

Deanna Petherbridge

The Primacy of Drawing

HISTORIES AND THEORIES OF PRACTICE

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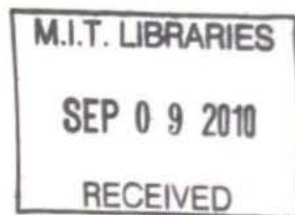
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Page v John Thomas Smith, *J. M. W. Turner in the Print Room at the British Museum*, 1820s, watercolour over graphite.

222 × 182 mm. London, The British Museum, 1885.0509.1648



To the Staff and Keeper of the Department of
Prints and Drawings, The British Museum





Part Two
The Linear Economy

Chapter Four

Line, Mark, Linear Codes and Touch

On the one hand, line is the entire construction taken as a whole ... in this case the line is the carcass, the skeleton, the relationship between different planes. On the other, it fixes the kinetic moments of the construction of an organism used as a unitary whole made up of individual parts, and in this case line is the path ahead, movement, collision, conjunction, break and continuation ... Only the line, then, tells us what has happened.

Alexander Rodchenko¹

The basic units of lines, marks and traces and the way that they relate to each other and to the support materials on which they are deployed constitute the primary aspect of the linear economy. They are made by hand using very simple drawing instruments, and also in the technological extension of drawing in analogical and digital computer software, which approximates linearity (long sequences of clustered pixels) *as if* made with a simple tool. No matter how the tools of drawing are used or simulated, or approximations of the linear are explored, in works from Picasso's flashlight drawings in air captured on deteriorating celluloid, to Marcus Raetz's drawings with twigs, Richard Long's traces in landscape or Walter de Maria's *Mile Long Drawing in the Mohave Desert* (1968), line asserts its abstract, directional and motile qualities, unlike the transformative medium of paint, which acts through the suggestibility of colour-as-sensation. Painting participates in a spatial dance whether we want it or not: cold colours recede, warm colours appear to come forward; juxtapositions of colour set up optical vibrancies; forms expand or contract by virtue of their colour relationships. Lines can be organised into coded systems to approximate the spatial and descriptive aspects of colour or to simulate textures, but unadorned line escapes the inherently sensory/evocative aspects of paint, *except in its apparent ability to suggest movement*: what the seventeenth-century theorist Franciscus Junius had referred to as a 'deceitfull similtude of Life and Motion'.²

Drawing systems that represent spatiality, volume, solidity and textural differentiation are different from denotational codes, although both prolong ideation, or thinking-looking, in a different way from painting.³ This is part of the reason why, since classical times in the West, drawing has been understood by artists, philosophers and theorists to be linked to *idea* and contrasted with the sensational aspects of paint/colour that work more immediately upon the emotional and physical responses of the onlooker through value, hue and saturation.⁴

Although the possibilities of drawing are limited by particularities of medium, and the types of drawing codes deployed, hand drawing covers a wider spectrum of practice than painting and is far less easy to define. It occurs as strict, uninflected outline or marks of varying thickness and pressure, and covers all sorts of modalities approaching the transformative properties of paint: as liquid wash, spreading and diffusing the integrity of line and bonding itself to the paper support, or rubbed pastels approximating the plasticity of paint through the manipulation of colour and tonality. These approximations towards paint are also modelled with greater or lesser success within computer graphic/paint programs, particularly through 'filters' that simulate certain styles of rendering in paint or drawing techniques.⁵ In hand drawing, because a single medium cannot offer the range of effects of paint, it is not unusual for artists to employ a wide repertoire of materials, techniques and marks in staged develop-

45 (facing page) Hyacinthe Rigaud, *Portrait of a Man*, n.d., black chalk, grey wash, heightened with white and grey gouache on blue/grey paper, 356 × 279 mm. Los Angeles, The J. Paul Getty Museum, 86.GB.612



ments or simultaneously combined in their drawings. Computer software programs offer an analogous menu of special effects through strategies of rotation, shearing, morphing, blending, scaling, filtering, stamping and an enormous, and possibly inhibitory, potential of digital image storage, retrieval, juxtaposition and montage.⁶ Experimental combinations and elaborations can be reversed, forwarded or supplemented at will, unlike hand drawing, where the clash of different modes and materials usually halts a sequential development and calls for a pause or new drawing.

Although gestural lines and marks carry the imprint of the bodies that have made them, and therefore seem to be part of the phenomenal world, nevertheless, line itself – abstract, directional or imitative – does *not* exist in the observable world. Line is a representational convention, if a primary element in the formal arsenal of making art.

Moving Lines and Narratives of Making and Reading

The pen should, as it were, walk slowly over the ground, you should be able at any moment to stop it, or to turn it in any other direction, like a well-managed horse.

John Ruskin⁷

Thus the eye, like a grazing animal, feels out the terrain not only from top to bottom but also from left to right and in all directions for which it feels the need. It travels the paths laid down for it in the work, which itself came into being through movement and became fixated movement.

Paul Klee⁸

The pictorial work springs from movement, it is itself fixated movement, and it is grasped in movement.

Paul Klee⁹

Drawn lines, by the very associations that link vision to the object of the gaze by a 'sight line', encapsulate the trace of the moving hand as indexical signs that are reconstituted by the movement of the observing eye.¹⁰ 'The line is a visible action', wrote Roland Barthes in a discussion of Cy Twombly: 'the line, however supple, light, or uncertain it may be, always refers to a force, to a direction; it is an *energon*, a labor which reveals – which makes legible – the trace of its pulsion and its expenditure'.¹¹ Paul Valéry suggested: 'the shapes our sight reveals to us as contours are produced by our consciousness of the concerted movement of our eyes as they register precise vision. This *registering* movement constitutes *line*'.¹² The artist/theorists Kandinsky and Klee located their discussions about lines and shape within a taxonomy of dynamic and passive lines.¹³ Line as a dynamic time-trace subsumes a complex layering of signification in the making of drawing and its reception, where it is not easy to unravel actu-

ality and illusion, inherent movement and implied motion and emotion.

In many respects, the moving hand of drawing registers the movement of the thinking eye, the degree of coordination being susceptible to multiple external and internal influences and depending on the skill perfected by the artist.¹⁴ The value placed on this straightforward hand-eye coordination in drawing, particularly sketching, is so great that there are all sorts of attempts to incorporate 'real-time' drawing into computer graphics through the employment of direct drawing tablets or whiteboards. These devices are intended to obviate the spatial and temporal disjunctions in computer-aided drawing (CAD) between eye-screen and hand when a mouse or keyboard is employed, and to bolster the simple real-world equation that linear drawing is a *record* of movement that *implies* movement, a reciprocity that means that every drawing invites a spectator and interpreter.¹⁵ In the sense that a line is a conduit of meaning or *ductus*, it *induces* qualities of movement at the same time as *reproducing* them: it is both transitive and intransitive. The linear paths that the spectator/interpreter directly perceives or infers in the drawing constitute cognitive mapping. And such readings are inseparable from the affective responses to the gestural traces of the hand and the echo of the body, as well as the expressivity of the topic or subject matter of the drawing – or its absence. The difference between these readings constitutes the surplus of the drawing within which meaning is constructed.¹⁶

For example, although it is impossible to establish what is observed and what invented in Francisco de Goya's red chalk working drawings for the *Tauromaquia* series of etchings (1815–16), they undoubtedly encapsulate the traces of a swiftly moving hand, as well as simultaneously suggesting the action and movement of the subject matter. Most of the series celebrates the exploits of famous bullfighters of Goya's time (1746–1828) or earlier, and they depend on references from prints and broadsheets.¹⁷ They are constructed out of fragments of remembered observations as well as appropriated material, yet the speedy red chalk and occasional red wash suggest a unifying mode of direct observation, particularly in the apparently casual manner in which activities happen within the bright, horizontal space of the ring. In *Tauromaquia* 20, *The Agility and Audacity of Juanito Apiñani in the [Ring] of Madrid* (pl. 46), a famous bullfighter is apparently 'caught' in mid-air vaulting over the bull.¹⁸ The sketch suggests to a contemporary viewer the possibility that Goya did not have the time to get everything down on paper while witnessing this event, but he has subsequently returned to accentuate aspects of the figure and bull with heavier strokes of over-drawing. This apparent indexicality is both evocative of witness and appropriate to the subject matter: apart from seeming to catch a moment-in-time equivalent to the almost instantaneous shutter speed of a camera, it also attests to the inhuman light-

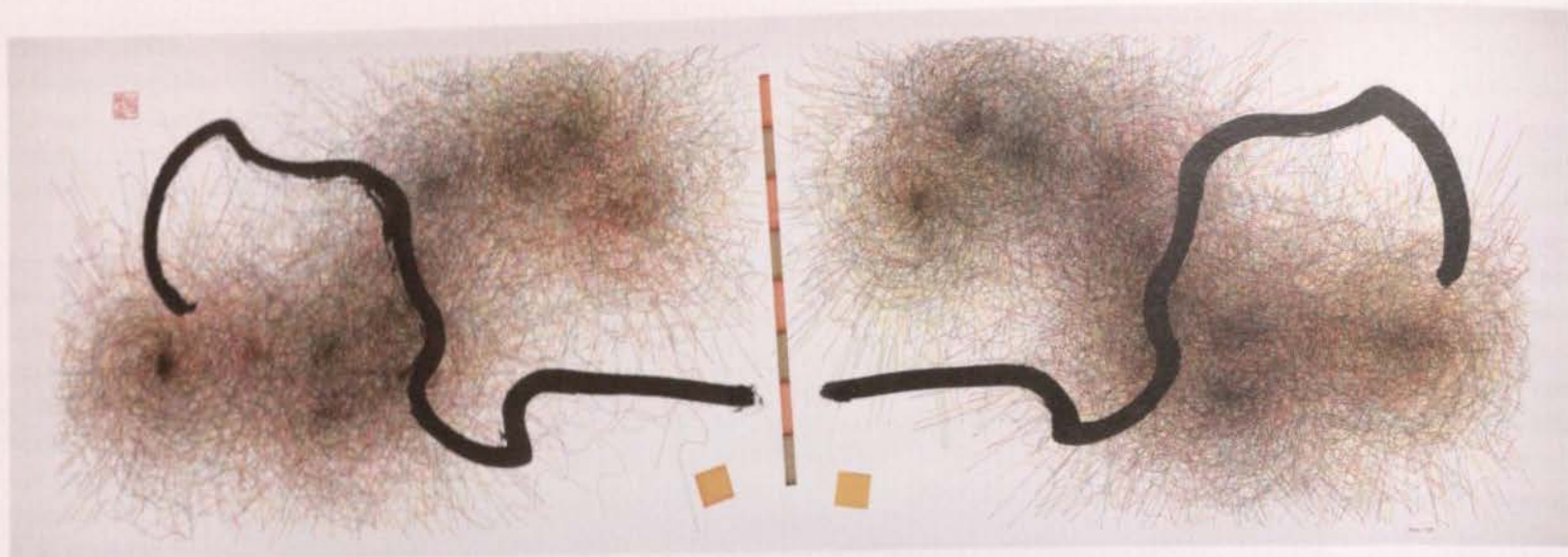


46 Francisco de Goya, *The Agility and Audacity of Juanito Apiñani in the [Ring] of Madrid*, drawing for *Tauromaquia* 20, 1815-16, red chalk 183 × 277 mm. Madrid, Museo Nacional del Prado, D.4307

ness and agility of the heroic bullfighter. The spectators in the tiers beyond the main event in the ring, indicated with the utmost economy of graphic means, suggest the out-of-focus blurring known so well in modernity from photography and cinematography. This apparently unmodified depth of field is 'corrected' in the finalised print that followed this drawing, where the spectators are given form and shelter under parasols on one side of the tiered seating, while the bullfighter is frozen in mid vault. Goya's record of movement, action and interaction is therefore fictive in all its aspects, but to the extent that the drawing survives as a trace of continuous hand movements and interrupted moments, it acts as a graphic analogue of the topic or essential subject matter of the drawing, allowing for the performative presence of the artist and the 'real' and fictional spectators.

The apparent ability of moving lines to 'write time' in the Goya drawing is no less compelling in a computer drawing on paper by Roman Verostko (b. 1929), *Lung Shan II*, one of a series that represents the end of a very long chain of development of applied mathematics (pl. 47). Verostko is one of the better known of the so-called algorithmic artists who have developed personalised art programs that drive mechanical plotters fitted with pens or brushes to produce images. In the *Lung Shan* series, Verostko's program *Hodos* was instructed to originate seemingly

random scribbles, which appear to act out chaotic improvisations. The drawings therefore mimic artistic automatism and grow epigenetically, that is, they appear to develop spontaneously in the biological manner that phenotypes (mature plants) grow from genotypes (DNA).¹⁹ In Verostko's *Lung Shan II* (1990) – the drawing consists of a mirrored image, presumably to display its paradigm of programmed randomness – abstract linear scribbles have been created by a bank of drawing pens filled with coloured inks. Because these lines have become so intensely entangled as to create almost impenetrable nests of coloured vortices, it is not difficult to imbue the drawing empathetically with projected notions of impatience and obsession, or to have the critical response that the drawing has lost its way in the detail. This reading is modified by the free, broad and apparently gestural black brush stroke that floats on the top of the pen lines to create a frontal plane that asserts both spatiality and time. (Verostko's original use of Chinese brushes, which had to be dipped in ink, were replaced in 1995 by self-inking Sumi brushes.) The aspects of time in writing and reading this work are multi-layered and contradictory. As well as responding to the speed of the centripetal scribbles and the simple history of gestural overdrawing in a 'Japanese' manner, there is also an inevitable semi-awareness for the informed spectator of the laborious calculations embedded in the drawing's abnormally large infrastructure – nullified,



47 Roman Verostko, *Lung Shan II*, 1990, pen and brush, plotted on paper, 1829 × 610 mm. Private collection

to some extent, by its contrary aspiration towards apparent extemporaneity and simplicity. (Generally, attempts to unpick digital processes of recent computer art reveal more about the technical interfaces and mechanical choices than the dynamics of drawing practice!)

It is a condition of linearity that unless lines and *pentimenti* have been deliberately erased, drawing asserts, or has the potential to assert, the fully extended history and processes of its own making, unlike the self-obscuring layers of the painterly project. In this sense, drawing constructs its own narrative of making, distinct but inseparable from its subject matter. In Michelangelo's unfinished drawing of the *The Holy Family with the Infant St John the Baptist* (circa 1530–32; pl. 48), with its use of superimposed media, we can read how Michelangelo literally fleshes out the formal realisation of the bodies, transforms the two-dimensional surface of the paper into containing space and develops the concept and emotional tone of the work. The artist has used four different media, beginning with a stylus underdrawing that sets up the compositional organisation within the horizontal space of the drawing sheet.²⁰ This is followed by grey-black chalk, which describes the planar and volumetric through diagonal hatching and establishes the bodies in dimensional space. Red chalk, sanguine, is used to restate bodily anatomy, literally fleshing the bodies through its blood colour. And pen and brown ink reanimates outlines that have become obscured or smudged and reclaims modelled planes. The dominance of these lines and thick strokes of oiled black chalk serves to disrupt the cohesion of the underdrawing. In places, the wetness of brown wash bonds with the friable red pigment, adding another tonality and plasticity through descriptions of shadow and depth. The technical complexity of this drawing is unusual for Michelangelo.

Armenini describes such drawing as a combination of making and idea: 'In this process the intellect is enhanced and polished, since the hand, minister of the intellect, sharpens the understanding.'²¹ What is so impressive in Michelangelo's drawing, in spite of its bad state of preservation, which stamps another, diachronic history across the surface, is that the reclaiming of each area for redrawing and the overlaying of techniques have not deadened the drawing but enabled it to increase in mobility and expressivity.²² This is particularly so in the group of the Virgin and the infant Christ and John the Baptist; Joseph's expression of brooding concentration was caught so well at an early stage that Michelangelo did not need to rework it. The intensity of Joseph's visage, which is emphasised by the containing gesture of his folded arms and tense pose, serves to stabilise the group. Although he is the most lightly worked figure, the quality of the drawing suggests that there has been no loss of interest on the part of the artist.

