Duchamp was the illuminated Pier Pavilion at Herne Bay, of which he brought home a clipping that came to figure importantly among his notes (Fig. 3.10). Before returning to this image and its major ramifications for Duchamp's art, there are several other specific impacts of his seaside vacation to consider.

"As much tennis as possible," Duchamp had written his friend Raymond Dumouchel on a postcard of the Pier Pavilion, documenting his primary leisure activity.²⁴ Duchamp's message offers a clue to one of his most cryptic notes for the *Large Glass*, "Long live! clothes and the racquet-press." Because Duchamp included this note among the sixteen texts he reproduced in his *Box of 1914*, a kind of announcement of the large-scale project he was pursuing, it was clearly significant for him.²⁵ But what can this cryptic note mean?

A vintage wooden racquet press from the period (Fig. 3.4) serves as a valuable clue, pointing up the visual rhyme between Duchamp's 1916 Readymade *With Hidden Noise* (Fig. 3.5) and such a press. To make the 1916 work Duchamp bolted two metal plates around a ball of twine, leaving an extension of the bolts that looks strikingly like that of a racquet press. The title comes from the secret object Duchamp asked his friend Walter Arensberg to place inside the ball.²⁶ Akin to a ball of twine, a tennis racquet is "strung" with a string made at that time from animal gut. But what of the clothes Duchamp celebrates along with the racquet press in his *Box of 1914* note? Duchamp was



Fig. 3.4
Tennis racquet press, ca. 1920.

Fig. 3.5
Marcel Duchamp, *With Hidden Noise*, 1916. Philadelphia Museum of Art, The Louise and Walter Arensberg Collection. © Succession Marcel Duchamp 2018 / ADAGP, Paris / Artists Rights Society (ARS), New York 2018.

Fig. 3.6
Marcel Duchamp, *3 Standard Stoppages*, 1913-14. Wood box (28.2 × 129.2 × 22.7 cm), with three threads (100 cm), glued to three painted canvas strips (13.3 × 120 cm), each mounted on a glass panel (18.4 × 125.4 × 0.6 cm), three wood slats (6.2 × 109.2 × 0.2 cm), shaped along one edge to match the curves of the threads. The Museum of Modern Art, New York, Katherine Dreier Bequest. Digital image © The Museum of Modern Art / Licensed by SCALA / Art Resource, NY 2018.

ever alert to the functioning of signs in language, such as the role of metonymy, in which a characteristic or a part of an object can stand for its whole. He always located the “clothes” of the Bride at the mid-section of the *Large Glass*, although we never see the garment on which the Bachelors are said to be tugging by means of the never-executed Boxing Match (Fig. 3.3).²⁷

However, Duchamp did create a structure of three narrow parallel glass plates at the mid-section of the *Glass* (see Figs. 3.2, 3.3), which has a direct connection to the layered structure of a racquet press. He had planned for these three glass plates at the mid-section from the time he made an early drawing placing the Bride above the Bachelors.²⁸ In the accompanying note he also gave them an electrical function, akin to the electrical condensers composed of alternating layers of glass and conducting material that made possible the high frequency currents necessary for wireless “spark” telegraphy, the Bride’s technology for issuing her commands to the Bachelors.²⁹ Although the narrow glass plates at the mid-section of the *Large Glass* bear no string or threads, Duchamp created an analog for the *Glass*’s mid-section in the *3 Standard Stoppages* (Fig. 3.6). In 1913-14, he had dropped three meter-length threads from the height of a meter onto three narrow blue-black canvases; subsequently, he mounted the canvases on glass plates and slid them into grooves added to a wooden croquet box.³⁰ Duchamp’s experiment functioned on a number of levels, reflecting his interest in chance, the curved non-Euclidean geometries, and, humorously, the concerns in contemporary French metrology about the standard meter bar’s expansion and contraction.³¹ But a *stoppage* in French is also a weaving mend, and for someone preoccupied with thread and string in this period, the threads of the *3 Standard Stoppages* may well be the metonymical signs of the Bride’s clothing. His planning for the tripartite mid-section of the *Large Glass*, rhyming as it does with a racquet press, surely makes it the root of the *Box of 1914* note, “Long live! clothes and the racquet- press.”

The string of *With Hidden Noise* then “rhymes” with this sign for the Bride’s clothing, bringing together the string that was so resonant for Duchamp and the plates that suggested the racquet press and condenser-like stacking. Appropriately, the 1916 Readymade, with its game of letters to be filled in, also echoes the “alphabetic units” of the Bride’s communication system.³² Subsequently, in both the 1941 *Box in a Valise* and in the 1963 Pasadena installation, Duchamp carried on the theme of the Bride’s clothing and communication. In both places he inserted his 1916 Readymade *Traveler’s Folding Item*, an Underwood typewriter

cover, as the counterpart to the mid-section of the *Large Glass*—providing a “skirt” or clothing for the message-producing Bride.

