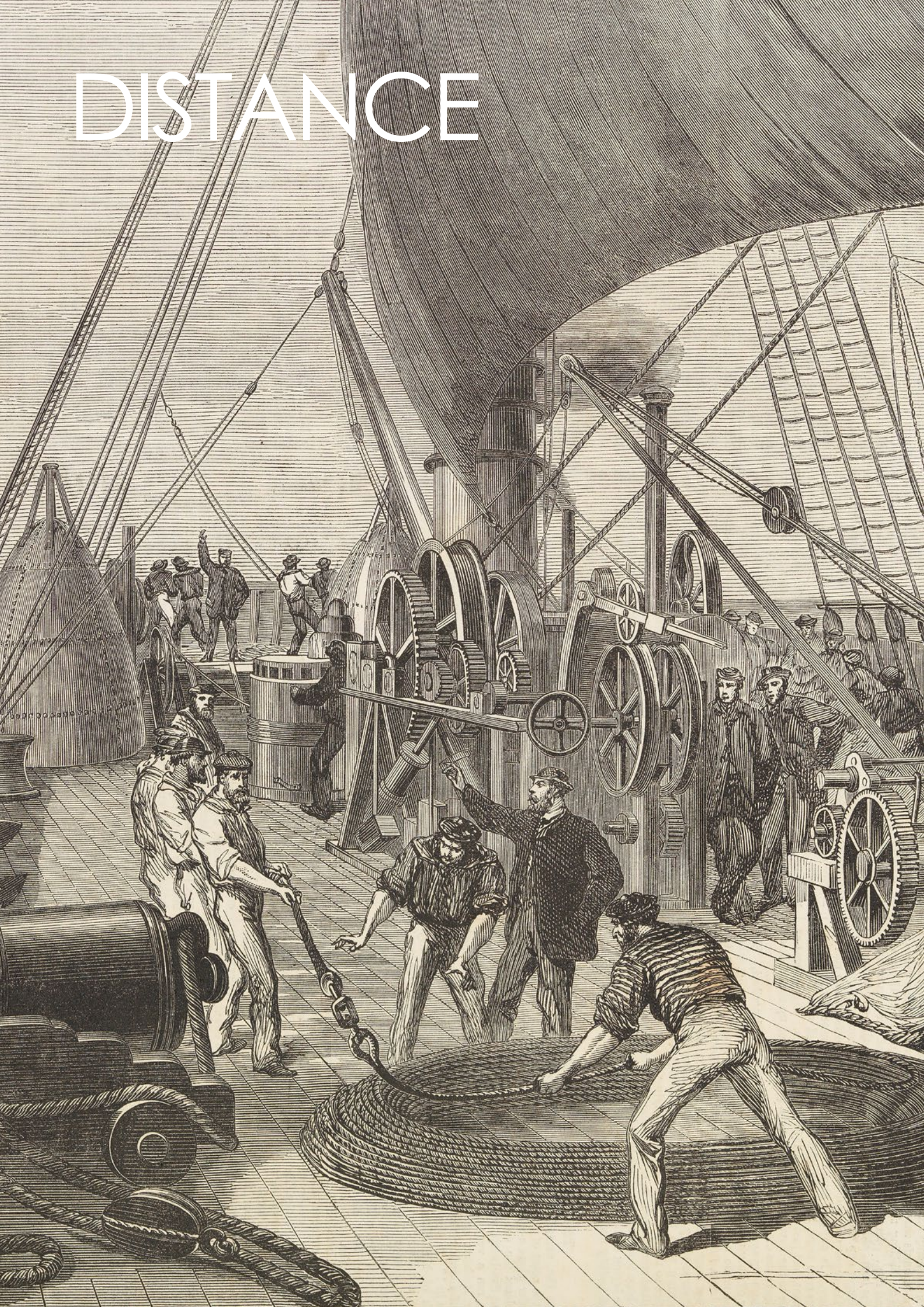
DISTANCE



from VICTORIANS DECODED: ART AND TELEGRAPHY

Edited by
Caroline Arscott and Clare Pettitt

With contributions by:
Caroline Arscott
Anne Chapman
Natalie Hume
Mark Miodownik
Cassie Newland
Clare Pettitt
Rai Stather

Exhibition Catalogue for the exhibition *Victorians Decoded: Art and Telegraphy* held at The Guildhall Art Gallery, London from 20th September 2016 to 22nd January 2017.

Published by The Courtauld Institute of Art
Somerset House, Strand, London WC2R 0RN and King's College London, Strand, London WC2R 2LS.

ISBN: 987-1-907485-053

All sections of this catalogue are available for free download at the project website for *Scrambled Messages: The Telegraphic Imaginary 1857-1900*
http://www.scrambledmessages.ac.uk/
This website is hosted by King's College, London

Designed by Olivia Alice Clemence

BACK AND FRONT COVER:
James Tissot, *The Last Evening*, 1873 (details), The Guildhall Art Gallery, Corporation of London.

KING'S College LONDON

THE COURTAULD Institute of Art

UCL

Institute *of Making*

DISTANCE

NATALIE HUME

BETWEEN THE EMPIRICAL AND THE ABSTRACT: GRIMSHAW'S *THE THAMES BY MOONLIGHT WITH SOUTHWARK BRIDGE*

Fig. 1, John Atkinson Grimshaw, *The Thames by Moonlight with Southwark Bridge*, 1884, Guildhall Art Gallery, City of London Corporation.

The high proportion of paintings in the Distance section of the exhibition testifies to the intrinsic connection between space and painting. Nineteenth-century art is often understood in terms of two broad categories characterised by divergent approaches to the treatment of space: realist and decorative. This binary split, although an oversimplification, corresponds to growing tension through the century between empiricism and abstraction. The Victorian era is often seen through a filter of proliferating 'things', epitomised by the Great Exhibition of 1851: material production, whether industrial or artisanal, was key to national identities and international relations.[1] But the century was also increasingly shaped by new intellectual traditions and theories, some of which described a disorienting process of abstraction and detachment from the conditions of materialism. Just before paper money became preeminent, a triumph of symbolic rather than intrinsic value, Karl Marx and Friedrich Engels described capitalism as a system in which 'all that is solid melts into air'.[2]

It is tempting to see these apparently contrasting inclinations – towards and away from the physical world – echoed in contemporary technology, which appeared to distil this duality, packaging it in new systems and devices. Photography provided the opportunity to 'paint with light', potentially freeing artists from the thickness of paint but ghosting the physical world, indexically bound to its corporeal subject. Both the railway and telegraphy were ways to negotiate space and alter the experience of distance, and each required the engineering of heavy infrastructure – great lengths of track and cable – in the pursuit of speed and the instantaneous transmission of messages. The artist, like the photographer,

must confront space: whether by conjuring illusionistic depth or collapsing it in deference to the flatness of the picture plane, painting is a manipulation of space.