Reading a hand drawing through the narrative of its moving lines can be a far more mundane exercise, allowing the spectator to reconstruct technical passages or simply understand how a drawing has been put together. This is so in a work of incredible virtuosity and sparkle by the French royal portraitist Hyacinthe Rigaud (1659–1743), *Portrait of a Man* (pl. 45). Because it is unfinished, it allows the viewer to enter its complexities and understand how the artist has moved in time from establishing the figure in black chalk to dressing it in dazzling wash and white highlights. This is a spatial and textural journey, with light and dark passages dependent on a fixed source of illumination somewhere to the left, in front of the diagonally posed subject. The low sculptural relief of the head and architectural setting, suggested by the incomplete black chalk delineations on the



48 Michelangelo Buonarroti, *The Holy Family with the Infant St John the Baptist*, circa 1530–32, pen and brown ink, black and red chalk over stylus indications, 280 x 394 mm. Los Angeles, The J. Paul Getty Museum, 93.GB.51

middle ground of blue paper, is successively challenged by the fine planes of lace, satin and damask-lined cloak, which constitute the overblown three-dimensionality of the frontal plane of the drawing. Although the technical journey is accumulative – the addition of washed-in shadows to represent the folds of the cloak, then the jagged strokes of white gouache to suggest silvery satin, the crisp delicacy of lace or the sparkling of buttons and studs – the sequential processes have also sculpted forms into greater and greater depth, lifting the figure out of its papery continuum into hyper-real pictorial space, through *chiaroscuro*. What is also interesting about the drawing is that this complicated journey of establishing textures and defining specificities of material is a rehearsal for Rigaud's equally spectacular technical virtuosity in oil paint, enabling us to appreciate the artist's pro-

jected pleasure in the performance of skill as a sequential bravura exercise.²³

Rigaud offers us a range of technical wizardry in hand drawing, which we can exclaim over, similar to the reception of special effects of contemporary Photorealist drawings, where we marvel at how graphite can resemble a photographic print (see pl. 44) or imitate the textures of an engraving. Such mimetic values are privileged in computer graphics, where the dressing up of constructed shapes or recycled photo-imagery with a range of ready textures is a standard capability of basic software programs.²⁴ Infinite textural manipulations can be rung from the filtering of photographic images in Photoshop or simply flipping and rotating images to form textural patterns. Such textures serve to differentiate forms and shapes in the traditional manner of

hand drawing, while also establishing compositional and spatial differentiations and hierarchies. (J. J. Gibson, whose studies of perception have greatly influenced computer technologies, suggested in the 1950s that distance was perceived by differentiations in 'texture gradients'.²⁵) In addition to banks of all-over effects, there are simulated furry, hairy, wet or sparkling surface textures that contribute to photorealistic modes of representation, and many software design packages supply filters to suggest the grain of charcoal drawing, the wet passages of watercolour or the solid, dry textures of fresco. To learn how to manipulate such graphical user interfaces is initially laborious, but like the long-term skills of drawing with pen or pencil, such techniques are readily internalised and naturalised with repetition and used with great speed by practitioners.

Serial Practices and Reductive Lines

I must say that I achieved a very rare voluptuousness and elegance of line [in the pen drawings]. I poured my entire sensibility into them, and if it weren't for the social obligation to provide my contemporaries with works somewhat richer in terms of means, the humble pen drawing, well prepared by an analytic study, would be entirely adequate to purge me of my passionate emotions.

Henri Matisse²⁶

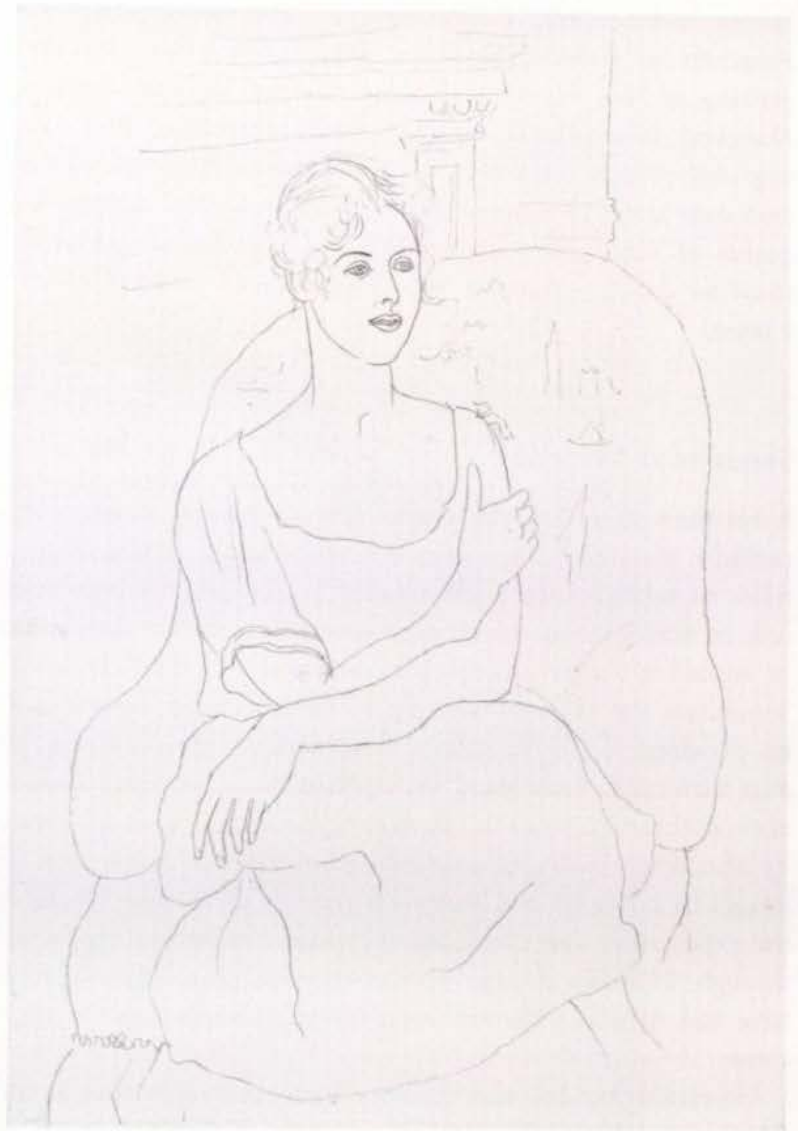
The extension of open-ended line into the continuities of drawing as a whole means that each work contains the possibility of another related drawing: a study of a detail, a reworking of ideas or compositional relationships, a restatement of the whole, further elaborations or simplifications, a close copy or a sketchy appropriation. Serial explorations of this sort became the obsessive subject of Edgar Degas (1834–1917) in his later years, when groups of drawings of ballet dancers, women bathing or combing their hair were closely connected through tracings, which could then be worked up in new charcoal and pastel variants that would themselves be copied and expanded. Not only did one drawing literally grow from another, being worked on in succession in the studio, but this serial technique also permitted Degas to build up complex compositions from simple, repeated poses and gestures.²⁷ Today, the sequentiality of hand drawing has been extended by the computer to an almost inconceivable promise of infinity and an irresistible drive towards constant change that is halted only by printing a work, or saving or deleting sequences.²⁸ The computer therefore legitimates and gives mathematical existence to this abstract potentiality of endless and seamless seriality, whereas the promise of change is coiled tentatively within the contingency of all hand drawing, whether a minimal diagram, a suggestive coloured pastel or a highly refined outline drawing.

Two consecutive neoclassical portraits by Picasso illustrate the serial forces of refinement, simplification, abstraction, omission and editorial control that can shape a reductive and seductive linearity, similar to that aspired to by Matisse. While in England for three months in 1919, designing for the Ballets Russe, Picasso drew Lydia Lopokova, a principal dancer who was later to marry the economist John Maynard Keynes. The poised and elegant ballerina is depicted seated in a curved armchair in a very Bloomsbury interior, and wearing a loose classical tunic. In the three-quarter view (pl. 49), the precise thick pencil lines of the conventionalised face and hair signify the artist's close concentration on likeness – and perhaps flattery – while the triangular patterning on the dress is very summarily sketched in. In the frontal drawing (pl. 50), Lopokova is drawn with even more fluency and confidence, and indications of the fireplace and architectural moulding have been added to the minimal *mise-en-scène*.²⁹ The figure is framed by the loose patterning sketched on to the armchair upholstery, as if the artist had perceived the need for a momentary pause for eye and hand in the practised velocity of a rehearsed drawing that has just slightly lost the intensity of an earlier version. The enwrapped arms, very upright posture and eyes that stare away from the observer into space add to the quality of remoteness and iconic prettiness of the subject. The continuities and careful breaks in the fine outline and the total lack of modelling encourage the spectator to follow the linear map away from and back to the face in a continuous, if carefully directed circular eye movement. The ambiguous white spaces in this drawing, which we variously interpret as body, furniture, interior space or paper plane, facilitate the unencumbered mobility of the line and encourage a grazing eye.

Picasso's employment of this reductive outline technique is historicist, reviving the clear drawing style of J.-A.-D. Ingres, which had been influenced by the neoclassical outlines of the sculptor John Flaxman, whose illustrations after Homer, Aeschylus and Dante were widely disseminated as engravings in Europe at the turn of the nineteenth century.³⁰ The refined simplicity of Flaxman's outlines, derived from the study of classical vases and Italian 'primitives', were deployed in designs where movement, composition, expressive gestures and narrative drama were formalised within tightly controlled systems, all the more informative for being encoded and simplified. Reductive outlines became a standard and authoritative style for artists of the period, collapsing the differences between drawing and engraving and privileging clarity and finish. The calligraphic habit of contrasting fine lines with stronger, emphasised black lines, although criticised at the time and later as a stylistic mannerism, was important in suggesting the spatial fluency of low relief.³¹ Even more simplified codes of diagrammatic outline drawing became the stuff of drawing manuals, design copybooks and school textbooks.³² Picasso's quality of line therefore participates in a his-



49 Pablo Picasso, *Lydia Lopokova*, 1919, graphite, 357 × 258 mm. Cambridge, Fitzwilliam Museum, PD 6-1989



50 Pablo Picasso, *Portrait of Lydia Lopokova*, 1919, graphite, 357 × 254 mm. New York, The Pierpont Morgan Library, Thaw Collection, EVT 130

torical continuum, incorporating neoclassical resonances that go far beyond the immediate issue of a portrait likeness, the chosen subject of most of his drawings at this period. Just as the narrative imperative had been primary for Flaxman, the capturing of likeness within reductionist paradigms was the aim of both Ingres and Picasso. There are paradoxical aspects to the apparent simplicity of Picasso's portraits of Lopokova. The elimination of modelling, perspectival clues and unnecessary detail contributes to a sense of finality at the same time as the expanses of white paper, of equal weight to the spacious line, convey a sense of breeziness and fresh openness. It is this contradictory closure in open-endedness that possibly encouraged Picasso to undertake multiple versions of the same subject.

Flaxman's influence on Goya has been very well documented, most familiarly in relation to the hooded friars in the line

engraving of *The Hypocrites with Caiaphas*, from Dante's *Inferno*, Canto 23, which Goya appropriated for use as a personal *leitmotif* in later works, where many menacing and hypocritical religious figures inhabit his passionately anti-clerical prints.³³ Flaxman's initial drawing in the Fitzwilliam Museum is carried out in a quill pen, so softened and pliable that it approaches the fluency of a brush, over some light, rough, preliminary graphite markings: it roughly depicts the hooded and bearded hypocrites who stand around the crucified figure of Caiaphas on the ground. The composition is changed in the engraved version to a far more potent organisation with three pairs of monks in profile, mock humble in the bending of their cloaked heads and weighted robes of punishment, ignoring the beseeching face of Caiaphas looking up at them through his agony. With only the minimum of background details, Flaxman compresses an entire

literary narrative into a small compass. The speed with which Francisco de Goya copied this sheet, in his own ink wash drawing of *Three Pairs of Hooded Figures* (1795; Madrid, Biblioteca Nacional), is remarkable. Although Goya apparently relied on an engraved plate as his source, his thick and rather cursory brush lines over traces of charcoal underdrawing are very close to the quality of Flaxman's original pen lines. Goya has reopened the chain of drawing that has been halted by its conversion into a print.

Sequential Sketches

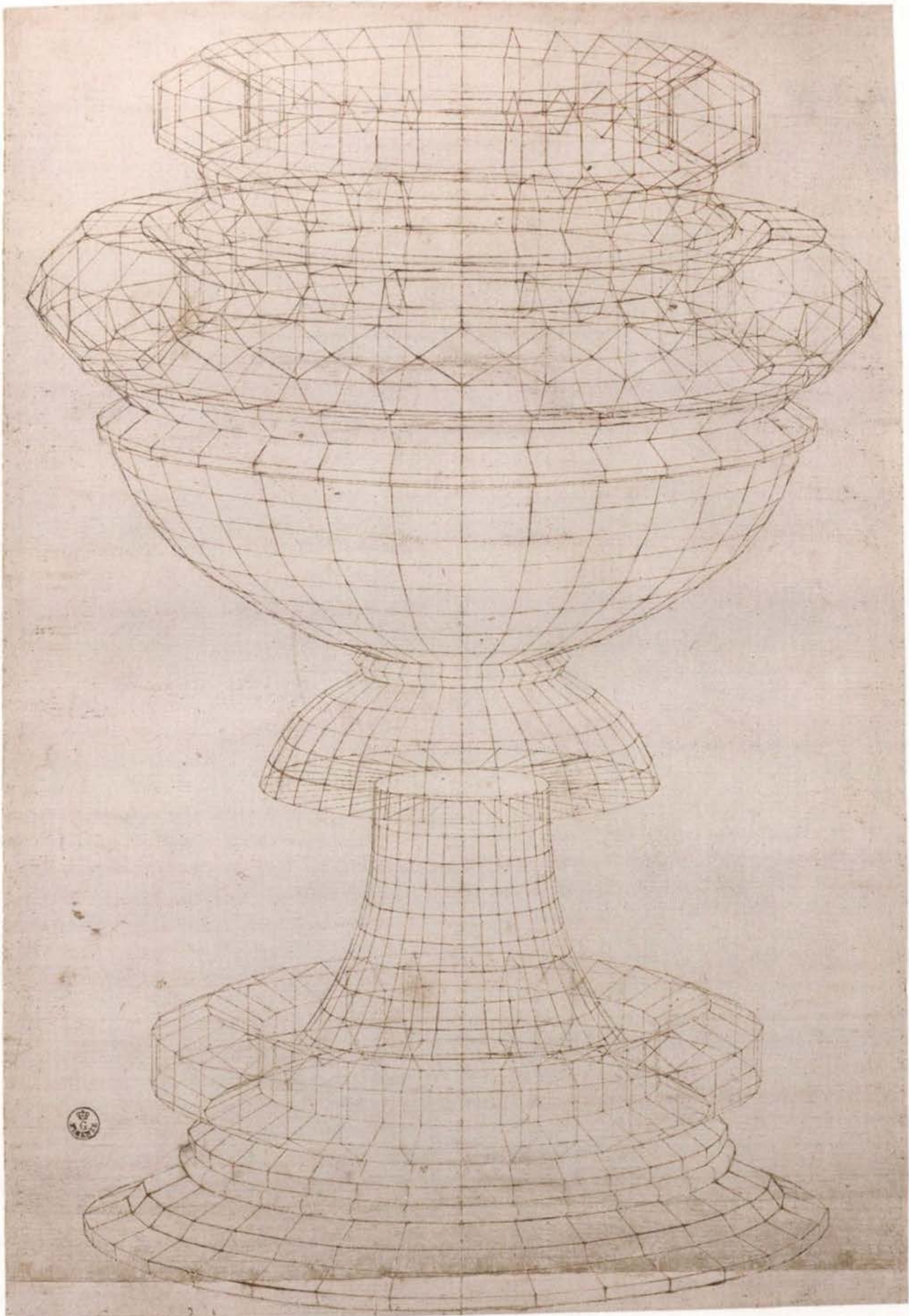
It has been suggested that Goya's private drawing albums were carefully planned in a continuous sequence as if unfolding a series of related images and themes.³⁴ Likewise, the sequential cells of drawn images in Picasso's *albums* suggest that they could be viewed in a rapid cinematic sequence, as in a child's flipbook. Sometimes the changes wrought in the repetitive sequences of his drawings are so very slight as to demand the animation of page-turning to understand their mysterious potential.³⁵ I speculate, without evidence in this regard, that Picasso used the activity of continual redrawing and the semi-automatic repetition of images to cover up and legitimise periods of creative block, in the expectation that eventually repetition would lead to breakthrough. This is a strategy known to most creative artists who have had to deal with invention inertia at some time in their career.

Unrelated sketches and chance events commonly disrupt the serial implications of artists' sketchbooks, where narratives of development unfold in sequential drawings. Most artists casually use sketchbooks upside down to make a horizontal sheet vertical or vice versa, or they work from back to front or skip pages, not to mention leaving a sketchbook incomplete. Many studio resource sketchbooks are bound from loose pages, and most of the famous albums – for example, those of Dürer – have been assembled and reassembled at different times.³⁶ Collectors, who traditionally stored drawings interleaved in large albums, therefore ignored the haphazard studio conditions of sketchbook use. The unfolding pages of bound sketchbooks are ideal for recording artistic journeys, and travel sketchbooks (known from the fifteenth century in Italy as *taccuini di viaggi*) influenced the serial development of print publications of topographical views or antiquities, where the observer could emulate the journey from site to site: prints of Rome for religious pilgrims were always popular. In architectural and design practice, the reciprocity between the time-based spatial experiences and stages of building or processes of manufacture is mirrored deliberately in the serial conventions of staged drawing. Plans, elevations, projections and detailed working drawings follow a developmental sequence,

which if not exactly the same as the practical order of construction, confirm systematic and serial connections between part and whole. Narratives of building use have been extended through CAD processes. Contemporary architects now often use animated sequences of virtual movement through evolving buildings in lieu of old-fashioned presentation drawings for their clients in order to reinforce the time-based experience of architectural spaces.