Duchamp’s layering of associations—string, tennis racquets, sewing thread, clothing, electrical currents—is typical of his remarkably inventive mind with its witty analogical abilities. Indeed, he created a variety of identities for the Bride of the *Large Glass* that tied her to specific objects from the worlds of science and technology. Duchamp had defined the basic visual form of the Bride in his painting *Bride* made in Munich in August 1912 (Philadelphia Museum of Art), drawing on his interest in the internal body parts revealed by X-rays and his experience of the science and technology exhibits of the Deutsches Museum.³³ The form of the Bride in the *Glass* derives from this painting, and, as he subsequently added identities and mechanical functions to the Bride, he did so only verbally in his notes. In addition to the Bride’s central function as a wireless telegraphy antenna emitting commands, Duchamp’s initial model for her was as an automobile, an identity that played on the longstanding association of sexual activity with heat engines. In his long initial note on the Bride, he also refers to her as an *arbre-type* [arbor-type], alluding to the transmission shaft [*arbre de transmission*] of an automobile.³⁴ As I have argued in *Duchamp in Context*, that identity is clearest in the artist’s July 1912 Munich drawing *Virgin (No. 1)* (Fig. 3.7), which, if turned 90 degrees to the right, echoes a diagram of a contemporary automobile. In addition to the transmission shaft running from left to right, the car’s hood and brake lever are apparent in the upper right quadrant of the rotated drawing, along with the suggestion of a wheel at lower right.³⁵ Some of these same parallels are apparent in the *Bride* painting, including similar striping on the “hood” of the auto. Typically, as in the *Virgin (No. 1)* drawing, Duchamp never simply copied a source image: he always transformed it and, usually, conflated it with other images, just as he layered metaphors in his writing.

Duchamp produced two drawings with extensive text and three illustrated notes on the Bride during his stay in Herne Bay, developing her identities further, including links to various meteorological instruments (barometer, weather vane), her new persona as Wasp, and an association with a vibratory “pulse needle” and sewing machines and thread.³⁶ In typically Duchampian fashion, these themes interconnect around concepts such as the Bride’s “filaments,” which take on specific meanings in various contexts, including the “meteorological extension” of her filaments, akin to a hair hygrometer measuring moisture.³⁷ Duchamp’s reference to the Bride’s “nourishment of the filament substance” relates directly

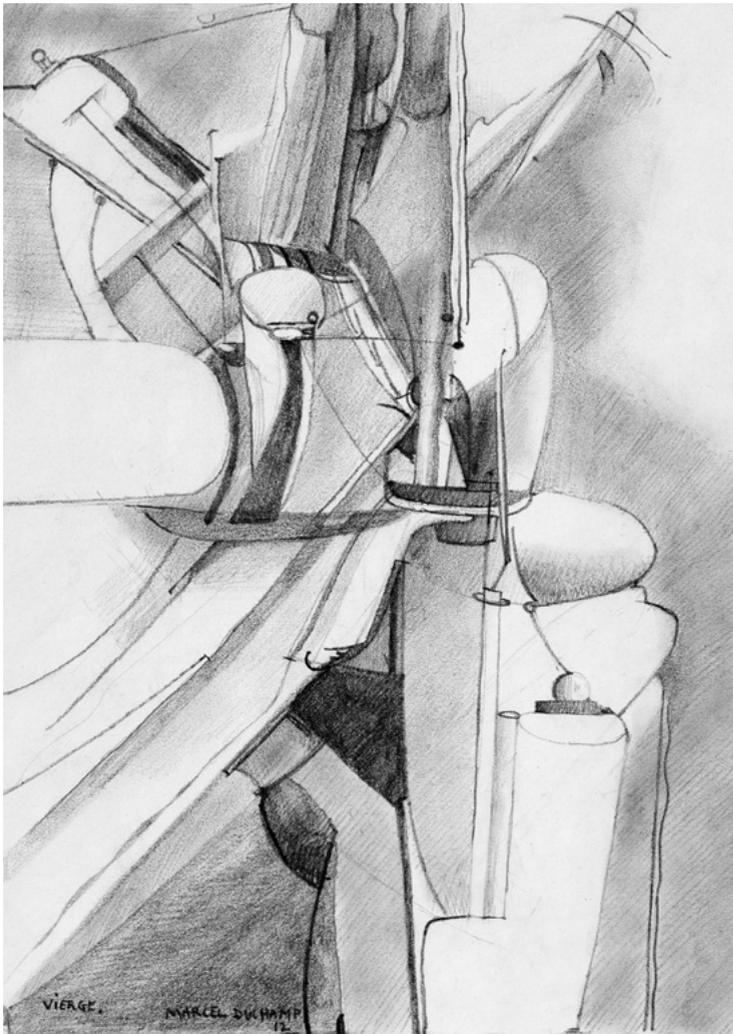


Fig. 3.7
Marcel Duchamp, *Virgin (No. 1)*, 1912. Graphite on wove paper, 42.9 × 32.5 cm.
Philadelphia Museum of Art, The A. E. Gallatin Collection. © Succession Marcel
Duchamp 2018 / ADAGP, Paris / Artists Rights Society (ARS), New York 2018.

