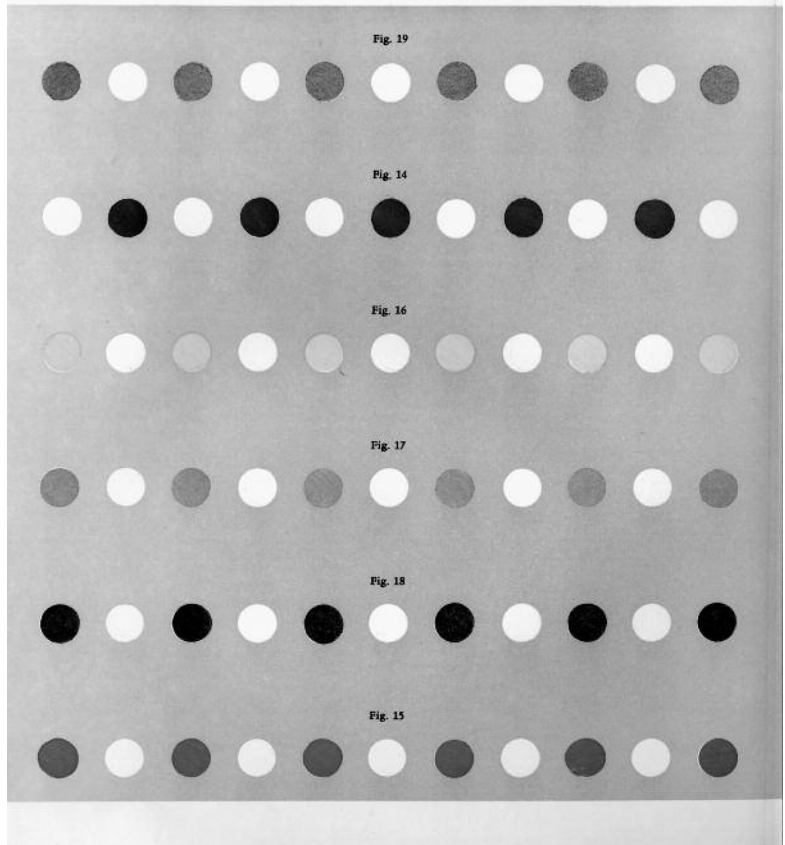


Plate 5 from M.E. Chevreul, *De la loi du contraste simultané des couleurs, et de l'assortiment des objets colorés, considéré d'après cette loi*, 1839. Robert B. Haas Art Library Special Collections, Yale University.

Assortiments des couleurs simples et binaires des artistes avec le blanc, le noir et le gris.

Planche 5.



Seurat's Media, or A Matrix of Materialities

CAROL ARMSTRONG

Where did Georges Seurat get the idea of the dot? Otherwise known as the pointillist mark—or perhaps we might call it the “pixel”—the painter first used the dot systematically in *A Sunday on the Grande Jatte*, begun in 1884 on the heels of the *Bathers at Asnières* and finished two painstaking years later, in 1886.¹ But where did it come from? As a riddle of origins, this is a query that cannot be answered. As an interrogation of before- and afterlives, however, it opens onto a complex matrix of interrelated media and materialities in whose web Seurat's dot is caught. As such, it is a question whose several unstable answers suggest a rewriting of modernist notions of medium-specificity as well as of the teleologies and binary oppositions inscribed within them.

Three or four possible solutions to the problem present themselves immediately. Georges Roque has already discounted one of them: that Seurat might have had in mind the illustrations from Michel Eugène Chevreul's 1839 *On the Law of the Simultaneous Contrast of Colors*. Several sheets of those illustrations take the form of enlarged dots.² Moreover, the illustrations accompany a text that in its long theoretical opening proceeds by way of an exhaustive listing of color pairs (“assortiments binaires”), which suggest that its author thought through his color theory according to a kind of binary code. (When he published his treatise, Chevreul was director of the dye works of the Gobelins tapestry manufactory.) Roque discounts that fact, but I shall come back to it.

Closer to the time of the painting of the *Grande Jatte* was the first successful deployment of the halftone screen for reproducing black-and-white photographs in the press. That took place in the *New York Daily Graphic* in 1873, and another version of the process was patented in England in 1882, though it would not begin to be widely used in the United States or Europe until the 1890s.³ Looked at up close, the halftone reproduction consists of variably sized ink dots spaced closer and farther apart.

The third in this group of possible answers to the unanswerable question of where Seurat's dot might have come from is the mosaic-like surface of the autochrome plate, made of tiny grains of potato starch dyed red-orange, green, and blue-violet. But not until twelve years after Seurat's death was this process patented—by the same Lumière brothers

responsible for the patenting of the French cinematograph in 1895.

Yet both the modern halftone process and the autochrome had earlier histories, which intersected more immediately with Seurat's practice. On the one hand, going back to the eighteenth century was the aquatint, whose reticulated surface was used, most famously, first by Francisco Goya and then, twenty-odd years prior to Seurat's short practice, by Édouard Manet to create a tonal rather than a linear "syntax."⁴ The reticulation as well as the resulting tonal effects showed up again in early efforts at achieving black-and-white photomechanical reproduction, such as the autotype or carbon print. On the other hand, earlier efforts at color printing, photomechanical and otherwise, preceded and helped to suggest the method of the autochrome plate. As Norma Broude shows, the "photochromotype" was used in a French illustrated newspaper, *L'illustration*, precisely during the time that Seurat was experimenting with the facture that would culminate in the pointillist mark.⁵ But instead of a secure origin for Seurat's dot, I would argue that the photochromotype, along with all the other possible answers to the question, is part of a relevant history not of a single medium but of a matrix of modern media.

One reason Roque discounts the importance of Chevreul's dots lies in the fact, which he emphasizes, that most painters got their Chevreul through Charles Blanc's 1867 *Grammar of the Arts of Design* and not from the original text and its illustrations. Another reason lies in the fact that the technical (i.e., pointillist) aspect of Seurat's neoimpressionism has been overshadowed by the color theory that Chevreul's dots were meant to illustrate. Already in 1899, when Paul Signac published his popularizing manifesto *From Delacroix to Neo-Impressionism*, pointillism was said *not* to be the point; instead what counted was divisionism—and its attachment to that branch of color theory that went back to Chevreul. And this in spite of the fact that its pointillism more than its divisionism made the *Grande Jatte* such a radical departure, both for Seurat himself and for all the others who either briefly or more long-lastingly took up the technique after they saw the *Grande Jatte* and the paintings that followed it. The painting's pointillism was new, not its divisionism per se; its dot technique—not its color theory—was novel, noticeable, and unprecedented.⁶

Its basis in Chevreulian color theory gave the *Grand Jatte* its pedigree, allowing Seurat's innovations to be placed in a line going back to Delacroix, with the red and green contrasts that Baudelaire had first emphasized in his *Salon de 1846*, and forward through Henri Matisse, the Fauves, and all the rest who went through a neoimpressionist phase, to twentieth-century color-abstractionism, such as Josef Albers's *Interaction of Colors*, published at Yale in 1963, and his related

Craigie Horsfield. *Via Gianturco*,
Naples, February 2010,
Concert Crowd, 2010. Detail.
Private collection.

“homages to squares.”⁷ Thus Seurat, who with his newly systematic divisionism first drove the decisive wedge between the color of the mark and its referent in the world, finds his established place in the often-told and much-enacted story of modernist abstraction, with its teleological linearity and avant-garde dialectics, not to mention its reductionist conceptions of the purity and single essence of the medium of painting, as well as the oppositions either implied or associated with it: between the spatial and the temporal, the optical and the tactile, the handmade and the mechanical, the high and the low.