John Atkinson Grimshaw (1836–1893) is best known for a particular kind of moonlit landscape, urban, suburban or rural, which demonstrates an approach that was both 'realist' and decorative. Born into a lower-middle-class family in the North, Grimshaw lacked formal training and developed an idiosyncratic technique that made extensive use of photography. His engagement with space and treatment of light may also have borrowed from the stage: he had connections to the theatre, and his portrayal of distance, often articulated through light (for example, including silhouettes in the foreground) suggest a series of fields or layers, corresponding to 'flats' or painted pieces of scenery.[3]

The Thames by Moonlight with Southwark Bridge, one of a series of similar scenes, is recognisably Grimshaw in both style and content, comprising a cloudy moonlit sky, reflections on water, twinkling gaslights, silhouetted boats and a bridge. Night, like distance, diminishes the colour spectrum, eliminates detail and makes it difficult to assess space. Grimshaw seems fascinated by this interplay of darkness and distance, emphasising the blackness of the silhouettes against the uncertain depth of sky and water that cover most of the canvas. The wide-angle view opens out the landscape, accentuating its breadth and further undermining legible depth. The lack of vanishing point is most obvious in the surprisingly steep angle of the roof on the far left, which serves a dual – and perhaps paradoxical – purpose of disrupting spatial logic and providing a sense of massive proximity, lending scale to the miniaturised buildings on the far shore. The double upright posts on the left act as a repoussoir (a foreground feature leading the eye into the scene), echoed in several sets of furled sails across the water, and again far away, in the west towers of St Paul's. This pattern of repetition pretends to map space, but instead offers a layered sequence of fields, each of which is ambiguous in relation to the others: it is difficult to judge, for example, the distance between the receding barges on the left, or from barges to bridge, or from bridge to the shore behind.

This imprecise rendering of space, along with his predilection for moonlit water, would seem to express Grimshaw's romantic nostalgia: he loved the Romantic poets and made forays into fantasy, in *Iris* (1886, Leeds Art Gallery), for example.[4] In *The Thames by Moonlight with Southwark Bridge* the city seems a shadowy afterthought, insignificant against the study of light on clouds in the wide-open sky and its reflection. Such effects, cyclical but unchanging, had provided material for artists over centuries. This highlights a link between time and space, as though the night is haunted by the past, masquerading as apparently endless and indistinct space. But some of these temporal associations – particularly the suggestion of straightforward nostalgia – may be misleading. In this context, it is instructive to consider the way in which Grimshaw's oeuvre intersects with that of a celebrated contemporary

peer. According to Grimshaw's grandson G. R. Phillips, the eminent artist James McNeill Whistler 'declared that he had thought he had invented pictorial "nocturnes" until he saw Grimshaw's moonlight pictures'.[5] It was hardly groundbreaking to paint the city at night (see, for example, Joseph Vernet's *Night: Seaport by Moonlight*, 1771, Louvre), so in bestowing the category of 'nocturne' Whistler was making a specific and nuanced point about Grimshaw's work. A nocturne, with its associations with darkness and water, is ostensibly associated with lyrical detachment from quotidian life, an interpretation that fits with an analysis of both artists' work as both retrograde and romantic. Whistler's innovation in applying the term to paintings, however, involved shrewd negotiation of current debates and issues: it was a commercially astute strategy that simultaneously branded the nocturne as fashionably 'Aesthetic' and issued a provocative statement about the status of visual art.[6] Given the two artists' stylistic divergence, Whistler's comment underlines that their affinity lies in content: both produced series of desolate, moonlit cityscapes that included artificial light and conspicuous references to industry.[7] More subtly, Whistler may well have recognised in Grimshaw's work a kind of detachment and abstraction that could be mistaken for romantic nostalgia but was conversely absolutely of its own time.

In *The Thames by Moonlight with Southwark Bridge*, the string of lights across the dark centre of the city forms an artificial horizon, providing definition to the indistinct topography. This is an environment animated not by life but by light: the boundless radiance of the moon is answered by glowing points of gas streetlighting, a relatively recent development.[8] Further west, the first electric arc lights had just been installed on Thames Embankment near Westminster, in 1878. These cannot be seen in *Thames by Moonlight*, but they do appear in Grimshaw's *Reflections on the Thames: Westminster* (Fig. 2), where they participate in the interaction between natural and artificial light. In that picture the striking white electric discs recede along the water, echoing the silvery moonlight, in contrast to the warm yellow gaslights on the other side of the pavement and the golden clock face of Big Ben, an artificial analogue of the chronometric moon. Despite the amorphous expanse of river and sky, the picture is carefully proportioned and metered, a study in distance and recession. The lines of arc lights and gaslights draw together as the bank curves away into the distance, producing an illusion of orderly depth; the illuminated coping stones and paving slabs emphasise the rhythm, also apparent in the architecture of the bridge and the string of barges. Electricity and gas power, under the auspices of the moon, map time and space and bring order to the city.

Fig. 2, John Atkinson Grimshaw, *Reflections on the Thames: Westminster*, 1880, Leeds Museums and Galleries (Leeds Art Gallery) UK / Bridgeman Images.

The accent on measurement may offer a clue to Grimshaw's interest in cosmic light, particularly in the context of the city. The 'light-year' first appeared as a unit of distance in 1851, with the speed of light being slightly amended in 1862 to within 0.6 per cent of its present-day figure as a result of experiments by Léon Foucault, using Charles Wheatstone's revolving mirror.[9] The discovery that light travels with a constant speed of nearly 300 million metres per second had become an important means for calculating vast distances; the way in which the moon reflects light from the sun evokes the enormity of space and the relationship between space and time. Grimshaw's focus on the illumination of clouds and reflections on water draws attention to these ideas and puts them in dialogue with mechanical time, quantified space and regular streetlighting.

