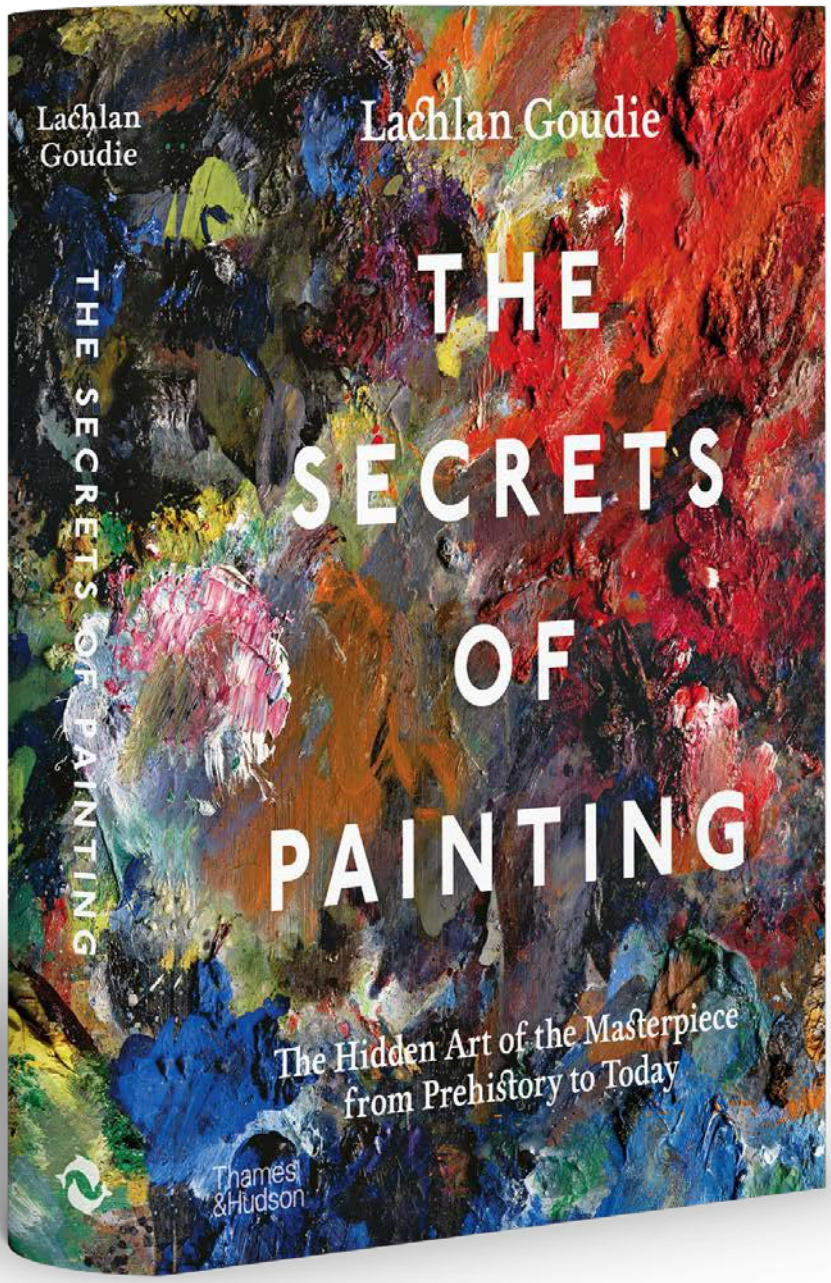


Thames &Hudson

Advance Information

Frankfurt Book Fair 2025
Hall 6.1, Stand B126

The Secrets of Painting

The Hidden Art of the Masterpiece from Prehistory to Today

Lachlan Goudie

A new history of painting as told through the eyes and hands-on insights of a practising artist.

Marketing points

- **New book from broadcaster**, author and artist Lachlan Goudie.
- **Will appeal to anyone interested** in how paintings are created as much as what they depict and why.
- **Offers an engaging narrative history** of art from a new angle.
- **Illustrations include a wide range of artworks** as well as images of artists' studios, materials and artists at work.

Description

The first question Lachlan Goudie asks himself when he sees a work of art is not 'why' it was created but 'how'. In this book, he poses that question of artworks created by the earliest humans to artists today, focusing on the technical inventions and turning points that at each stage have marked a new chapter in the history of art.

Goudie knows from experience that masterpieces don't emerge serenely from an artist's studio. They are the result of a long tussle between dirty hands and crushed pigment, hog's-hair brushes and linseed oil, rabbit-skin glue and pulverized chalk. Great paintings are always the product of a struggle involving artists and their materials, one that pushes the practitioner to the very limits of technical ability.

The secrets of painting lie above all in the physical elements from which an image is crafted. The nature of these elements has changed over time and across continents. As each generation of painters exploits the new material and technical innovations of their era, they transform the character of their work and help propel the course of art history.

Goudie traces this story all the way back to the original 'big bang' in the story of art: the very first painting pigments, made from charcoal and minerals, that were used to paint extraordinary images on the walls of the caves at Chauvet 36,000 years ago. He goes on to explore the impact of numerous new inventions and discoveries over the centuries, including ink, fresco, egg tempera, oil paint, canvas, watercolour, gouache, impasto, tubes of manufactured oil paint, collage, household gloss, acrylic, digital media and AI. Each chapter focuses on a technical turning point as embodied in the work of a particular artist, including Guo Xi, Giotto, Artemisia Gentileschi, Alma Thomas, Anselm Kiefer, David Hockney and many more.

Lachlan Goudie is a Scottish painter and arts broadcaster. He has presented many BBC TV programmes, including *Mackintosh: Glasgow's Neglected Genius*, *Painting the Holy Land* and *The Story of Scottish Art*. He is the author of *The Story of Scottish Art*, published by Thames & Hudson in 2022.