In this article I focus on the point of Seurat’s dot and place it in a different lineage, one that goes forward to the present moment and looks back, while also moving backward to an earlier history in order to look forward. I spin a less linear yarn than the usual narratives of medium-specificity—one that involves the several media of painting, tapestry, drawing, photography, and digital media and deploys the metaphor of warp and weft both spatially and temporally, synchronically and diachronically, to describe the intersections between those media at several given moments and to pick up the threads of several interwoven histories. At the same time, I address Seurat’s attention to the material matrix of the different media he worked through, which is a different concept from those of the picture plane and flat support that have been so dear to the modernist story, starting with Maurice Denis’s “neo-traditionist” remark in 1890 (the year before Seurat’s death) that painting was “essentially a flat surface covered in colors arranged in a certain order,” and culminating, from 1939 onward, with Clement Greenberg’s effort to tell the story of painting being “hunted back to its medium.”⁸

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I begin by looking back from the vantage point of a contemporary artist with whom I have worked, Craigie Horsfield (a photographer, filmmaker, sound-installation artist, draughtsman, and writer, among other things), and his photo-tapestries (made by starting with an analog photograph, then making a digital scan of that photograph, and then entering that



scan into the computer to make digital instructions for the weaving of a Jacquard tapestry), exhibited first in London in 2008 (at Frith Street Gallery), in Antwerp in 2010 (at M HKA, Museum van Hedendaagse Kunst Antwerpen), and then in Naples (Galleria Alfonso Artiaco), New York (Marvelli Gallery), and Basel (Kunsthalle Basel) in 2011 and 2012. One of those tapestries (*Via Gianturco, Naples, February 2010, Concert Crowd*) depicts an anarchist rock concert in Naples. Coincidentally, many of Seurat's neoimpressionist colleagues were themselves anarchists. What is less coincidental is the pointillist effect of the Jacquard weaving of digitally scanned photographic information.

I proceed by looking forward from the moment, several centuries earlier, of the invention of the Jacquard loom, in the first decade of the nineteenth century during the booming years of the Lyon textile trade, and a black-and-white tapestry portrait of Joseph-Marie Jacquard himself, woven by such a loom in 1839, the year of photography's official birth and of Chevreul's influential publication, as it happens. Looking askance at the surface of Jacquard tapestries, one can see two of their characteristic features, one of them distinctive, the other shared in common with other kinds of tapestry; namely, the relief effect of the Jacquard surface and the matrix of any woven surface.

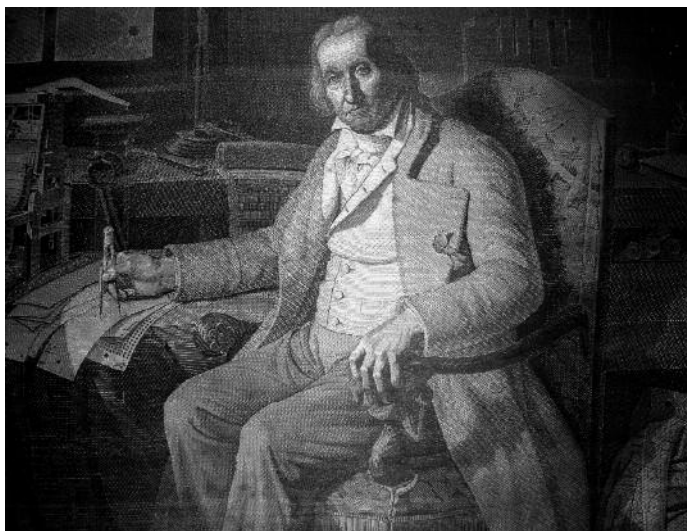
Let us now look back further to the Gobelins, of whose dye-works Chevreul was the director when he wrote *The Law of Simultaneous Contrast*, and which was in its decline by 1839. A key part of his brief as a chemist and practical natural philosopher was to try to repair that decline by addressing the quality of the Gobelins' dyes (though, as Chevreul showed, the dyes were not the problem). He distinguished among media in writing up the theory and practice of the "law of simultaneous contrast"—between tapestry and painting and between and among all other imaginable media, mostly decorative. But the problem of color saturation, contrast, and optical mixing in the weaving of threads of different colors—a problem to which Chevreul devoted a larger-than-usual section of his treatise—was what led to the project of *The Law of Simultaneous Contrast* in the first place.⁹

A key difference between Gobelins and Jacquard tapestries concerns me, though in no way did it concern Chevreul or his color theory. What was significant about the Jacquard loom was that its designs were determined by punch cards rather than by hand. The patterns of a Jacquard tapestry were determined by the on-off signals given by holes punched in cards, rather than being labor-intensively threaded

Below: Carquillat for Didier Petit et Cie (weaver) after Jean-Claude Bonnefond (painting and engraving). *Portrait of Joseph-Marie Jacquard*, 1839. Jacquard-woven silk. Art Institute of Chicago.

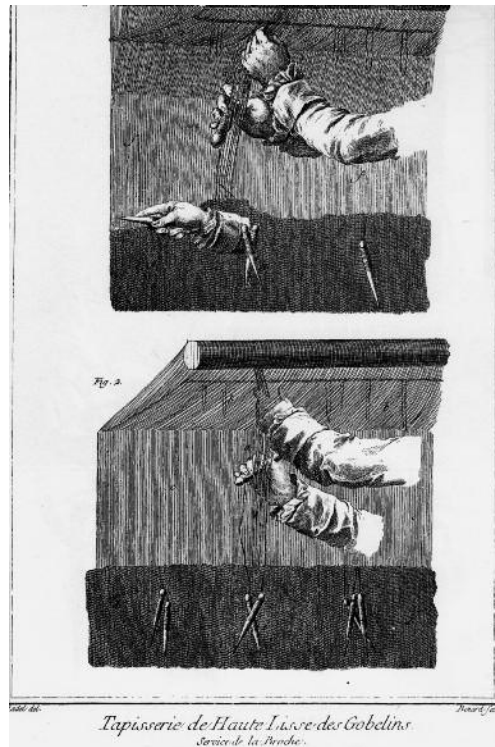
Opposite, left: Jacquard loom. Norwegian Technology Museum, Oslo.

Opposite, right: "Tapisserie de Haute Lisse des Gobelins, Service de la Broche" (High-warp Gobelins tapestry, Use of the spindle). Plate 10 from "Tapisserie/Tapisserie des Gobelins," in Denis Diderot and Jean le Rond D'Alembert, eds., *Encyclopédie, ou Dictionnaire raisonné des sciences, des arts et des métiers: Recueil de planches sur les sciences, les art libéraux et les arts mécaniques, avec leur explication*, vol. 9, 1771.



and rethreaded by hand, as is shown in several of the copious illustrations of the Gobelins tapestry-works in Denis Diderot and Jean le Rond d'Alembert's eighteenth-century *Encyclopédie*.¹⁰ The Jacquard punch cards are the ancestors of the computer punch cards that were still being used (though they were finally on their way out) when, back in the 1980s, I switched from the typewriter to the computer as a word-processing device. William Henry Fox Talbot's friend Charles Babbage was clear about the fact that his "difference engine," as imagined in 1822, and his "analytical engine," for which he built part of a trial model in 1837, owed a huge debt to Jacquard's loom. Babbage described these early forebears of the modern computer as machines for weaving numbers, or information. He went to great lengths to acquire a copy of the Jacquard loom—made portrait of Jacques-Marie Jacquard.¹¹ That portrait was one of the earliest examples of a free-standing digital image, in which the weft of the image, though not the warp, was determined by what was, essentially, binary code.