Grimshaw's interest in energy, time and space persists in the picture featured in this exhibition, *The Thames by Moonlight with Southwark Bridge*. This part of the city lacks the blaze of electricity and the metropolitan glow of Big Ben so the mapping of space is far more ambiguous, but the tiny glowing dots of gas signify an expanding city. Cosmic light offered a way to think about unimaginably large distances, bringing a modern perspective to humanity's understanding of the universe (a literal Enlightenment); at the same time, artificial light was essential for the flourishing of modern life, bringing productivity to winter months and opportunities for consumption to the hours of evening leisure. Despite giving an impression of congealed stillness, *The Thames by Moonlight with Southwark Bridge* is nevertheless invisibly driven by flow, with all its significant components – river, moonlight, gaslight, clouds, boats, bridge – defined by movement and energy transfer.

The rigid, stagy look of the picture is likely to be a vestige of the role played by photography (and perhaps of the theatre) in Grimshaw's creative process. A certain nostalgia may be intrinsic to that technology, despite its continuing novelty and transformation in the 1880s, but it is one that is so self-conscious as to be almost ironic: the still photographic image stands explicitly for a lost moment. This may be part of what lies behind Grimshaw's ability to produce an atmosphere of idealised timelessness with an unsettling sense of contemporaneity. The iron bridge, then only sixty-five years old, is a symbol of growing industry and commerce; the characteristic Thames sailing barges are scattered across the water, sails furled, waiting for daylight. Three distinct sets of paired sails are silhouetted emphatically against the water and sky, rhyming with the twin towers of St Paul's in the distance and suggesting a comparison between the old routine based around the call to prayer and the new one, following the call of commerce.

The human presence, though, is indirect, almost disavowed. The scene is visually appealing – even picturesque – but there is something ominous and unfriendly about the sharply pointed, crouching city. The pretty reflections on the water are intrinsically melancholy, partly because they are somewhere else (F. Scott Fitzgerald articulated this yearning desolation years later in the similar image of Gatsby gazing across at the distant green light on Daisy Buchanan's dock).[10] The scene is arranged as though viewed from somewhere in the water, or among the shoddy boats, but the distortion is disorientating: although conventional devices lead into the attractive, the viewer nevertheless cannot belong there. The heavy black bridge crossing the river repudiates its function in connecting the city; instead, it isolates the viewer in a non-place before the picture, separating the dark, flooded 'here' from the illuminated, metropolitan 'there'.[11] The resulting sense of isolation and dislocation is apposite given the degree to which Grimshaw's works has been overlooked in comparison with some of his contemporaries.[12]

The distance in *The Thames by Moonlight with Southwark Bridge* is evoked across a spectrum of contexts: wide space across the canvas, the pictorial depth receding into the scene, city quietly growing as it sleeps. But the distances that are most cleverly evoked are unseen. The water is covered with an all-over pattern of ripples that emphasises its surface; this diminishes its description of distance towards the horizon but acts like a veil, suggesting that the hidden depths might be bottomless. The clouds, their patchy pattern reflected beneath them, similarly hang before the moon, as though masking a space so overwhelming that it cannot be shown. Hubert Damisch has proposed that clouds historically produced a problem and also liberated painters from the requirements of iconography and spatial representation, offering an opportunity for fantasy, mystery and oblique commentary.[13] This function is sustained into wider culture, from the ancient game of visualising images in the sky to the 'cloud' as a repository for digital data: constantly changing, amorphous, insubstantial and voluminous, clouds have a special affinity to phenomena that are intangible or indefinable. Grimshaw's clouds, rendered both realistically and decoratively, offer a literally nebulous rendering of contemporary life, both benighted and enlightened, empirical and abstract. As a cultural medium that explored the boundaries and implications of space, visual art could not fail to respond to new technologies – notably photography, rail travel and telegraphy – that seemed to devour both space and time. The action of natural and artificial light upon clouds and water, despite the image's apparent stillness and superficiality, offers an oblique manifestation of contemporary preoccupations such as travel, flow, transformation, matter and energy.

1. See, for example, Asa Briggs, *Victorian Things* (1988) (London: Penguin, 1990). I use 'Victorian era' as a geographical as well as a temporal identifier, to mean Britain and its sphere of influence.

2. Karl Marx and Friedrich Engels, *Manifesto of the Communist Party* (1848) in Robert C. Tucker (ed.), *The Marx-Engels Reader*, 2nd edition (New York: Norton, 1978), pp. 475–6. Paper money became much more significant following the circulation of fully printed, unsigned banknotes by the Bank of England from 1855. http://tinyurl.com/hr5nogr (consulted 23rd August 2016). The United States experienced a gradual transition to legal tender notes in the early 1860s. http://tinyurl.com/h8jow52 (consulted 23rd August 2016).

3. Frank Milner argues convincingly that both photography and theatre were important sources for Grimshaw as a developing artist. He also elucidates the connections between photography and the theatre, as, for example, the sophisticated use of 'colour-slide projection … for special effects in the theatre'. Frank Milner, 'The Mystery of the Self-Taught Pre-Raphaelite', in Jane Sellars (ed.), *Atkinson Grimshaw: Painter of Moonlight* (London: Mercer Art Gallery and Guildhall Art Gallery, 2011), p. 31.

4. Grimshaw shared with many of his contemporaries a fascination with medieval culture, naming his children after characters in poems and legends, collecting armour and renting a house with battlements. Alexander Robertson proposes that Grimshaw imbued his paintings 'with an atmosphere and sense of poetic nostalgia' as 'a way of coping with the changes all around'. Alexander Robertson, 'Atkinson Grimshaw: Life and Work', in Sellars, *Atkinson Grimshaw: Painter of Moonlight* (2011), p. 11.

5. Guy Ragland Phillips, unpublished memoir, quoted in Mark Bills, 'Atkinson Grimshaw in London', in Sellars, *Atkinson Grimshaw: Painter of Moonlight* (2011), p. 76.

6. Whistler's analogy of painting with music was polemical: 'the artist is born to pick, and choose … as the musician gathers his notes, and forms his chords, until he bring forth from chaos glorious harmony.' This position was associated with Whistler's defence of art from critics, whose influence 'has brought about the most complete misunderstanding as to the aim of the picture. For him a picture is more or less a hieroglyph or symbol of a story.' James Abbott McNeill Whistler, *The Gentle Art of Making Enemies* (1890) (London: William Heinemann Ltd, 1994), pp. 143, 146.