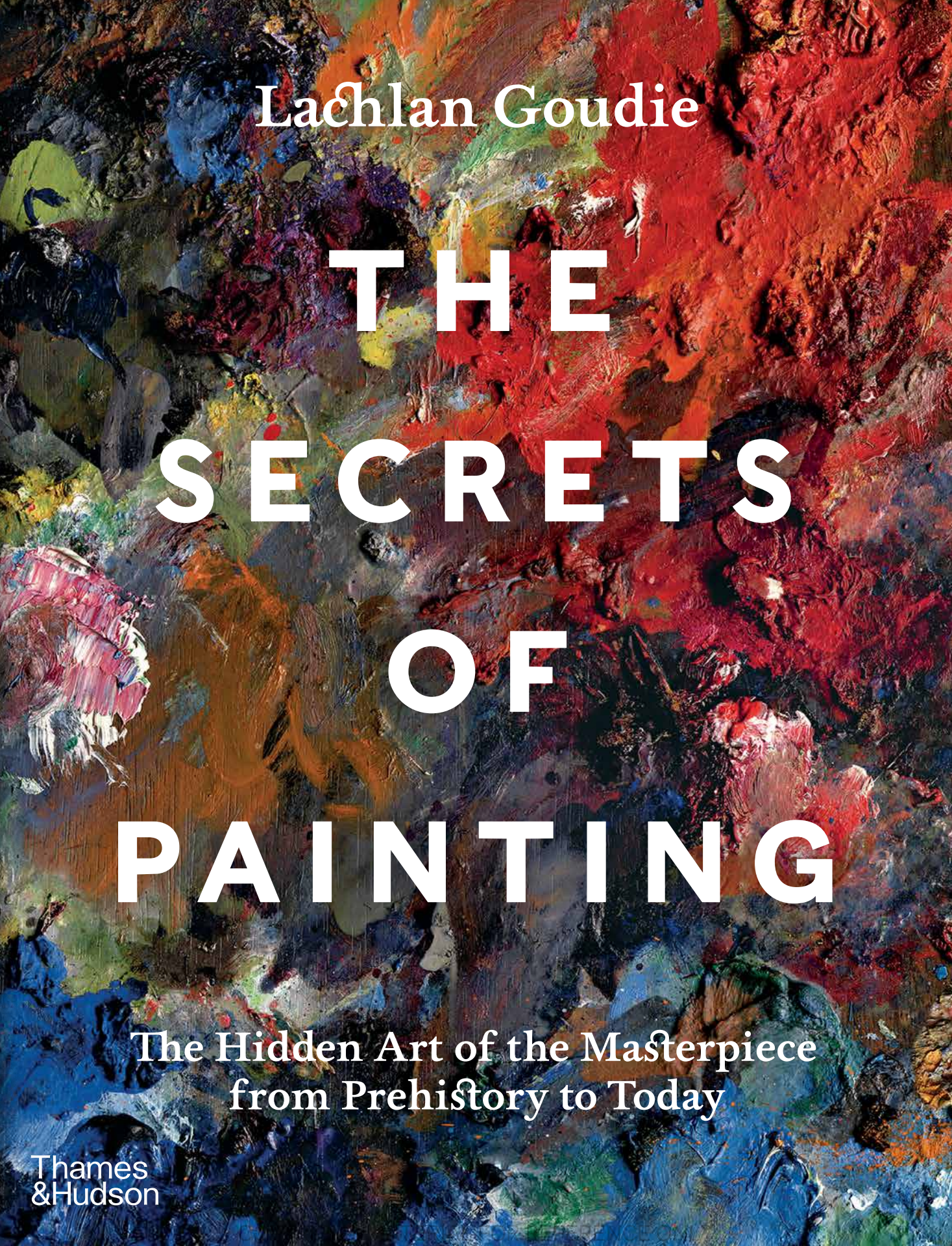
Specification

- 384 pp
- *c.* 220 illustrations
- 24.6 × 18.6 cm (9¾ × 7⅜ in.)
- Hardback

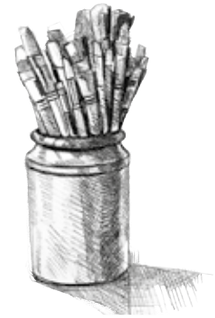
Spring 2026

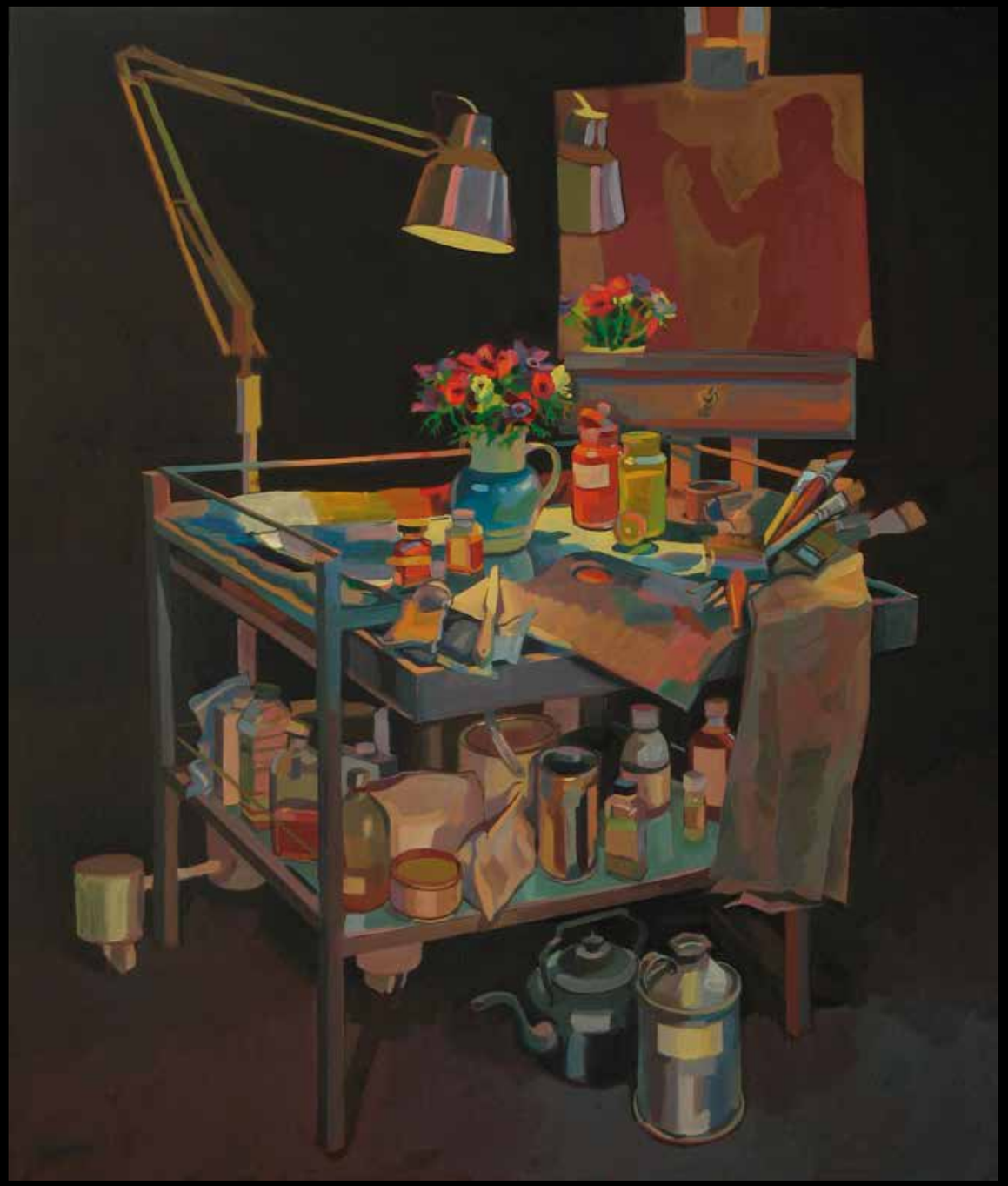
Thames & Hudson Ltd
6–24 Britannia Street
London WC1X 9JD
+44 (0)20 7845 5000
www.thamesandhudson.com

Thames & Hudson Inc.
500 Fifth Avenue
New York, NY 10110
+1 212 354 3763
www.thamesandhudsonusa.com


Lachlan Goudie
THE SECRETS OF PAINTING
The Hidden Art of the Masterpiece from Prehistory to Today
Thames &Hudson

The Secrets of Painting

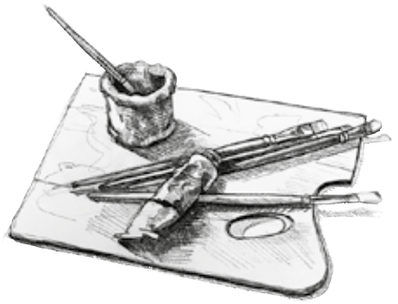




THE SECRETS OF PAINTING

LACHLAN GOUDIE

For Charlotte,
the colour and the kindness in my life



CONTENTS

Alexander Goudie, *Still Life with Bottles and Open Drawer*. Oil on canvas, 80 × 80 cm (31½ × 31½ in.).

INTRODUCTION

Painting is a dirty business. Masterpieces don't emerge serenely from an artist's studio – they are the result of a long tussle involving grubby hands and crushed pigment, rabbit skin glue and pulverized chalk, linseed oil and hog's hair. Great paintings are always the product of a struggle between artists and their materials, one that pushes the practitioner to the very limits of technical ability. As a painter myself, I know this from experience.

To discover the real secrets of painting, you need to examine the filth under an artist's fingernails, the physical elements of art from which an image is crafted. The nature of these elements has changed over time and across continents. And as each generation of painters exploits the new material and technical innovations of their era, they transform the character of their work and help propel the course of art history.

Today we are accustomed to admiring paintings displayed with sacred reverence in art galleries, the clean rooms of our cultural history. But the life of every great painting begins in chaos: among the detritus and clutter of an artist's studio, the noise and interruptions of family life, the drudgery of everyday chores, the demands of dealers, deadlines and, occasionally, ambitious apprentices. To create anything amid these competing pressures, an artist needs extraordinary determination, selfishness, creative bravery and the kindly intervention of accidents and magic.

Every painting is the product of its environment, a place and time that are invisible to us now. It is also the result of many overlapping layers of outlines, corrections, revisions and refinements that lie hidden beneath the picture surface. Excavating and establishing the precise sequence of those marks is not easy. Artists are often secretive about their methods and usually work in private. There are many accounts of painters only handing down colour recipes from their deathbeds, or of those who squirrelled away their painting secrets in studio pattern books with notes written in code.

Even those who are not secretive rarely record their process. In most artists' studios instructions were passed on to pupils by demonstration, with apprentices watching the master at work. That's how I learned to

paint. My father, Alexander Goudie, was an artist and he schooled me by demonstrating his techniques at the easel. I learned by observing him or painting at his side, and every so often he would tell me a painting secret, a tip that allowed me, suddenly, to resolve a problem. These moments represented the transmission of knowledge he had spent a lifetime accruing, but they were infrequent. He would usually accompany the exchange with a grin before whispering, 'I only meant to teach you that when you were twenty.'

When I began my painting career, Dad gave me an heirloom, his own battered copy of Max Doerner's *The Materials of the Artist*, described on the inside sleeve as 'the most valuable book in existence on the craft of painting'. For my father's generation Doerner's technical manual, first published in 1921, was a painting bible. By handing it on, Dad was presenting me with the means of decoding how to paint like a master by delving into their techniques and processes.

The book was to prove a valuable asset. My father died in 2004 while I was a student and my tutors at art school weren't much of a substitute. I was never taught material craftsmanship, never introduced to the comparative qualities of oil paints and acrylics, the characteristics of different grounds, canvases and brushes. In an era when most art schools prioritized conceptual reasoning over craft, the technical secrets of painting that had been passed down the generations seemed in danger of being lost.

Fortunately, while few artists have written down their techniques, Doerner's volume was not the first painting manual. There are several key moments in art history when scholars recorded contemporary painting practices. China has a tradition of texts dating back to at least the 6th century that chronicle the personal painting philosophies of respected teachers, while in medieval Europe monks preserved their knowledge of paints, pigments and inks in handwritten almanacs. These volumes were filled with techniques related to manuscript illumination, along with scraps of scholarship snaffled from alchemical treatises or transcribed from ancient Greek, Roman and Persian texts. Such documents proliferated in the 13th century and came to be known as 'books of secrets'. Alongside the lore of painting, they contained a trove of expertise concerning everything from cooking and cosmetics to witchcraft.

In the centuries that followed, from Paris to Milan, Bruges to Bianliang, Agra to Kyoto, authors sporadically added to the library of art history. Seminal documents such as the 17th-century Mayerne manuscript were crammed with notes on the chemistry of art and techniques for the preparation of pigments and oils, gleaned from conversations the author had with Rubens and Van Dyck. The preponderance of such manuscripts aimed at decoding the enigmas of art even spawned satirical texts: in 1755 'L'art de la peinture en fromage' earnestly outlined a technique for painting with cheese.