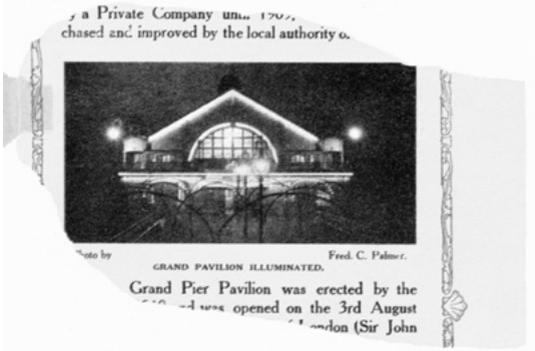
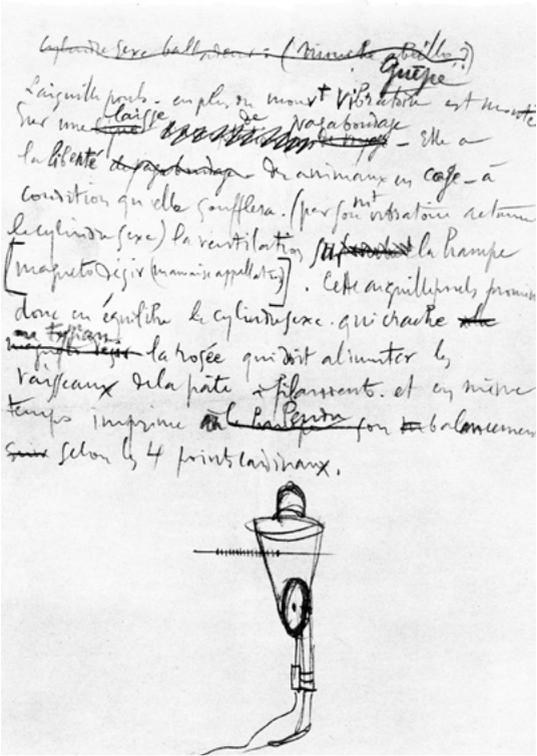


Fig. 3.8
 Marcel Duchamp, Drawing from note headed "Wasp / The pulse needle,"
 from *Marcel Duchamp, Notes*, ed. Paul Matisse, Paris 1980, note 108.

Fig. 3.9
 Vintage sewing machine, ca. 1930.

Fig. 3.10
 "Grand Pier Pavilion Illuminated," from *Marcel Duchamp, Notes*, ed. Paul Matisse,
 Paris, 1980, note 78.

to contemporary technology for making incandescent lightbulbs, in which extruded paste filaments were “nourished” with carbon.³⁸ We will return to the Bride’s association with light bulbs, which is highly relevant to both the *Glass* and the Readymades.

In Herne Bay Duchamp was working to emphasize the presence, as he said, of “organic material” in the Bride, in order to distinguish her supple and visceral qualities from the purely mechanical Bachelors below.³⁹ And it was in August 1913 that he discovered the famous colony of digger Wasps at Reculver, close to Herne Bay.⁴⁰ Already interested in the work of entomologist J.-H. Fabre, Duchamp in his notes now crossed out a mechanical term such as “Sex Cylinder” and replaced it with “Wasp.” The intelligence of female wasps, as described by Fabre, made the wasp a logical association for Duchamp’s Bride, so clearly in control of the events of the *Large Glass*.⁴¹

While Duchamp included his two Herne Bay drawings and one illustrated note in his 1934 *Green Box* collection of notes, he reproduced only the written content of two notes, including that which begins “Wasp”/“Pulse needle.” Thus, the drawing (Fig. 3.8) remained unknown until the 1980 publication of his remaining unpublished notes.⁴² It is this drawing that reveals clearly the association of the so-called pulse needle with a sewing machine and confirms what W. Bowdoin Davis has argued convincingly is a sewing machine presser foot at the center of the upright *Virgin (No. 1)* drawing (at the break in the transmission shaft in the automobile reading).

In his 2002 book, *Duchamp: Domestic Patterns, Covers, and Threads*, Davis grounded his argument in the Herne Bay sketch, comparing it and the *Virgin (No. 1)* drawing to the sewing machines Duchamp would have seen at the 1912 Munich Gewerbeschau.⁴³ But Duchamp had also grown up in a family with sewing present, rented a room in Munich in the apartment of an engineer/seamstress couple, and, given the specificity of his sketch, may well have had a sewing machine within view where he was staying in Herne Bay.⁴⁴ As suggested earlier, thread and string were critical for Duchamp in this period, including as models of the impersonal, “dry” drawing mode he was seeking: a line of sewing machine stitching produces a variation on the precise, dotted or dashed line of the mechanical drawing in which he was also so interested.⁴⁵ Davis interprets a number of the pencil lines in the *Virgin (No. 1)* drawing as threads, but does not note the lever that raises and lowers the presser foot (Fig. 3.9), which in the automobile reading suggests the brake lever.⁴⁶ Such doubling is exactly the kind of visual punning Duchamp loved.

The sewing machine's structure in Duchamp's drawing also echoes the artist's funnel-like Sex Cylinder/Wasp and, before that, the shape of the Bride herself from 1912—all easily associated with the thorax of a Wasp (preserved in the notion of “wasp waist”). If the Bride is linked to a sewing machine, the “pulse needle” to which Duchamp refers in the note's text is surely the pulsating needle as it sews its precision line, even if the structure reverses the more obvious gender roles of a phallic needle. In fact, sewing machines had strong feminine associations as manufacturers sought to domesticate what was an industrial machine—and, of course, women were the primary operators, whether at home or in a factory context. Recent scholarship has revealed another aspect of the sewing machine's history in this period that gave it specific sexual overtones—the fact that operating the double pedals of a treadle machine could produce an orgasm from women's thighs rubbing together.⁴⁷ Duchamp talked in his notes of the Bride's imaginative-voluntary “blossoming,” and here may have been an analogy to the male Bachelor who “grinds his chocolate himself” as part of the *Large Glass's* theme of “onanism for two.”⁴⁸