The ability of drawing to unfold in time at both micro and macro levels means that it readily serves time-based disciplines, from book illustration to comic books, graphic novels or animation. Richard Serra (b. 1939), for example, has made storyboard-like sketches envisaging how spectators might approach the site and view his sculptural installations,³⁷ and in a small sketchbook of 1969 (Cologne, private collection), Sigmar Polke (b. 1941) created simple brush drawings of furniture that develop sequentially over the sketchbook pages like a comic strip. In a sequence of these simple line drawings in watercolour on cheap lined paper, an upholstered chair, which variously becomes a tall armchair or a couch, has been assigned the significance of a human-like presence, and it freely defies gravity, space and scale in the manner of comic books. It glides and hides in a Looking Glass room where other objects mysteriously expand and contract around it. Each change of scale or register seeks continuity, or amusing discontinuity, in the next image, while the brush outlines never lose their abstract and assertive linearity.³⁸

Drawing, of course, forms the basis of the protean figural transformations of animation, and it is not by chance that this has become one of the major growth areas of design in the early twenty-first century. Computer animation responds to the exponential increase of technological sophistication in kinematics, coupled with the desire to achieve ever greater simulacra of photographic and filmic reality through increased pixels per frame (sometimes called voxels when their spatial position has been calculated) and more fluid human-inspired movement.³⁹ Animators even construct virtual figures by building human-style graphic skeletons, on to which they anchor virtual muscles and blood vessels covered with subcutaneous fat and skin, and model fine joint movements based on the actions and facial expressions of actors or avatars.⁴⁰ Even more significant than this curiously redundant reapplication of traditional anatomical studies is the fact that these three-dimensional, animated figures are based on *linear* wire-frame infrastructures, whose triangulated geometries are amplified into infinitely small subdivisions around which surfaces can be wrapped: a system sometimes referred to, confusingly, as digital clay modelling.⁴¹ Such wire-frame figures have an ancient lineage in Western art, as analytical, geometrical diagrams whereby the artists Leonardo, Piero della Francesca, Uccello and Dürer could demonstrate issues of projection, proportion and movement.

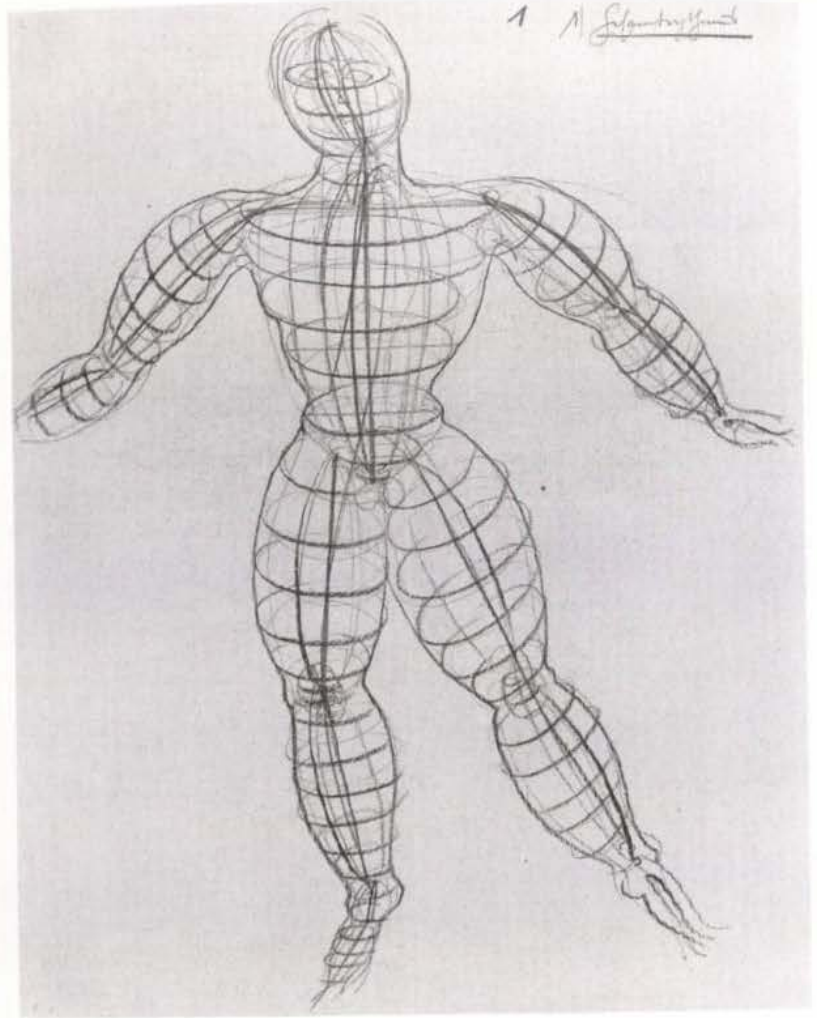


51 ?Paolo Uccello, *Study of a Vase in Perspective*, circa 1450-70, pen and dark brown ink, 90 x 240 mm. Florence, Galleria degli Uffizi, Gabinetto Disegni e Stampe, 1758A

52 (right) Albrecht Dürer, *Proportion Study of a Female Figure in Profile*, from the Dresden Sketchbook, 1509, pen and black ink, 294 × 205 mm. Dresden, Sächsische Landesbibliothek - Staats und Universitätsbibliothek, MS R-147, fol. 156r



53 (far right) Oskar Schlemmer, *Total Rhythm (2), Ellipses (Gesamtrhythmus, Ellipsen [2])* from the Bauhaus Stage Course 'Man', 1928, graphite. Private collection



Volumetric Codes: Linear Modelling

Dürer's *Study for the Praying Hands of an Apostle*, discussed in chapter three, makes virtuosic display of curved contour lines for describing the volume and surface complexities of a pair of tapered and very gothic hands, with a limited exploitation of curved linear cross-hatching in the shadow areas and the fabric highlights. The open net of interconnecting lines models and encircles the complex forms through entirely linear means. In the *Four Books on Human Proportion* (1528) and Dürer's preparatory sketches in the Dresden Sketchbook, he developed a series of shorthand systems for gridding, measuring, comparing and articulating figures, both male and female, old and young. These include stereometric figures whose body parts have been reduced to simple blocks, sometimes with truncated pyramidal-shaped heads, like the articulated wooden 'lay figures' or models of the human figure with jointed limbs that artists still use in their studios to study movement. Such diagrammatic figures depend on a knowledge of linear perspective derived from Piero della Francesca, and the complex mathematics of Luca Pacioli, author of *De divina proportione* (1509), who was closely associated with

Leonardo in Milan; Dürer composed his own treatise on mathematics in 1525. Dürer's book explores the construction of complex geometrical shapes in the manner undertaken by Piero in his own *Book on the Five Regular Solids* of circa 1480.⁴² A famous drawing of this genre, traditionally attributed to Paolo Uccello (1397–1475), is the *Study of a Vase in Perspective*, which has diagrammatised an orthogonal view into a linear framework of great complexity and elegance (pl. 51).⁴³ Some of this understanding of 'modelling' space within a framework might have impacted on Leonardo's open armature drawing in connection with the Sforza equestrian monument, which he explored between 1490 and 1494.⁴⁴ An example of Dürer's experimentation with transparent wire-frame human figures using curved rather than angular sections is a drawn sheet from the Dresden Sketchbook, *Proportion Study of a Female Figure in Profile*, in which he has constructed an open linear framework for the armless female body, with each sectional slice representing an eighth of the total body height (pl. 52). This is different from Dürer's usually flat frontal or profile measured contour drawings, because the body is depicted spatially in three-quarter view (head in profile) and divided by elliptical sections.



54 Baccio Bandinelli, (?) *The Death of Cleopatra*, 1530s, red chalk, 260 × 203 mm. London, The British Museum, 1962.0512.3

The box-like schematisation of figures employing *quadratura* (squaring-up) was employed as a proportional shorthand by Lomazzo, Cambiaso and later Rubens.⁴⁵ Cambiaso regularly used this method in his complex compositional studies, for example, in his preparatory study for *The Marriage of the Virgin* (pl. 55) for one of two frescoes that he painted in the Cathedral of San Lorenzo in Genoa in the years 1567–9. In this squared-up sheet, the abstracted cuboid figures act out lively poses in relation to the empty architectural frame, which Cambiaso has not stopped to detail. Ink washes add volume to the very frontal composition by designating background shadow or precise turning of planes; most of Cambiaso's compositional studies involve deeper recession in which the cuboid figures disport themselves.

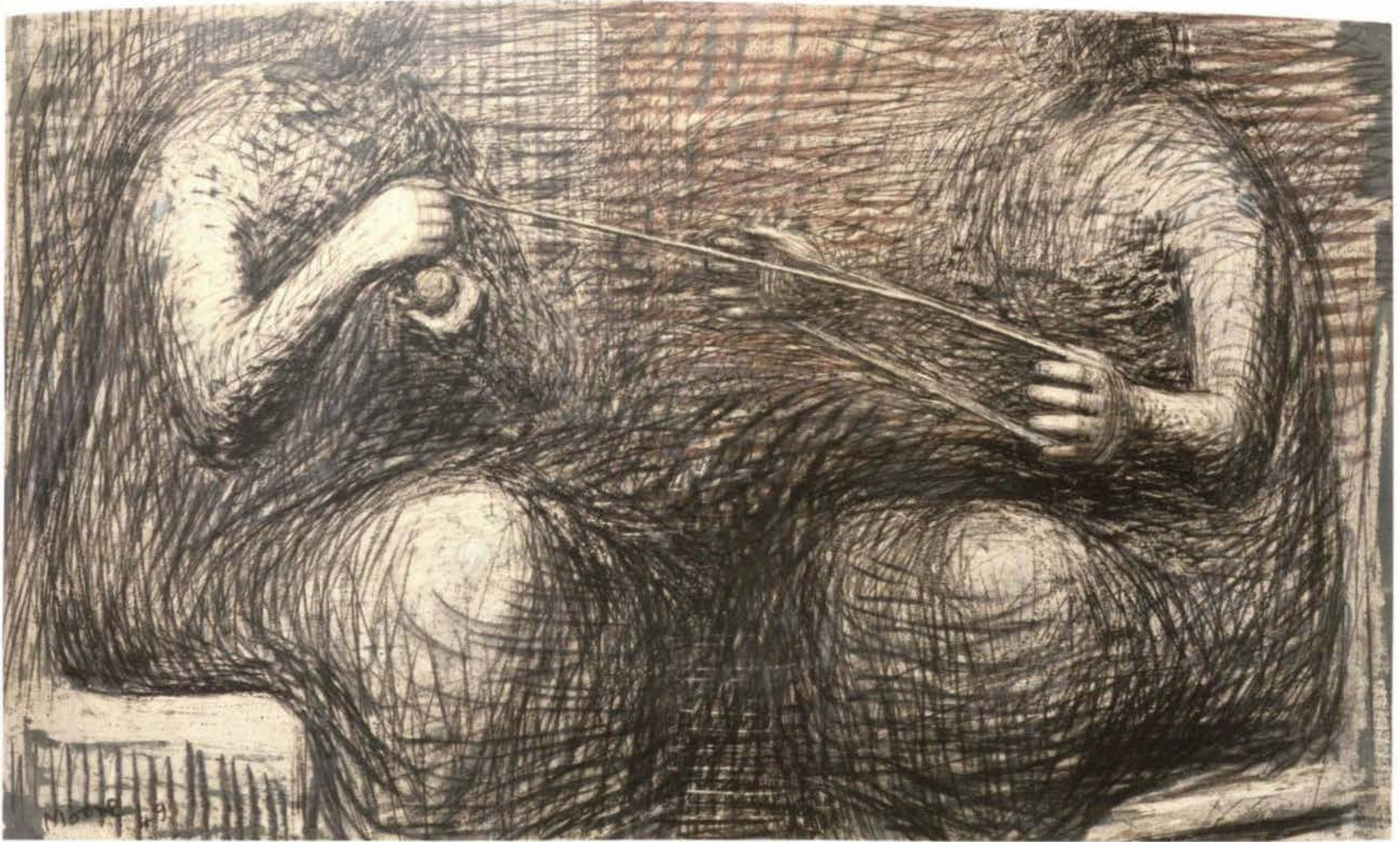
Hogarth attempted to describe a wire anatomical diagram that appears in Plate 1 of *The Analysis of Beauty* (1753). It is achieved by twisting a 'wire' around a figure, so that it retains 'the shape of the parts it passes over'. He appreciated that the wire was interchangeable with a line: 'it may properly be consider'd as one of the threads (or outlines) of the shell (or external surface) of the human form: and the frequently recurring to it will assist the imagination in its conceptions of those parts of it, whose shapes are most intricately varied'.⁴⁶ When Oskar Schlemmer (1888–1943) constructed a teaching programme for the Bauhaus in the 1920s, he reinvented a mobile wire-grid figure constructed of parallel elliptical sections that owed much to Dürer and which he named 'plastic man'. Drawings of this fluid, dancing figure served as teaching diagrams in relation to issues of movement, proportion and scale, and it was realised three-dimensionally in Schlemmer's theatre designs.⁴⁷ Schlemmer's transparent, mobile figure, which he called *Total Rhythm (2) Ellipses* (pl. 53), is the direct prototype of the familiar mechanistic humanoids that float,

stretch and morph themselves on our computer and television screens in all sorts of complicated foreshortenings, as do all those animated objects constructed out of multi-polygon wire structures. An early example of this now-ubiquitous animated figure was the Chrysler Corporation's *Cyberman* wire-frame manikin of 1985, which was square in section like the stereometric figures of Cambiaso and articulated in a very similar manner. With the incredibly quick advance of digital technologies, this figure now appears crude and outmoded, but its principles have been readily expanded for polygon rendering.

Linear modelling is particularly suited to hard media such as metalpoint and pen and ink; but conventional codes for indicating volume through line can be drawn in any medium, and the Florentine sculptor Baccio Bandinelli (1493–1560), also known for wild pen contour drawing, combines a huge range of linear hatching modes in his elegant red chalk drawing (?) *The Death of Cleopatra* (pl. 54). The semi-nude figure holds a lock of her hair, or perhaps a serpent, and could date from the 1530s. Controlled, short linear strokes of red chalk are employed to describe the planes of the breasts, right shoulder and upper arm, and the subtle forms of the neck and upturned face, which are viewed from below. Moving away from this sensual precision, Bandinelli employs hatchings in a much freer way in the left hip of the figure: swiftly and broadly impressing a sequence of sloping parallel strokes that simultaneously define the volume of the figure through indicating a flattened plane and cancel out its detail. In addition, he uses cross-hatching to indicate deep shadows in the drapery, and his hand has moved confidently and swiftly around the figure, redefining curves of body, drapes and the elliptical dishes held in the figure's powerful left hand, so as to reaffirm their abstract design relationships and participation in

55 Luca Cambiaso, *Study for 'The Marriage of the Virgin'*, circa 1566–9, pen and brown ink with brown wash over black chalk, squared in red chalk for transfer, 96 × 298 mm. London, The British Museum, 1946,0713.294





56 Henry Moore, *Women Winding Wool*, 1949, crayon and watercolour, 348 × 636 mm. New York, Museum of Modern Art, Gift of Mr. and Mrs. John A. Pope in honor of Paul J. Sachs, 244.62

three-dimensional movement. The free waves of hair suggest a Venus from the sea, or a figure who has just blown in from some other world whose movement is spinning to a halt.

A modern and expressionist version of this linear code for defining volume and movement is explored to excess in *Women Winding Wool* (1949; pl. 56) by Henry Moore (1898–1986), although its potential motion has been knitted into monumental stasis. The curved lines that capture and enmesh the simpli-

fied forms of the headless female figures establish a homological relationship with the subject matter of winding. Moore, who was much influenced by Georges Seurat (1859–1891) at the time, ravel his headless women within the skeins of their own winding thread, very much in the way that Lewis Carroll enfolds a somnolent knitting sheep into the skein of Alice's dream narrative in *Alice through the Looking-Glass* (1871).

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57 Juan Gris, *Portrait of Max Jacob*, 1919, graphite, 365 x 267 mm. New York, The Museum of Modern Art, Gift of James Thrall Soby, 3020

Encoded Outlines

On a white surface, a sheet of paper, with pen and ink, you can, by creating certain contrasts, create volumes; by changing the quality of the paper you can give supple surfaces, bright surfaces, hard surfaces, without, however, using either shading or highlights.

Henri Matisse⁴⁹

A fine simple outline may possess grace, action, expression, character and proportion.