7. A few of Grimshaw's very late paintings do resemble those of Whistler stylistically – see, for example, *Sand, Sea and Sky: A Summer Fantasy* (1892, private collection) and *The Port Light* (1890s, private collection) – but these are a departure from the night-time pictures he was producing in preceding decades.

8. Gas lighting was introduced into the London streets from the early 1800s and spread quickly around the busier parts of the city.

9. https://en.wikipedia.org/wiki/Light-year#cite_note-22 (consulted 31 August 2016); www.wikipedia.org/wiki/L%C3%A9on_Foucault (consulted 31 August 2016).

10. The green light, an enduring image of desolate hope, is associated with distance in space and time as well as detachment. 'Gatsby believed in the green light, the orgiastic future that year by year recedes before us. It eluded us then, but that's no matter – tomorrow we will run faster, stretch out our arms farther. … And one fine morning – So we beat on, boats against the current, borne back ceaselessly into the past'. F. Scott Fitzgerald, *The Great Gatsby* (1925) (Basingstoke and Oxford: Pan Macmillan, 2013), p. 233.

11. Some biographical details might be relevant here. In 1879 Grimshaw suffered a financial disaster that apparently led him to move temporarily away from his wife and children into London. But by the mid-1880s Grimshaw had returned home, and unlike his Chelsea neighbour Whistler, an American who had lived in Paris, Grimshaw seems always to have been an outsider.

12. Of the association between Grimshaw and Whistler, Mark Bills writes that 'it seems … the closeness of their friendship is exaggerated as books on Whistler fail to mention Grimshaw even in passing'. Bills, 'Atkinson Grimshaw in London', in Sellars, *Atkinson Grimshaw: Painter of Moonlight*, (2011).

13. Hubert Damisch, *A Theory of /Cloud/: Toward a History of Painting*, translated by Janet Lloyd, (Stanford: Stanford University Press, 1972).

DISTANCE

ANNE CHAPMAN

PROFOUND REPETITION: HOOK'S *DEEP SEA FISHING*

Fig. 1, James Clarke Hook, *Deep Sea Fishing*, 1864, Guildhall Art Gallery, City of London Corporation.

At the time when James Clarke Hook painted a trio of fishermen trailing their lines beneath the waves in *Deep Sea Fishing*, the study of ocean topography was a nascent science and expertise in the seas' depths was developing. For those attempting to realise a transatlantic telegraphic connection, depth presented as much of a problematic distance as the great expanse across the Atlantic Ocean did. Only a decade before the cable laying attempts of 1857 and 1858 these depths were an unknown, an as yet unexplored territory. At first, attempts to measure and map this new frontier arose from both the need to traverse the ocean swiftly and safely and from the interests of the whaling industry. This then developed into a scientific quest for understanding exploited by those involved in the transatlantic telegraph project.[1] Just as fishermen benefit from both appropriate technology and experience in order to make their catch where they cannot see, so hydrographers' exploration of the seabed relied on interpretation of information mediated by technology, an interpretation which they could only hone over time. This repeated practice and experience transformed the ocean's depths from a dangerous unknown to a safe bed for the transatlantic cable.[2]

In order to ascertain the topography of the ocean, hydrographers measured depth by sounding, a process in which a leadsman dropped a weight attached to a line over the side until it hit the bottom (although 'echo sounding' has its origins in the nineteenth century, it was not successfully utilised until the twentieth).[3] This method could take up to three hours and even then hindrances of weather and water would produce inaccuracies.[4] Accuracy also depended partly upon a haptic subtlety employed with increasing difficulty as the distance to the ocean floor increased: Rozwadowski explains that 'hydrographers claimed they felt the impact in deep water' yet relied also on the visual signals of the line stopping or slowing.[5] Both of these were, of course, subject to human fallibility.

Comprehension of the seabed required both multiple repetitions and improvements in technology. Different soundings of the same area could produce very different results. The four profiles shown in Fig. 2 appear in the 1858 enlarged edition of *Explanations and sailing directions to accompany the wind and current charts* and with them naval officer and oceanographer Matthew Fontaine Maury illustrates the unreliability of information gathered by this method: each very different profile represents the same section of the Atlantic bed. Mid-century hydrographers could not exhibit the same confidence in the results of their dropping lines into the ocean as that of the fishermen dangling their lines in *Deep Sea Fishing*.

Deep Sea Fishing is one of many marine scenes painted by Hook. He was one of a number of Victorian painters who specialized in coastal scenes which 'catered for the hankering of the townsman after the sea'.[6] Much of his work was held in great esteem during his career. Ruskin declared in *Modern Painters* that '[t]he designs of J. C. Hook are, perhaps,