Beyond his musings on the Bride, Duchamp's experience at Herne Bay produced an even more fundamental effect in terms of the developing *Large Glass* as a whole, including the decision to “paint the final picture on plate glass.”⁴⁹ He carried back from Herne Bay a photograph of the illuminated Pier Pavilion torn from a publication (Fig. 3.10) and wrote a detailed note on his new thinking about the work. That note (note 80 in the posthumously published collection) has been little studied but contains critical new information on his project and its relation to his works of 1913-14. Among other insights, the note reveals that Duchamp was actually considering a black painted canvas backdrop for the *Large Glass*: “As background, perhaps: An electric fete recalling the decorative lighting of Magic city or Luna Park. Or the Pier Pavilion at Herne Bay—garlands of lights against a black background (or background of the sea. Prussian blue and sepia).”⁵⁰ Not only does he speculate on how to achieve a “Good black” in the note, but he also comments on the relationship between thread and the impersonal markings he will make on glass, “Have drawn in a special shop with a grinding machine all the lines which should have been made by the white threads on the canvas.”

A quest for an ideal black and the use of thread or string as an impersonal line remained central for Duchamp after Herne Bay. The canvases of the *3 Standard Stoppages* were painted deep blue-black, and, with the falling threads of his chance experiment, he

was simultaneously finding a way to make a completely impersonal line in painting, an approach he would follow up in the *Large Glass* by using lead wire to outline forms. In his 1914 painting *Chocolate Grinder, No. 2* (Philadelphia Museum of Art), Duchamp actually sewed a heavy thread through the canvas to make the ridges on the grinder.⁵¹ The background of the *Chocolate Grinder* was also painted black, and he mused extensively in a note on the painting and in a number of other notes about how to achieve a “Beautiful black—Prussian blue and bistre.”⁵² Or, “To obtain ‘exactitude,’” for example, he considered dying the canvas black, so that a line drawn through the paint would show black.⁵³

Duchamp was clearly preoccupied with blackness in 1913-14, and his Herne Bay experience now provides a clue for that focus—and, I would argue as well, a new insight into his later Readymade, *Fresh Widow* of 1920 (Fig. 3.11). Growing up in Normandy, Duchamp had certainly contemplated the sea coast and had briefly painted seascapes in 1907, but he had never experienced an illuminated Pier Pavilion against the vast blackness of the sea and sky as he did in Herne Bay. While Blackpool had been the pioneering British seaside resort to make “illuminations” a central attraction, by 1913 Herne Bay featured thousands of incandescent light bulbs outlining buildings on the Pier and strung between them, which were complemented by fireworks displays.⁵⁴ Duchamp’s souvenir photograph and his note 80 make clear that this was a transformative experience for him. It was also a major encounter with electrical technology, a topic in which he was deeply engaged as he worked on the *Large Glass* project.

In his prefatory “Notice” note for the *Large Glass*, Duchamp would specify that the events of the *Large Glass* were to occur “in the dark,” and further examination of his note 80 sheds crucial light on his response to Herne Bay.⁵⁵ The initial discussion of “garlands of lights against a black background (or a background of the sea. Prussian blue and sepia.),” quoted above, continues: “Arc lights—Figuratively a fireworks—In short a magical (distant) backdrop in front of which is presented [...] the agricultural instrument.” (Duchamp referred at times to the *Large Glass* as an “agricultural instrument,” given the prominence of the agricultural themes in it.⁵⁶) Although he would ultimately give up the notion of a backdrop for the *Large Glass*, there is a remarkable testament here to his thinking about how to create a “painting of precision” in response to his Herne Bay experience.⁵⁷ To create an equivalent for light bulbs or fireworks on the canvas component, he proposes, “For the background, riddle with holes, i.e., shoot with lead shot in

all the unused areas of the canvas. Make a test riddling with nails of (different sizes)—Holes more or less close to each other.” Although Duchamp’s use of the chance shots of a toy cannon to determine the locations of the Nine Shots at the right side of the Bride’s realm in the *Glass* (see Figs. 3.2, 3.3) is well-known, his radical notion of “riddl[ing]” a canvas “with holes” has been overlooked.⁵⁸ Light shining through the punctures in the canvas would have created the effect of Duchamp’s “electric fete” at Herne Bay.

While Duchamp gave up the thought of making an ensemble of glass and canvas components, his idea of punching holes and the association of those holes with illuminated bulbs and “decorative lighting” did not go away. When he produced the *Green Box* collection of notes in 1934, the French title of the *Large Glass* was punched into the lid—*La Mariée mis à nu par ses célibataires, même*.⁵⁹ But his Herne Bay experience may also have lived on in the two Readymades, *Fresh Widow* or 1920 (Fig. 3.11) and *Paris Air* of 1919 (Fig. 3.12).

We can imagine Duchamp looking out over the sea at Herne Bay, not through a typical French window but through the double-hung British-style windows that would have been his first extended experience of such non-French windows. In 1915 in New York, he drew such a window in a note about framing the *Large Glass* glass panels and noted, “opening on a landscape of some kind (at will) / garden sea town etc.”⁶⁰ Duchamp had been in just such a sea town in August 1913, and it had been a crucial experience for him. Here he envisioned a new kind of landscape, in stark contrast to his contemporary in Paris, Robert Delaunay, who was himself gazing through windows in the city. Delaunay’s goal, antithetical to Duchamp’s, was to capture the glory of prismatic light and color, as if on the pane itself.⁶¹ Duchamp, by contrast, had rejected “painting [...] addressed to the retina” such as the light-filled canvases of Impressionism, Fauvism, and, by implication, those of Delaunay.⁶² He preferred instead the blackness of the sea and sky at night as the ultimate anti-Impressionist landscape.