The aim of these volumes was to assimilate a complete picture of how artists crafted their greatest works, an ambition shared by modern conservation scientists, to whom technology has offered ever more advanced ways of penetrating the layers of a picture surface. Infrared reflectography, X-ray machines, gas chromatography and mass spectrometry have given conservators the opportunity to climb aboard a painting time machine in search of the very first brushstrokes. Detailed examinations of several of the artworks featured in this book have allowed me to travel alongside those scientists, drilling down through the strata of pigment and oil, charcoal, glue and chalk to discover all the buried paintings.

Like those conservation scientists, trying to understand how a painter has crafted a particular image is one of my constant preoccupations. The first question I ask myself when I see a work of art is not 'why' it was created but 'how'. Analysing the different materials incorporated into a painting can begin to explain this, but the exact reasons why layers were deployed in a particular order can't always be deduced. I have interpreted the available evidence and used this to weave a narrative around the making of each artwork featured in this book.

Paintings reveal themselves through the process in ways that defy any rational explanation. The artist Francis Bacon insisted that 'all painting is accident', and when working I regularly feel I'm not entirely in control of what's happening – that another force is deciding on my behalf where to place brushstrokes or what colour choices to make. Experience and natural talent are the unquantifiable factors that drive and direct much of what happens on canvas.

But history still has a lot to teach us. My motivation for writing this book stemmed from a sense that if you want to become better at painting, as I do, then why not make yourself an apprentice of the greatest artists who ever lived? There are many practical lessons which can be learned from the different versions of a painting that lie entombed between the picture ground and the finished surface. Those creative stages – the first sketches, the ghosts of the underpainting, the corrections and adjustments that chart the birth of a great work of art – will tutor you in everything there is to know.

So, this is my casebook, my process of enquiry and investigation: to decode how, across time, artists have exploited their materials, knowledge and techniques to transform blank canvases into finished masterpieces. The artists themselves may be long gone, but they're not silent. And if you study their paintings, by peering deeply into the layers of oil, pigment, ink or charcoal, they'll reveal their creators' secrets.

The panel of the horses, Chauvet cave, France, *c.* 35,000 BCE, detail (see p. 15).

CHAPTER I

MAKING OUR MARK

The Panel of the Horses

There are countless undiscovered caves in the world, vaults where the earliest human art sits patiently, waiting to meet us. In December 1994 three potholers exploring a canyon in the Ardèche region of south-eastern France came across a *souffleur*, a gap in the rock from which a breath of air was escaping. It was the sign, possibly, of a hidden chamber. One by one they wriggled into the shaft, and the moment they emerged on the other side our entire understanding of human history and culture was reborn. What they found was the most breathtaking gallery of prehistoric art ever discovered.

As the explorers moved from one subterranean cavern to the next, they encountered panels of drawings and paintings, shot through the rock like a seam of ancient artistry. In the furthest depths of the complex, they became the first modern humans to set eyes upon what is now called the 'panel of the horses' since its creation 36,000 years earlier, in the Palaeolithic era. The explorers were moved to tears: 'Alone in that vastness, lit by the feeble beam of our lamps...Everything was so beautiful, so fresh...as if the tens of thousands of years that separated us from the producers of these paintings no longer existed.'

Most discoveries of prehistoric art are located at sites that make few concessions to the urgency of modern tourism, or book research. But to experience my own artistic epiphany I undertook a pilgrimage to the Chauvet-Pont d'Arc cave. Taking an early flight from London to Lyon, I continued my journey by car, driving south for two and a half hours, my satnav guiding me across the plateau of the Ardèche and into a canyon outside the village of Vallon Pont d'Arc. From there I proceeded on foot, hiking through dense woodland. The trail was not marked and the destination not advertised. A final scramble upwards, through thickets of maquis and along a high escarpment, brought me to a steel portal in the rock.

Lachlan Goudie, view of the entrance to the cave. iPad drawing, 2024.

I had travelled as fast as the 21st century could carry me, but now, on the threshold of encountering one of the greatest works of art in human history, I could go no further: visitors are not permitted inside the cave. The images are so delicate that moisture from human breath could damage them forever. Beyond the reinforced door I imagined the series of chambers stretching almost 150 metres (500 ft) into the limestone rock. Somewhere in the darkness lay the panel of the horses, fragile and insignificant relative to the surrounding landscape, but monumental in terms of human culture.

Thirty-six thousand years ago, before the horse panel was even painted, that chamber was suddenly illuminated with torchlight. Visitors arrived, carrying armfuls of branches and wearing animal furs and necklaces made from shells, bear claws and lions' teeth. These were our ancient ancestors, Homo sapiens like us, similar to modern humans anatomically, intellectually and psychologically. In this small group was an artist, someone who had dreamed up an image, an intricate composition that they would now realize upon the cave wall.

To get to this point the group would have ventured through the darkness for around ten minutes, beginning at the cave entrance, then a 15-metre (50-ft) opening in the rock face that flooded the first chamber with light. From the entrance they could have contemplated an Ice Age landscape: a canyon encircled by cliffs that tumbled down into a sheltered valley, slopes covered in a tundra of lichens and grasses with very few trees. Across the valley floor glacial streams had already carved out a spectacular rock arch, a geological feature that still dominates the landscape. Then, as now, the Pont d'Arc must have been a landmark imbued with enormous symbolic significance.

Lachlan Goudie, *Pont d'Arc*, 2024. Pencil and watercolour on paper.

The panel of the horses, Chauvet cave, France, *c.* 35,000 BCE. Charcoal and pigment on rock.

Once they headed underground the artist and his companions would have left all this behind. Their route will have taken them through numerous chambers, each one already decorated with artworks representing different creative phases in the cave's history, with those closest to the entrance featuring large rock panels covered in vibrant daubs of paint.

Since the beginning of art history, the recipe for paint has required two ingredients: a coloured pigment and a liquid binder. The pigment particles are suspended in the binder, allowing the colour to be transferred onto another surface. Every painting you have ever looked at has its origin in this one simple discovery, and 36,000 years ago the question of how to make this coloured substance had already preoccupied humans for a long time.

At some point between 250,000 and 200,000 years ago, in Africa, Neanderthals started mixing up a runny coloured solution. Pigment was produced by crushing a mineral rock into a fine powder or by pulverizing materials such as charred bones, wood and dried insects. In early recipes the binding liquid could take the form of water, plant sap, spit, blood or urine. What is essential is that the ground pigment does not dissolve but remains hanging in this liquid, enabling the colour to be applied to the picture surface.

Lachlan Goudie's experiment with cave painting at Chauvet, 2024.

once the material was on site the process continued to be time-consuming: fires needed constant attention, and when the slender sticks of wood were cooled they had to be whittled to a sharp point. Only with organization and collaboration was it possible to create a piece of charcoal that would crumble in a controlled way and generate the desired intensity of line.

Charcoal is essentially a block of black pigment. As it was dragged across the wall, fragments were ground into the film of clay creating a kind of pasty paint, with the clay acting as a binder. Once the black pigment became trapped in the porous wall, it was almost instantly fixed in place. When I created my own image on the rock outside the cave, I was amazed at how quickly my drawing was bound to the surface of the limestone. There was little I could do to erase a line, so the process of making each mark required complete confidence.

The technique used by the artist of the horse panel amounted to an early form of fresco, in which the limestone wall itself was an active component in the process. When the artist Giotto di Bondone was painting the walls of Padua's Scrovegni Chapel 35,000 years later, he would employ virtually the same materials used at Chauvet. In the Renaissance 'true fresco' required the artist to paint on a freshly applied layer of plaster made from limestone, sand and water. Only a small number of colours could be used to paint on this surface, and earth colours and charcoal remained particularly suited to the technique.

It's possible to draw a line of creative continuity between the methods used to make art during the Renaissance and the Palaeolithic era. These were clever, sensitive artists; they weren't Ice Age brutes and they certainly weren't 'cavemen'. Caverns like the one at Chauvet were sacred, spiritual places which were treated with reverence and only sporadically visited, not least because in winter they became the subterranean kingdom of predators like cave lions and bears.