Horsfield's contemporary photo-tapestries put photography, the digital image, and tapestry together. His *Circus, Placa de Toros la Monumental, Gran Via de Les Corts Catalanes, Barcelona (Horses), February 1996* (2010), part of a set shown in Antwerp in 2010 and later of a pair shown in New York, depicts spectators at a nighttime circus performance. The work resonates with the composition of Seurat's *Parade* of 1887, one of the series of paintings after the *Grande Jatte* to be executed, from the ground up, using the pointillist technique, which to our eyes now look so like pixelated images. Even more than the painting, that tapestry recalls the fabulous nighttime drawings surrounding the *Parade*, almost all made with Conté crayon on special Michallet hand-laid paper, so that the raised and low-lying parts of the



textured ground show through the dusting of the charcoal-and-clay mixture of Conté crayon, and the lights and darks give the impression of being woven together *in* the matrix rather than *on* the plane surface of the sheet of paper, which is not a simple plane after all.¹²

I propose that Seurat's drawing and painting technique should be considered together. Once we do so, I believe it becomes clear that it was his most innovative work in drawing, above and beyond any other source, that was instrumental in the development of the pointillist painting technique.¹³

For the most part, Seurat preferred so-called laid paper to wove paper. The latter had been available as a machine-made rather than handmade product since about 1807 and gets its name from the closely woven mesh that forms the scrim of its paper-mold, a British invention of the eighteenth century (because of its flexibility, the mold could be mounted onto cylinders in a paper-making machine). This contrasts with the ribbed look of laid paper, which results from the parallel lines of the mold's facing, supported by the wider spacing of perpendicular lines in its backing. As others have noted, Seurat manifestly preferred laid paper to wove paper, partly because it allowed for the drier dust of particles left by the Conté crayon (invented in 1795 because of a shortage of graphite during the Napoleonic wars) to settle on and show the ridges that make up the gridded texture of hand-laid paper. Because it makes its textured matrix manifest, "laid" paper therefore looks more woven than "wove paper" does, and Seurat seems to have liked the "matrixial" look of the results.¹⁴

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Seurat's drawing practice started around 1877, before his brief stint as a student at the Academie des Beaux Arts. His copies and male "academies" demonstrate his mastery of the drawing languages of sharp-pencil contouring and softer charcoal shading. By as early as 1880 or so, however, his strategies had changed dramatically, as in the strikingly sensuous female nude, in Conté crayon on Michallet paper,



in the collection of London's Courtauld Gallery. Emerging out of a dark ground made by a thicket of scribbling and hatching, the lit volumes of her body are formed either by leaving the paper bare and/or by a more gossamer weave of grey marks, resulting not only in the inversion of the light ground/darker figure opposition of classical drawing but in the substitution of a primarily tonal for a linear syntax of mark-making. Almost nowhere except in the underarm does a discrete line demarcate an edge. The other marks overlay one another with greater or lesser degrees of density to form a veil, a matrix, a ground, where distinctions are achieved through shades of light and dark, black, grey, and white. Evoking the nocturnal world that Seurat would begin to inhabit in his later paintings—perhaps it was drawn at night, by candle-light or gas lamp—this kind of drawing suggests, to me at least, someone who was thinking about photography: not only the negative-positive method of printing but its replacement of tonal for linear values.¹⁵ (Edgar Degas's later turn to photography—and particularly to nocturnal photography—suggests an awareness of a similitude between the photographic negative and experimental drawing and printing techniques, such as the dark-ground monotype. Degas's night-life pictures were an important source for Seurat's similar subject matter in both drawing and painting.)¹⁶ That a female body seems to have stimulated this turn in Seurat's drawing practice is also significant.

In the following years of Seurat's practice, from 1881 to 1884, he would experiment with touch, both in painted and in drawn sketches, in oil paint and in Conté crayon, which largely replaced the graphite pencil in his work on paper. (At the same time, he would recapitulate the working gestures and laboring topoi of the three previous decades of modernist practice: Gustave Courbet's stonebreakers and Jean-François Millet's sowers and gleaners are prime among the manual-labor prototypes with which Seurat engaged.) The dark-ground method of drawing found in the female nude at the Courtauld did not predominate, but a practice he may have discovered in making that drawing did: that of the tonal silhouette and the web of overlaid marks, which also found its

Opposite, top to bottom:
Georges Seurat.

At the Concert Européen,
1886–1888. Conte crayon
and white gouache.

Museum of Modern Art.

Georges Seurat.

*La Parade du Cirque (Circus
Sideshow)*, 1887–1888.

Metropolitan Museum of Art.

Craigie Horsfield.

*Circus, Placa de Toros
la Monumental, Gran Via
de Les Corts Catalanes,
Barcelona (Horses)*,
1996/2010. Detail. M HKA,

Antwerp.

Left: Georges Seurat.

Back View of a Male Nude

Leaning on a Staff, 1877.

Charcoal and graphite.

Louvre, Graphic Arts,

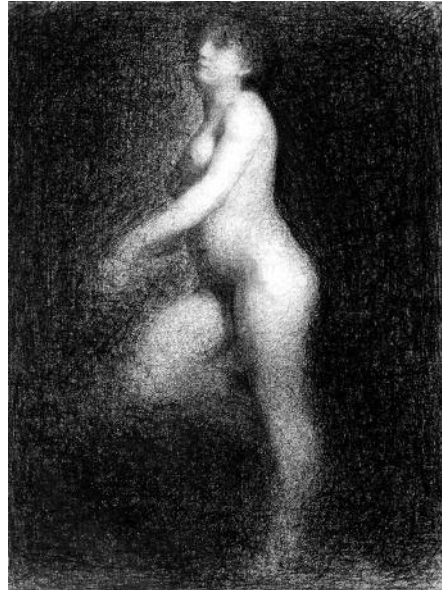
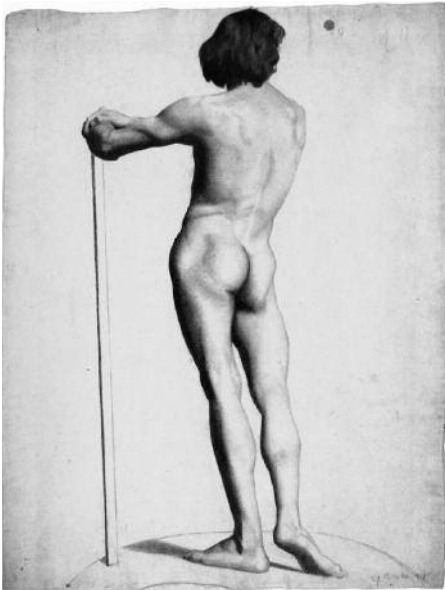
Fonds du Musée d'Orsay.

Right: Georges Seurat.

Nude, 1881–1882. Conte
crayon and graphite.

Courtauld Institute of

Art Gallery.