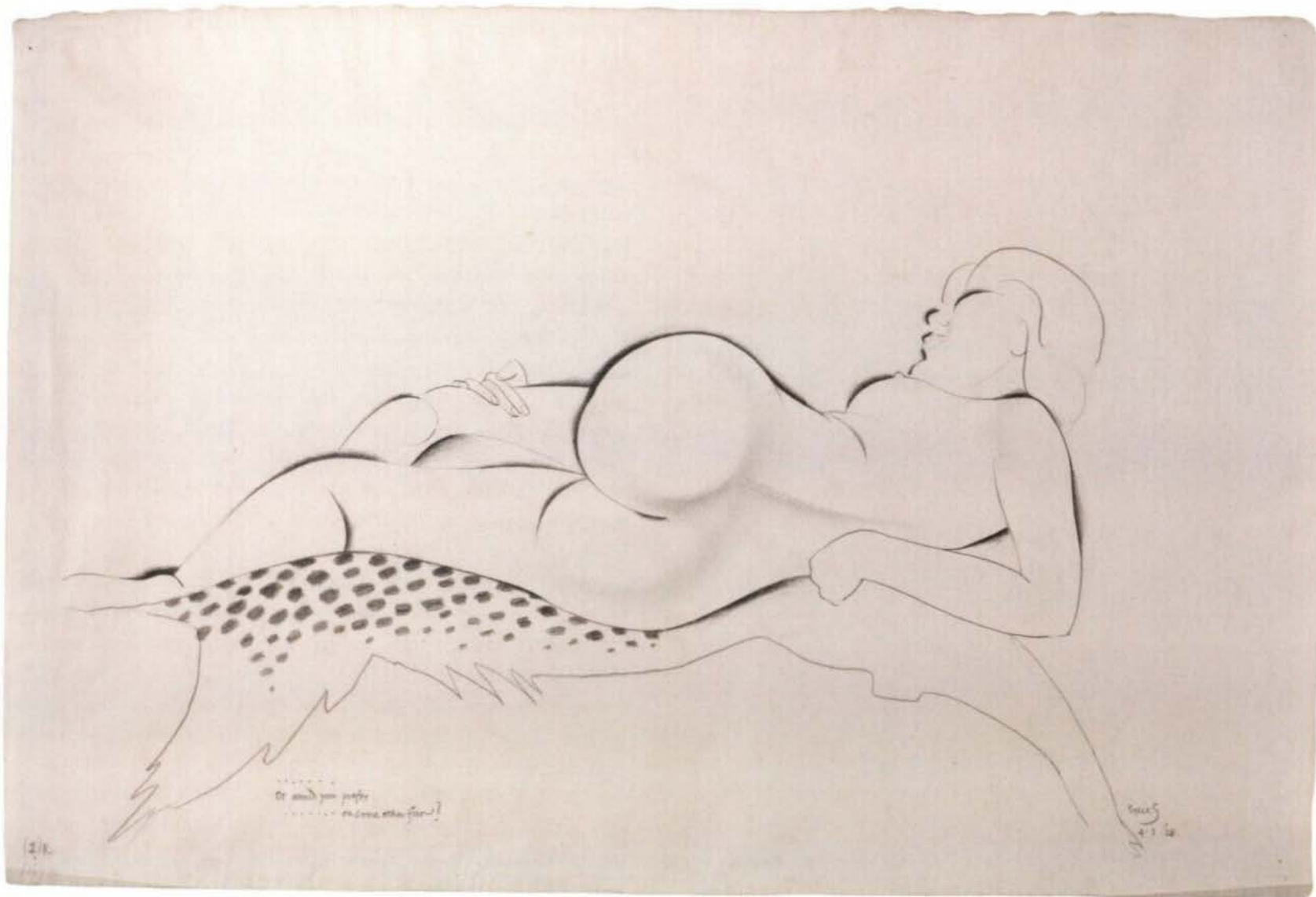
George Cumberland⁵⁰

Apart from the construction of a dimensional grid for suggesting volume, there are other reductive linear systems that suggest space, time or aspects of embodiment in subtle ways. Lines that knowingly encode volume and plasticity through subtle variations of weight in cursive strokes are used by Juan Gris (1887–1927) in his well-known *Portrait of Max Jacob* (1919; pl. 57). Like the mechanistic outlines of those children's books that invite

colouring-in to complete their mimetic suggestibility, Gris's drawing demands volumetric completion by the spectator through a system of graphic hints and nudges. Each curving line, which supersedes a carefully erased underdrawing, is slightly thickened in some areas to suggest volume and shadow, while facial planes are entirely rendered through linear conventions of blocking-in forms. Only in the grainy eyebrows and the slightly smudgy shadow under the collar does the artist depart from unadorned linearity by using graphite as a broad tool. At no point, however, do the lines join into a continuous contour and, like the careful calibrations of the thick and thin pencil lines, each break or interval seems chartered with awesome deliberation. The drawing brings to mind a comment that Sarah Stein recorded from Matisse's pedagogical musings in his drawing class, which she helped to organise in 1907–8: 'One must always search for the desire of the line, where it wishes to enter or where to die away.'⁵⁰ Gris manipulates the desire of the line into a classifying convention that evokes both Ingres's pencil drawings and the formal composition of Poussin's *Self-Portrait* (1650; Paris, Musée du Louvre) in the rectangular frame behind Max Jacob's head, which is formally repeated in a small waistcoat pocket detail.⁵¹ Such references are reinforced by the solid proportions of Max Jacob (as compared to the attenuated and slightly disembodied aspects of Picasso's *Lydia Lopokova*, described with fine outlines) and the way in which the figure generously fills the drawing sheet.

A similar type of inflected line can be arrived at by totally different means in computer graphics by means of 'cut-out' or 'graphic pen' tools whereby digitised photographic images are subjected to an 'edge detection' filter, which erases the volumetric body of forms in favour of a shadowed outline. In this mirror reversal of the usual drawing process, the outline comes at the *end* of the process, rather than constituting an initiatory delineation. Using such tools, it is fairly straightforward to arrive at a negative drawing that appears to encode low relief, rather in the manner of Eric Gill's *Nude Woman Reclining on a Leopard Skin* (1928; pl. 58). Here, the sculptor, engraver and typographer Eric Gill (1882–1940) employs a linear strategy stemming from the neoclassical calligraphic engraving styles discussed above. The strictly controlled relief smudges around the curve of buttocks, breast, shoulder, leg and face evoke the shadows of low-relief or incised carvings, the techniques most exploited in Gill's *œuvre*. In addition, in this unabashedly erotic drawing, the shadows act as the vibrating intersections of formal and sexual desire.⁵² Uninflected line drawings therefore rely on line as *ductus*, which leads the eye along its length as movement, and a very restrained use of line as *trait*, stroke, touch or trace (Latin *tractus*, from the verb *trahere*, to drag) only insofar as it *subtracts*, *abstracts* and *extracts*.

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58 Eric Gill, *Nude Woman Reclining on a Leopard Skin*, 3 April 1928, graphite, 381 × 581 mm. London, The Samuel Courtauld Trust, Courtauld Institute of Art Gallery, D.1932.SC.57

Performativity and Traces of Action

[A bodily gesture] bears the meaning of thought as a footprint signifies the movement and effort of the body.

Maurice Merleau-Ponty⁵³

I want gesture – any kind of gesture, all kinds of gesture – gentle or brutal, joyous or tragic; the gestures of space soaring, sinking, streaming, whirling... I see everything as possessing or possessed by gesture.

Elaine de Kooning⁵⁴

If all lines, including the digital, appear to *write* time, and therefore to invite temporal *readings*, the quality of the spectator's response is inevitably linked to the qualities of line employed.⁵⁵ The uninflected and controlled outlines of neoclassical or outline drawing systems, often negatively designated as remote, cold and

mechanistic by commentators, call for very different readings from that class of variable drawn lines that appear to be marked by the hand and, in extension, the artist's body.⁵⁶ Varying or inflected lines, which vibrate with their conditions or making, involve breaks, interruptions, stresses, thickenings and regular or disordered rhythms that appear to betray the emotive state of the artist and conditions of making.⁵⁷ It is not difficult to arrive at such straightforward correlations, but of course the supposed passion of a stroke or entire drawing may be entirely counterfeit. Within the linear economy, gestural mark-making therefore is, or *appears to be*, a trace of a performative action and embodied state, which can be either real or simulated, deliberate or unconscious.

Broken pencil strokes that appear to be a direct analogue of an authorial state of mind activate the drawing 'He Killed his



59 Walter Sickert, 'He Killed his Father in a Fight', circa 1910–14, graphite, 384 × 281 mm. Manchester, The University of Manchester, Whitworth Art Gallery, D.1960.162

Father in a Fight' (pl. 59), by Walter Sickert (1860–1942) of which little is known. Sickert was suspected in his time of being the Camden Town Murderer, and in a recent self-funded forensic investigation and highly controversial book by the American detective writer Patricia Cornwell, similar images of violence were adduced as direct evidence of guilt. The raised arm of the murderer, with reiterated curves of pawlike hands extended above his tensely downward-turned head, while his left arm holds down his victim on the bed, forms a taut compositional arc, with the anguished head hanging over the edge of the bed. The concentration of movement is accentuated by the reinforced lines scrawled with different intensities of graphite, on the attacker, torso of the murdered man and the heavy shadows under the bedsheets, anchored with a surprising little circumstantial detail of a castor on the bed leg. The emptiness of the page to the right of this action means that the forceful lines are con-

tained and concentrated against the edges of the paper indicating the walls of the bedroom, into which the spectator has been squeezed as witness. There are three or four stages of drawing, from light tentative straight lines laying out details of the *mise-en-scène* to zigzag tonal markings and thick, broken pencil strokes slashed into the paper that structure the restraining arm. This appears to be a shockingly revelatory drawing until compared with graphic representations of comparable subjects, such as David Slaying Goliath, Judith Slaying Holofernes and Jael Killing Sisera, which artists have dealt with for centuries. Drawings of Jael killing the sleeping Sisera by Rembrandt and Guercino in their different ways are equally redolent of a transformation of mimed gestures into suggestive lines and marks. In Rembrandt's drawing of the subject in the Ashmolean Museum, Oxford, taking place on a bed, not the floor of a tent, legs and arms swirl about in trial combinations of murderous ferocity and veracity.⁵⁸ It is not fanciful to think of artists performing their drawings themselves, miming emotions and actions in a mirror; they were advised to do so in tracts and manuals. A group of small physiognomic drawings and etched self-portraits by the young Rembrandt are clearly based on acted-out expressions of the passions: exaggeratedly wide-eyed, angry, smiling or open-mouthed in a shout of execration.⁵⁹

Identification with the passion or speed of a mark as an analogical trace of artistic embodiment is sustained within the domain that Merleau-Ponty describes as intercorporeity. 'This means that while each monocular vision, each touching with one sole hand has its own visible, its tactile, each is bound to every other vision, to every other touch.'⁶⁰ Such a phenomenological binding of vision and touch can endorse a sense of presence or *being-there* that induces a blindness to the historicity of process and intentional codification of meanings. Nevertheless, Sickert's probably unconscious device of leaving space for a witness *within* the drawing makes a very effective tie with the spectator without. In an older work, the iron-gall ink sketch of *The Dream of Aeneas* by Salvator Rosa (pl. 15), the artist conjures the drama of the awesome apparition of the river god of the Tiber through the slashing speed of the pen, with heavy directional lines containing the whirling contours and broken syncopation of the first laying-down of the figures. There are so many *pentimenti* and dark, acid-corroded scribbles in the figure of the dreaming Aeneas with its wild under-traces of black chalk, however, that our attention is drawn more closely to his lack of quietude than the river god, who is climbing out of the Tiber to help him. The confusion of the sketch is rectified in the more formal, reversed etching of the same subject, where the god, balancing on a spilling water pot, gesticulates towards the future site of Rome in a flurry of moving draperies and seaweedy hair, in contrast to Aeneas sleeping on his shield. The dynamic connection between the etched dreamer and the dreamed is empha-

sised by the darkening of the forest background with linear strokes, so that the two figures are dramatically lit by contrast—recipients of the whiteness of the paper support on to which they are printed. 'Every visible is cut out in the tangible, every tactile being in some manner promised to visibility . . . Since the same body sees and touches, visible and tangible belong to the same world', wrote Merleau-Ponty,⁶¹ and our contingent reading of the passionate tactility of Rosa's drawing is exacerbated by the distorting manner in that the acid ink has spread and opened up lines and corroded the paper into holes. It is difficult not to conflate the degradation of material that has happened in real time with the apparent time encoded within the wild gestural traces. Both these temporal aspects have become embedded within the viewed drawing and indeed constitute a significant historical amplification of its phenomenological status. They contribute to the drawing's surplus within and around which meaning is inscribed by the viewer.

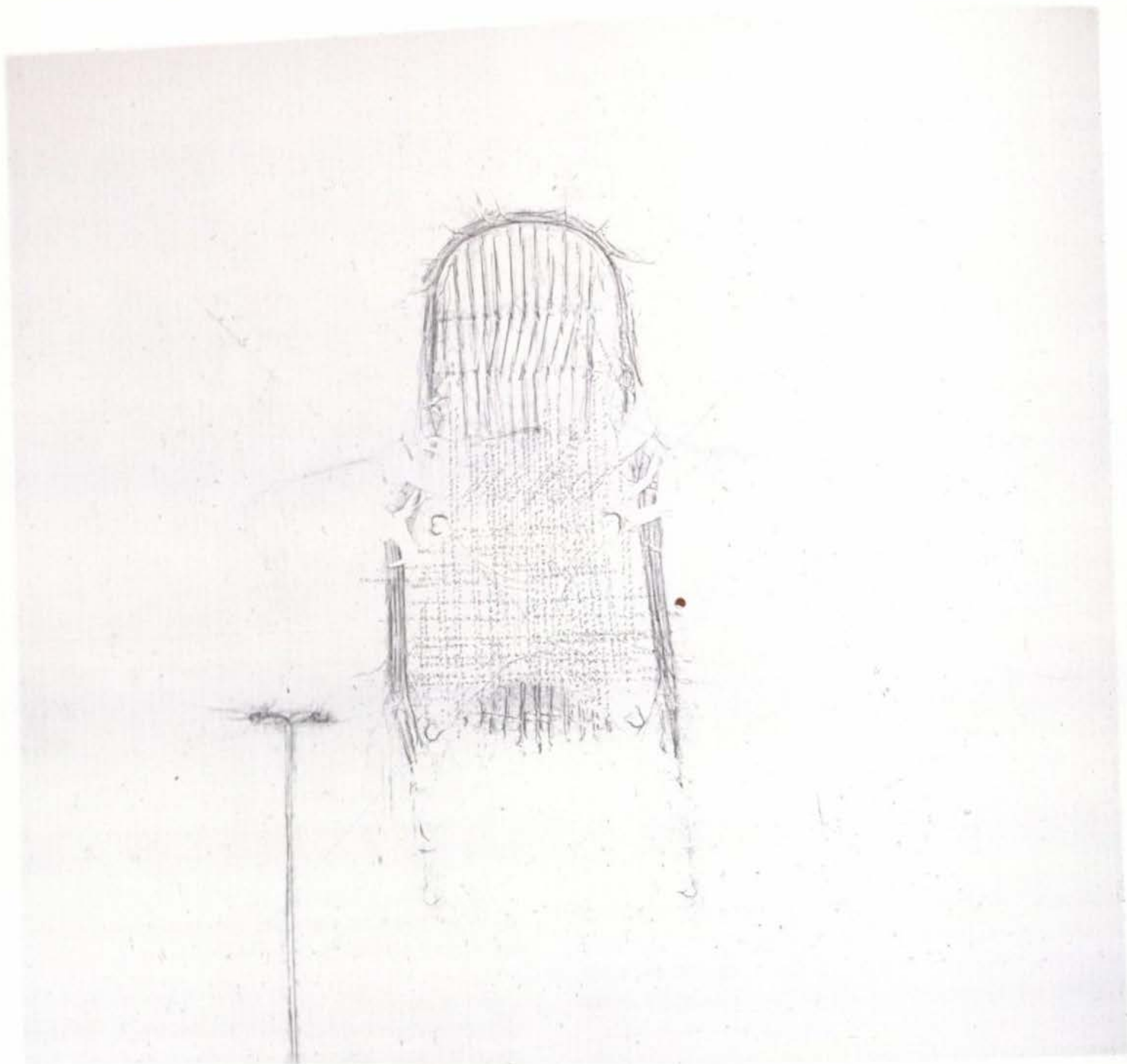
Most, but not all of Goya's drawings known as *Sueños, Dreams*, formed the basis of the *Caprichos* suite of etchings published in 1779. *Sueño no. 5*, the drawing for the etching entitled *There It Goes (Allá vá eso)*, achieves intensity through qualities of line and compositional means in association with chance effects not all of which were incorporated into the final image (pl. 60). Some of the scratchy brown ink lines of the first stages of the work spread and became fuzzy when the drawing was dampened and put through the press to transfer the initial design to the copper plate, something that Goya often did when evolving graphic ideas for prints. The artist seems to have responded to these chance effects when adding the heavy, insistent lines and scratchy hatchings of the landscape below the witch and disciple, and the whirling scribbles of owls and other beasts in the sky, including a demented cat with its fur standing on end. The contrast between the upper and lower registers of this worked drawing is reinforced by the slashing lines of the frame, which assert the elongated proportion of the image. The witches, elevated between earth and sky, mock the ethereal perfection of the sacred figures floating in the upper registers of religious paintings, and the older witch's emaciated body is the very inverse of the clothed unworldliness of saintly figures.