What became of Duchamp’s black “painted background of the sea” he thought so much about in Herne Bay? Perhaps he did finally realize it—in *Fresh Widow* (Fig. 3.11), his construction made by a carpenter in New York in 1920, with its window panes covered with black leather that should be polished daily, as he said. Much has been written about the levels of symbolic meaning in *Fresh Widow*, with its pun on the French windows he had left behind in Paris.⁶³ However, given Duchamp’s later talk about his “windows” as a genre and his wanting to be considered a “fenêtrier,” perhaps there



Fig. 3.11
Marcel Duchamp, *Fresh Widow*, 1920. Miniature French window, painted wood frame, and panes of glass covered with black leather, 77.5 x 44.8 cm on wood sill, 1.9 x 53.4 x 10.2 cm. The Museum of Modern Art, New York, Bequest of Katherine Dreier. Digital image © The Museum of Modern Art / Licensed by SCALA / Art Resource, NY 2018.

Fig. 3.12
Marcel Duchamp, *Paris Air*, 1919. Philadelphia Museum of Art, The Louise and Walter Arensberg Collection. © Succession Marcel Duchamp 2018 / ADAGP, Paris / Artists Rights Society (ARS), New York 2018.

is more in common between these works than we have realized in the past.⁶⁴ Was it here, at last, that he achieved his “beautiful black” seascape from Herne Bay, the ultimate anti-landscape?

The last Readymade that suggests a connection to Herne Bay and to Duchamp's notes made there is his 1919 *Paris Air* (Fig. 3.12), which figured in both the *Box in a Valise* and in the Pasadena installation. Just as Duchamp's *Fountain* stands in for the Bachelors as Malic Molds below, *Paris Air* is his stand-in for the Bride. Duchamp had produced *Paris Air* as a souvenir for his friend Arensberg by asking a pharmacist to break open an ampule of serum and reseal it with 50 cc. of Parisian air inside.⁶⁵ Among the Bride's many technological associations in Duchamp's notes—ranging from automobile, to barometer or weather vane, to wireless telegraphy emitting antenna—was the incandescent light bulb. As noted earlier, Duchamp discusses the Bride's “filaments” in terms of light bulb filament manufacture, and he had had a major encounter with such incandescent bulbs at Herne Bay. Yet the light bulb was also a particularly suggestive object for the artist, whose analogical thinking layered associations on it, including the theme from classical mythology of Demeter and her torch searching for Persephone, which had been updated in commercial bulb advertising.⁶⁶ Most importantly, the light bulb or another sealed glass vessel, like the pharmaceutical vial of *Paris Air*, allowed Duchamp to develop further the Bride's associations with the Virgin Mary. That iconoclastic religious theme runs through Duchamp's notes and drawings, including his early sketch of the *Large Glass* with its Madonna-like Bride.⁶⁷ Thus, the sealed glass vial could evoke the traditional association of the Virgin Mary with a pure, enclosed vessel—serving as a metonymical condensation of the Bride/Virgin Mary into a single object-sign. Indeed, this was the way the Readymades had often functioned, as “vehicle for unloading ideas.”⁶⁸

In one of his preparatory notes Duchamp had written of the *Large Glass*, “The picture, itself, is the hieroglyphic data of the Bride stripped bare.”⁶⁹ Its information was to be conveyed in a new kind of schematic visual language of signs, accompanied by a text based on his notes that was to explain every part of the work, like a Sears Roebuck catalog, as he said.⁷⁰ By such declarations, Duchamp affirmed that he was not a traditional painter interested in self-expression, but rather a kind of linguist/engineer concerned with “hieroglyphic” signs and “data.” The Readymades, too, were a kind of “hieroglyphic data”—three-dimensional signs, or “hieroglyphs,” filled with possible readings. However, as we have

seen, there was very often a direct connection between the ideas he was exploring in the *Large Glass* and the choice of objects for the Readymades. Drawing on the realms of science and technology as well as his personal experience of Herne Bay, Duchamp had indeed put art “at the service of the mind,” creating a remarkable, interconnected body of works filled with ideas and humorous invention upon them.⁷¹