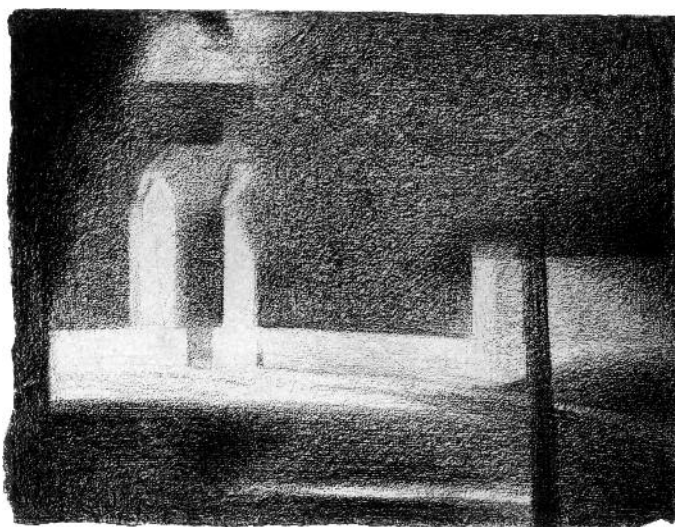


way into Seurat's already regularized version of the impressionist touch and palette, in fields of crisscrossing marks that look like enlarged, oil-painting versions of printerly crosshatching. In landscape oil sketches, too, recapitulating the shift from the twilight Barbizon mood to the broad-daylight impressionist treatment of modern industrial suburbs à la Camille Pissarro, Seurat played with what was becoming his signature web of marks, until it began, sometimes, to approximate the dot matrix, as in the field-of-poppies effect that both Claude Monet and Pierre-Auguste Renoir had already explored.

In his drawing practice of the same years, especially from 1883 to 1884, he would sometimes turn his hand to the dark-ground treatment, in which highlighted areas detach themselves from the darker background by means of the absence of Conté crayon, leaving the white of the paper bare and thereby stressing the tonal register—sometimes in landscapes that might be nocturnal or, alternatively, that suggest the strong contrast of midday sunlight. In these drawings the material matrix of the paper itself begins to count as it had not before.

The story is familiar: around this time Seurat began work on what would become the first of his major paintings, the *Bathers at Asnières*. The facture of the final painting exhibits what, at a distance, appears to be a smoothed-over, matte, fresco-like version of the crisscross texture of his painted studies, including the painted studies for the *Bathers* itself. In Seurat's preparatory drawings for this work, the Conté-crayon dark ground often extends all the way to the edge of the paper, as if it were part and parcel of the material support; that the dark ground need have nothing to do with a nocturnal referent becomes clear. The studies are remarkably cropped, as photographs would be much later on, not for purposes of being transferred by means of a cartoon grid to the final work and there enlarged, but simply as a function of the creation of that dark ground. In certain instances—as in his study of the calling boy (currently held by the Yale Art Gallery)—Seurat might well have executed the drawing after, rather than before, the final work. The cropping of the work is what leads me to this conjecture, and why not? The evidence suggests Seurat's drawing practice was just as important to him, and at least as innovative, as his work in painting.

More important is the possibility, suggested most strongly in the fully worked-up study of the slump-backed boy, that Seurat was creating his drawn tonal effects not exclusively by a scribbled network of lines or by abrasion and blending with the stump but sometimes



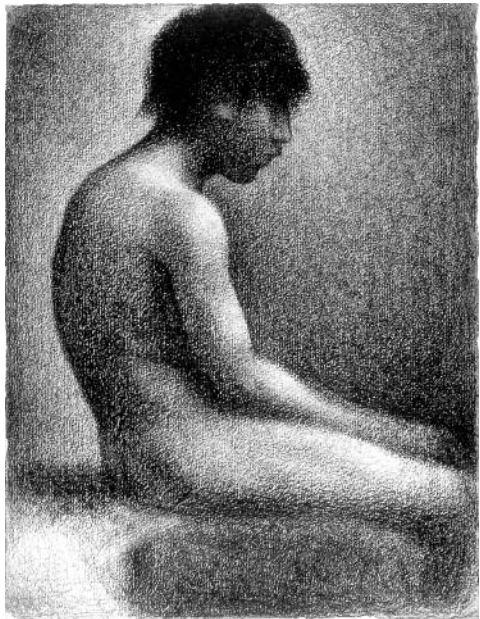
Below: Georges Seurat.
The Gateway, 1882–1884.
Conte crayon. Solomon R.
Guggenheim Museum.

Opposite, top:
Georges Seurat. *Echo*
(study for the *Baignade*),
1883–1884. Conte crayon.
Yale University Art Gallery.

Opposite, bottom:
Georges Seurat. *Seated Boy*
(study for the *Baignade*),
1883. National Gallery of
Scotland, Edinburgh.

simply by turning the Conté crayon stick on its side and applying tone, not line, and thus creating the drawn approximation of a photographic negative. However it was produced, the impression of scintillation and sparkle that is created by the tiny white ridges and points of paper showing through the dark matrix of Conté crayon is suggestive of the dotted, pixelated effect of the next great painting, the breakthrough *Grande Jatte*. The rasterized and/or woven look of these drawings—pointillism before the fact, by effect rather than by technique, by means of the interweaving of ground and facture rather than the mark per se—thus seems a plausible source for the idea of the dot.

A close examination of the surface of the *Bathers at Asnières* reveals not only that Seurat began to translate his drawn into his painted practice in that painting but also that it was a veritable laboratory of facture, of touch, handling, and working methods. Scanning its surface, one finds the woven crosshatching of the painted studies (in the grass, for instance), but also the web of more spidery marks of the drawn studies (the white coat of the reclining worker, who might be supposed to have worked in the textile, dye, or otherwise chemical industries of the region), and over much of the painting's surface, the dragging of dry paint over the weave of the canvas, which works with that weave as a material matrix similar to that of the ridges of Michallet paper. (One sees that use of the canvas weave most of all in and around the slumped back of the boy, defined by a thick white contour stroke that abuts the edge of his spine, so as, paradoxically, to avoid a drawn outline.) And then, as if the idea suddenly came to Seurat after the fact of this elaborate process, here and there a swarm or halo of dots appears (around the circular hat behind that same youth and in the red cap of the calling boy).



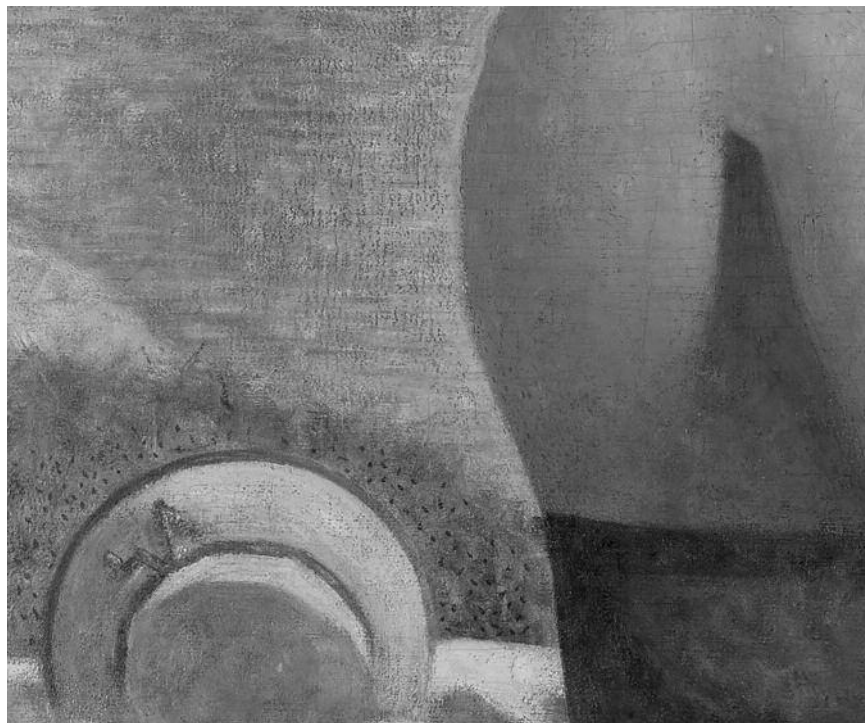
Seurat came to the pointillist technique of the *Grande Jatte* gradually, by returning to the studio strategies of the creation of large-scale academic history paintings, with a full battery of sketches and the hierarchical mode of invention that went with them: *croquis*, *études*, *esquisses*, *ébauches*. And in his landscape and figure studies, he moved back and forth between painting and Conté crayon: he thought them together, connecting the dots, as it