The trace of an action that constitutes drawing is not only related to the hand or the traditional materials and tools of drawing. In the 1950s the Situationists wandered around Paris mapping out a series of bodily encounters to constitute a psycho-geography that might or might not be charted in an actual graphic map. Such practices have become the repeated orthodoxies of later conceptual and performance art. Since the late 1960s artists have used their own bodies to pace and describe the boundaries and limits of a performance space, charting a spatial and temporal diagram through licking a line such as Vito Acconci (b. 1940) did in the three-minute film called *Lick* (1970),



60 Francisco Goya, *There It Goes (Allá vá eso, Sueño no. 5)* preparatory drawing for Capricho 66, 1796–7, pen and brown ink, 235 × 171 mm. Madrid, Museo Nacional del Prado, D.4206

or inviting others to squeeze into narrow spaces or press up against things in darkened rooms and so complete a 'relational' work.⁶² In 1971 Robert Morris (b. 1931) described such interactive environments in his Tate retrospective as acknowledging that 'the world begins to exist at the limits of our skin and what goes on at that interface between the physical self and external conditions doesn't detach us like the detached glance.'⁶³ The 1950s was also the time in France when Jean Dubuffet (1901–1985) claimed that the traces of his works were 'produced by the elements themselves, inscribing themselves directly, without the intervention of any other medium; that of a primordially immediate, pure image, with no alteration in transcription, no beginning of interpretation, impeccably raw'.⁶⁴ And the *anthropometries* of Yves Klein (1928–1962), in which carefully orchestrated models left the traces of their paint-covered bodies on paper,



61 Alighiero e Boetti, *Untitled*, 1990, graphite and tempera on mounted paper, 2700 × 3100 mm. Padua, Chiara and Francesco Carraro Collection

were similarly acknowledged, under the influence of Merleau-Ponty, as 'the representation of pure phenomenology ... the trace of the immediate'.⁶⁵

In a fascinating drawing, *Untitled* (1990; pl. 61), traces of body-writing can be read in a late pencil study of a chair by Alighiero e Boetti (1940–1994), as the artist preferred to be known, in a doubled persona. The crushed state of the very large piece of paper suggests that it has been folded around the artist's body while exploring the sensations of sitting, which seem to be the

topic of this drawing. As well as the delicate drawn lines describing the tautness and distortion of the supporting lattice-work, there is a superimposition of the *felt* sensation and shape of the seat on top of a conceptual ground plan of the chair. In front of the chair is a straightforward linear drawing of a walking stick, suggesting either an incapacitated body or symbolising an escape from sitting. Boetti's drawing embodies a vein of conceptual humour in the way that the entire body has been involved in this performative drawing project, and opens up questions of the

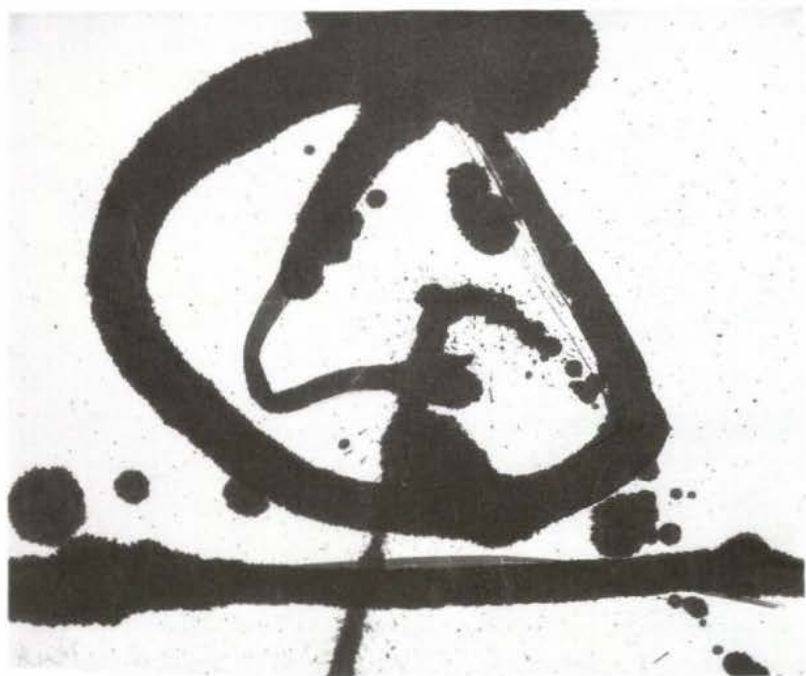
problems of dealing with the intangible that many artists would like to address in their drawings.⁶⁶

The incorporation of the body into the work in modernity exists side by side with so-called automatic practices, first experimented in writing form by André Breton, which depend on varying degrees of delusion with regard to the agency or lack of human intervention in processes of making. In the 1960s Robert Motherwell (1915–1991) revisited such Surrealist notions when he experimented with what he called ‘unadulterated automatism’ in his *Lyric Suite* drawings of 1965, similar to projects by Mark Tobey (1890–1976). Motherwell produced up to forty drawings a session, working with inks on Japanese rice paper ‘without *a priori* traditional or moral prejudices or *a posteriori* ones, without iconography, and above all without revision or additions’.⁶⁷ A ‘scrapbook’ drawing from this series, *Untitled*, from *Lyric Suite* (1965; pl. 62), evokes the freedoms of Zenga brush paintings, although without the spiritual resolution that such Japanese works embody, in spite of their meditative renunciation of control. The wetness of dropped ink that has pene-

trated the rice paper of Motherwell’s serial exercise is not far from the quality of dry brushwork that Roman Verostko went to such great lengths to simulate in *Lung Shan II*. Motherwell himself was adept in including apparently spontaneous brush gestures in the heavily mediated processes of print-making, employing direct lift-ground etching techniques or drawing in Tusche ink on lithographic stones to reproduce light, broken strokes.⁶⁸

As an extension of automatic strategies and unmediated participation in real time, the environmental sculptor Andy Goldsworthy (b. 1956) has created – or assisted at the creation of – a series of entirely indexical drawings. In the early 1990s he collected icicles and balls of snow from specific Scottish mountain sites and left them to melt overnight on sheets of paper. In these delicate natural traces, such as *Garroch Fell* (1991; pl. 63), deposits of soot and earth have been imprinted as swirling rhythms of blackness and emphasis within the stains left by the melting snow, adding an ironic narrative of environmental pollution by human agency into an elegant drawing not made by hand.

62 Robert Motherwell, *Untitled*, from *Lyric Suite*, 1965, black ink on rice paper, 229 × 279 mm. New York, Dedalus Foundation, D65-104



63 Andy Goldsworthy, *Garroch Fell*, 1991, snow, earth melted on paper, 1500 × 1220 mm. Private collection



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63



64 Francisco de Goya,
They're Very Much in Harmony
(Muy acordes), 1820s, brush
 and Indian ink, with scraping
 and some iron gall,
 265 × 185 mm. New York,
 Pierpoint Morgan Library,
 Gift of Eugene Victor and
 Clare Thaw in honour of
 Mr Janos Scholz on the
 occasion of his eightieth
 birthday, 1984.1

It is interesting to compare these unauthored works with a flowing brush and wash drawing from Goya's *Black Border Album* undertaken between 1815 and 1829. *They're Very Much in Harmony* (*Muy acordes*) (pl. 64) is the last drawing in this private album, and the already profoundly deaf Goya appears to have interpreted the singing couple of blind beggars (whom he could not hear, if they were, indeed, seen) through tropes of tactility. Sitting so close together that they touch, the singing woman clings to her blind partner who plays music through the touch of his feeling hands on the guitar strings. His upturned foot, extended as if to mark out their territory and act as a barrier, is formally balanced

by the woman's hat, which claims her side of the low bench on which they are seated and isolated. All this is suggested through strokes of great fluency and varieties of touch, ranging from bold saturated Indian ink brush strokes describing volume (the drawing has been reworked after its initial laying out) to dry textures, where the brush just skims the paper while differentiating the woman's shawl and skirt or the turning plane of a stockinged leg. Touch is both the topic and the graphic means of this beautiful and emotive drawing, where the faces of the blind couple are described with amazing economy.



65 Rembrandt van Rijn, *Tobias Healing his Father's Blindness*, circa 1640-45, pen and brown ink touched with white gouache, 211 × 177 mm. Cleveland, The Cleveland Museum of Art, purchase from the J. H. Wade Fund, 1969.69

Discourses of Tactility and Touch

Colour and light are objects of sight alone ... drawing ... is an object of touch as well.
Roger de Piles⁶⁹

Touch is the hand-writing of the painter, the stroke of his mind.

Charles Blanc⁷⁰

Drawing is ... the first visible thing of the form of the thought, the changing point from the invisible powers to the visible thing ... It is not only a description of the thought ... you have also incorporated the senses ... the sense of balance, the sense of vision, the sense of audition, the sense of touch.

Joseph Beuys⁷¹

Portrayal of the senses was particularly important in the centuries preceding Goya's drawing, and touch was often symbolically represented in painting by a sculptural bust, explored by the fingers of the sighted or the blind. De Piles tells the story of a blind sculptor in wax who made amazingly accurate portraits solely through the sense of touch: 'my eyes are at my fingertips'.⁷² Aspects of touch in the making of drawings, where fingers act as seeing and intelligent digits, are part of a reciprocity with the *apparent* tactility implicated in gestural line, mark and strokes. The German artist Philipp Otto Runge (1777-1810), for example, remarked in a letter about portraiture: 'It is as if you had the

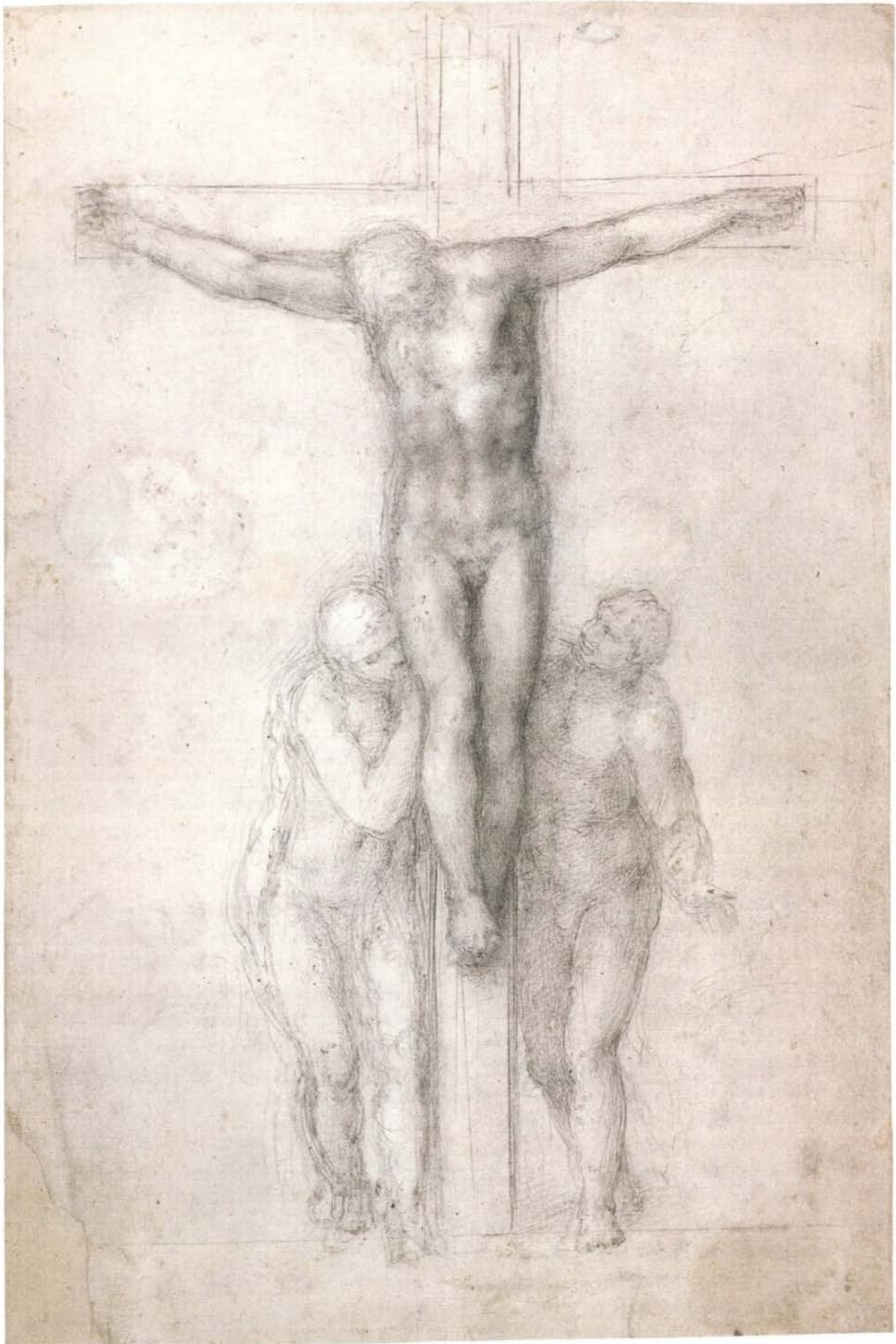
person in front of you and felt around his face with the chalk; where there are concavities, you stroke the paper more often.⁷³ In art, touch is both transitive and intransitive: it is the responsive act of making by the artist, as well as an indexical record or a representational mark that signifies tactile values. Manifest touch participates in an important cross-over discourse equally relevant to painting, sculpture and print-making.

Touch relates to the performative, and has never ceased to be an important element in relation to the emphasis upon emitted sounds by the pressure of fingers, for example, on a musical keyboard, or the heaviness or lightness of elevation in dance. An equivalent of the indexical relationship of touch and sound in most acoustic musical instruments was brilliantly conveyed in Goya's *Muy acordes*, through a congruence of iconography (the touching couple) and making (the light and heavy touches of ink brushwork on the paper). As Delacroix wrote, touch belongs to the 'conventional language of art . . . Contour and touch are equally absent in nature'.⁷⁴ The visual signs of touch in drawing are coordinated with actual touching: a delicate stroke, for example, suggests distance and a heavy, emphatic gesture signifies closeness to the spectator and/or compositional emphasis. The lack of such tactile responses in the act of making something on a computer or responding to stimuli for scientific purposes, is regarded as so significant that there are many research projects concerned with simulated touch or 'sympathetic haptics' for users in two- and three-dimensional areas.⁷⁵

Touch, including touches of humour, dominates Rembrandt's drawing of *Tobias Healing his Father's Blindness* (pl. 65). Some heavy lines punctuate the skinnier indications of the main compositional group, showing Tobias cutting out the cataract from his blind father's eye, while Tobit's old wife Anna, in spectacles, peers over his shoulder, and the partly whitened-out Angel Gabriel participates with equally eager interest. The heaviest touches of brown ink give emphasis to a female spectator at this little drama: the maid on the right, whose placing in front of the diagonally composed action draws our attention to her stolid witness of this act of restoration of sight. (Tobit's first glance will be bestowed on his son.) Such graphic emphases act very differently from those touches of colour that occur in Rembrandt's paintings, adding tactile emphasis to textural renderings of shiny surfaces, for example, through thick dabs of highlights, or guiding the eye through tonal contrasts of hue and saturation. Touches of colour transcend their physical presence in the sensational dynamics they bring to a painting as a whole, whereas graphical touches draw attention to themselves. Rembrandt's series of drawings about Tobit's blindness (he was, improbably, blinded by swallow's droppings), of which there are also copies made by his students, set out scenes of this narrative in an entirely theatrical manner, playfully coordinating the connection between touch and performance.⁷⁶

In the *making* of a drawing, touch resides in the very fingertips – or the pressure of a body against a wall, or Boetti's receptive bottom. It is most acute when the tools of drawing are closely bonded to the hand that holds them and become an intelligent extension of the digits. It is what we see most poignantly, for example, in the very late tactile drawings of Michelangelo when he was beginning to lose his sight. In the various versions of *Christ on the Cross*, dated 1555–64, the multiple short curved contour lines that spin away from the outlines of the figures in a series of vibrating repetitions are the touches of a drawer, who is not *seeing* what he is drawing, so much as *feeling* the figural volumes growing under his fingers on the materiality of the paper.⁷⁷ We can surmise that the elderly Michelangelo, who had the shakes, was clutching a short piece of black chalk directly in his crabbed fingers, rather than inserted into a holder, so that his fingertips could touch the paper and guide his gestures in making marks.⁷⁸ In a deeply emotive version of the subject, *Christ on the Cross between the Virgin and St John* (Windsor, Royal Library), the apparently twisting and agonised figure on the cross, whose legs have been redrawn a number of times, is literally embedded into the shadowed paper support on its right side through rippling waves of contour chalk repetitions.⁷⁹ In *Christ on the Cross between the Virgin and St John* in the British Museum (circa 1550–60; pl. 66), the corollary of the tactile rather than visual rendering of the figures has led to a broadening and loosening of bodily proportions. Unfortunately, the drawing has blurred through excessive handling, and oxidisation of the white body colour has almost effaced the subtleties of the figure of St John; but the compositional organisation of the drawing is very legible. St John is standing so close to the crucified figure that his body has nearly become identified with that of Christ, while the broad, nude Virgin touches the dead Christ down a long sweep of contour, her head and hands embracing his thigh. Touch therefore wraps the Crucifixion into a trinitarian organisation, spirit and body framed by the outstretched crucified arms above. These are intensely internalised drawings, where the act of seeing with the hand, so to speak, is more important than the submission of the work to another's gaze, and they have long, and surely rightly, been interpreted as deeply spiritual meditations, possibly related to a sculptural idea.