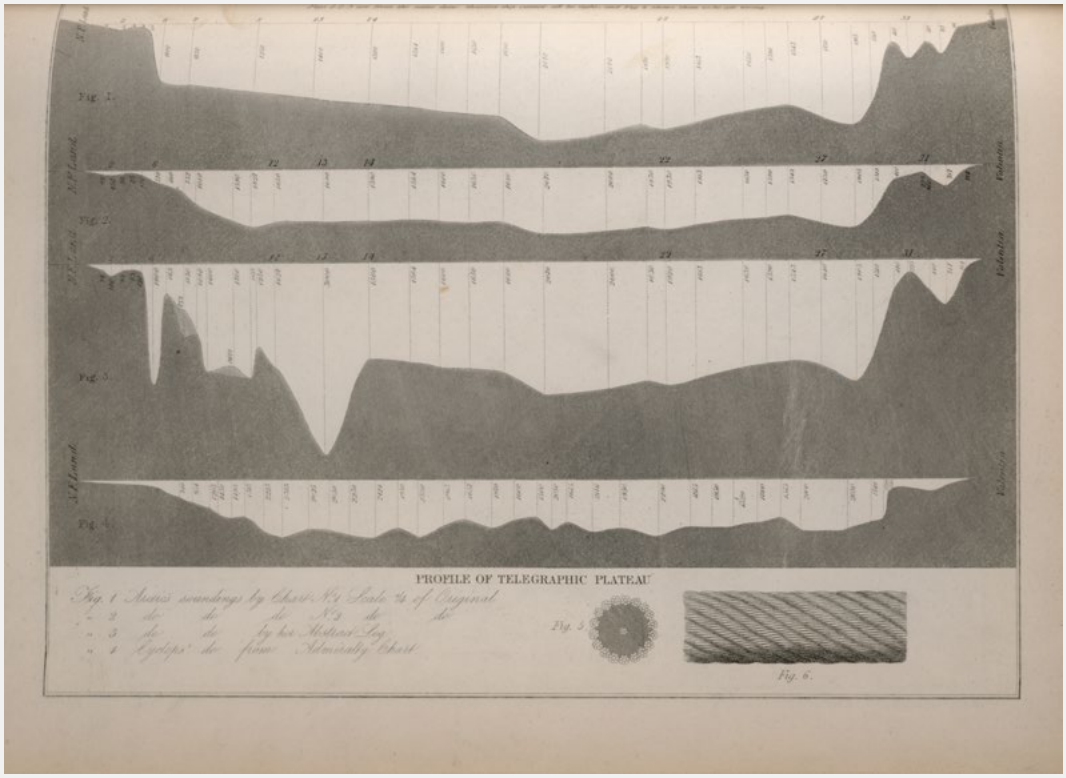


Fig. 2, 'Profile of Telegraphic Plateau', in M. F. Maury, *Explanations and sailing directions to accompany the wind and current charts* (Washington: William A. Harris, 1858 [eighth edition, enlarged]), Plate XII. Image: King's College London, Foyle Special Collections Library.

the only works of the kind in existence which deserve to be mentioned in connection with the pastorals of Wordsworth and Tennyson'.[7] When Ruskin reviewed the Royal Academy exhibition of 1859, he much admired another of Hook's marine paintings, *Luff, Boy!*: 'A glorious picture — most glorious'.[8] Hook became an Associate Academician in 1850 and a full Royal Academician in 1860. *Deep Sea Fishing* was not exhibited at the Royal Academy, and Hook's execution of human scale in it is, in places, questionable. Nonetheless, the painting communicates the relationship between knowledgeable human experts and the depths of the sea.

Three fishermen of different ages lean over the stern of their vessel hanging their lines into the water below. They fish at a distance neither we nor they can see. Whilst this is, as the title makes clear, deep sea, and its colour suggests a churning ocean, Hook reminds us of the transparency of the water into which we look: he picks out some of the boat's hull beneath the swell and reddish brown swirls suggest seaweed agitated by the sea's surge. The surface clarity of the water invites us to look in only to have our vision quickly impeded by depth; the distance to which the fishing lines must reach is concealed although flashes of white froth mark their point of entrance into the murk below.

This type of fishing uses a hand-line rather than a rod. The fishing lines depicted by Hook, their twisting strands touched with flashes of light, would have been coarse in order to facilitate a tactile exploitation of depth. With hands unprotected and with the action out of sight, this must have been a trying task. Yet Hook's men display no strain or exertion in their faces and their bodies relax. The man to the right of the picture has perhaps caught something as his line angles away from him, tauter than the perpendicular others. Nonetheless his line runs through his thumb and forefinger with no appearance of the application of pressure and the rest of his fingers loosely bend a little. As John Bickerdyke explains of hand-line fishing in 1895, 'immediately a bite is felt, the fisherman should haul in the line, hand over hand' and '[t]he snooding or portion of the tackle immediately next to the hook must be a good deal stronger than if a rod is used [...] it is impossible to prevent sudden strains and jerks which are certain to break light tackle'.[9] The man with the likely catch displays no evidence of the physical exertion that 'hauling' requires. In portraying this effortless strength Hook suggests the skill that arises out of repeated practice.

The boat, its occupants, and the sea immediately in front of it fills the canvas. As it focuses on oceanic depth, *Deep Sea Fishing* obscures surface distance; it presents only the smallest section of the horizon and we cannot discern how far the boat has sailed from its harbour. The painting does, however attend to the significance of the expanse of time: paint has worn away from the boat's hull, its planks weatherbeaten, and lines age the countenances of the two men who face us. Such wear is the mark of experience, of repetition. The fishermen, in appearing to span three generations, suggest the repetition attendant on inheriting the traditions of a skilled trade. We can see the marks of repetitive toil in the ingrained dirt under and around their fingernails. Moreover, Hook places the eldest, marked by his white whiskers, centrally, intimating his importance; his glance catches our attention as he confidently looks up at us from his task, so experienced he need not focus on his fishing line. As Ben Highmore explains in *Ordinary Lives* '[o]ne person's ordinary is another person's extraordinary [...] ordinariness is a process (like habit) where things (practices, feelings, conditions and so on) pass from unusual to usual, from irregular to regular'.[10] These skilled men are not troubled by the demands of the task they undertake in the depths beneath them. By presenting three generations of fishermen performing their feat without any surface signs of challenge, Hook's genre painting implies that repetition transforms that which could be deemed to be difficult into the quotidian.

Hook makes a contrast which emphasises this as he places the viewer at an unusual and difficult distance from an active boat. Close enough for the boat to obscure most of the horizon, we look up from the water as the waves rise away from us. In making eye contact with the viewer, the central fisherman's glance makes us participants in the scene, not mere onlookers. However, with no indication of another vessel beneath us, we look from a position seemingly impossible to all but a swimmer. *Deep Sea Fishing*, the representation

of a single moment in the complicated work of the fisherman, suggests a challenge in transient attempts at comprehensive understanding of the expertise of the everyday.

Hook's painting implies a closeness between these experts and their ocean. His palette effects a correlation between the fishermen and their environment, in spite of the incomprehensibility of its depths. The browns, greys, and blues of the men's clothing repeat not only in the boat in which they travel but in the sea on which they sail. In their review of the Royal Academy exhibition in June 1863, the *Art Journal* notes this to be typical of Hook in reference to another of his paintings, *Prawn Catchers*: '[t]he colour of this rich composition is compounded after Mr. Hook's wont [...] thus it is that his figures comport so completely with the landscapes in which they are made to blend, nature and humanity meeting as it were each other half way'.[11] The marine name of the boat, Wave, clearly visible as the water strikes the vessel, further emphasises the closeness rather than distance between the natural world and the human technologies used to exploit it.

Hook presents a scene of human exploitation of the natural world in which three experts tackle the hidden depths of the ocean to provide food for others, a scene provoking no drama, no strain, no fear. They relax as they employ a simple line and the gentlest of touches. This is a moment in which experience calms the challenge of concealed distance beneath the rolling waves. The Victorian viewers of the picture could not fully share this serenity. Hook was painting at a time of developing knowledge of the underwater world. His composition places the viewers awkwardly in relation to the vessel and reminds viewers of the difficulty of comprehending a deep sea. The picture conveys the stretching of time through successive generations and its subdivision through endless repetition of fishing procedure. This extensiveness of time summons up the immensity of the ocean.