were, between the tonal and matrixial figure-ground relations of the one and the dotted and flecked joining of the two in a single weave in the other. Eventually he arrived at the final layer of the *Grande Jatte*, which functions like a pixelated screen or an inkjet print (whose sprayed, triadic color mixing it anticipates): seamlessly tonal from afar, a dot matrix up close. (The dots in that painting were either confined to its frame within a frame or added on top of previous layers that were not yet pointillist.) In addition to being compared to frescoes and mosaics and Egyptian funerary reliefs, the *Grande Jatte* also elicited remarks about its resemblance to tapestry.¹⁷

An unusual drawing of a café singer in the manner of Degas, begun the year after the completion and exhibition of the *Grande Jatte*, around the time of the fully pointillist *Parade* and Seurat's most intensive bout of nocturnal drawings, dots the *i*'s on my argument about the painter's interest in matrixial media at their points of intersection. This drawing is executed on commercially prepared Gillot paper invented by a lithographer who experimented with photomechanical media: coated in white pigment, printed with black lines vertically, and embossed horizontally so that it is ridged like laid paper and has a black-and-white mesh pattern by virtue of its preprinting. Seurat drew on top of this surface with black crayon, using the preprinted line pattern to provide the midtone of the image. On top of that layer he drew another layer of black crayon, which interacts with the black-and-white of the pre-given mesh.¹⁸ Though it appears to have been the only drawing for which Seurat ever used this paper, it nonetheless punctuates his practice by indexing his interest in the interrelatedness of print, drawing, and photographic techniques, as well as his interest in the related effects of wovenness, the warp and weft of what is to all intents and purposes a dot matrix, and the materiality of a "matrixial" ground. All of this is

Below: Georges Seurat.
Baignade (Bathers at Asnières), 1884. Detail.
The National Gallery, London.

Opposite: Georges Seurat.
Couple Walking (painted study for the *Grande Jatte*, 1884–1886. Fitzwilliam Museum, Cambridge.



significantly different—with different consequences—from the modernist notion of the flat plane of the picture-support: abstract, disembodied, purely optical, singular, and reductivist, the idealized two-dimensions of Euclidean geometry.

What are those different consequences? That work *in* the matrix, as opposed to *on* a plane, is close-up, material, and embodied, tactile *as well as* optical, plural, and generative, and something that, quite apart from being a neutral, passive support, weighs on the account of the material thought of the painter. In that material thought the distinction between the handmade and the mechanical that is so deeply inscribed in the story of modern media comes undone, just as it does in Seurat's own earlier drawing-subjects, of figures, male and female, themselves doing close-up work—such as sewing, knitting, writing, and even painting—that is at once mechanical and manual.

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I end with a hanging thread, which concerns the “matrixial,” a word I have used so far without reference to its theoretical usage in the work of the contemporary psychoanalyst/artist, Bracha Ettinger.¹⁹ I have not thus far mentioned that original use of the neologism—*matrixial* relies on the etymology of the word *matrix* in the Latin word for “mother,” *mater*, from which we also get our words *matter* and *material*—partly because I do not subscribe to the Lacanian school of psychoanalytic thought in which Ettinger's relational feminism is rooted. At the same time, I have wanted to stress the other, more technical meanings of the word *matrix*: as in the “matrix” or carved/etched plate/mold of print-making or the “dot matrix” system of everything from the halftone to the colored digital image—to which might be added the matrix of

woven fabric and of laid paper, all of which complicate both simple linearity and the figure-ground gestalt with a web or grid formation that has its abstract counterpart in the rows and columns of mathematical “matrix theory.”

According to the *Oxford English Dictionary (OED)*, the word *matrix* has an array of meanings in the worlds of biology—botany and zoology—biochemistry, pharmacology, mineralogy, architectural construction, sociology, and political science (to which might be added linguistics), business administration, science fiction,

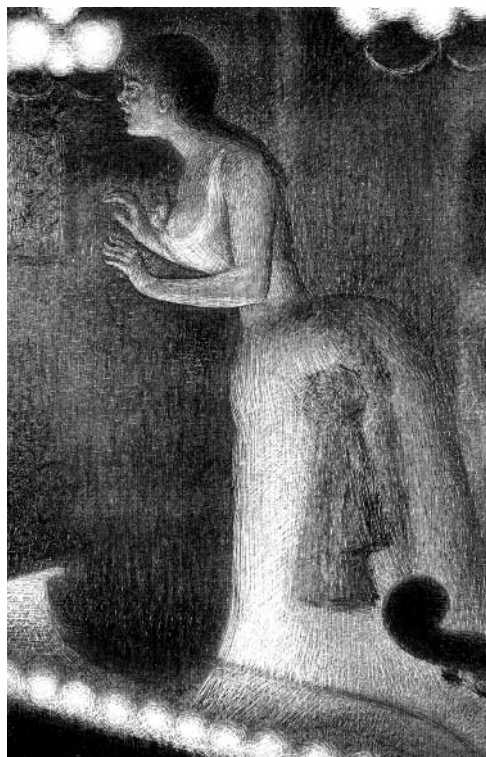


printing, dentistry, sound recording, photography, mathematics, logic, electronics, and computing, all having to do with one, both, or all of two or three root definitions: namely, “a supporting or enclosing structure . . . a substrate . . . a ground substance”; “a place or medium in which something is originated, produced, or developed”; and an “an interconnecting network . . . a rectangular array . . . lattice or grid.”²⁰ Those definitions are tied to the phenomenological meaning of *matrice* as the bodily “native space of . . . every other existing space.”²¹ They also lead me back to Ettinger’s theorizing of the “matrixial,” which is predicated on the first, historical meaning of the word *matrix*, also given in the *OED*: “The womb; the uterus . . . the ovary.” Thus, if in Ettinger’s “matrixial” theory the womb is the first space of human psychic, social, and linguistic relationality, in a “matrixial” account of media, works of art such as Seurat’s *Grande Jatte* or Horsfield’s *Circus* emerge out of a matrix that is the birthplace and continuous site of emergence of material thought. And if the etymology of *matrix* suggests a gendered understanding of materiality, embodiedness, and generativity, so might it be deployed as a gendered metaphor for a different understanding of media and their manifold imbrications of the technical and the imaginative, the material and the mental, the tactile and the optical, embodied sensibility and abstract theoretical thought.

Such an imbrication is most clearly spelled out in media that have traditionally been gendered female. If her husband sought to eliminate as far as possible the factor of different materialities and their textures from his color experiments, Anni Albers brought them to the fore in her discussion of weaving, along with its relatives braiding, knitting, crocheting, lace-making, and embroidering, and along the way showed that it is in those crafts associated with women and involving textile and its tactile textures that a relevant notion of *matière* emerges. In *On Weaving*, in her chapter dedicated to the “tactile sensibility,” Albers mounts an argument not only for that sensibility but for the aesthetic importance of contact with materials, “concrete substances,” and “medium(s)”:

All progress, so it seems, is coupled to regression elsewhere. We have advanced in general. . . . But we certainly have grown increasingly insensitive in our perception by touch, the tactile sense.