- 1 Marcel Duchamp, as quoted in Otto Hahn, "Passport No. G255300," *Art and Artists* 1 (July 1966): 10.
- 2 Walter Hopps, as quoted in William A. Camfield, *Marcel Duchamp: Fountain* (Houston: The Menil Collection, 1989), 109.
- 3 See Duchamp's 1946 interview with James Johnson Sweeney, reprinted in *The Writings of Marcel Duchamp*, ed. Michel Sanouillet and Elmer Peterson (New York: Da Capo Press, 1989), 125.
- 4 See Linda Dalrymple Henderson, *Duchamp in Context: Science and Technology in the Large Glass and Related Works* (Princeton, NJ: Princeton University Press, 1998). Duchamp published three collections of notes during his lifetime: *The Box of 1914*, the *Green Box* (1934), and *A l'infinitif (The White Box)* (1966); for these notes, see *The Writings of Marcel Duchamp*. His remaining notes were published after his death as *Marcel Duchamp, Notes*, ed. and trans. Paul Matisse (Paris: Centre National d'Art et de Culture Georges Pompidou, 1980; Boston: G. K. Hall, 1983).
- 5 See Duchamp, *Green Box*, in *Writings*, 49.
- 6 Duchamp, as quoted in an unpublished 1953 interview with Sidney, Harriet, and Carroll Janis: 25.
- 7 Herbert Molderings has convincingly reinterpreted the 3 *Standard Stoppages* as paintings; see Molderings, *Duchamp and the Aesthetics of Chance: Art as Experiment*, trans. John Brogden (New York: Columbia University Press, 2010), chap. 3.
- 8 I initially made this suggestion in *Duchamp in Context* (1998) in a concluding section, "Thematic Collisions, Duchamp's Anti-Bergsonism, and New Unities in the *Large Glass* and Early Readymades", 198-203. The preoccupation with taste by Duchamp's Puteaux Cubist colleagues is on display in the final short section of Albert Gleizes and Jean Metzinger's 1912 *Du Cubisme*, where they use the term *gout* (taste) eleven times. See Gleizes and Metzinger, "Cubism," in *Modern Artists on Art*, ed. Robert L. Herbert (Englewood Cliffs, NJ: Prentice-Hall, 1964), 16-18.
- 9 I am grateful to Francis Naumann for the impetus to study Duchamp's Herne Bay notes and activities more closely for the symposium he organized at Herne Bay in August 2013, "Duchamp in Herne Bay, 1913-2013."
- 10 For "hilarious picture," see Duchamp, *Green Box*, in *Writings*, 30. For an overview of the science and technology in the *Large Glass*, see Linda Dalrymple Henderson, "The *Large Glass* Seen Anew: Reflections of Contemporary Science and Technology in Marcel Duchamp's 'Hilarious Picture,'" *Leonardo*, 32/2 (April 1999): 113-26.
- 11 For "painting of frequency," see Duchamp, *Box of 1914*, in *Writings*, 25.
- 12 For "commands," see Duchamp, *Green Box*, in *Writings*, 36, 38. Duchamp speculated extensively on how he might make the Bride's realm four dimensional, to emphasize the insuperable contrasts between her and the finite, measured, three-dimensional world of the Bachelors. See Duchamp, *A l'infinitif*, in *Writings*, 84-101. On this subject, see Henderson, *Duchamp in Context*, 80-85; for Duchamp and the fourth dimension, more generally, see Linda Dalrymple Henderson, *The Fourth Dimension and Non-Euclidean Geometry in Modern Art*, rev. ed. (Cambridge, MA: MIT Press, 2013), chap. 3.
- 13 See *ibid.*, 43, as well as 39, 42-44. For a full discussion of the theme of electromagnetic communication in the *Large Glass*, see Henderson, *Duchamp in Context*, 103-15.
- 14 For the scientific discoveries that captured the public's imagination in this period, see, e.g., Alex Keller, *The Infancy of Atomic Physic: Hercules in his Cradle* (Oxford: Clarendon Press, 1983). I coined the term "vibratory modernism" to describe this new paradigm that stimulated so many artists' imaginations; see Linda Dalrymple Henderson, "Vibratory Modernism: Boccioni, Kupka, and the Ether of Space," in *From Energy to Information: Representation in Science and Technology, Art, and Literature*, ed. Henderson and Bruce Clarke (Stanford: Stanford University Press, 2002), 126-49.
- 15 For "illuminating gas," see Duchamp, *Green Box*, in *Writings*, 48-53.
- 16 See, e.g., Henderson, *Duchamp in Context*, 154-55, and figs. 151, 153-55.
- 17 Duchamp, as quoted in Arturo Schwarz, *The Complete Works of Marcel Duchamp*, 3rd rev. ed., 2 vols. (New York: Delano Greenidge Editions, 1997), vol. 2, 588.
- 18 Lodge was a high-profile figure in this era, producing nearly 1200 publications, many of which were directed toward popular audiences and which were translated widely; see, e.g., Bruce J. Hunt, *The Maxwellians* (Ithaca: Cornell University Press, 1991).
- 19 On the ether, see, e.g., Daniel M. Siegel, "Thomson, Maxwell, and the Universal Ether in Victorian Physics," in *Conceptions of Ether: Studies in the History of Ether: Studies in the History of Ether Theories 1740-1900*, ed. G. M. Cantor and M. J. S. Hodge (Cambridge: Cambridge University Press, 1981), 239-68.
- 20 Sir Oliver Lodge, "The Ether of Space," *The North American Review*, 187 (May 1908): 730. Lodge had presented the text as a lecture before the Royal Institution, and his lectures were regularly covered in foreign as well as British periodicals, including those oriented toward psychical research, another of his interests. On Lodge's theories and their impact in this period, see, e.g., Linda Dalrymple Henderson, "Umberto Boccioni's *Elasticity*, Italian Futurism, and the Ether of Space," *Ether and Modernity*, ed. Jaime Navarro (Oxford: Oxford University Press, 2018), 212-15.
- 21 See Henderson, *Duchamp in Context*, 87-89.
- 22 Jennifer Gough-Cooper and Jacques Caumont made this suggestion in their entry for June 4, 1964, in "Ephemerides on and about Marcel Duchamp and Rose Sélavy 1887-1968," in Palazzo Grassi, Venice, *Marcel Duchamp*, ed. Pontus Hultén (Milan: Bompiani, 1983).
- 23 On Duchamp and Rousset, see, e.g., Henderson, *Duchamp in Context*, 51-57.
- 24 See Gough-Cooper and Caumont, entry for August 8, 1913, in "Ephemerides," in Palazzo Grassi, *Marcel Duchamp*.
- 25 To create the *Box of 1914* in its edition of five, Duchamp photographed his notes and mounted them on board, placing them in boxes that had held photographic negatives. For this note and others, see Duchamp, *Box of 1914*, in *Writings*, 23. See also Schwarz, *Complete Works*, ca. no. 285.