1. For a detailed explanation of this development see Helen M. Rozwadowski, 'Technology and ocean-scape: Defining the deep sea in mid-nineteenth century', *History and Technology*, vol. 17 (2001).

2. Rozwadowski, 'Technology...' (2001), pp. 219-220.

3. Sabine Höhler, 'Depth records and ocean volumes: Ocean profiling by sound technology, 1850-1930', *History and Technology*, vol. 18 (2002), pp. 129-131.

4. Ibid., p. 124.

5. Rozwadowski, 'Technology...' (2001), p. 224.

6. Julian Reuherz, *Victorian Painting* (London: Thames and Hudson, 1997), p. 118. The 2013 exhibition *Amongst Heroes* recently demonstrated the breadth of this popular genre with a focus on Cornish scenes. The exhibition, curated by Roo Gunzi, included *Deep Sea Fishing*. (See the exhibition catalogue: *Amongst Heroes: the Artist in working Cornwall* (London: Two Temple Place, 2013)), http://tinyurl.com/z7o86xc (consulted 11 September 2016).

7. John Ruskin, *Modern Painters*, vol. v (1860), in E. T. Cook and Alexander Wedderburn, *The Complete Works of John Ruskin* (London: George Allen, 1903-1912), vol. vii, p. 342, http://tinyurl.com/kpxtosm (consulted 11 September 2016).

8. Ruskin, *Academy Notes*, no. v (1859), in Cook and Wedderburn, *The Complete Works...* (1903-1912), vol. xiv, p. 228.

9. John Bickerdyke, *Sea Fishing* (London: Longman's, Green, and Co., 1895), p. 267.

10. Ben Highmore, *Ordinary Lives: Studies in the Everyday* (London: Routledge, 2011), p. 6.

11. 'The Royal Academy', *Art Journal*, vol. 18 (1863), p. 113.

DISTANCE

CASSIE NEWLAND

CHATTERTON'S COMPOUND

Chatterton's compound was an adhesive invented by John Chatterton of the Gutta-Percha Company. It swiftly became one of the material mainstays of the submarine cable industry.[1] It was developed to address a long-standing problem in the manufacture of submarine cable whereby the layers of gutta-percha insulation would separate from each other and from the copper core.[2] Chatterton's compound was applied to the copper conductor before the application of the first layer of gutta-percha and also between every subsequent layer of gutta-percha. A further and final covering was sometimes applied to the finished core to aid in the adhesion of the hemp or jute wrapping.[3] Ayrton in his *Preliminary catalogue of the apparatus in the Telegraph Museum* gives the recipe for Chatterton's Composition as being by weight:

One part Stockholm tar
One part resin
Three parts gutta-percha.[4]

These ingredients were heated together to form a viscous liquid. The copper conductor or partially formed cable core would then be pulled through a hot bath of the compound immediately prior to the application of the gutta-percha.

Stockholm Tar is a pine tar, the name refers not to tar made or manufactured in Stockholm but to all tar exported by the Norrländska Tjärkompaniet. Known variously as The Swedish Tar Company or The Stockholm Tar Company, the company had been granted an export monopoly in 1648 by the King of Sweden.[5] This gave them exclusive rights over the export, carriage and sale of Swedish tar, ensuring that every barrel of tar produced in Sweden was brokered, shipped and sold exclusively by Swedish traders at whatever price the market would support. The moniker 'Stockholm' stems from the practice of burning the name of the port of export on the side of every barrel. As Stockholm had become the only legal port of export, Stockholm Tar became synonymous with Swedish tar in general. The Swedish Tar Company continued to trade under various names and in various guises for several hundred years. Gamble notes that the monopoly was still in place at the turn of the twentieth century.[6] The monopoly, though despised internationally, ensured that only tar of consistent quality was exported from Sweden. Buyers could be assured that all barrels had been inspected and graded. Stockholm tar consequently earned itself a reputation as not only being of a consistently good quality but as the very finest available. Kaye notes that even the lowest grade of Swedish tar was still considered to far outstrip its rivals from Russia and the United States in terms of quality.[7] Stockholm tar was therefore the product of choice for all naval, military and industrial purposes, indeed, it dominated the naval stores market well into the twentieth century.[8] Prices were (as the saying goes) reassuringly expensive, kept high by the Swedish traders.

Stockholm tar is produced using traditional methods, which appear to differ little either by region or by antiquity. Villstrand argues that the methods of production remained

static from 1600 onward.[9] Tar is produced in a structure known as a tjärdal, literally 'tar valley' in Swedish, as the method of construction involves the digging of a trench or ditch into the slope of a hillside. A pipe, or a timber trough is laid along the bottom of this trench. A funnel-shaped pit is then created at the high end by the erection of bank separating it from the downhill slope.[10] This creates the distinctive funnel shape earthwork which is to be found archaeologically. The pit is then lined with either birch bark of flat stones to prevent the tar seeping into the ground during burning. The funnel-shaped pit would be carefully stacked with pine timber, covered with peat or white moss and burnt in a controlled manner for several days until the tar runs down the trench and can be caught in barrels at the bottom.

The second ingredient in Chatterton's compound is resin. Other sources substitute the word rosin. These are not necessarily typographic mistakes or contradictory suggestions as rosin is simply a kind of resin. From the mid-nineteenth to the mid-twentieth centuries rosin was by far the most common type of resin in production. Rosin was a staple of the naval stores industry (which also included tar, pitch, turpentine and timber) and may be therefore be considered the only likely candidate for the 'resin' employed in the manufacture of Chatterton's compound. Rosin is a product of the pine tree. When wounded, a pine tree produces a gum to seal the site of the injury. This gum can be collected by tapping and distilled to produce two of the staples of the naval stores industry: turpentine and rosin. When the gum from a particular tree had been exhausted it was given over to the lumber industry to provide other naval stores, timber, tar and pitch.[11]

The rosin from the Longleaf pine is particularly plentiful and free-flowing and so the centre of world rosin production was therefore in the Longleaf pine forests of the south-eastern states of the USA. The 'piny woods' stretching from North Carolina, through South Carolina, Georgia and Alabama in a coastal band 60 to 80 miles (97 to 129km) wide, some 60 to 90 million acres (24 to 36 million hectares).[12] The largest producer of turpentine and rosin was North Carolina.