No wonder a faculty that is so largely unemployed in our daily plodding and bustling is degenerating. Our materials come to us already ground and chipped and crushed and powdered and mixed and sliced, so that only the finale in a



long sequence of operations from matter to product is left to us: we merely toast the bread. No need to get our hands into the dough. . . .

We touch things to assure ourselves of reality. We touch the objects of our love. We touch the things that we form. Our tactile experiences are elemental. . . .

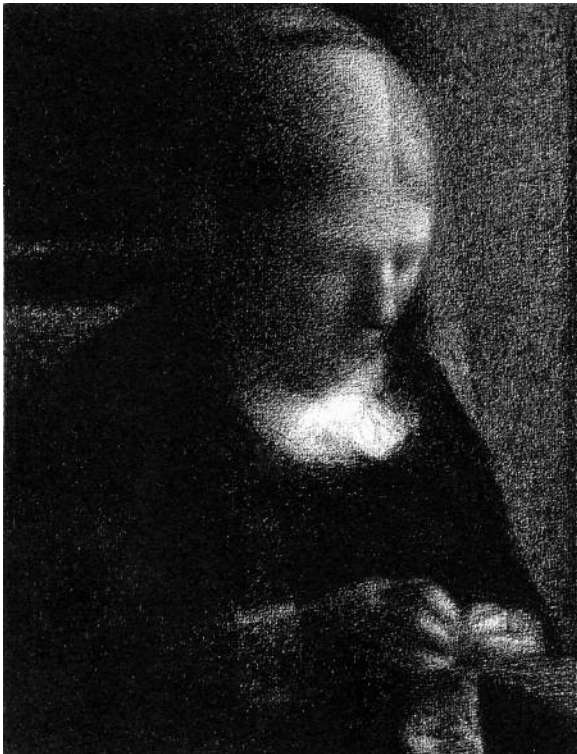
Concrete substances . . . constitute raw material; and here we still have to add that to which our sense of touch responds—the surface quality of matter and its consistency and structure. The very fact that terms for these tactile experiences are missing is significant. For too long we have made too little use of the medium of tactility. *Matière* is the word now usually understood to mean the surface appearance of material. . . . There seems to be no common word for the tactile perception of such properties of material, related to inner structure. . . .

Surface quality of material, that is, *matière* . . . is an aesthetic quality and therefore a medium of the artist; while quality of inner structure is . . . the concern of the scientist and the engineer. Sometimes material surface together with material structure are the main components of a work; in textile works, for instance, specifically in weavings or . . . in works of architecture. Parallel to this overlapping of outer and inner characteristics in a work is the overlapping of artistic, scientific, and technological interests on the part of the weaver or the architect. The pendulum of the work swings from art to industrial science.

Structure . . . needs our intellect to construct it, or analytically, to decipher it. *Matière*, on the other hand, like color, cannot be experienced intellectually. . . . [I]t takes sensibility to respond to *matière*, as it does to color.²²

Opposite: Georges Seurat.
Café Singer, 1887–1888.
Crayon on Gillot paper.
Private collection.

Below: Georges Seurat.
*Embroidery (The Artist's
Mother)*, 1882–1883.
Conte crayon. Metropolitan
Museum of Art.



Among other things, *On Weaving* is concerned with unsettling distinctions between manual and mechanical labor (a loom, even one powered by hand, is still a rudimentary machine), while also complicating a progressivist and hierarchical understanding of the relation between low craft and high art—“hand weaving,” Albers says at the outset, is “a method of forming a pliable plane of threads by interlacing them rectangularly” and is not only “[o]ne of the most ancient crafts” but has “remained essentially unchanged to this day,” such that even “the final mechanization of the craft through introduction of power

machinery has not changed [its] basic principle.”²³ And between (low, manual, female?) weaving and (high, technological, male?) architecture, she seeks to force a connection between surface and structure, sensibility and intellect, matter and mind—if not a “regression” to Mother, she who was our first reality, who first formed, touched, and loved us (to use the terms associated with *matière* in the above quotation).

Which returns me to Seurat, Seurat’s mother, the “matrixial” question of the touch and the “picture element,” and Horsfield’s phototapestries. To associate Seurat’s material thought with Anni Albers rather than Josef Albers is to shed a rather different light on the subject, and it brings us to Seurat’s own depictions, in drawing, of his mother sewing, embroidering, and knitting. Setting these images of his mother in a somatic world of nighttime shadows whose dense blackness is evocative of a kind of domestic “dark matter,” Seurat returns to the nocturnal aspect of his slightly earlier female nude, which already suggested a deep connection between the dark-ground mode and the female body. At the same time these drawings focus attention on an up-close, almost blind world of intimate manual work that is mechanical in nature, more tactile than optical, and small and repetitive in its gestures—its yield lies against the unseen lap, and its distance from the body’s core is a finger’s length away (reminding us that the “digital” goes back to fingers as much as to numbers—from counting on fingers, to using fingers to push wool over needles, punch holes in cards, or tap the keys of a typewriter or computer). Later, Seurat made drawings of certain of his male friends, such as Paul Alexis and Edmond Aman-Jean, writing and painting, which suggests that those activities, too, are hard on the eyes, and close, minute, and digital in their gestures. (At the same time, he made two drawings of painters—one like himself, the other probably a late Haussmannian house painter—standing on the scaffolding of large works, making large gestures like those of his earlier sketches of stonebreakers, sowers, and gleaners.) What all of this suggests is an awareness of the relay between the ambitiously large-scale, macroscopic optical effect and the diminutive, almost microscopic touch, made delicately and repetitively with the point of the brush.

That awareness is combined with a focus on the maternal. A Conte crayon portrait of his mother from an even closer distance, so that her working hands are cropped out but implied beneath the lower deckle edge of the sheet of Michallet paper, zeroes in on the maternal image, though without emphasizing the face’s femininity. In so doing, it identifies the physical matrix of paper-and-Conte-crayon with the artist’s mother, her eyes lowered in concentration and almost elided in the tactile texture of the drawing’s substance, structure, and surface, as if she were all but sightless. Almost no visible trace can be seen of the large

gesture of a drawn line, so that figure and ground, image layer and substrate, are inextricable from one another, and between the evident weave of the paper, the tonal effect of the dark substance adhering to it, and the scintillation of the whites showing through that substance, the medium-specificities of a woven fabric, the mark-less analog photograph, and the uniformly pixelated image are all suggested and conflated. Meanwhile the ground is no more neutral, immaterial base to the image's superstructure than the mother's matrixial body is to the form and/or concept that it generates and develops.

In such an account, there is no reason that a concern with specificity should entail the qualities of singularity or purity of, or the black-and-white oppositions associated with, essentialist notions of medium; quite the contrary. Moreover, if we return one last time to one of the present moment's afterlives of Seurat's tonal drawing and pointillist painting practice, Horsfield's photo-tapestry work, and to the title, "Confluence and Consequence," of its most comprehensive exhibition in Antwerp in 2010, we discover that the notion of the "matrixial" covers the temporality of the interwoven histories of art and technology as well.²⁴ There is no single thread to follow from origin to teleological endpoint; rather, there is a matrix of relations, horizontal and vertical, on the surface and in depth, that go backward and forward in time as well as in space, expanding and contracting from different points of intersection in that matrix, thickening and thinning, coming close and moving further away, growing large and small according to one's vantage-point onto what unfolds.