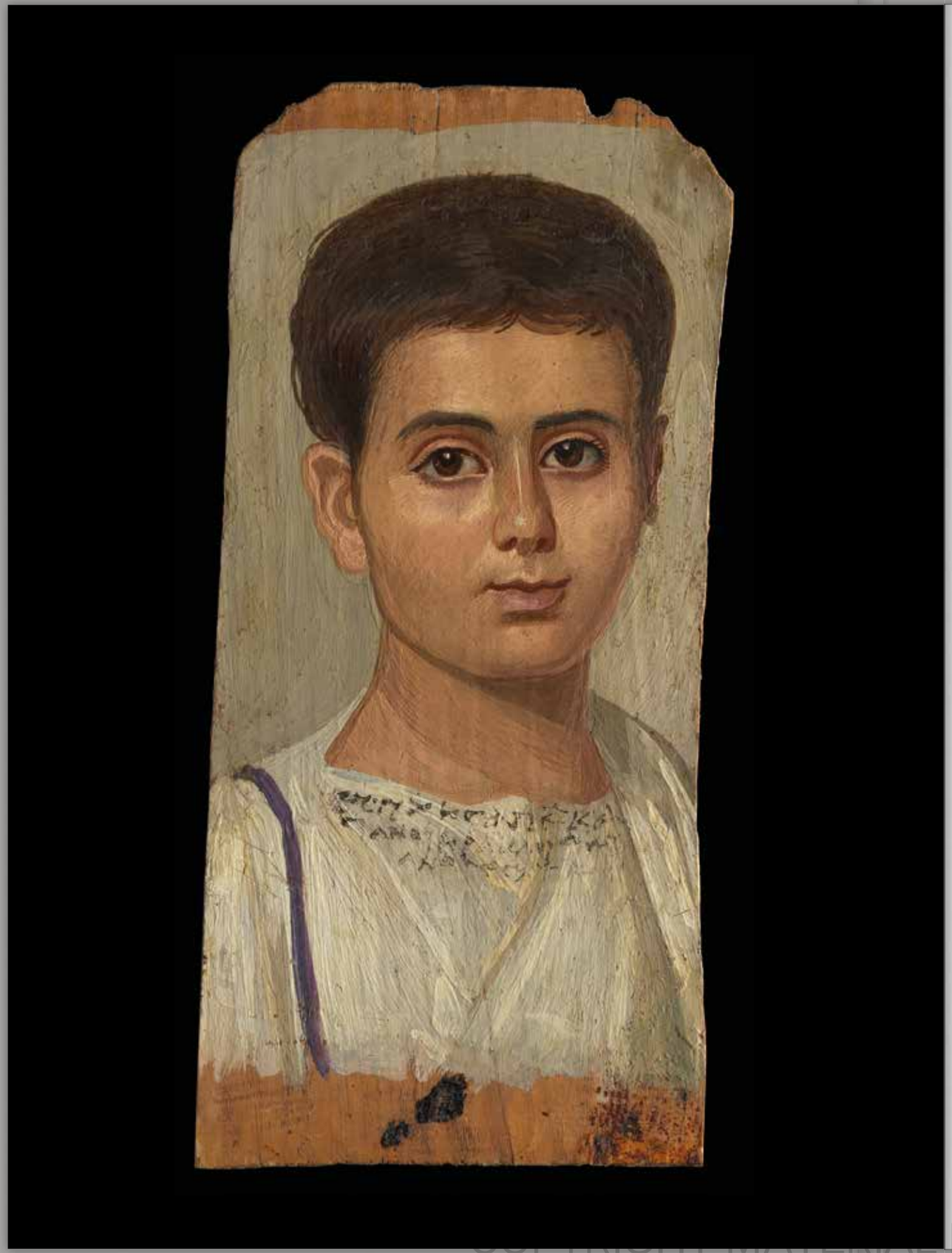
The person who created the horse panel was far too canny to call a cave his home and probably belonged to a semi-nomadic tribe of hunter-gatherers who established a camp on the valley floor at Pont d'Arc. In the winter they possibly stayed put, but in the summer the tribe would roam across hundreds of square kilometres, hunting down the migrating herds of bison, bull-like herbivores called aurochs, horses and giant deer. Northern Europe was covered in an immense ice sheet and although the regions south of this frozen wasteland were more temperate, in winter the temperature still dipped to -20°C (-4°F).

Camp life revolved around shared daily tasks, and no one got to be a painter all the time: they needed to help grind seeds, butcher meat and scrape hides. All these jobs were facilitated by a range of tools more sophisticated than anything produced before in human history. Every member of the tribe knew how to knap a flint blade, whittle sharp points from antler or bone, or pare down a stone edge into a burin, a chisel that could be used for scraping, carving wood...or engraving images onto cave walls. Once the daily chores of gathering food and processing hides were done, there was probably plenty of time to smell the juniper blossom, craft pendants, and consider what could be painted in the depths of the nearby cavern.

Even before the artist arrived at the cave wall, the order in which each animal would be drawn had been thought through; the arrangement was anticipated from the start, with spaces purposely left empty for elements to be inserted at a later stage. We can't know how many people were responsible for the earliest animals on the panel, but from this point the stylistic similarity suggests that a single artist completed the rest of the composition. To work with such flair, this person must have been a mature and experienced painter, someone around thirty to sixty years of age. But was it a man or a woman?

Women had great status in Stone Age societies and played a significant role in decorative activities. A woman could certainly have been responsible for many of the palm prints and outlines painted at Chauvet, and there's even reason to believe the cave network was understood conceptually as a feminine environment. Several compositions were strategically positioned near geological features whose triangular forms suggest female genitalia, and the final chamber contains possibly the oldest decorative representation of a woman's body in human history. On a cone of rock suspended from the ceiling, an artist has drawn a pair of thighs around a black triangle of hair, a motif which has contributed to a theory that perhaps the entire cave network was intended to glorify the reproductive power of women's bodies.

The panel of the horses, however, is likely to have been executed by a man; the extended, uninterrupted length of the charcoal lines required an arm with a very wide span and many of the images were positioned at an extreme height. The mark that initiated the entire composition certainly required the artist to stretch up high: the nub of charcoal was first pressed into the clay in the top left-hand corner of the panel. This was followed by several strong, confident lines and in no time at all the neck, profile and sweeping horns of an auroch had been scratched onto the wall. Two similar-sized heads were then added, one in the lower left and the other positioned in a gap which had been left in the centre of the



Unknown artist, *Portrait of the Boy Eutyches*, made in Roman Egypt, *c.* 100–150 CE. Encaustic on wood, 38 × 19 cm (14⅞ × 7½ in.).

CHAPTER 2

THE LOOK OF LIFE

Portrait of the Boy Eutyches

Four hundred years ago, along the edges of the Western Desert in Egypt, faces began emerging from the sand. They were portraits, images of people who had lived in Roman Egypt during the 2nd century, discovered amid the remains of imperial garrison towns and the cemeteries that served them. Over the centuries more faces surfaced, like ancient time travellers, and among them was the portrait of a young boy.

Like all the others, he was painted on a thin veneer of wood and his face was evoked so realistically he appeared to have just dusted the sand from his clothes. He was a gentle, olive-skinned child, with centre-parted dark hair and brown eyes that stared intensely across the centuries. An inscription written across the collar of his tunic bore his name: Eutyches.

For around 1,700 years Eutyches lay beneath the desert sands. Today he is entombed within a climate-controlled cabinet at the Metropolitan Museum of Art in New York, our witness to a tradition of representational painting that thrived in the ancient world before disappearing between the 3rd and 4th centuries. It would be over a thousand years before anything as lifelike was painted in Western art again.

How did Eutyches survive so long? The sand and the dryness, perhaps. But the most important reason for the boy's longevity was the composition of the paint surface. In the ancient world artists began using an unexpected substance to bind their pigment into paint: beeswax. It's hard for us to understand how wax ever came to be used as an ingredient for making paint, but in ancient Egypt beeswax was everywhere. In fact, it was sacred, a substance commonly thought to derive from the tears of the sun god Ra.

Wax was believed to be so full of life-giving properties it was used to cast objects placed inside tombs to assist the incumbent's journey into eternity. But with its low melting point and malleable texture, wax also

empire made a beeline for the major settlements of Arsinoë, Oxyrhynchus and Philadelphia. It was possibly in one of these towns that our artist was summoned to the house of Kasianos and asked to create the portrait of Eutyches. The painter's heart must have sunk when he caught sight of the small body in the mortuary room, but it won't have been the first time his subject was a child. He would have come prepared, emotionally and professionally.

Perhaps the painter travelled with a supply of prepared boards or purchased them from workshops at the necropolis. Before commencing work on the panel, it's possible he made a preparatory drawing on a spare board or shard of pottery; one surviving portrait study has reminders scrawled around its edges to 'paint the eyes in a softer way'. An artist as skilled as the one who immortalized Eutyches, however, might not have needed any preamble and could have launched straight into the final portrait.

The initial outline would have been made using a watery liquid paint called distemper. Once again, warm animal glue was the secret ingredient, mixed as a binder with soot-black pigment. Distemper was easy to brush on, and once the mouth, nose and oval eyes had been positioned the paint would quickly dry to a matt finish. This image wasn't created following a template structure, and the artist probably established the features instinctively. It won't have been long before the underdrawing was complete and it came time to add the first layers of encaustic.

A decorated sarcophagus survives from the late Ist century, which reveals what the artist's workstation might have looked like. A painter is shown sitting in front of a slender tripod supporting a blank board. Balanced on a pillar between the two is a large painting chest, with drawers containing different ochre pigments. Hanging on the wall behind are several finished portraits. It's a glimpse through an ancient studio keyhole – if only the pointy-nosed artist portrayed in the image would allow us to ask some questions. There's still so much we don't know, and the exact recipe for the encaustic paint used in Roman Egypt remains lost. This scene, though, does contain a few clues to the process. An ornate column beside the artist appears to be emitting smoke: it's a brazier, a small fire used to heat implements and continuously melt the beeswax that was essential for encaustic painting.

Hasty sketch with instructions in Greek for completion, found on the reverse of a mummy portrait in Tebtunis, Egypt, 2nd century CE.

In Roman Egypt honey (the ancient equivalent of sugar) was intensively cultivated; even the smallest settlements would have hundreds of hives. As a natural byproduct of honey-making, wax was probably purchased from local beekeepers. Today wax is sold in packets of yellow pellets

Artist warming tools on hot coals, image found inside a decorated sarcophagus, Ist century CE.

or in brick form like a hard slab of butter. Shaving flakes off the end is laborious work, and it makes me wonder whether Eutyches' painter had an assistant, someone to oversee the process of keeping the brazier stoked while preparing a constant supply of melted beeswax.