The privileging of tactility marks the last drawings of the elderly, entirely deaf Goya, when he was living in Bordeaux and his sight was failing. There is a testament to this in a description by Antonio Brugada, who describes how Goya worked on stone lithography with a magnifying glass.⁸⁰ This was the period when he was preparing the late *Bulls of Bordeaux* print series (1824–5), and it is possible that his powerful late drawings were carried out with lithographic crayon because the relative stickiness and greasiness of the medium enabled the nearly blind artist to feel



66 Michelangelo Buonarroti, *Christ on the Cross between the Virgin and St John*, circa 1550–60, black chalk and white lead overdrawing (oxidised in places), 410 × 278 mm. London, The British Museum, 1895.0915.510

the progress of the drawing on the paper with his fingers, in the manner described above. The scale and proportions of these later figures have changed significantly from other periods of Goya's œuvre when he employed brush and ink or dry chalk. The late figures are larger in relation to paper size; their heads, hands and feet have become exaggerated, while the curiously shapeless bodies have broadened, comparable to the figures in Michelangelo's late tactile drawings: they are even more expressive of pain, suffering or madness than his earlier figures. This is so in *Lunatics* (*Locos*) from the Bordeaux Album (pl. 67), where a group of three stumpy monsters are engaged in some curious sexual antics, the meaning of which is not clear. The grotesque grinning face of the central figure with his jacket pulled over his head, is as compelling as the implied anger and disgust of the artist. The pyramidal composition is given extra emphasis because there is no drawn or implied frame. This drawing could have been a preparatory study for a lithograph, and lithography is a print medium that diminishes the significance of a frame, since the pulls do not have the heavy 'blind' imprintation of a metal plate, which always indents the paper.⁸¹

In past centuries, discourses of touch, rather confusingly, have appropriated the tactile into a very generalised discussion of the differentiated range of strokes for representing natural phenomena, as well as texture and planarity. The Reverend William Gilpin (1724–1804) advised the devotees of the Picturesque: 'It is enough to make with a few free touches of the pen, here and there, some of the breaks, and roughnesses, in which the richness of an object consists.' He often wrote about touch: '[In] free touches with a pen, the chief characteristic is expression; or the art of giving each object that peculiar touch, whether smooth, or rough, which best expresses its form.'⁸² According to Delacroix, 'When touch is judiciously handled it can be used to stress the different planes of an object more suitably. The planes are brought forward when the touch is strongly marked, and vice versa.' Touch, therefore, has a spatial identification, but, confusingly, it is also related to finishing touches – the lively last strokes that vitalise a painterly surface, or smooth it over at the end of the process – as well as implying textural differentiation. Delacroix does not only infer painting and sculpture, but, in the same entry, writes about touches in engraving that 'can render the bloom on a young girl's cheek, an old man's wrinkles, the softness of cloth, the transparency of water, the distance of skies and mountains'.⁸³

Touch becomes closely identified with the distinctive graphite or chalk strokes of different kinds of foliage in late eighteenth- and nineteenth-century popular manuals on landscape art, establishing a direct equivalence of perceived shape and tactile sensations in representational conventions. For example, 'the principle touch of the oak' is formulated as an 'elliptic asterisk' in a manual of 1815.⁸⁴ The drawing master William Marshall Craig, a severe



67 Francisco Goya, *Lunatics (Locos)*, 1824–8, black chalk and crayon, 191 × 144 mm. London, The British Museum, 1980,0628.56

critic of Gilpin for the imprecision of his graphic landscape signs, which bore no resemblance to 'certain objects in nature', declared that 'every different subject should be expressed by a different line or touch'.⁸⁵ John Ruskin's drawing manual of 1857 supplied extremely detailed information on how to represent foliage, clumps of grass and boughs of trees through a practised repertoire of drawing gestures, although he warns against mechanical touches:

'If you want a continuous line, your hand should pass calmly from one end of it to the other without a tremor; if you want a shaking and broken line, your hand should shake, or break off, as easily as a musician's finger shakes or stops on a note: only remember this . . . no recipe can be given you for so much as the drawing of a cluster of grass.'⁸⁶

In a later publication Ruskin asserts a Darwinian note, that touch is an essential aspect of linear form, which is the 'chief charac-

teristic of species . . . and individuals of a species'.⁸⁷ He himself observed such careful distinctions in a wonderfully differentiated pen and brown wash sketch of foliage on Mont-Blanc, *Chamonix: Hill with Trees Sloping upwards to Left* (1850; pl. 68). The leafy branches of each wind-swept tree are contrasted with the linear fronds of fern and bracken growing out of the thickly gathered dark brown strokes that define rocks and earth. Lightness and heaviness of touch set up a scale of shadow and natural sunlight as well as the opacity and translucency of natural textures.

Against this specific, even literal association between touch and mimesis, the influential Italian critic Diego Martelli, a friend of Manet, Degas and Pissarro, proposed: 'Drawing no longer belongs to the sense of sight alone but is transferred in part to the sense of touch and exists as the graphic and mathematical expression of our quantitative judgements.'⁸⁸ For Charles Blanc, touch is implicated in issues of scale and decorum: 'The first law of taste in these matters is that the touch ought to be broad in large and delicate in small works.'⁸⁹ In the 1960s Philip Rawson, while acknowledging scale and handling, was to revive, and further confuse, discourses around touch: 'In all drawings there is a basic minimum of stroke-scale – the "touch" in fact – which the eye accepts as the irreducible unit of sense.'⁹⁰ He differentiated 'touch-scale' from atmospheric perspective.

Even before eighteenth-century attempts to regularise landscape marking into codified systems for representing leaf and tree shapes according to botanical typologies, complex sets of linear signs for depicting foliage, sky, rocks and water were a condition of landscape sketches from underdrawings on boards and walls to the first autonomous works on paper. A complicated linear vocabulary of rounded and angular squiggles and calligraphic flourishes, rising and falling rhythmic strokes in regular or irregular patterns, ordered or chance groupings of dots or hatchings, and so on, have served to indicate texture, material, density, depth and volume, as well as signifying individual and massed natural forms – rocks, trees, tempests and deluges. Generic systems of marks, to be picked and mixed at will, they function as significant indicators of historical and geographical affiliations or schools, as well as personal style, and have always been minutely examined by drawing collectors as the revelatory signs of autograph. Traditionally, landscape has been the genre within which this graphic vocabulary has been pushed to its richest manifestation, possibly because the fractal complexities of the natural world defy representation and invite conventionalised linear codes.

Vincent van Gogh (1853–1890) elaborated the conventional linear vocabulary of landscape drawing and variations of touch with unprecedented richness in his pen and ink drawings. In *Hill with the Ruins of Montmajour Abbey* (pl. 69), undertaken while living in Arles in 1888, he carefully differentiates the ruined monastery from the huge outlined boulders and stubby growth



68 John Ruskin, *Chamonix: Hill with Tree Sloping upwards to Left*, 1850, pen, brown ink and wash, touched with white over graphite, 516 × 379 mm. London, The British Museum, 1944.1014.168

of the hillock through scale, if not variations of touch. The distant view of the flat Crau valley is also not distinguished by differing pressures of light or heavier touch to suggest aerial perspective, even though the strokes diminish in size towards the horizon. Instead, pale watery strokes and dots with a reed pen over the whole surface of the drawing are interspersed with heavier brown strokes and some chalk marks, as well as banks of fine-lined grassy squiggles and patches of parallel contour repeats, probably made with a metal nib. The decorative force of these varied strokes throughout the sheet therefore registers the drawing as a vertical composition, which both reinforces and suppresses conventional perspective, and maps out the surface idolatry of modernist art. Although the pen symbols are a literal translation from paintbrush strokes to some extent (and van Gogh moved between painting and drawing with a greater ges-



69 Vincent van Gogh, *Hill with the Ruins of Montmajour Abbey*, circa 1888, pen and brown ink and black chalk, 485 × 598 mm. Amsterdam, Rijksmuseum, Rijksprentenkabinet, RP-T-1962-65



70 Vincent van Gogh, *Peasant of the Camargue (Portrait of Patience Escalier)*, 1888, brown ink over graphite, 494 × 380 mm. Cambridge, Mass., Harvard University Art Museums, Fogg Art Museum, Bequest of Grenville L. Winthrop, 1943.515



71 Rembrandt Harmensz. van Rijn, *The Bulwark called Blauw hoofd on the IJ*, early 1650s, pen and brown ink and brown and grey brown washes, 116 × 198 mm. Paris, Institut Néerlandais, Fondation Custodia, Collection Frïts Lugt, 5174.

tural homology of mark-making than practically any other artist), their graphic elaboration is also clearly a compensation for, or equivalent of, colour. It is as if he has tuned in to the vibrations of colours and translated them directly into rhythmic markings, simultaneously referencing the differentiation of shape and textural detail of foliage, earth and rocks and the glaring sunlight and heat. Alternatively, the complex systems of marks could be understood as encoding chromatic *absence*. Curiously, however, although the range of marks signals the artist's dogged obsession with rendering rhythm and texture, they do not directly summon his haptic presence – perhaps because it has been blotted out by the intensity of filling the page in an act of compositional *horror vacui*.

Van Gogh's noisy pen-markings,⁹¹ evoked through his strenuous landscape experiences, carry over into mapping the geography of the face of Patience Escalier, portrayed in *Peasant of the Camargue* (1888; pl. 70).⁹² According to letters to his brother Theo, van Gogh's project was 'to paint a poor old peasant, whose features bear a very strong resemblance to Father', and he

described the former cowherd of the Camargue as a 'man with a hoe'.⁹³ Van Gogh had used elaborate pen markings in other drawn portraits, for example, the famous *Portrait of Joseph Roulin*, also of 1888 (J. Paul Getty Museum), but his investigation of the contours, hollows and rough textures of Patience Escalier's physiognomy, through dots, slashes and parallel groups of thick and thin hatchings, marshalled into planes and changes of direction, affirms his sad and patient subject as a man of the soil, rooted in matter. Only the change of scale in the fine pen-markings of the face differentiates the head from the rhythmically dotted background, into which it is set as a bas-relief – or a raised area in a rugged contour map.

Touch, embedded in lines and strokes, is one of the dynamic forces that activates the paper space into limitless or controlled depth, assists it to move forward and backward in high or low relief, enwrap objects or recede into vaporous indeterminacy. Touch brings emptiness to life, and differentiates spaces in the undrawn parts of a graphic work. In Rembrandt's drawing *The Bulwark Called Blauw hoofd on the IJ* (pl. 71), one of the sites that

he visited on his regular walks in the environs of Amsterdam, it is the insistent touch of the hand in the upright brown ink strokes of windmill, roofs and chimneys that draws our attention, by contrast, to the bright spread of the waters of the River IJ beyond and below. Rembrandt drew the Blauwhoofd fortifications a number of times, and the buildings receding away from the dramatic mill, and the shadows and wind-swept trees, are wedded into the damp and luminous landscape with drowning washes of brown and grey-brown ink. The palest of watery strokes lay out the sandbanks in the water and some almost indistinguishable ships, and a light delicate wash indicates the small peninsula of Kale Nes on the northern shore.

Each stroke is laid down with a rehearsed consideration of spatial dynamics and rhythmic variety in a manner akin to the calligraphic markings of a Chinese scholar artist. Like them, Rembrandt is engaged in a spare dialogue between dry and wet brush strokes; what Chinese scholars designated 'water-brush', *shui-pi*, and *kan-pi*, 'dry brush'. In Chinese painting generally, calligraphic ink marks are allowed to breathe in an endlessly deferred state of suggestibility. The immanence of such brush strokes depends on relentless practice and observation, and consideration of the supreme importance of the moment when the brush touches the paper for the first time, *lo-pi*. As the Buddhist painter Tao-chi (1642–*circa* 1707) wrote, 'the single stroke is the root of all representation. Only when a painter comprehends the fundamental principle of the single stroke in relation to nature, can he develop the correct method for painting all representation.'⁹⁴ Rembrandt's fluency in the drawing of the mill and its

furled sails with a few accurate gestures seems to be the result of just such contemplation and mental rehearsal before a spontaneous gesture.⁹⁵ What is omitted in this drawing is as significant as what is included. The issue of selection has always been a part of the discourse of landscape, but it also implies a state of artistic confidence, which could almost be termed the 'bravura of absence'.⁹⁶

As Ruskin, who was anything but a fan of Rembrandt, grandly suggests in yet another discussion of touch and distance, 'every touch is false which does not suggest more than it represents'.⁹⁷ The empty spaces of Rembrandt's melting drawing, with its suggestion of a low horizon receding into great watery indeterminacy and depth, contrasts with the manner in which the paper support in van Gogh's gestural landscape is pulled up to the surface plane, like the verticality of the blazing sky that invades the very surfaces of the rocks and the parched earth.

The psychodynamic implications of moving lines, of gestural, embodied marks and indexical traces, and those linear codes that help to extend the spaces, meanings and narratives of drawing, are so embedded in practice as to appear inseparable from perception and imagination. For practised artists they become naturalised, and function equally unconsciously within representational drawing or abstraction. Coded systems function both in hand drawing and technological applications, even when the logic of their use has been mirror-reversed or completely overturned within the 'absolute space of simulation' of the digital realm.⁹⁸ The reciprocity and intertwining of the linear economy constitute the richness of drawing as practice and discourse.

- 62 Palmer was influenced particularly by the painter-engravers Lucas van Leyden (circa 1489–1533), Martin Schongauer (circa 1450–1491) and Albrecht Dürer.
- 63 *Cloisonné* enamels are bounded by very thick outlines, comparable with the leading of stained-glass windows, techniques popular with artists such as Gauguin and Georges Roualt. Palmer's influence is apparent in the work of Graham Sutherland, John Piper and Paul Nash, not to mention generations of woodblock book illustrators. See Colin Harrison, 'The Artistic Rediscovery of Samuel Palmer', in William Vaughan et al., *Samuel Palmer, 1805–1881: Vision and Landscape*, London, 2005, pp. 55–61.
- 64 The use of varnish on paper was not an invention of Palmer: whether known to him or not, Gainsborough had varnished drawings in the 1770s 'in imitation of oil painting'. (pl. 93) See J. Hayes, *The Letters of Thomas Gainsborough*, New Haven, CT, 2001, pp. 110–11. William Blake also strengthened his watercolour with the addition of gum arabic.
- 65 A. H. Palmer, *The Life and Letters of Samuel Palmer, Painter and Etcher*, London, 1892.
- 66 Sir Geoffrey Keynes, ed., *The Complete Writings of William Blake*, Oxford: Oxford University Press, 1966, p. 26.
- 67 Palmer used a tinted Claude glass, which he refers to in the only extant *Sketch-book*, of 1824 (London, British Museum, 1964, 1104. 1.1–78), as 'my spec. glass', which could have suggested the value of a brownish tonality. See *Samuel Palmer's Sketch-book, 1824*, ed. Martin Butlin, 2 vols, Clairvaux, 1962.
- 68 The comments by Carl Gustav Carus (the main theorist of German romanticism) are in his *Friedrich der Landschaftsmaler*, Dresden, 1841, p. 18; quoted in Moshe Barasch, *Theories of Art, 2: From Winckelmann to Baudelaire*, New York and London: Routledge, 2000, p. 260.
- 69 There is a version of this drawing in The Hamburg Kunsthalle (Inv. 41119) that lacks the tree with its anchor and cross, and has a horned owl sitting on the coffin. Carus himself was very partial to paintings of graveyards. A watercolour in the Museum der bildenden Künste in Leipzig, *Moonlight over the Ruins of Eldena* (1840), recalls the moody subject matter of drawings described by Charlotte Brontë's eponymous heroine *Jane Eyre*.
- 70 A replica was painted by Ingres's assistant Paul Flandrin in 1842 (the *Odalisque with Slave* in the Walters Art Museum, Baltimore, MD) in a version in which the claustrophobic background has been opened up into a garden vista. In 1858 Ingres, or his workshop, made a rather brownish copy of the drawing for Emile Galichon in the same mixed technique, unfinished and now much restored (Paris, Musée du Louvre, inv. no. 4622r).

- 71 In a wonderfully lush passage Charles Blanc (*Ingres: sa vie et ses ouvrages*, Paris: Jules Renouard, 1870, pp. 106–7) declaims: 'Il est impossible de mieux peindre le mystère, le silence et l'étouffement du sérail; pas un rayon de soleil, pas un coin de ciel bleu, pas un soufflé d'air dans cette chambre ouatée capitonnée, imprègne des parfums vertigineux du toulback, de l'ambre et du benjoin.'
- 72 Stephen Wildman et al., *Visions of Love and Life: Pre-Raphaelite Art from Birmingham Museums and Art Gallery*, Alexandria, VA, 1995, pp. 185–7. A version of this drawing dated 1860 is in the Huntington Library Art Collection, San Marino, CA. See the exhibition catalogue by Colin Cruise et al., *Love Revealed: Simeon Solomon and the Pre-Raphaelites*, London: Merrell, 2005.
- 73 For a long time this was believed to be the subject of Solomon's drawing. In later years, after a court case and sexual scandal had ruined his career, Solomon distributed his drawings widely through the photographic technique of *platinotypes* (a process invented in 1873), which emphasised their textures and could be sold in portfolio editions in lieu of prints. See Fiona Moorhead, 'Solomon in the Frame: The Artist and Victorian Photography', in *From Prodigy to Outcast: Simeon Solomon, Pre-Raphaelite Artist*, London: Jewish Museum, 2001, pp. 30–31b.
- 74 Wassily Kandinsky, *Concerning the Spiritual in Art* [1911], trans. M.T.H. Sadler, New York, 1977, p. 18.
- 75 Albert Gleizes, *L'Épopée* [1929]; trans. as *The Epic: From Immobile Forms to Mobile Form*, Paris: Association des Amis d'Albert Gleizes, 1995, pp. 11, 18 and 21.
- 76 'Until now, the three dimensions of Euclid's geometry were sufficient to the restiveness felt by great artists yearning for the infinite... The painters have been led... to preoccupy themselves with the new possibilities of spatial measurement... the fourth dimension' (Guillaume Apollinaire, *The Cubist Painters: Aesthetic Meditations* [1913], New York, 1944, p. 12).
- 77 Theodor Adorno, *Aesthetic Theory* [1972], trans. C. Lenhardt, London and New York: Routledge & Kegan Paul, 1984, p. 299.
- 78 Traditional drawing systems and hierarchies of genres depended on assumptions of continuity; once they had been challenged in the early twentieth century and collapsed, they had only a fictive survival in exhibition displays and written texts.