Georges Seurat.
The Artist's Mother,
1882–1883.
J. Paul Getty Museum.



Notes

1. On the “pixel,” or “picture element,” see Richard F. Lyon, “A Brief History of ‘Pixel’” (Paper EI 6069-1, presented during “Digital Photography II” at the IS&T/SPIE Symposium on Electronic Imaging, 15–19 January 2006, San Jose, California), www.foveon.com/files/ABriefHistoryofPixel2.pdf. On the development and reception of this manifesto-painting, see Robert L. Herbert, *Seurat and the Making of La Grande Jatte* (Chicago: The Art Institute of Chicago, in association with University of California Press, 2004).

2. See Georges Roque, “Chevreul’s Color Theory and Its Consequences for Artists” (paper presented at Color and Textiles: From Past to Future, a meeting of The Colour Group [GB], Paris, 2010). See also Georges Roque, *Art et science de la couleur* (Paris: Gallimard, 2009), esp. 56–234 (on Chevreul) and 350–363 (on Seurat).

3. On the history of printing and photomechanical methods of reproduction, see Estelle Jussim, *Visual Communication and the Graphic Arts: Photographic Technologies in the Nineteenth Century* (New Providence, NJ: R.R. Bowker, 1974); and Richard Benson, *The Printed Picture* (New York: The Museum of Modern Art, 2008). The latter was published in tandem with the excellent exhibition of the same name. Benson looks back to the beginnings of printmaking and forward to the digital image, citing William Ivins’s pathbreaking *Prints and Visual Communication* (Cambridge, MA: Harvard University Press, 1953), as the benchmark he wished to flesh out.

4. Ivins uses the word *syntax* to describe the abstract system of marks that make up the language of the print image, arguing that with the photograph and the halftone reproduction (“a cheap and easy means of symbolic communication without syntax”), not only linear syntax but syntax in general was eliminated in favor of the image’s symbolic statement and information content. William M. Ivins Jr., *Prints and Visual Communication* (Cambridge, MA: MIT Press, 1969), 129.

5. Norma Brode, “New Light on Seurat’s ‘Dot’: Its Relation to Photo-Mechanical Color-Printing in France in the 1880s,” *The Art Bulletin* 56, no. 4 (December 1974): 581–589. Brode, and everyone else who has written about the development of Seurat’s technique since then, relies on William Inness Homer’s *Seurat and the Science of Painting* (Cambridge, MA: MIT Press, 1964).

6. See Paul Signac, *D’Eugène Delacroix au néo-impressionnisme*, 3rd ed. (1899; Paris: H. Floury, 1921), 4: “Le néo-impressionniste ne *pointille* pas, mais *divise*” (The neo-impressionist does not *dot*, he *divides*); emphasis in original.

7. See Baudelaire Dufaÿs (Charles Baudelaire), *Salon de 1846* (Paris: Michel Lévy Frères, 1846). Proceeding from the question “Qu’est-ce que le romantisme?” (What is romanticism?) to “De la couleur” (On color), Baudelaire enunciates the Chevreulian principle that “La couleur est donc l’accord de deux tons” (Color is therefore the agreement of two tones; 12), while embodying that principle in the particular relation of red to green—“le rouge chante la gloire du vert” (red sings the glory of green; 10)—and moving directly from there to the formula, romanticism = colorism = Delacroix: “Le romantisme et la couleur me conduisent droit à EUGENE DELACROIX” (Romanticism and color lead me directly to EUGENE DELACROIX; 17). As for Josef Albers, see *On the Interaction of Color* (1963), rev. pocket ed. (New Haven: Yale University Press, 1975), esp. ch. 3: 6–7, where he addresses his famous exercises with colored paper. Answering the question “Why color paper—instead of pigment and paint,” he remarks, “color paper permits a repeated use of precisely the same color without the slightest change in tone, light, or surface quality. It permits repetitions without disturbing changes

caused by varying application of paint . . . ; without traces of hand or tool resulting in varying density and intensity”; and “color paper also protects us from the undesired and unnecessary addition of so-called texture . . . which too often only hides poor color conception.” (7).

8. “Se rappeler qu’un tableau—avant d’être un cheval de bataille, une femme nue, ou une quelconque anecdote—est essentiellement une surface plane recouverte de couleurs en un certain ordre assemblées” (“Remember that a picture—before being a war horse, a nude woman, or telling some other story—is essentially a flat surface covered with colours arranged in a particular pattern”). Maurice Denis, “Définition du néo-traditionnisme,” *Art et critique*, no. 65 (23 August 1890): 556–558, translated as “Definition of Neo-Traditionalism,” in Charles Harrison et al., eds., *Art in Theory 1815–1900* (London: Blackwell, 1998), 863. Clement Greenberg, “Towards a Newer Laocoön” (1940), in *Perceptions and Judgments, 1939–1944*, vol. 1 of *Clement Greenberg: The Collected Essays and Criticism*, ed. John O’Brian (Chicago: University of Chicago Press, 1988), 23–38. (The essay was originally published in *Partisan Review*.) For a definition of the support that comes closest to mine in this essay, see the chapter on François Rouan in Hubert Damisch, *Fenêtre jaune cadmium: Ou les dessous de la peinture* (Paris: Éditions du Seuil, 1984), esp. 275–276 (“La matrice”) and 278–284 (“L’origine textile de l’art”).

9. See Michel Eugène Chevreul, *De la loi du contraste simultané des couleurs et de l’assortiment des objets colorés considérés d’après cette loi dans ses rapports avec la peinture, les tapisseries des Gobelins, les tapisseries de Beauvais pour meubles, les tapis, la mosaïque, les vitraux colorés, l’impression des étoffes, l’imprimerie, l’enluminure, la décoration des édifices, l’habillement et l’horticulture* (Paris: Pitois-Levrault et Cie, 1839). As the long full title makes clear, Chevreul’s theory was medium-specific in its multiple applications. However, though painting comes first in the long list of media, tapestry, which traditionally sought to imitate the effects of painting, has pride of place. Also, though Chevreul’s color wheel suggests more continuity between colors than Goethe’s or Newton’s, and though it follows theirs in its ultimately triadic logic—which would continue, with modifications, into the RGB (additive) and RYB (subtractive) color triads of the illuminated (screen) and pigment image, as well as the yellow-magenta-cyan triad of the contemporary inkjet printer, whose pixelated color mixing is a later relative of Seurat’s dotted optical mixture—the basic unit of his thought is as binary as the on-off punch card of the Jacquard loom.

10. See Denis Diderot and Jean le Rond d’Alembert, *Encyclopédie, ou Dictionnaire raisonné des sciences, des arts, et des métiers: Recueil de planches sur les sciences, les art libéraux et les arts mécaniques, avec leur explication*, vol. 9 (Paris: André le Breton, Michel-Antoine David, Laurent Durand, et Antoine-Claude Briasson, 1771), “Tapissier/Tapisseries des Gobelins,” plate 10, “Tapisserie de Haute Lisse des Gobelins, Service de la Broche.” In the case of the Jacquard loom, though its designs are determined by punch cards rather than by hand, those punch cards must be punched by the fingertips, and the loom itself may be manually driven in other regards.