Frederick Olmstead, a travel writer in the 1850s, notes that North Carolina's prominence in the industry was due to several interacting factors, all of which had their roots in the slave economy and its ample labour supply. First, land in the south was generally worked for profit rather than subsistence. Whereas the pine forests of South Carolina, Georgia and Alabama could be profitably logged, cleared and turned over to the raising of plantation crops, such as cotton, the soil of North Carolina was generally unsuited to this. The only large-scale industry able to turn a profit in North Carolina (except rice in the squishy bits) was therefore 'turpentining', as the parallel practices of producing both turpentine and rosin were known. A second factor identified by Olmsted (writing in 1856, before the Civil

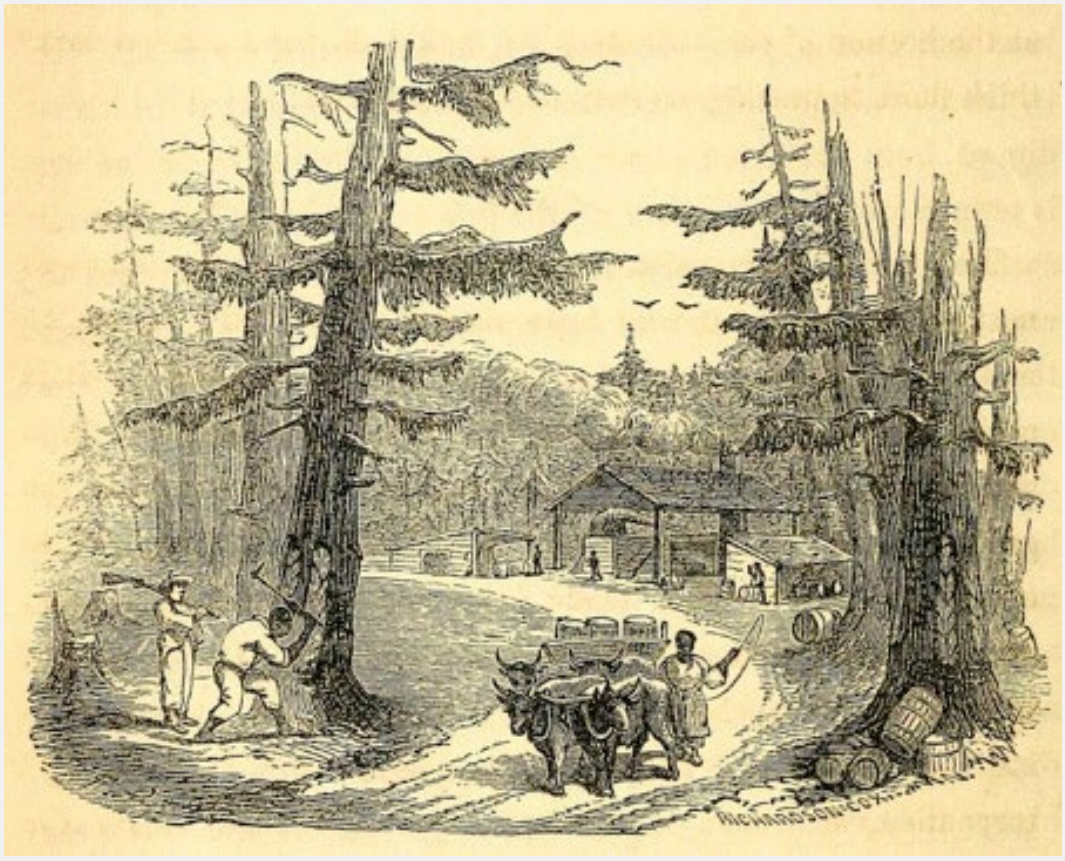


Fig. 1, F. L. Olmsted, *A journey in the seaboard slave states: with remarks on their economy* (New York: Dix & Edwards, 1856), p. 344. This is a North Carolina scene. Rosin is being collected from a pine tree (bottom left) and a forest distillery is in the background.

War and the subsequent abolition of slavery) was the vital importance of slave labour at the inception of the industry. He suggested that it was only the low-cost labour provided by an inherited slave stock (about 35 per cent of North Carolinian families owned slaves)[13] that allowed the labour-intensive practice of turpentining not only to turn a healthy profit but to develop in the area at all.[14] Indeed, the slump in naval stores production from throughout the slave-holding states after the American Civil War (1861-65) was not reversed until rising international prices for rosin and turpentine allowed the industry to run at full market wages.

The following description of turpentine collection and distillation is largely taken from Olmsted's experiences of travelling through the Old Southern States in the mid 1850s. The descriptions would still appear to be a valid characterisation of the industry in the 1870s because, as Outland notes:

> Gum harvesting changed none at all ... The tools and equipment also remained the same. Boxing axes, hacks, pullers, dippers, scrapers, and stills were neither improved nor replaced. This lack of advancement was not an unusual characteristic

of southern industry.[15]

Preparing a suitable forest began in November and ended the following March. These initial months were spent engaged in 'boxing'. Boxing was the cutting of an angled hole at the base of a pine tree approximately 20 to 40cms wide and 7 to 10cms deep. The box sloped inward towards the heart of the tree to create a kind of hollow container within the trunk which could contain one to two litres. The number of boxes cut into any given tree was dependent on size, with a large tree being able to sustain three boxes. A strip of bark about 10cms wide (or the width of a man's palm) was left between each box to sustain the tree. Outland notes that experience was an important factor in judging box placement. Factors, such as the angle of lean, trunk shape, and predominant weather conditions had to be taken into consideration.

Once the boxes were in place they were 'cornered', a process whereby triangles were cut into the top corners of each box to channel the gum. From this moment the gum would begin to flow into the box. To maintain the flow of gum the tree had to be 'chipped' at intervals (depending on the age of the box and the season) which involved cutting away a strip of bark directly above the box to reveal a new patch of undamaged phloem referred to as the 'face'. Repeated chipping led to a slow upward creep of the exposed face, with older trees being chipped to a height of three metres or more. The gum would be collected from the boxes using a 'dipper' (the same shape as the constellation).