Chapter Four

Line, Mark, Linear Codes and Touch

- 1 A. M. Rodchenko, *The Line* [1921], from 'The Inkhuk Archives' in Selim O. Khan-Magomedov, *Rodchenko: The Complete Works*, ed. Vieri Quilici, London, 1986, pp. 292–4 (p. 293).
- 2 '... although there be sometimes in lineal pictures... a deceitfull similitude of Life and Motion... coloured pictures... ravish our sight' (Franciscus Junius, *The Painting of the Ancients in three bookes*..., London, 1638); Franciscus Junius, *The Literature of Classical Art: Franciscus Junius*, ed. Keith Aldrich, Philipp Fehl and Raina Fehl, 2 vols, Berkeley, CA, and Oxford, 1991, vol. 1, p. 252.
- 3 According to Roland Barthes, in the essay 'The Denoted Image': 'The coded nature of the drawing can be seen at three levels. Firstly, to reproduce an object or a scene in a drawing requires a set of rule-governed transpositions... and the codes of transposition are historical... Secondly, the operation of the drawing (the coding) immediately necessitates a certain division between the significant and the insignificant... Finally, like all codes, the drawing demands an apprenticeship' (from 'Rhetoric of the Image' [1964], in *Image Music Text* [1977], trans. Stephen Heath, London, 1984, p. 43).
- 4 Although Jacques Derrida contextualises his comments on *not* seeing, in his essay 'Memoirs of the Blind', with the generalisation, '*Idein, eidos, idea*: the whole history, the whole semantics of the European *idea*, in its Greek genealogy, as we know – as we see – relates seeing to knowing', he goes on to distinguish between drawing and painting, the mark and the dab of colour: 'the *trait* is not sensible, as a patch of color would be. Neither intelligible nor sensible. We are speaking here of... drawing and not painting' (Jacques Derrida, *Memoirs of the Blind: The Self-Portrait and Other Ruins*, trans. Pascale-Anne Brault and Michael Naas, Chicago and London, 1993, pp. 12 and 55).
- 5 In computer jargon, 'filtering' depends on a vocabulary derived from signal processing, that is, dealing with electrical or sound waves. Images are analysed in terms of frequencies, so 'low-pass filters' make an image look blurred.
- 6 All these invented terms, products of 'neologorrhoea', the overwhelming need to create new terms in technoculture, are used more or less consistently in software programs and manuals.
- 7 John Ruskin, *The Elements of Drawing* [1857], New York, 1971, p. 32.
- 8 Lecture, Monday, 27 February 1922, in *The Thinking Eye: The Notebooks of Paul Klee* [1956], ed. Jürg Spiller, trans. Ralph Manheim, London and New York, 1961, p. 359.

- 9 Paul Klee, *The Creative Credo* [1920], reprinted in *ibid.*, p. 78.
- 10 The use of indexical is derived from C. S. Peirce's tripartite classification of signs. At its most basic, an *icon* signifies through its resemblance to the significate; an *index* has a causal relationship to the significate, being an imprint or transfer of the real; and a *symbol* signifies through arbitrary rules or conventions. See Peirce, 'Logic as Semiotic: The Theory of Signs', in *Philosophical Writings of Peirce*, ed. Justus Buchler, New York, 1950.
- 11 Roland Barthes, 'Cy Twombly: Works on Paper' [1979]; reprinted in *The Responsibility of Forms: Critical Essays on Music, Art and Representation*, trans. Richard Howard, Oxford, 1985, p. 170.
- 12 Paul Valéry, 'Seeing and Copying', in *Degas, Manet, Morisot*, trans. David Paul, London, 1960.
- 13 See discussion in chapter seven, pp. 203–5.
- 14 John Tchalenko, a researcher associated with the University of the Arts, London, has digitally tracked the movements of the human eye while engaged in drawing or painting as part of a research project concerned with hand–eye coordination.
- 15 So-called haptic interfaces include direct drawing tablets and soft pads, which can be manipulated with special styluses, including cordless pucks; alternatively, hand scribbles from a palm organiser can be fed on to the computer screen as an overlay. The development of such systems could be traced through SIGGRAPH conferences, exhibitions and publications.
- 16 The space of difference between the thing, its representation and the *trait* is also the 'night of the abyss' according to Derrida, *Memoirs of the Blind*, p. 45.
- 17 The earlier prints (1–14) illustrate a history of bullfighting, including its legendary Moorish origins. See José Manuel Matilla and José Miguel Medrano, *El libro de la Tauromaquia, Francisco de Goya*, Madrid: Museo Nacional de Prado, 2001.
- 18 An associated drawing of a moment of activity is the tragi-comic *Showing Off? Remember Your Age* from the so-called Black Border Album (E) 7 of *circa* 1815–20 (Berlin, Kupferstichkabinett), which depicts an anguished old fellow falling down the stairs. The albums were split up after Goya's death, although reconstituted by scholars into identifiable groupings.
- 19 Verostko, who has worked in this field for more than forty years, first used the term epigenetic in a conference paper presented in Utrecht in 1988 entitled 'Epigenetic Painting: Software as Genotype' (see www.verostko.com). His work is in the Digital Art Museum.
- 20 Stylus marks can indicate that a work has been traced from another drawing, but they were also used for the light preliminary sketch of a work, as advised by Armenini. See Giovanni Battista Armenini, *On the True Precepts of the Art of Painting* [1586], trans. Edward J. Olszewski, New York, 1977, p. 144.
- 21 *Ibid.*, p. 144.
- 22 Armenini (*ibid.*) also advises a serial process of sketching: 'it is well to draw many sketches, each different from the first . . . for one concentrates one's attention more when drawing anew than when merely going over a sketch. . . . Repeated sketching and drawing results in the addition of many elements in better form as well as the removal of many as unnecessary.' (p. 144)
- 23 Copy drawings after Rigaud by the German engraver Johann Georg Wille (1715–1808) indicate how exactly his techniques were investigated, for example, *Study of Hands after Rigaud*, white and black chalk on blue/grey paper, 332 × 517 mm (Paris, Collection of the Petit Palais, D. Dut. 1096).
- 24 Specialist graphic programs enable users to make their own textural mutations.
- 25 James J. Gibson, *The Perception of the Visual World*, Boston, MA: Houghton Mifflin, 1966, pp. 78–80.
- 26 Handwritten commentary in an album of photographs put together by his model and assistant in the 1930s (Lydia Delectorskaya, quoted in Yve-Alain Bois, 'Matisse and "Arche-drawing"', in *Painting as Model*, Cambridge, MA, and London, 1993, p. 50).
- 27 Discussed in great detail in Richard Kendall, 'Drawing, Tracing and the Sequence', in *Degas: Beyond Impressionism*, London, 1996, pp. 186–8.
- 28 The speed and fluidity of change in computer drawing mean that some artists use special programs for recording their processes, since it becomes impossible to print out continually, and successive stages would otherwise totally disappear within sequential processes.
- 29 There is also a pencil drawing in the Lady Keynes collection, Firlie, East Sussex. Lytton Strachey described Lopokova as 'canary brained' (see Judith Mackrell, *Bloomsbury Ballerina*, London: Weidenfeld and Nicolson, 2008).
- 30 These illustrations were commissioned by Thomas Hope in Rome in the early 1790s, and first editions of the *Iliad of Homer*, *The Odyssey of Homer*, *The Tragedies of Aeschylus* and *Compositions from the Hell, Purgatory and Paradise of Dante Alighieri* were engraved by Thomas Piroli, although subsequently republished in other versions. *Compositions from the Works, Days and Theogony of Hesiod* (1817) were engraved by William Blake.
- 31 Francesco Bartolozzi (1727–1815), who engraved the facial profiles of Alexander Cozens in *Principles of Beauty Relative To The Human Head*, 1778, used this calligraphic technique in an exaggerated manner, as did the German artist Johann Heinrich Wilhelm Tischbein (1751–1829), friend of Johann Wolfgang Goethe and director of the Neapolitan Accademia di Belle Arti, who engraved plates of Sir William Hamilton's vases. The 'dangerous' and 'unmathematical' Tischbein, and the practice of calligraphic line, were condemned roundly by George Cumberland (*Thoughts on Outline Sculpture*, London: W. Wilson, 1796, pp. 17–18): 'by giving . . . symmetry of feature in regularly irregular outlines . . . [Tischbein] has dashed hopes that precious monuments would at length reach us uncontaminated and pure . . . Such licence must not be conceded to the student'. John Ruskin (*The Elements of Drawing*, p. 32) wrote in 1857: 'It does not in the least matter whether your pen outline be thin or thick; but it matters greatly that it should be equal, not heavier in one place than in another.' In the Appendix, 'Things to be Studied', Ruskin pointed to Flaxman caustically as a finished example of 'bad drawing with a steady hand' (*ibid.*, p. 225).
- 32 Barbara Stafford (*Body Criticism: Imaging the Unseen in Enlightenment Art and Medicine*, Cambridge, MA, and London, 1993, p. 148) makes inspired connections between 'the new lexical systems for the idealized reduction of complex information and the demolition of the body by the abstract diagram'. There is a 'fundamental link between geometry and pedagogy, and the exaggerated intellectualisation of images as rarified schemata'.
- 33 See Sarah Symmons, 'Themes and Variations', in *John Flaxman RA*, ed. David Bindman, London, 1979, pp. 152–7. Goya also appropriated Flaxman's neoclassical style of wash drawings into the delicate grey wash drawings with a minimum of shadows and modelling in his so-called Sanlúcar Album of 1796. Philip Guston's twentieth-century appropriation of sinister hooded Ku Klux Klan figures into his work possibly followed this precedent.
- 34 This was (controversially) suggested by Pierre Gassier, the scholar who worked on Goya's catalogue raisonné in the 1970s; the sketchbooks do not always appear to coincide with the print sequences. See Pierre Gassier, *Francisco Goya Drawings: The Complete Albums*, New York and Washington, DC, 1973, p. 13, and Eleanor A. Sayre, 'Introduction to the Prints and Drawings Series', in Alfonso E. Pérez Sánchez and Eleanor A. Sayre, *Goya and the Spirit of Enlightenment*, Boston, MA: Museum of Fine Arts, 1989, p. xciv. On Goya's drawings in general, see Juliet Wilson-Bareau, *Goya: Drawings from his Private Albums*, London, 2001.

- 35 See discussion of the Picasso sketchbooks in chapter twelve, p. 336.
- 36 This is so of Dürer's Dresden Sketchbook (Dresden, Sächsische Landesbibliothek, MS B-147 [Dresdner Skizzenbuch]).
- 37 These casual sketches on scraps of paper include *Story Board for Steelmill-Stahlwerk* of 1977, pencil on paper, three sheets, each 127 × 96 mm (Collection of the Artist).
- 38 Polke has continued to be fascinated with comic strips and animation, for example the acrylic on paper drawing *Spiderman* (1971–4), which was shown in his retrospective at the Museum of Modern Art in New York in 1999.
- 39 Computers work on Moore's Law – applied to the exponential increase in the density of transistors on an integrated circuit – but also interpreted by devotees to prove that every problem of representation can be improved ten times every five years.
- 40 See Alvy Ray Smith, 'Digital Humans Wait in the Wings', *Scientific American* (November 2000), pp. 55–60.
- 41 Not to be confused with more traditional animation practices in which three-dimensional Plasticine figures are manipulated and filmed frame by frame.
- 42 Albrecht Dürer, *Undenweysung der Messung [Instruction in Measurement with Compass and Ruler in Lines, Planes and Solid Bodies]*, Nuremberg, 1525. For an account of Piero della Francesca's mathematical and perspective studies, and Dürer's relationship to Pacioli and Leonardo, see chapters 1 and 2 of Martin Kemp, *The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat*, New Haven, CT, and London, 1990, especially pp. 27–64. Piero's manuscript *De prospectiva pingendi* (circa 1482), following his earlier tract on mathematics, can be consulted in a modern edition, based on the critical edition of G. N. Fasola [1942], Florence, 1984.
- 43 See the discussion by Martin Kemp of this work and the perspective drawing of a *mazzocchio*, also in the Uffizi, in the catalogue of the National Gallery of Art, Washington, DC: *Circa 1492: Art in the Age of Exploration*, ed. Jay A. Levenson, London, Washington, DC, and New York, 1991.
- 44 For the open-frame sculptural armature for the *Sforza Horse* drawn by Leonardo in the Codex Madrid II, fol. 157r, see Carmen C. Bambach, ed., *Leonardo da Vinci, Master Draftsman*, New York, 2003, pp. 430–35.
- 45 Giovanni Paolo Lomazzo's *Schematic Figure – Study of Prophet for the Vault of San Marco*, Milan (1570) is in the University Art Museum, Princeton, NJ. There are studies by Rubens of the Farnese *Hercules* on a doubled-sided sheet in the Courtauld Institute of Art Gallery (*Studies of the Farnese Hercules*, D. 1978.PG.427), showing a blocklike head on the recto and diagrammatic musculature organised according to directional axes on the verso. A boxlike or stereometric style for representing figures was used over the centuries in drawing manuals, extending up to the popular *Cours de dessin* by Charles Bargue and Jean-Léon Gérôme (2 vols, Paris, 1868–70).
- 46 William Hogarth, *The Analysis of Beauty*, ed. Ronald Paulson, New Haven, CT, and London, 1997, p. 56.
- 47 See Schlemmer's notes for the stage classes of 1928 and 1929 in *Man: Teaching Notes from the Bauhaus*, ed. Heimo Kuchling, trans. Janet Seligman, London, 1971.
- 48 Henri Matisse in an interview with Georges Charbonnier in 1951 (*Matisse on Art*, ed. Jack D. Flam, Oxford, 1973, p. 141).
- 49 George Cumberland, *Thoughts on Outline Sculpture*, London, 1796, p. 33. Cumberland introduced this text as 'a few thoughts on that best rudiment of art, the inestimable value of chaste outline'.
- 50 *Matisse on Art*, ed. Flam, p. 43. Roland Barthes often refers to the desire of the line.
- 51 In particular, Gris's drawing is very close to the clarity of outlines and conventionalised features in Ingres's squared-up *Study for 'Luigi Cherubini'* of circa 1840–41 (Montauban, Musée Ingres) for the painting *Cherubini and the Muse of Lyric Poetry* (1842; Paris, Musée du Louvre). Max Jacob's stubby hands also evoke Ingres's well-known oil portrait of *Louis-François Bertin* (Louvre), with its prominent hands.
- 52 The drawing contains the inscription 'Or would you prefer . . . on some other fur?' It is also discussed in chapter seven, p. 195.
- 53 Maurice Merleau-Ponty, 'Indirect Language and the Voices of Silence', in *Signs*, trans. Richard C. McCleary, Evanston, IL, 1964, p. 44.
- 54 Elaine de Kooning, Statement: *It Is* [autumn 1959], in de Kooning, *The Spirit of Abstract Expressionism: Selected Writings*, New York: George Braziller, 1994, pp. 175–6.
- 55 This is a truism, but the point I am making is that the linkage or *interlacing* between a line and its reading (the thread of light that Lacan investigated briefly in an essay about the gaze, citing Merleau-Ponty) is closer than the conceptual gap between the spectator's gaze and a painting or more finished work of art. See Jacques Lacan, 'The Line and Light', in *The Four Fundamental Concepts of Psycho-Analysis* [1973], ed. Jacques-Alain Miller, trans. Alan Sheridan, London, 1994.
- 56 Many twentieth-century writers on art condemned even, uninflected lines as cold and repellent, just as critics from the previous century had generally dismissed the 'mechanistic'. Stendhal, in reviewing the Salon of 1824, was very sarcastic about the drawings of David and his school: 'accurate, studied drawing, imitated from the antique, as David's school understands it, is an exact science, of the same nature as arithmetic, geometry, trigonometry . . . During the thirty years that David's tyrannical rule lasted, the public was made to believe . . . that having the patience needed to acquire the *exact science* of drawing implied having genius' (quoted in Arlette Sérullaz, *Gérard, Girodet, Gros: David's Studio*, Milan: 5 Continents, and Paris: Musée du Louvre, 2005, p. 6). Rosalind Krauss (*The Picasso Papers*, Cambridge, MA, and London, 1998, p. 141) located the 'matrix of [Picasso's] practice of pastiche' in 'the steely graphite pencils of the neoclassical draftsman'. She deplored 'the robotic character of a mark made in the course of tracing' and decried the 'mechanical production of the contour, in the form of tracing, as a kind of disease' (*ibid.*, pp. 142 and 151).
- 57 Wilhelm Worringer in his 'Expressionist' aesthetics in the early twentieth century, for example, distinguished between the supposedly flowing lines and the 'organically tempered curves' of classicism and the expressivity of gothic, seeing a direct correlation between anger, 'the most powerful vehemence of expression', and the 'hard, angular, ceaselessly interrupted, jagged line' (Worringer, *Abstraction and Empathy: A Contribution to the Psychology of Style* [1908–11], trans. Michael Bullock, London, 1953, p. 43). Gilles Deleuze (*Francis Bacon: The Logic of Sensation* [1981], trans. Daniel W. Smith, London and New York, 2003, p. 105) borrows from Worringer when he discusses the power of the gothic line, 'the northern stain', in relation to Francis Bacon: 'the line does not go from one point to another, but passes between points, continually changing direction'.
- 58 Guercino, *Jael Killing Sisera* (Mahon Collection, on loan to the Ashmolean Museum, Oxford). Rembrandt dealt with the subject quite extensively, with a drawing in the Ashmolean Museum, *Jael and Sisera*, towards the end of the 1640s, and *Jael Killing Sisera* (Amsterdam, Rijksmuseum), from the 1650s, as well as copies after another lost drawing of the subject. Related drawings of the *Beheading of a Man* of circa 1640 are in the British Museum, London, and the Metropolitan Museum of Art, New York. Rubens's brown ink wash drawing of *Judith Killing Holofernes* (circa 1609–10; Frankfurt am Main, Städtischen Kunstinstitut) is of similar violence.
- The ink inscription on Sickert's drawing includes the name W. H. Davies, a writer friend of the artist similarly concerned with 'low life'.