The travelling artist would certainly have required a trunk in which to stash their materials. In France archaeologists have discovered a Roman-era tomb containing the body of a woman who was an encaustic painter. Buried with her was a chest filled with brushes, pigments and wax, all the supplies necessary to keep painting in the afterlife. Stored within separate compartments they also found little metal trays, heating coals and several glass receptacles filled with a final vital ingredient of encaustic: resin.

Resin is a treacly substance secreted by plants and trees. The French painting box contained pine and fir resin, but the painter of Eutyches possibly used something much rarer, a treasure of the ancient world known as 'tears of Chios'. These were small droplets of golden resin uniquely produced by mastic trees growing on the Aegean island of Chios. The brittle crystallized beads of Chios mastic were the world's first chewing gum, munched for their mouth-cleansing properties. And including this ingredient in an encaustic paint recipe would have helped improve the paint's handling properties, altering the drying time and strengthening the surface of the beeswax.

Describing the recipe for encaustic, the Ist-century Roman author Pliny the Elder mentions a range of possible ingredients, including resins, glue, gum, egg and even oils. But if Chios mastic was employed, even a small amount would have filled the mortuary chamber with a sweet,

imperceptibly into the white silk. The picture surface was becoming increasingly complex, and Guo Xi intensified the process further by suddenly introducing hints of colour: 'After the outlines are made in dark ink strokes, I trace the outlines repeatedly with ink wash mixed with blue, so that even when the outlines remain visible, the forms appear as if emerging from the mist and dew.' Drops of blue indigo were blended into the monochrome image, and that wasn't the only new pigment: dotted throughout the landscape are faint strokes of earth brown in the timbers of the mountain temple, and transparent greens, perhaps made from Sophora flowers, flickering through the foliage.

The level of descriptive detail in the image was intense, but Guo Xi was painting the scene entirely from memory. There were, however, other ways to be a landscape painter in the early period of the Song dynasty. One hundred years before *Early Spring*, many artists had turned their backs on society and fled into the mountains. Searching for a sense of order in a world plagued by violence at the end of the Five Dynasties, they sought sanctuary by secluding themselves in nature. These artists included Fan Kuan, a wilful maverick who grew tired of painting by rote, abandoned his position as an academician and went to live and paint in the mountains with nature as his only teacher. Fan Kuan was one of three landscape titans in Chinese art history. His greatest surviving painting, *Travellers by Streams and Mountains*, describes a geography so monumental that the turbulence of human experience is dwarfed by the stability and permanence of the natural world.

Early Spring, detail: dotted throughout the landscape are faint strokes of earth brown in the timbers of the mountain temple, and transparent greens flickering through the foliage.

Fan Kuan, *Travellers Among Mountains and Streams*, 10th–11th century. Hanging scroll, ink and light colour on silk, 206.3 × 103.3 cm (81¼ × 40¾ in.).

The Dream of Joachim, detail: the angel's face shows traces of green underpaint, which suggests it was painted following Cennini's method.

cinabrese colour was probably used to establish the cheeks, nose and forehead over the green ground. Following Cennini's method each additional shade was then introduced in a strict sequence, working from dark to successively lighter tones. Gradually the features of the angel would have been modelled, with green left exposed in the areas of deepest shadow around the eye sockets, neck and jaw. According to Cennini, a fifth value of *cinabrese* was then concocted which contained so much lime it was almost white. This was used to pinpoint the strongest highlights around the cheekbones and the brow, pulling the face fully into relief.

Whatever Cennini says, however, formulas only get you so far. Giotto wouldn't have been constrained by the need to paint in sequence throughout the process. When necessary, he would have switched between brushes loaded with light or dark pink, spontaneously shaping the face and hands, adding a stroke of red on the lips and the underside of the neck. The colour range would also have been extended, with pure white touched into the eyes and the tip of the nose, and darkest sinopia deployed to sharpen features with a fine squirrel-tail brush. Only then would the angel have attained the definition and radiance which has endured for 700 years.

I found the discipline of applying colours in a predetermined order inhibiting. As an artist accustomed to the freedom of modern materials, I quickly reverted to old habits, darting between pots of paint, applying colour in washes, and ranging across the composition from one end to the other. As a result, my efforts lacked precision and colours became muddy. Giotto and his collaborators, however, knew how to paint instinctively while working within the limitations of their materials.

The system of grading colour values and applying them in sequence was an important part of the fresco process, a methodology that allowed artists to work at speed and establish the structure of every painted element, from flesh to drapery, buildings and landscape. But the outstanding feature of Giotto's technique was how he managed to blend his brushstrokes together, creating imperceptible transitions that made the fabric and flesh textures appear convincing.

To achieve this effect the artist devised a new approach. Painting with the tip of a squirrel- or stoat-tail brush, Giotto methodically feathered slender strokes onto the plaster. By repeating each sequence of colour, building up the layers of brushstrokes, the artist wove his subjects together from countless overlapping lines. This careful blending technique avoided the hard edges and jumps in colour characteristic of Byzantine art and created forms that shift smoothly from light into dark. It lay at the heart of how Giotto managed to paint with a naturalism not seen since antiquity.

These painted effects were intricate and premeditated, and the levels of discussion and collaboration required to achieve unified results, with different teams working on different walls, is remarkable. All the while, time was against the artists – as the minutes passed the surface of each plastered *giornata* was gradually drying out. The extent to which a surface will absorb brushstrokes varies depending on weather, temperature and changes in humidity, and a plaster wall has moods that evolve across the day. In the morning, when the *giornata* was heavy with water, it would almost repel the paint. Later in the day, when most of the moisture had evaporated from the surface, colour would be sucked from the end of the brush. As the mood of the wall changed, the character of the painted marks changed too.

Colours applied to wet plaster would appear glistening and rich, but once dried they started to look chalky. Brushstrokes added late in the day would often turn out much darker. Such changes could make something which seemed dazzling in the morning look drab by sundown, and when you started a new day's work it was often tricky to balance the freshly mixed palette of colours with an adjoining segment completed the previous evening. Experienced artists would gradually learn how to account for these slippages.

Lachlan Goudie's interpretation of the angel from *The Dream of Joachim*, experimenting with Giotto's techniques.

The process of true fresco was fraught with stress. There was only a small window of time when everything was in equilibrium and the moisture levels perfectly calibrated. Assistants would have flicked water onto the plaster to try and keep it hydrated and prolong this moment, but eventually it would reach a point when the brushstrokes dragged, and painting had to cease for the day.

By the end of that first working session, the finished angel on the *Dream of Joachim* would have been flawlessly painted. The surrounding sky, however, would still have been a pinkish-grey colour. Azurite blue and gold detailing on the robes and halo wouldn't be added until later, when the surface was completely dry. The last job of the day would have been to paint lines around the segment of drawing to be plastered in the morning and douse this area with water. Then, gathering up their brushes and bowls, Giotto's crew would have clattered down the ladders, another *giornata* done.

Jan van Eyck, *Portrait of a Man (Self-portrait?)*, Oil on wood, 26 × 19 cm (10¼ × 7½ in.).

a strong odour which was caused by the oil mixed with the pigments, the secret still remained hidden from them'.

The *Arnolfini Portrait* was a consequence of the biggest bang in the story of art, an innovation that changed everything. Traditionally, texts from Vasari onwards asserted that the person who had conjured up this potion, the Merlin of art history, was Jan van Eyck. His discovery, they claimed, came in the form of a drop of oil. In fact, a method for painting with oils was first divulged in a treatise written around 1100 by a monk named Theophilus Presbyter, and during the 13th and 14th centuries artists across northern Europe experimented with the medium. So, Van Eyck did not invent oil paint, but his understanding of its properties and ingredients was unprecedented. His expertise allowed him to achieve effects that beguiled patrons and established oil paint as the most potent and powerful painting medium in the history of art.

Historically a variety of oils were used as binders for pigment, including those pressed from linseeds, poppyseeds and skinned walnuts. Each had their own characteristics. Walnut and poppy produced a clear oil great for mixing pale-coloured pigments, while linseed lent colours a warmer, yellowish tinge. However, they shared one drawback: oil takes a very long time to dry. In the 13th and 14th centuries you couldn't layer colours or develop an image quickly enough using pure oil for the technique to supplant egg tempera. Vinegars, cloves and even the sap of fig plants were all incorporated to try to improve the handling and drying rate of the paint, with unsatisfactory results. Van Eyck may have applied himself to this challenge. Writers described him as a painting investigator who 'practised alchemy and distillation'. And the small step in his technique – which formed part of a contemporary leap in painting technology – was his use of new siccatives, substances that help accelerate the hardening and drying of oil paint.

Lachlan Goudie, bottles of linseed oil.

We think Van Eyck was born around 1390 in Maaseik, a small town on the river Meuse. Art must have been in the air – Jan's elder brother Hubert and his younger siblings Margaret and Lambert all became painters. We don't know who trained them, but the Van Eyck family seem to have formed a tight painting crew. Jan possibly served as Hubert's apprentice and Lambert, in turn, is thought to have become a member of Jan's workshop. Hubert and Jan, particularly, collaborated and refined their oil paint mixtures, developing a mastery over the medium.

Their greatest triumph was the Ghent Altarpiece, a masterpiece at least a decade in the making. The design was conceived by Hubert in the early 1420s but after his death in 1426 it was Jan who brought the work to completion. The twelve-panel, winged altarpiece was remarkable for its visionary religious symbolism, the way narratives were set within a recognizable reality, and above all for its ultra-high definition, an effect made possible by the technology of 15th-century oil paint.