- 26 For *With Hidden Noise*, see, e.g. Schwarz, *Complete Works*, vol. 2, cat. no. 240. The top and bottom plates each bore three lines of French or English words with missing letters, requiring the insertion of letters from another line. Sophie Treadwell assisted Duchamp with the work's language; see Francis M. Naumann, *The Art of Making Art in the Age of Mechanical Reproduction* (New York: Harry N. Abrams, 1999), 67-68.
- 27 For the text accompanying Duchamp's drawing, see Duchamp, *Green Box*, in *Writings*, 66.
- 28 For Duchamp's note with the sketch, see Duchamp, *Green Box*, in *Writings*, 39; in this English translation, however, the drawing's labels, including "plaques de verre," are removed. For the original French note, see Arturo Schwarz, ed., *Notes and Projects for the Large Glass* (New York: Harry N. Abrams, 1969), 23.
- 29 For a typical electrical condenser of the period, see Henderson, "Large Glass Seen Anew," fig. 7, or Duchamp in *Context*, fig. 89; see also the discussion of condensers in *ibid.*, 105-106.
- 30 Duchamp's installation of the plates in a wooden croquet box paralleled the structure of the variable condenser housed in a box at the top of the Eiffel Tower and used for the production of wireless telegraphy signals; see Henderson, *Duchamp in Context*, 106.
- 31 On the 3 *Standard Stoppages*, see e.g., *ibid.*, 61-63; Henderson, *Fourth Dimension and Non-Euclidean Geometry*, 248-50; and Molderings, *Duchamp and the Aesthetics of Chance*, chaps. 1-5.
- 32 For "alphabetic units," see Duchamp, *Green Box*, in *Writings*, 38.
- 33 On the Bride and X-rays, see Henderson, *Duchamp in Context*, 11-13; and Linda Dalrymple Henderson, "X Rays and the Quest for Invisible Reality in the Art of Kupka, Duchamp, and the Cubists," *Art Journal* 47 (Winter 1988): 323-40.
- 34 See Duchamp, *Green Box*, in *Writings*, 42.
- 35 See Henderson, *Duchamp in Context*, 89-93, and, for the automobile chassis, fig. 50; see also Henderson, "Large Glass Seen Anew," fig. 4.
- 36 For the two drawings, see Duchamp, *Green Box*, in *Writings*, 46-47 (and related text on 45, 48); and Schwarz, *Complete Works*, vol. 2, cat. nos. 273, 276. The illustrated note beginning "In the Pendu femelle—and the blossoming Barometer" (*ibid.*, 48) is reproduced in the English translation without its sketch, which is a simple slanted line with an irregular square at its middle (see Schwarz, *Notes and Projects*, 117; this note is not included in *Complete Works*). For the two notes not published during Duchamp's lifetime, beginning "Wasp Properties" (Schwarz, *Complete Works*, vol. 2, no. 275) and "Wasp / The pulse needle" (Schwarz, *Complete Works*, vol. 2, no. 274), see, respectively, Marcel Duchamp, *Notes*, ed. Matisse, nos. 106 and 108 (from which fig. 9 herein is drawn). With Duchamp having recopied their texts at some point, the two notes appear in *Writings*, 45, combined as a single note, which begins, "The pulse needle in addition [...]" and concludes, "(hygiene of the Bride)."
- 37 Duchamp, *Green Box*, in *Writings*, 48. On the Bride and meteorology, see Henderson, *Duchamp in Context*, 121-25. For an overview of the filament theme, see Henderson, "Large Glass Seen Anew," 116.
- 38 For Duchamp's "nourishment" reference, see Duchamp, *Green Box*, in *Writings*, 48. For a full discussion of the Bride and light bulbs, see Henderson, *Duchamp in Context*, 125-26.
- 39 See Marcel Duchamp, *Notes*, notes 102, 104.
- 40 Artist and filmmaker Jeremy Millar first noted the relevance of the Reculver wasp colony for Duchamp's Herne Bay stay in his film *Zugzwang (Almost Complete)*. See Jeremy Millar, *Zugzwang (Almost Complete)* (London: Koenig Books, 2006).
- 41 See the section on "Biology and the Bride," in Henderson, *Duchamp in Context*, 126-29.
- 42 For the complete note and drawing, see again Marcel Duchamp, *Notes*, ed. Matisse, note 108; for the text of the note, see Duchamp, *Green Box*, in *Writings*, 45, paragraph beginning "The pulse needle" and ending "4 cardinal points." See again n. 36 on the various Herne Bay notes.
- 43 See W. Bowdoin Davis, Jr., *Duchamp: Domestic Patterns, Covers, and Threads* (New York: Midmarch Arts Press, 2002), chaps. 5, 8.
- 44 On Duchamp's proximity to a seamstress in his rented room in Munich during July-August 1912, see Rudolph Herz, *Marcel Duchamp; Le Mystère de Munich* (Munich: Moser Verlag, 2012), 157-63. On Duchamp's Munich stay, see also Marcel Duchamp in *Munich 1912*, ed. Helmut Friedel, Thomas Girst, Matthias Mühlhling, and Felicia Rappe (Munich: Staädtische Galerie im Lenbachhaus and Kunstbau München, 2012).
- 45 As Herz and other scholars have suggested, the dashed lines on sewing patterns served as another model for the alternative type of line Duchamp was seeking (see *ibid.*). Duchamp spoke of his quest for "completely dry drawing" in a 1956 NBC television interview with James Johnson Sweeney; see Duchamp, *Writings*, 130.
- 46 See Davis, *Duchamp*, 116-19, where he also discusses stitch-like lines in Duchamp's *Virgin (No. 2)* drawing of summer 1912.
- 47 As Herz illustrates (*Le Mystère de Munich*, p. 162), there were also popular photographs of couples at sewing machines. On the association of bi-pedal treadle sewing machines with "masturbatory effects" in the nineteenth century, see, e.g., Karen Offen, "'Powered by a Woman's Foot,': A Documentary Introduction to the Sexual Politics of the Sewing Machine in Nineteenth-Century France," *Women's Studies International Forum* 11/2 (1988): 93-101.
- 48 For "blossoming," see Duchamp, *Green Box*, in *Writings*, 42-44; for "grinds his chocolate," see *ibid.*, 68. For "onanism for two," see Robert Label, *Marcel Duchamp*, trans. George Heard Hamilton (New York: Paragraphic Books, 1959), 67.
- 49 See Marcel Duchamp, *Notes*, ed. Matisse, note 80; this is the critical record of his Herne Bay experience, a section of which he recopied in note 74.
- 50 See *ibid.*, note 80.
- 51 For the artist's speculation on a plan to "glue to the finished canvas threads of different thickness—color" to "obtain 'exactitude,'" see Duchamp, *A l'infinifit*, in *Writings*, 80.