- This suggests that the drawing is an illustration for an incident written by Davies. See Wendy Baron, *Sickert: Paintings and Drawings*, New Haven, CT, and London, 2006, p. 405.
- 59 Both Samuel van Hoogstraten and Gérard de Laïresse advised this practice in their seventeenth-century treatises. Laïresse's advice is as follows: 'Now consider the Motions and Passions, which to represent naturally, I shall here shew a proper Method; standing before a Looking glass, make with your own Body, such Actions and Motions as your Figures require' (Gérard de Laïresse, *The Art of Painting in all its branches . . .*, trans. John Frederick Fritsch, London, 1738, p. 36).
- 60 Maurice Merleau-Ponty, 'The Intertwining—The Chiasm', in *The Visible and the Invisible* [1964], ed. Claude Lefort, trans. Alphonso Lingis, Evanston, IL, 1968, p. 142.
- 61 *Ibid.*, p. 134.
- 62 The French philosopher and art writer Nicholas Bourriaud invented the term 'relational aesthetics' in 1998. See Bourriaud, *Relational Aesthetics*, trans. Simon Pleasance and Fronza Woods, Dijon: Les Presses du réel, 2002. See also Michel de Certeau, *The Practice of Everyday Life*, trans. Steven Rendall, Berkeley, Los Angeles, London: University of California Press, 1984.
- 63 Letter from Robert Morris to Michael Compton, 19 January 1971; quoted in Jon Bird, 'Minding the Body', in *Rewriting Conceptual Art*, ed. Michael Newman and Bird, London, 1999, p. 96.
- 64 Jean Dubuffet, 'Empreintes', *Les Lettres nouvelles*, no. 48 (April 1957); in *Jean Dubuffet: Towards an Alternative Reality*, New York: Pace Publications, Abbeville Press, 1987.
- 65 'My models became living brushes' wrote Klein who referred to his anthropometric paintings as 'a phenomenology without ideas, or rather without any of the systems of official conventions', in an article 'Le vrai devient réalité,' March 1960, reprinted in *ZERO* 3, Cambridge, Mass: MIT Press, 1973. He also allowed flames to burn the surface of his paintings as 'the spontaneous traces of the fire' and contemplated creating body imprints in blood. See *Yves Klein, 1928–1962: Selected Writings*, trans. Barbara Wright, London: Tate Gallery, 1974, and Sidra Stich, *Yves Klein*, ostfildern Cantz Verlag, 1994, pp. 171–91.
- 66 The British sculptor Alison Wilding (b. 1948), for example, made a number of drawings in the 1990s entitled *Elephant* that deal with the subject of something heavy and immovable 'being in the way' (personal communication).
- 67 *The Collected Writings of Robert Motherwell*, ed. Stephanie Terenzio, New York and Oxford, 1992, pp. 170–73.
- 68 There are various ways to reproduce spontaneous brushwork in etching, either through lift grounds that resist aquatint or drawing directly on a plate with acid-resistant 'stopping-out' varnish.
- 69 Roger de Piles, *Cours de peinture par principes, composé par M. de Piles*, Paris, 1708, p. 263; quoted in Jacqueline Lichtenstein, *The Eloquence of Color: Rhetoric and Painting in the French Classical Age* [1989], trans. Emily McVarish, Berkeley, CA, and Oxford, 1993, p. 159.
- 70 Charles Blanc, *The Grammar of Painting and Engraving with Original Illustrations*, trans. Kate Newell Doggett [1873], Chicago, 1879, p. 170.
- 71 Joseph Beuys, interview with Bernice Rose, 18 June 1984, Düsseldorf (transcript in the archives of the Study Center for Drawings, Museum of Modern Art, New York).
- 72 De Piles, *Cours de peinture par principes*, p. 260. For the discussion of line and touch, see Lichtenstein, *The Eloquence of Color*, pp. 158–68.
- 73 Philipp Otto Runge, letter to his mother, 14 August 1799 (*Hinterlassene Schriften: Philipp Otto Runge, 1840–1841*, facsimile, 2 vols, Göttingen: Vanderhoeck & Ruprecht, 1965, vol. II [1841], p. 22).
- 74 Entry, 13 January 1857, in *The Journal of Eugène Delacroix* [1951], ed. Hubert Wellington, trans. Lucy Norton, 3rd edition, London, 1995, p. 357.
- 75 See, for example, the various haptic simulation projects of the Virtual Reality Laboratory of the University at Buffalo, NY (www.vrlab.buffalo.edu/), such as fingertip digitisers for 'Applying Haptics and Biomechanics to Tactile Input Technology' and devices such as the Modelglove and Hapstick. Scientific applications include a telehaptic interface for capturing human pulses for medical diagnostics.
- 76 See versions of the *Angel in Tobit's House* and the *Departure of Tobias and the Angel* in the Rijksmuseum, Amsterdam. Rembrandt had a strong interest in the theatre.
- 77 The late *Crucifixion* drawings include two in the British Museum, two in Windsor (RL 12775 and 12761), one in the Louvre (*Crucifixion with Two Mourners*) and a slightly smaller sheet in the Ashmolean Museum, Oxford (*Crucifixion with Two Mourners*). There is also a copy in the Uffizi, Florence, by Giulio Clovio.
- 78 This is not fanciful. I have observed a very elderly and nearly blind artist working in this manner.
- 79 Michelangelo, *Christ on the Cross between the Virgin and St John*, black chalk, 404 × 218 mm (Windsor, Royal Library, 12761).
- 80 'People might laugh if I said that Goya's lithographs were all executed with a magnifying glass. The fact is that it was not in order to do detailed work, but because his eyesight was failing'. Testimony of Antonio Brugada in Laurent Matheron, *Goya*, Bordeaux, 1857. I am grateful to Helen Luckett for this reference. See also Juliet Wilson-Bareau and Manuela B. Mena Marqués, *Goya: Truth and Fantasy. The Small Paintings*, London, 1994, pp. 332–3.
- 81 Blind printing is the technical term used for intaglio or reverse printing where the plate is impressed on to the wet paper without, or in addition to, ink-printed lines and imagery.
- 82 William Gilpin, *Three Essays: On Picturesque Beauty . . .*, 3rd edition, London, 1808, p. 72.
- 83 Entry on *Touch*, 'Plan for a Dictionary of the Fine Arts', Paris, 13 January 1857, *Journal of Eugène Delacroix*, ed. Wellington, pp. 356–8.
- 84 Edward Kennion, *An Essay on Trees in Landscape*, London, 1815. See also Joshua Bryant, *Progressive Lessons in Landscape*, London: Ackermann, 1807. For an interesting discussion on touch, see Ann Bermingham, *Learning to Draw: Studies in the Cultural History of a Polite and Useful Art*, New Haven, CT, and London, 2000, pp. 111–20.
- 85 William Marshall Craig, *An Essay on the Study of Nature in Drawing*, London, 1793; quoted in Ann Bermingham, 'System, Order and Abstraction: The Politics of Landscape Drawing around 1795', in *Landscape and Power*, ed. W. J. T. Mitchell, Chicago, 1994, pp. 88–93.
- 86 Ruskin, *The Elements of Drawing*, p. 97 (Sketching from Nature).
- 87 John Ruskin, *Modern Painters*, vol. I/v, Orpington, Kent, 1888, pp. 67–9. Ruskin declared James Duffield Harding as 'after Turner, unquestionably the greatest master of foliage in Europe'.
- 88 Diego Martelli, 'Gli impressionisti' [1879–80], unpublished pamphlet trans. by the author in Norma Broude, *Impressionism: A Feminist Reading. The Gendering of Art, Science and Nature in the Nineteenth Century* [1991], New York, 1997, pp. 130–31.
- 89 Blanc, *The Grammar of Painting and Engraving*, p. 171.
- 90 Philip Rawson, *Drawing*, London and New York, 1969, pp. 210–13.
- 91 Employing the term 'noisy' is not arbitrary; van Gogh was obsessed with the sonority of colour, even taking piano lessons 'to learn about the nuances of colour-tones'. See John Gage, *Colour and Culture: Practice and Meaning from Antiquity to Abstraction*, London, 1993, p. 236.
- 92 The drawing in the Grenville L. Winthrop collection relates to the oil painting in the Norton Simon Museum, Pasadena, CA.
- 93 See the entry in the exhibition catalogue by Stephan Wolohojian and Anna Tahinci, *A Private Passion: 19th-Century Paintings and Drawings from the Grenville L. Winthrop Collec-*

- tion, *Harvard University*, New York, 2003, pp. 145–7.
- 94 Tao-chi, also known as Shih-t'ao or Daoji, 'The One-Stroke Method', from *Remarks on Painting*, 1730. There are many, differing translations of this famous passage, this one stemming from K. Tomita and Kaiming Chiu, 'An Album of Twelve Leaves by Tao-chi', *Bulletin of the Museum of Fine Arts, Boston*, XLVII (1949), pp. 49–58. See also François Cheng, *Empty and Full: The Language of Chinese Painting*, Boston, MA: Shambala, 1994, pp. 123–5. I am indebted to Jac Esterhuizen for these references.
- 95 Such a reading, which makes wide cultural analogies, is not a false projection into the past, if one accepts the 'Hegelian' view, as put forward by Svetlana Alpers, that the Dutch replaced an interest in symbolic subject matter with a fascination with the means of representation as an end in itself. See Svetlana Alpers, *The Art of Describing: Dutch Art in the Seventeenth Century*, London, 1983; reprinted 1989, p. 249. It is believed that, in addition to Mughal miniatures, Rembrandt owned some Chinese brush paintings.
- 96 'A Landscape-Painter . . . when he knows his subject . . . will know not only what to describe, but what to omit' (De Piles, *Principles of Painting . . . Translated into English by a Painter*, London, 1743).
- 97 Ruskin, *Modern Painters*, vol. 1/v, p. 190.
- 98 Jean Baudrillard, *The Ecstasy of Communication*, trans. Bernard Schutze and Caroline Schutze, New York, 1988, p. 16.

Chapter Five

Material Traces

- 1 Jonathan Richardson the Elder, *The Works of Jonathan Richardson*, London, 1792, pp. 63–4.
- 2 Roderick Whitfield and Weng Fong, *In Pursuit of Antiquity: Chinese Paintings of the Ming and Ch'ing Dynasties from the Collection of Mr and Mrs Earl Morse*, Princeton, NJ, 1969, pp. 24 and 28.
- 3 A chalk holder is sometimes called a *toccalapis* in Italian (*lapis*, chalk or stone) and was named *matitatoi* by Baldinucci and others in the late seventeenth century (*matita*, chalk). In German it is called *Stifthalter*, amongst other terms.
- 4 The old-fashioned term body colour is still used by drawing scholars. It implies a base, usually white lead, that is mixed with a fixative as well as a pigment so as not to be as transparent as watercolour, although not exactly the equivalent of modern-day gouache.
- 5 See Richard Kendall, *Degas: Beyond Impressionism*, London, 1996, pp. 57–87. Kendall remarks on 'the move from technical profligacy to a kind of penitent late austerity', p. 58.
- 6 A. H. Palmer, *The Life and Letters of Samuel Palmer, Painter and Etcher*, London, 1892, p. 16.
- 7 The fine and broad distinction is made by James Watrous, *The Craft of Old-Master Drawings* [1957], Madison, WI, and London, 1967, as well as Joseph Meder, *The Mastery of Drawing*, trans. and revised Winslow Ames, 2 vols, New York, 1978.
- 8 An extremely useful short guide is Paul Goldman, *Looking at Prints, Drawings and Watercolours: A Guide to Technical Terms*, London and Malibu, CA, 1988. See also 'A Drawing Glossary', by Edward Saywell, Lynn Straus and Philip A. Straus, on the Fogg Art Museum website (www.artmuseums.harvard.edu/fogg/drawingglossary.html). This also contains a good reading list.
- 9 Giorgio Vasari, *Vasari on Technique* [1907], trans. Louisa S. Macle hose, ed. G. Baldwin Brown, New York, 1960, p. 212.
- 10 William Gilpin, *Two Essays; One on the Author's mode of executing rough sketches; the other on the principles on which they are composed*, London, 1804, p. 12.
- 11 *The Institutio oratoria of Quintilian, Books X–XII* [1922], trans. H. E. Butler, Cambridge, MA, and London, 1998, p. 109 (Book x: iv). Quintilian continues from this remark with amazingly contemporary-sounding advice, as useful for artists as writers: 'There can be no doubt that the best method of correction is to put aside what we have written for a certain time, so that when we return to it after an interval it will have the air of novelty and of being another's handiwork' (Book x.iv.2, p. 111).
- 12 Leonardo da Vinci, *Treatise on Painting*, ed. and trans. A. P. McMahon, Princeton, NJ, 1956, p. 107.
- 13 Giovanni Battista Armenini, *On the True Precepts of the Art of Painting* [1586], trans. Edward J. Olszewski, New York, 1977, p. 126.
- 14 *The Artists' Vade Mecum: Being the Whole Art of Drawing*, London, 1762, p. 3.
- 15 Jacques-Nicolas Paillet de Montabert, *Traité complète de la peinture*, 9 vols, Paris: J.-F. Dellon, 1829–51, vol. ix, p. 618.
- 16 Jules Momméja, *Ingres*, Paris, 1903, p. 19.
- 17 Gilpin, *Two Essays*, p. 13. The Louise Bourgeois quotation is from an interview with Marie-Laure Bernadac for the drawings exhibition *Louise Bourgeois: pensées-plumes* at Centre Georges Pompidou, Musée National d'Art Moderne, Paris, 1995; reprinted in *Louise Bourgeois: Destruction of the Father: Reconstruction of the Father. Writings and Interviews, 1923–1997*, ed. Marie-Laure Bernadac and Hans-Ulrich Obrist, Cambridge, MA, and London, p. 301.
- 18 Conté's invention came about because graphite was in short supply in France during the Napoleonic Wars. The technique was developed in the graphite-producing areas of Cumberland, with the famous wood-encased Derwent pencils being manufactured in centres such as Keswick. Rods of natural graphite had been glued into (square) wood encasings in Britain and Germany in the mid-seventeenth century. See Henry Petroski, *The Pencil: A History of Design and Circumstance* [1989], London and Boston, MA, 1990, pp. 60–66.
- 19 See Alois Senefelder, *The Invention of Lithography*, trans. J. W. Muller, New York and London: Fuchs & Lang, 1911.
- 20 Paper was introduced into Spain from the Mahgreb and Middle East *circa* 1150. See David Landau, and Peter Parshall, *The Renaissance Print, 1470–1550*, New Haven, CT, and London, 1994, pp. 15–21.
- 21 The acidity of ink in felt-tipped markers, which led to the premature destruction of many sketchbooks and notebooks in the 1950s and 1960s, has ostensibly been addressed by some manufacturers.
- 22 These are manufactured mainly under the Conté brand name, although these and modern Conté crayons bear little relationship to the nineteenth-century products.
- 23 Chinese inks (which can be thinned with water into subtle washes) are made from pine soot and glue, mixed into a paste and dried. Indian ink, which has a resinous sheen, is waterproof. Bistre (wood soot ink with the tars extracted) was a popular ink in the seventeenth and eighteenth centuries.
- 24 The American publication by Ralph Mayer of 1940, which deals across the board in recipes and techniques of painting as well as drawings, has gone into four editions and eight reprints. His dictionary of art terms and techniques is now issued as the *Collins Dictionary of Art Terms and Techniques* (1993). Similarly, Max Doerner, *The Materials of the Artist*, first published in English in 1934, went into many editions.
- 25 See Claude Lévi-Strauss, *The Raw and the Cooked: Introduction to a Science of Mythology*, London: Penguin, 1966.
- 26 From Henri Michaux, 'En pensant au phénomène de la peinture' [1946], trans. Michael Fineberg (from *Passages*, Paris: Gallimard, 1963) in *Henri Michaux, 1899–1984*, London, 1999.
- 27 Watermarks, with the logo of the manufacturer, are made of wire, and woven or sewn into the fine mesh of paper-making moulds. Such moulds are lowered into troughs of prepared watery pulps made out of rotted cellulose (whether rags, cotton linters or natural fibres of other sorts), then lifted out while the water drains away (couched), turned out on to racks and the sheets are dried. The deckle edge, or raggedy thinning edge of a piece of mould-made paper, distinguishes it from the cut edges of machine-made papers, but can be imitated.