Jan van Eyck was already renowned, but the completion of the Ghent Altarpiece in 1432 supercharged his career. Commissions snowballed, helped by an important shift in the art market. In the 15th century the major cities of the Southern Netherlands, Ghent and Bruges, were centres of manufacturing and global commerce, urban economies powered by an affluent middle class who were driving change and buying art. Van Eyck painted the poster children of this new social group, Mr and Mrs Giovanni Arnolfini, representatives in Bruges of a large Italian clan of cloth traders and financiers. What they wanted from him was an object that would project their status and economic clout.

Hubert and Jan van Eyck, *The Ghent Altarpiece*, 1432. Oil on wood, 520 × 375 cm (17.1 ft × 12.3 ft).

The Arnolfini Portrait, detail.

the positions of features, perfectly executing the curve of Giovanni's hat and the folds of the gowns. Thin washes were then brushed over the drawing to build up the sense of tone and depth. While Van Eyck's drawing technique had a Zen-like confidence, there are many areas where the underdrawing faced flux and change.

In the finished painting Giovanni Arnolfini is a strange-looking gentleman, but the initial underdrawing made him look even odder; his head was bigger, his eyes were larger and positioned, along with his nose and mouth, much higher up his face. All these elements were redrawn before painting began. Mrs Arnolfini was also treated to a facelift; her eyes were raised and her gaze shifted towards Giovanni, while the angle of her head was subtly reengineered.

The Arnolfini Portrait, detail.

Such alterations were perhaps initiated when the artist stood back and noticed details that appeared out of kilter. From the outset Van Eyck was always prepared to pull and stretch elements of the drawing, either to improve the overall composition, to meet the client's demands or to suit the aesthetic of the day. Mrs Arnolfini's long fingers and forehead, for example, were influenced by contemporary ideals of perfectly plucked female beauty, while Giovanni's enlarged features help him appear dominant and masculine.

Even the room itself is Van Eyck's idealization. The *Arnolfini Portrait* is among the earliest panel paintings to show subjects in a domestic setting and the environment seems to have been drawn in forensic detail. But what you are looking at is an imagined space, one that reflects Arnolfini's

instance, unusually, the inscription had not been written into the framework before painting began. Even more radically, Manohar ignored the margins and thrust the outer edges of the throne defiantly into the boxes reserved for text. Few things happened accidentally in Mughal painting and these unorthodox compositional decisions were probably agreed with the prince at the start. From the outset the figure of Salim seems to be making a statement: don't fence me in!

The prince and the painter must have worked closely together, a creative relationship helped by the fact they were far from being strangers; Manohar was born into Akbar's court and may only have been a year older than Salim. It's possible they knew one another as children, and it's likely that after Prince Salim founded his atelier around 1585, while still in his father's palace at Agra, Salim and Manohar collaborated as patron and artist.

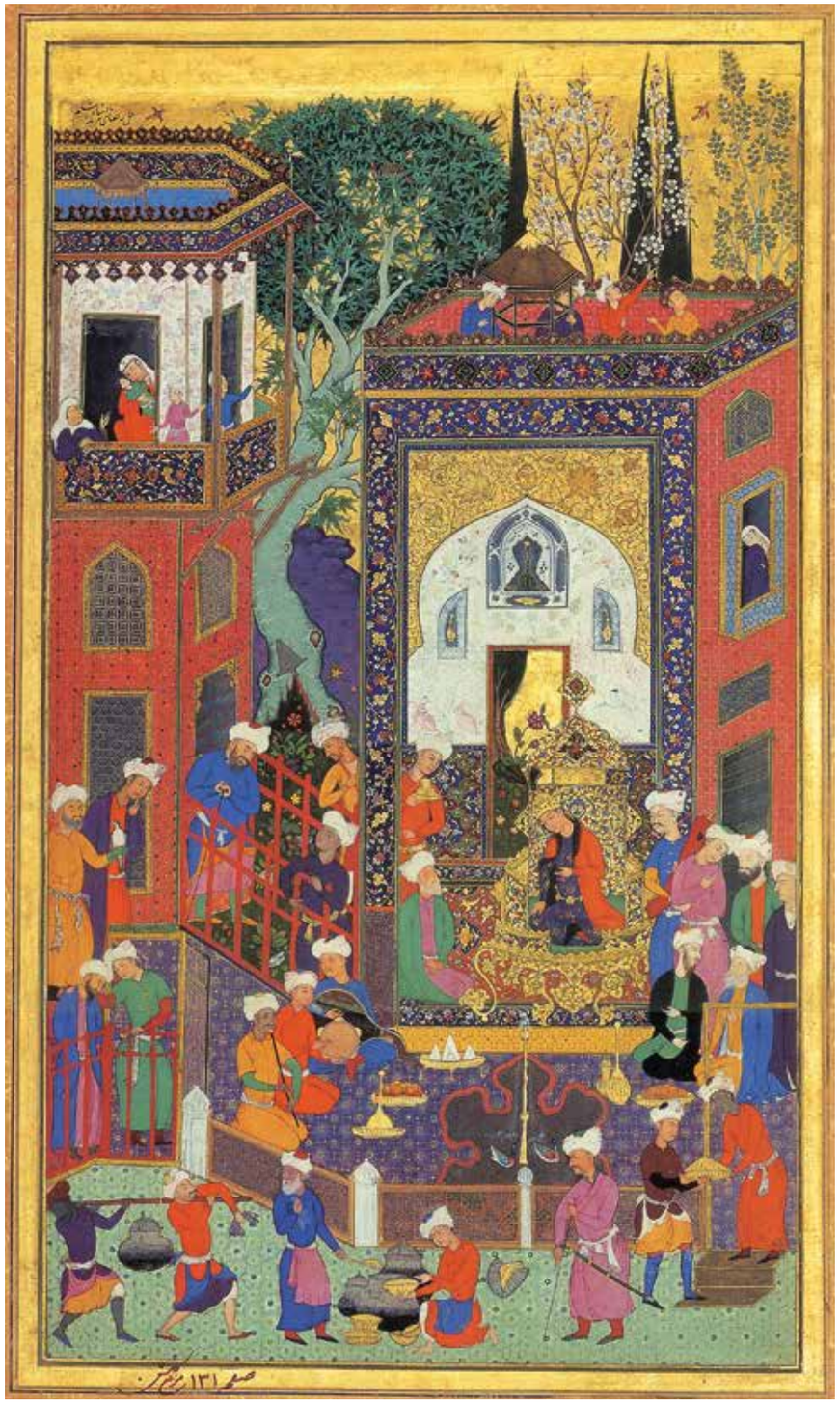
It was common in Mughal studios for portrait profiles to be painted using templates. These drawings, created in the presence of the subject, were made on gazelle hides and then stored in the studio. Whenever a portrait of the individual aristocrat was required, perhaps to insert them into a procession, the outline would be transferred using the pouncing technique. Since there wasn't a standard scale for drawing manuscript illuminations, template portraits often appeared out of proportion to the surrounding figures. But *Salim Enthroned* is too sensitive a portrayal to be a transfer. Salim's profile was probably painted onto the hemp paper from life, perhaps while the pair were sitting in a pavilion or on a terrace veranda somewhere in the fort at Allahabad.

Manohar possibly sat cross-legged on the floor with the drawing board resting on his knees, while the prince lay back on silk cushions, conversing with a stream of visitors. Eavesdropping on the royal banter, the artist would have waited patiently for the prince's head to return to a certain position before adding a few more features to the emerging sketch. Manohar will have concentrated on Salim's face, the raison d'être of this entire portrait. Every contour needed to project the character of its sitter: determined, mature, imperial.

Manohar was not the only artist to portray the prince in Allahabad. Around the same time the Iranian painter Aqa Reza, who had been the director of Salim's studio since it was first established, depicted the prince sitting on a golden throne surrounded by courtiers. While Salim is shown dressed in the same royal robes of lapis, gold and orangey red lead, in every other way Reza presents us with a very different figure: a willowy, elongated boy rebel who appears noticeably younger than in Manohar's portrait, beardless, perhaps even uncertain?

Reza's style reflected the refined and calligraphic approach typical of his Iranian training, and this elegance of line and colour was something

Aqa Reza, 'The court of King Salim', from the *Muraqqa-e Gulshan*, *c.* 1600–4.



Ogata Kōrin, *Irises*, 1705, detail (see page 90).

CHAPTER II

THE COLOUR OF MONEY

Ogata Kōrin, *Irises*

Japan at the turn of the 18th century was a realm where the elements of art were infused with mystery and power. Nature was revered as a divine creative force and painting materials derived from the natural world, including mineral pigments, animal glue and plant fibres, shared in this potency. In the Shinto faith creativity was understood to be part of a perpetual cycle of growth and transformation, a process over which no individual could claim ultimate control.

For many artists in Japan at this time the real secrets of painting lay beyond human skill or comprehension. To achieve any understanding of them at all required years of toil and tutelage. Most apprentices were enrolled within a formal art school system that promoted disciplined study, where teaching was rooted in a respect for ancient techniques and spiritual beliefs. A good student was expected to be selfless, attuned to their materials and to have attained, through their training, a profound state of enlightenment.

But while Japan was rich in ancient traditions and practices it was also a dynamic, modern society, and the art market was no different. Picture dealerships were scattered across the country and a sophisticated transport infrastructure allowed artworks to be shipped anywhere in the empire. The trade was fuelled by an overabundance of artists and fierce competition between them, and when forging a career in such a ruthless environment mystery and spiritual enlightenment weren't always much help. In 18th-century Japan there were many paths to becoming a great painter.