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- 52 See *ibid.*, 80, 82. Like the *Chocolate Grinder, No. 2*, Duchamp's *Chocolate Grinder, No. 1* (Philadelphia Museum of Art) also features a black background.
- 53 *Ibid.*, 80.
- 54 On Blackpool, see Terry Regan and Andrew Hazlehurst, *From Lamp to Laser: The Story of the Blackpool Illuminations* (St. Albans: Skelton, 2004). Gough-Cooper and Caumont document fireworks during Duchamp's stay; see "Ephemerides," entry for Aug. 8, 1913.
- 55 See Duchamp, *Green Box*, in *Writings*, 28.
- 56 See Henderson, *Duchamp in Context*, 168-70.
- 57 See Duchamp, *Green Box*, in *Writings*, 30.
- 58 For the cannon shots, see Duchamp, *A l'infinifit*, in *Writings*, 84; and Dawn Ades, David Hopkins, and Neil Cox, *Marcel Duchamp* (London: Thames and Hudson, 1999), 97.
- 59 See Schwarz, *Complete Works*, vol. 2, cat. no. 435. On Duchamp's continued association of the punched holes and lighting, see Linda Dalrymple Henderson, "Illuminating Energy and Art in the Early Twentieth Century and Beyond: From Marcel Duchamp to Keith Sonnier," in *Energies and the Arts*, ed. Douglas Kahn (Cambridge: MIT Press, forthcoming).
- 60 See *Marcel Duchamp, Notes*, ed. Matisse, note 171.
- 61 For Delaunay's *Windows*, see, e.g., Mark Rosenthal, *Visions of Paris: Robert Delaunay's Series* (New York: Guggenheim Museum, 1998).
- 62 Duchamp, as quoted in Pierre Cabanne, *Dialogues with Marcel Duchamp*, trans. Ron Padgett (New York: The Viking Press, 1971), 43.
- 63 *Fresh Widow* was the first work signed by Duchamp's female alter-ego, Rose Sélavy. For this work, see Schwarz, *Complete Works*, vol. 2, cat. no. 376. On this work, see, e.g., Francis M. Naumann, *The Recurring Haunting Ghost: Essays on the Art, Life, and Legacy of Marcel Duchamp* (New York: Readymade Press, 2012), chap. 9. Duchamp made the comment about polishing "like shoes" in an unpublished 1964 lecture, "Apropos of Myself" at the St. Louis Art Museum (quoted in *ibid.*, 93).
- 64 Naumann quotes Duchamp's comment to Arturo Schwarz (published in an earlier edition of *Complete Works*) about being thought of as a "fenêtrier" (see *ibid.*, 94).
- 65 For *Paris Air*, see Schwarz, *Complete Works*, vol. 2, cat. no. 375.
- 66 See Henderson, *Duchamp in Context*, 169 and fig. 133.
- 67 See *ibid.*, 126, 179-82. For Duchamp's drawing, see again Duchamp, *Green Box*, in *Writings*, 39.
- 68 See again note 1.
- 69 See *Marcel Duchamp, Notes*, note 164.
- 70 See, e.g., Duchamp, as quoted in Katherine Kuh, *The Artist's Voice: Talks with Seventeen Artists* (New York: Harper & Row, 1962), 83.
- 71 When Katherine Dreier asked Duchamp to make a painting for her library in 1918, he somewhat grudgingly produced his last work on canvas, *Tu m'* (Yale University Art Gallery). If the work is turned 90 degrees, Duchamp seems to have recast the contrasting worlds of the Bride and Bachelors with Readymades as stand-ins for the protagonists (his 1916 Readymade *Hat Rack* as the Bride in her ethereal realm and the *Bicycle Wheel* evoking the Bachelors' world). See Henderson, *Duchamp in Context*, 208-209.
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