11. See James Essinger, *Jacquard’s Web: How a Hand Loom Led to the Birth of the Information Age* (Oxford, UK: Oxford University Press, 2004). Though it lays out its story in linear order, with the appearance of a this-led-to-that determinism, Essinger’s book is nevertheless an example of a “matrixial” rather than linear history, which has an ancestor in James Burke’s fascinating 1978/1979 British Broadcasting Corporation series *Connections* (also published as a book: *Connections* [Boston: Little, Brown,

1978], whose fourth chapter, “Faith in Numbers” (81–113), is on the interconnections among diverse inventions such as the grain mill, waterwheel, printing, weaving, and computing).

12. On Seurat’s drawings, see the superb exhibition catalogue, Jodi Hauptman, ed., *Georges Seurat: The Drawings*, exh. cat. (New York: Museum of Modern Art, 2007), especially the essay by Karl Buchberg (“Seurat: Materials and Techniques,” 30–41), from which I get much of the information about Seurat’s materials and material procedures. See Yves-Alain Bois’s review of this show and catalogue in *Artforum* 46, no. 8 (2008): 359. See also Michelle Foa, “Georges Seurat: Picturing Perception” (Ph.D. diss., Princeton University, 2008), which puts the canonical figure paintings together with the landscape work and the drawings. See also the foundational text by Robert Herbert, *Seurat’s Drawings* (New York: Shorewood, 1962).

13. I am not the first to see or argue the relationship between the pointillist paintings and the techniques of the drawings: the point is made in passing by Broude, 585, and by Hubert Damisch, “Polka Dots and Moonbeams,” in *Georges Seurat*, 18–123.

14. On the history of paper, see Nicholas A. Basbanes, *On Paper: The Everything of Its Two-Thousand Year History* (New York: Knopf First Editions, 2013); Ian Sansom, *Paper: An Elegy* (London: Fourth Estate, 2012); and Dard Hunter, *Papermaking: The History and Technique of an Ancient Craft* (Mineola, NY: First Dover Edition, 2011).

15. Though Ivins does not state this outright, the photograph (and with it the halftone), in its elimination of syntax, also replaced a linear with a tonal language of the image and its reproduction. But this fact is implicit both in the name “halftone” and in the teleology that Ivins traces from the linearity of the woodcut and engraving through the tonal effects of etching and, in particular, aquatint, through to the direct imprint of the lithograph and the emulsion of the (analog) photograph. In describing the difference between a daguerreotype and a photograph proper, Ivins remarks, “A photograph is an image, usually on paper, in silver or pigment, or stain, that can be exactly repeated. The daguerreotype not only was not exactly repeatable, but its image instead of being composed of pigments or stains was made by the minute shadows cast by the light in microscopically small reticulations or pits in the surface of a highly polished metal plate.” Ivins, *Prints and Visual Communication*, 118. (Ivins’s theory of the medium-specificity of photography will not allow him to see the daguerreotype as a photograph, a view shared by Benson in *The Printed Picture*.) On the partiality and elasticity of modernist definitions of medium-specificity, see Rosalind Krauss, “Stieglitz/Equivalents,” *October* 11 (Winter 1979): 129–140.

16. On Degas’s experimentation with photography and other media, see my “Degas in the Studio: Embodying Medium, Materializing the Body,” in *Edgar Degas: The Late Work*, ed. Martin Schwander (Basel: Fondation Beyeler, 2012), 23–31.

17. See, for example, Félix Fénéon, *Les impressionnistes en 1886* (Paris: Publications de *La Vogue*, 1886), 22: “Son immense tableau la *Grande-Jatte*, en quelque partie que l’on examine, s’étale monotone et patiente tavelure, tapisserie” (His immense picture, the *Grande Jatte*, in whatever part one examines it, spreads out in a monotonous and patient maculation, or tapestry). And Signac ends *D’Eugène Delacroix au néo-impressionnisme* with the following sentence: “Ces toiles qui restituent de la lumière aux murs de nos appartements modernes, qui enchâssent de pures couleurs dans des lignes rythmiques, qui participant du charme des tapis d’Orient, des mosaïques et des tapisseries, ne sont-elles pas des décorations aussi?” (These canvases which restore light to the walls of our modern apartments, which set pure colors within rhythmic lines,

which participate in the charm of Oriental carpets, of mosaics and tapestries, are they not decorations as well?; 86).

18. This drawing is discussed and illustrated by Buchberg, "Seurat," 40–41.

19. See Bracha Ettinger, *The Matrixial Borderspace* (Minneapolis: University of Minnesota Press, 2006).

20. These definitions of *matrix* are taken from the third (online) edition of the *Oxford English Dictionary*, as updated in 2001 (see <http://www.oed.com/>). Not included in this set of definitions is an obsolete word, *menstruum*, once an alchemical synonym for *medium*, defined under its own heading in the *OED* not only as "the menses" but as "a nutritive or formative medium, a matrix."

21. Maurice Merleau-Ponty, "Eye and Mind," in *Maurice Merleau-Ponty: Basic Writings*, ed. Thomas Baldwin (London: Routledge, 2004), 307. In the original French the passage reads, "Le corps est pour l'âme son espace natale et le matrice de tout autre espace existant." Maurice Merleau-Ponty, *L'oeil et l'esprit* (Paris: Éditions Gallimard, 1964), 54.

22. Anni Albers, *On Weaving* (London: Studio Vista Publishers, 1965), 62–63. See also T'ai Smith, "Limits of the Tactile and the Optical: Bauhaus Fabric in the Frame of Photography," *Grey Room* 25 (Fall 2006): 6–31.

23. Albers, *On Weaving*, 19. Neither weaving nor knotting and knitting are exclusively the province of women, as Albers's illustrations demonstrate (though her third plate, representing the ancient "Greek warp-weight loom," shows women at work). Nor does Albers herself explicitly reference the gendering of either weaving or architecture, in spite of the fact that that gendering had been built into the Bauhaus system. See Anja Baumhoff, *The Gendered World of the Bauhaus: The Politics of Power at the Weimar Republic's Premier Art Institute, 1919–1932* (Frankfurt: Peter Lang, 2001). Sigmund Freud, whose daughter Anna took up weaving, hypothesized the essential femininity of weaving thusly: "It seems that women have made few contributions to the discoveries and inventions in the history of civilization; there is, however, one technique which they may have invented—that of plaiting and weaving. . . . Nature herself would seem to have given the model which this achievement imitates by causing the growth at maturity of the pubic hair that conceals the genitals. The step that remained to be taken lay in making the threads adhere to one another, while on the body they stick into the skin and are only matted together." (Freud goes on to remark that if we find this idea "fantastic," as I do, and the corollary theory of penis envy an "*idée fixe*" on his part, as I do, he is "of course defenseless.") Sigmund Freud, "Femininity," in *New Introductory Lectures on Psychoanalysis* (1933), lecture 3, in *The Standard Edition: The Complete Psychological Works of Sigmund Freud*, ed. James Strachey (New York: W.W. Norton, 1990), 164.

24. See Catherine de Zegher, ed., *Craigie Horsfield: Schering en inslag / Confluence and Consequence*, exh. cat. (Antwerp: Museum of Contemporary Art Antwerp, 2010), includes my essays "Not the End" (182–186) and "A Fable" (203–216), concerning the pair of photo-tapestries representing rhinoceroses. (All the tapestries were woven at Flanders Tapestries in Wielsbeke, Belgium. See <http://www.flanders-tapestries.com/>.) See also my "Time and Materials: Craigie Horsfield and Tapestry," *Artforum* 47, no. 2 (October 2008): 191–195.