Irises, one of the most celebrated masterpieces in Japanese art history, is not one but two works of art: a pair of six-panel decorated folding screens. They were created in Kyoto between around 1701 and 1704, not

Unknown maker, *Scenes In and Around the Capital*, 17th century. One of a pair of folding screens, ink, colour, gold and gold leaf on paper, 170 × 366.2 cm (67 in × 12 ft ⅛ in.).

even Kōrin himself must have been surprised by the ever-changing relationship of one image to another. As it was opened, each moving panel would have caught the light in a flash of gold; flowers that were silhouetted one moment were illuminated the next. Overlapping one panel against another or reorientating the angles of the different elements granted a kaleidoscope of possibilities.

Irises had been inspired by a story from classical Japanese literature, *The Tales of Ise*. In it the hero, who has been exiled from Kyoto, embarks on a long wandering journey, stopping by a stream edged with irises to compose a poem for his lost love. In the years following his completion of the screens Kōrin made his own long journey north, to the city of Edo. The busy merchant metropolis was full of folk making money and spending it on fancy kimonos, wall hangings and elaborate screens to decorate their townhouses. Kōrin spent five years there trying to woo new clients, but it was not a happy experience.

In 1709 he came back to Kyoto. The artist was comforted by his return to a city he knew intimately and resumed work on a subject that was equally familiar: he stretched a whole new set of screens and began painting irises all over again. Like the melancholy traveller in *The Tale of Ise*, Kōrin had found himself wistfully dreaming of better days while working in Edo, remembering home and his carefree youth. But in his journey to find purpose and conquer his debts, he was reborn as an artist of extraordinary invention and vision.

Kōrin exemplified the opposing forces that shaped Japanese artistry at the beginning of the 18th century: tradition and innovation, disciplined study and independence of mind, the divine power of nature and the advance of manufacturing technology. His willingness to experiment and upend traditions was radical, but it also reflected the cycle of growth and transformation that lay at the heart of Japanese craftsmanship. It was an instinct which allowed him to remodel the conventions and materials of the past and create a masterpiece for a fast-changing modern world.

the French Academy, a committee of venerable artists whose role was to preserve the integrity of a national school of painting and sculpture. These establishment enforcers appointed the professors at the Ecole des Beaux-Arts and acted as the jury of the annual Salon, the most prestigious exhibiting society in the country.

The Academy and the institutions it controlled upheld the values of precise draughtsmanship, a silky classical painting style and dramatic figure compositions. At the Ecole des Beaux-Arts students were taught to paint following a strict method, which required them to work over a dark ground and construct an image from a layering of shadows, halftones and highlights using earth colours and white. For the Academy art was a rules-based system, and as Morisot started her new canvas that morning in the Bois de Boulogne she was contravening the rulebook with every step.

To start with she was working in an open-air studio; producing anything more than a landscape study in oil paint outside was still viewed with suspicion. Then there was the canvas. Outdoor sketches were meant to be modest in size, but Morisot's canvas was three-quarters of a metre (2½ ft) in width, with a surface so bright it risked blinding people. To achieve a subtle handling of tone, students were instructed to work on a ground painted earth brown, but Berthe's canvas hadn't been tinted at all, it was a pale cream. This difference mattered, because even before the first brushstroke had been applied Morisot had a clear ambition to make colour, not tone, the goal of her painting – another rule broken.

Photographic portrait of Berthe Morisot.

Photographs of Berthe Morisot capture an intense and determined- looking woman, but despite her forbidding appearance the artist's creative process was racked with self-doubt: 'I feel quite stupid setting up my easel before something and fancying myself able in an hour's time to reproduce nature...It is always the same story: I don't know where to start.' This sense of anxiety and dissatisfaction drove her to push beyond the easy solution to any visual problem. And that morning, as she began to outline the composition that would become *Summer's Day*, the tension between determination and self-doubt which defined her character was behind every brushstroke.

There was no initial charcoal sketch. The first marks on canvas were drawn directly with a brush dipped in a mixture of dark purple-blue oil paint: a hard diagonal for the edge of the boat, a high line for the opposite riverbank, the briefest contours of the

Berthe Morisot, *Summer's Day*, *c.* 1879. Oil on canvas, 45.7 × 75.2 cm (18 × 29⅝ in.).

figures. In another break from the Academy style Morisot didn't see any need for precise draughtsmanship. At this stage it was enough to fence off the general shapes into which colour would later be poured, and colour was going to be the element that structured the entire image.

There was no need for a complex composition either. Morisot wasn't trying to impress the Salon jury with a dramatic arrangement of figures inspired by classical art. This scene was meant to look accidental, something glimpsed in a turn of the head. So Morisot made everything lopsided and out of kilter; she sliced off the sky and angled the foreground so the passengers in her boat appear to fall into your lap. For a conservative contemporary audience, framing an image in this way was bewildering.

Morisot wasn't a born radical. She was a member of the Parisian elite, the daughter of a distinguished civil servant. Her first drawing lesson, when she was sixteen, had been organized as a birthday surprise for her father. The Morisots were so posh that her parents had a studio built in the Bois de Boulogne where the children could paint. For the most part Berthe's life was one of comfort and privilege, except for one obstacle – in 1879 society still didn't believe women could be great painters. Female students weren't accepted at the Ecole des Beaux-Arts until 1897, and expensive private tuition, like the lessons given to Berthe and her sister, Edma, could perhaps produce competent amateurs but little more.

Morisot's first painting teacher was an artist called Joseph-Benoît Guichard. He instructed the girls in watercolour and pastels and took

continent, each with distinct cultural identities. They spoke different languages and produced graphic forms of art as divergent in style as the paintings of France and Italy. The British, however, simply ignored their existence, rejected their culture and made these people invisible. Where explorers found evidence of art they denied any connection with the native population, declaring it 'scarcely probable that they could have been executed by a self-taught savage'. It would be another 200 years before the depth and richness of Aboriginal creativity was recognized across the world. By that point art had existed in Australia for more than 50,000 years, a period of uninterrupted creative evolution virtually unmatched anywhere else on the planet.

One of the reasons Aboriginal art was disregarded for so long is that traditionally tribes had been secretive about the images they created. Most cave art lay hidden from view and ritual sand paintings were left to blow away in the wind. But in the early 1970s a fissure appeared in the global consciousness. Something was happening in the deserts of central Australia and the world began to take notice.

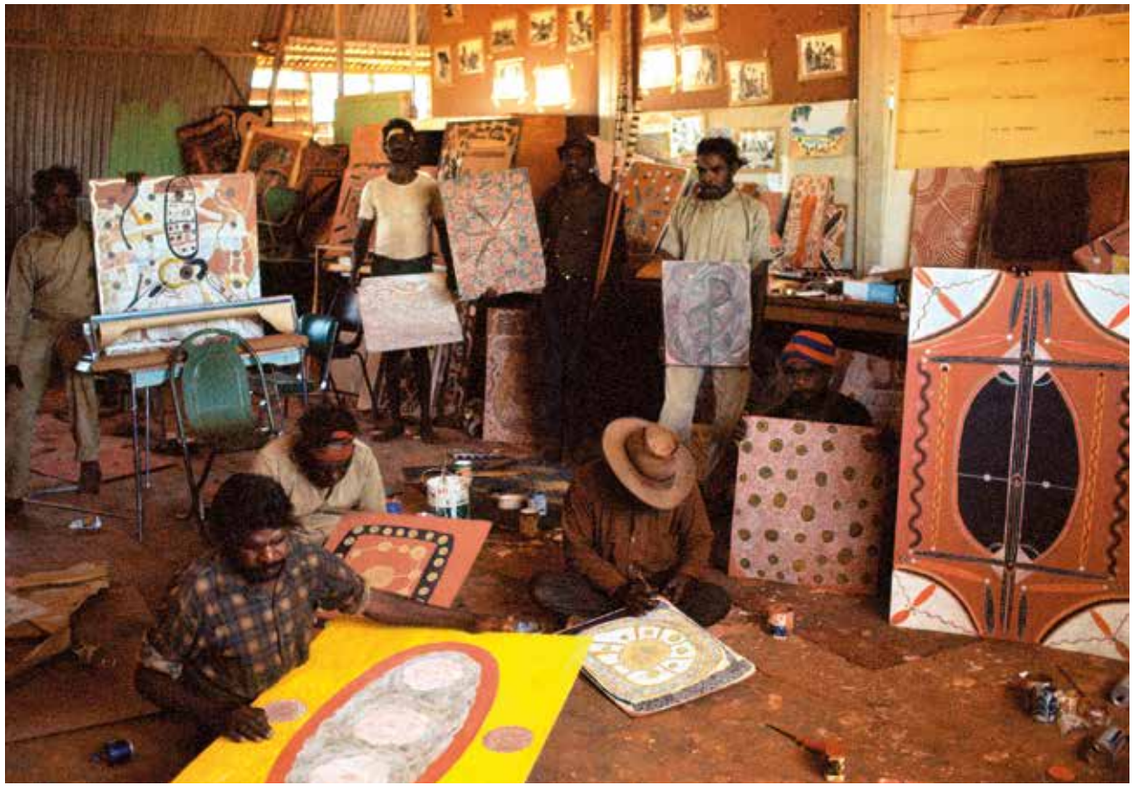
In Papunya, on the edge of the Great Sandy Desert, a group of Aboriginal elders had started to gather. Beneath the corrugated iron roof of a large Nissen hut they would sit and paint together. The images they created, however, weren't intended to be secret or ephemeral. For the first time in history the ancient patterns and iconography of Aboriginal art were being regenerated in permanent form and painted openly onto small boards and panels.

The settlement at Papunya was established in the 1950s. It was a town built on a policy, the Australian government's plan to assimilate the disparate Aboriginal tribes of the Northern Territory to a European way of life. There was a school where children would be taught English and adults would be given the skills to live in real time, not Dreamtime. People drifted there from across thousands of square miles of desert, chased from their traditional lands by drought and disease, encroaching cattle stations and the malignant boom of nuclear weapons tests. For many, Papunya represented their first contact with white culture. It was a listless and unhappy place, where poverty and despair took root. But there was also art at Papunya.

In 1971 a new teacher started work at the settlement school. His name was Geoff Bardon and he was to experience a creative epiphany in the desert. Only a few weeks after his arrival Bardon instigated the painting of a traditional Aboriginal mural upon the walls of the school. The project was unprecedented. It was overseen by a handful of tribal elders and acted as the catalyst for a group of artists to begin meeting and working together. At the back of Geoff's classroom and on a veranda beneath the school they painted on bits of scrap paper, old doors and tables. After they left Bardon would find artworks abandoned in the sand: patterns comprised of circles and dots, panels shaped to resemble the lozenge format of ceremonial objects. The new teacher was unable to communicate with most of the artists. He had no idea what he was looking at and no understanding of a culture where the value of art lay in the creative process rather than the finished artefact. But it was clear to him that he had stumbled across an extraordinary outpouring of creative energy, a contemporary Aboriginal painting movement.

Geoff Bardon successfully negotiated the use of an old Nissen hut. He supplied the artists with wood composite boards and cheap painting materials scrounged from the school: enamel paints, acrylics, powdered gouache and poster colours which needed to be mixed with PVA glue. Sometimes the artists brought their own earth pigments and combined them with the eclectic palette of classroom leftovers.

Bardon gave the old men children's materials and watched them work. Across the span of history, this was a process that had been observed by no more than a handful of white people. And now, before Bardon's eyes,



Group portrait of artists with their works at the studio in Papunya, 1972. Photo by Michael Jensen.

David Hockney,
Untitled, 398, 2009.
iPhone drawing.

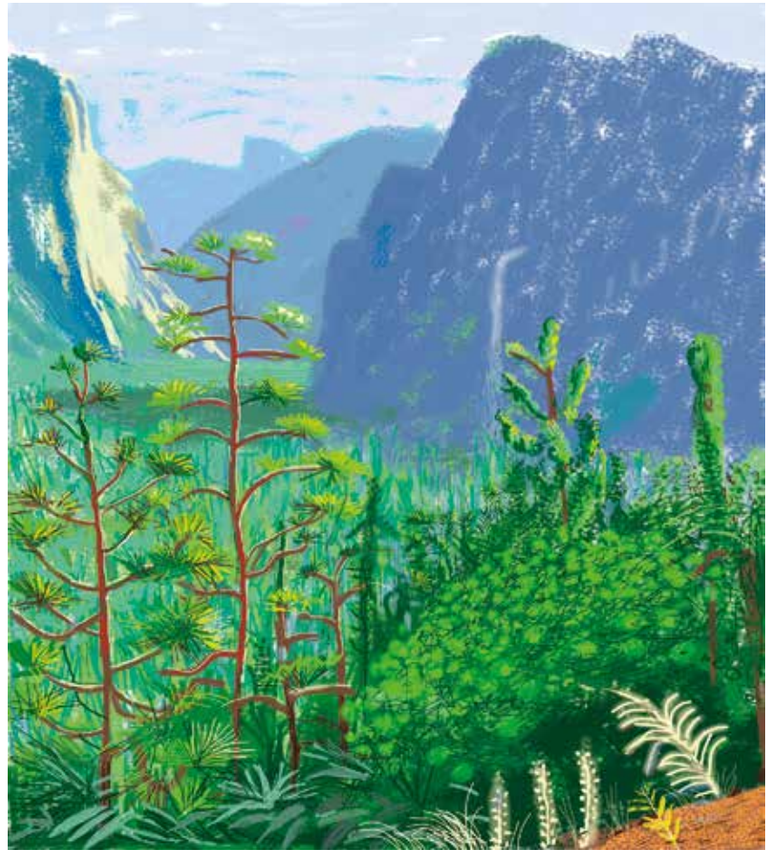
iPad. The screen on the newly invented digital tablet was eight times bigger than his iPhone, the size of a sketchbook. But this was a magic sketchbook, one which allowed Hockney to paint pictures with pixels, using colours made of light and sheets of enchanted paper that would grow as large as he wished.

Through 2010 and 2011 he began testing the sorcery in the software, fiddling with brush menus and colour palettes and familiarizing himself with a range of icons: the 'bucket', the 'eraser', the 'colour picker' and – the greatest wizard of them all – the 'undo' button. He invested time puzzling over the process, and to uncover the deep power that lay within this slice of Californian tech he turned to a subject that was a staple of art historical tradition: the landscape. In early 2011 he began sketching outdoors on his iPad in the fields of East Yorkshire, documenting the arrival of spring, and in October he took his touchscreen on a Californian road trip to Yosemite National Park.

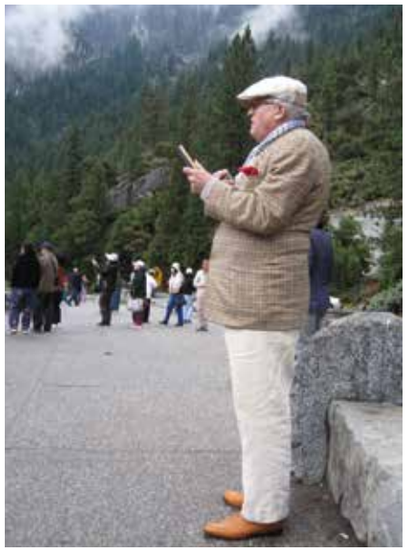
For ten days he drew and painted on his iPad, and on Sunday 16 October, nearing the end of his expedition, he prepared to sketch the most iconic landscape in the national park, a panorama that encompassed the cliffs of El Capitan, the iconic Half Dome mountain and the Bridalveil Fall. Paintings of sublime landscapes like these had helped convince President Abraham Lincoln in 1864 to preserve the Yosemite Valley for the nation. The view had been recorded by countless artists, but in 2011 Hockney was the first great painter ever to capture the scene on an iPad.

Only a few years after Hockney's trip to Yosemite, I painted there myself. I remember hiking across the park, searching for spots from which I could record the awesome landscape, nervously balancing my brushes and watercolour box on each vertiginous ledge. But the iPad collapses every outdoor painting tool into a slim digital tray you can hold in your hand. No brush or colour is more than a stretched digit away, the water doesn't need changing, and the palette won't get clogged with pine needles and grit. When 19th-century oil painters worked outdoors, they needed someone to carry their crate of materials. Hockney simply had a pocket stitched inside his jacket in which the tablet could be snuggly contained.

David Hockney,
Yosemite 1, October 16th 2011, 2011. iPad drawing printed on four sheets of paper, 197 × 177 cm (77½ × 69¾ in.).



David Hockney at
Yosemite National Park,
2011.



That day, confronted by the panorama of Yosemite Valley, he slipped the iPad from its pocket and began to draw. Hockney's opening act was to select the proportions of his digital 'canvas' from a sketchbook of infinite possibilities. He chose a format that was almost square and with one press of the 'bucket' he instantly flooded his ground with cerulean blue. Titian's apprentices, labouring over their tinted imprimatura, would have watched transfixed as Hockney cast his digital spells. The next moment he chose a brush, only a few pixels in width, and began drawing an outline of the landscape in light ochre. There was no need to swap brushes, clean out the colours or wait for the freshly primed canvas to dry.

One of the major forces driving the evolution of painting technology across history was a desire to make artworks more portable and the creative process more

Refik Anadol, *Unsupervised – Machine Hallucinations – MoMA Dream*, 2021, detail (see page 357).

CHAPTER 20

THE 21ST-CENTURY WORKSHOP

Refik Anadol, *Unsupervised – Machine Hallucinations*

Across the span of history, painters have always used the materials at their disposal to produce ever more extraordinary works of visual art. In caverns and workshops, bottegas or repurposed warehouses, they have exploited the properties of each material innovation: grinding recently discovered minerals, testing out newly invented pigments, emulsifying colours with modern binders. They have brushed, feathered and flicked each new paint onto every surface imaginable and even dragged a finger across pixels to create coloured light. And the grimy hand of the artist has been there at every stage.

But the painting material that is powering the latest and most remarkable transformation in art history is data. Ubiquitous but untouchable, the use of data as a medium for making visual imagery is unprecedented. Today artists are employing artificial intelligence (AI) as a creative tool, helping them incorporate vast amounts of digital material onto their palettes. This new technology has the potential to create entirely new artworks, images which no human in history has ever painted, using elements that haven't even been invented yet. And right now, the software has started learning from us, programming a course towards a future of creatively autonomous machines. We are at a point where everything we know about painting is set to transform at lightning speed.

One of the hotspots for this creative experimentation is located only forty minutes' drive from David Hockney's Los Angeles workshop. The studio of Refik Anadol is a 21st-century art lab, where brushes and easels have been replaced with banks of computers. It was established in 2014, after the digital artist relocated from Istanbul to California. Instead of painters as apprentices, Anadol invited data and computer scientists,


Lachlan
Goudie
THE SECRETS OF PAINTING
Thames
&Hudson