The distilling process generally lasted between two and two and a half hours and resulted in two products, rosin and turpentine.[16] On heating to around 300°c the turpentine floated to the top and was run off into the condensing coil where it was cooled and decanted into barrels. The heavier liquid rosin remained in the still. This was then cooled until it had obtained the consistency of molasses at which point it was passed through a series of screens designed to filter out the debris and foreign matter acquired during harvesting. Rosin could be packed into cheap and shoddy barrels as it quickly set to a solid preventing leakage during transport.[17]

The UK was the largest single consumer of rosin, importing hundreds of thousands of barrels annually.[18] The vast majority of those barrels ended up on the wharves of the cable factories in London where they sat alongside the Stockholm tar from Sweden: two materials taken from trees, which though related by species, were separated by several thousand miles of Atlantic ocean. Inside the factories they were blended with the gum of a third tree - the exotic *Palaquium gutta* from the Malay peninsula - to form Chatterton's compound. This truly international product, the first step toward synthetic plastics, revolutionised the submarine cable industry allowing the tendrils of Empire to snake around globe. When people refer to London as the 'melting pot' of the world, it is easy to imagine that pot to be full of Chatterton's compound.

1. S. Roberts, *Distant Writing: A History of the Telegraph Companies in Britain between 1838 and 1868* (2006), p.128, http://distantwriting.co.uk (consulted 3 September 2016).

2. W. E. Ayrton, *Preliminary catalogue of the apparatus in the Telegraph Museum* (Bristol: Bristol Selected Pamphlets, 1877), p. 14.

3. J. Munro, *Nerves of The World*, (unknown publisher, 1895), transcribed by B. Glover, (2008) http://tinyurl.com/zq25lv4 (consulted 3 September 2016).

4. Ayrton, *Preliminary Catalogue* (1877), p. 14.

5. R. Outland, *Tapping the pines: the naval stores industry in the American South* (Louisiana State Univesity Press, 2004), p. 9.,

6. T. Gamble, 'How The Famous "Stockholm Tar" of Centuries of Renown Is Made' (1914), in T. *Gamble Naval Stores: History, Production, Distribution and Consumption* (Savannah, Georgia: Review Publishing & Printing Company, 1921), pp. 46-7.

7. T. P. Kaye, 'Pine Tar; History And Uses', *Third International Conference on the Technical Aspects of the Preservation of Historic Vessels* (San Francisco: San Francisco Maritime National Park Association, 1997), p. 1.

8. Gamble, *Naval Stores* (1921), p. 46.

9. N. E. Villstrand, 'Skogen, Bonden och Tjaran' (2003, updated 2007), http://tinyurl.com/h4h3ubp (consulted 3 September 2016).

10. B Hjulstrom, 'Organic Geochemical Analysis for pine tar production in middle Eastern Sweden during the Roman Iron Age', *Journal of Archaeological Science*, vol. 33 (2006), pp. 284-6.

11. Outland, *Tapping the Pines* (2004), p. 267.

12. Ibid., p.14.

13. J. G. Randall & D. Donald, *Civil War and Reconstruction* (Lexington: D C Heath & Co., 1961), p. 68.

14. F. L. Olmsted, *A journey in the seaboard slave states: with remarks on their economy* (New York: Dix & Edwards, 1856), p. 338.

15. Outland, *Tapping the Pines* (2004), p.127.

16. Ibid., p. 75.

17. Ibid., p. 77.

18. T. Gamble, 'The World Wide Consuption of Naval Stores', in Gamble, *Naval Stores* (1921), pp. 91-95.

CATALOGUE ENTRY D1 | DISTANCE

JAMES CLARKE HOOK (1819–1907)

WORD FROM THE MISSING, 1877

78 X 130 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

In many ways this painting is an analogue to Albert Goodwin's *The Toiler's Return* (Cat. D15); both appeared in the 1877 Royal Academy Summer Exhibition (nos. 126 and 1329). It shows the same generous sweep of beach and cliff on the right, and the grouping of mother, son and daughter is similar; only the baby is missing. But the threat hanging over Goodwin's figures has been visited on this family, and they have given up looking out for the returning boat. Their poverty is conveyed by the woman's stooped pose as she collects driftwood on the beach; the children play barefoot in the surf, they have set aside a toy boat. Seeing a slip of paper in a bottle washed up on the shore, they imagine that it might hold a message from their lost father.

The vivid light on the clouds, the moving waves and the figures' vibrant forms, with careful rendering of details such as hands, all offer a sense of presence and immediacy. The specificity of these insignificant, ephemeral lives is juxtaposed with the steady, impersonal power of the sea and the unyielding rock of the shoreline. The emphasis on environment and observation, blended with a hint of narrative, allows the viewer some freedom of interpretation. At least one contemporary critic read a lighter story into the image: 'A poor fisher-girl has come to the beach to gather drift-wood; and her little brother playing about, and, boy-like, looking for what flotsam and jetsam in his small way the sea may have cast up, has come upon a bottle, which has evidently been some time in the water, for a piece of seaweed has grown to it. He holds his prize up to the wondering eyes of his little sister, who stoops … that she may more readily catch a proper sight of the paper that is within, and which contains the "word from the missing"'.[1]

This fluidity of meaning is doubtless part of the painting's appeal, one that may have been intrinsically modern. Telegraphy, with its requirements for abbreviation and coding, had enhanced the recipient's role in understanding a message. In this painting, the apparently conflicting emotional cues of the children's playfulness and the bright sunlight alongside the woman's stooped form and the portentous title intentionally offer the potential for a range of interpretations. Similarly, the romantic serendipity of a message washed up like treasure among the driftwood is perhaps especially compelling in a technological era where miracles of distance are an issue, paradoxically, of calculation and precise engineering.

Hook's vivid treatment of the various pictorial elements elicited much praise, with the sea judged 'excellently liquid', and the painting offering 'a crispness and a smack of Nature in the rough'.[2] Another reviewer appreciated 'the intentness of the little girl'.[3] Most notable for the purpose of this exhibition though, was a long and lyrical review that builds to a eulogy on distance: 'A lime-kiln, grey-lichened like a rock, is in a niche in the mid-distance, nestled under the cliff; beyond is trembling, greyish colour on the sea, half light, half vapour. *The distance is most exquisite.* A waft of smoke trailing near the horizon tells of a steamer there. Far beyond that is a faint, undefined whitish lustre: cliff or cloud, who can tell? The picture is gloriously full of pure silvery light, dashed with subtle grey tones of shadow'.[4]

Hook had trained at the Royal Academy, becoming an Associate in 1850 and a member in 1860. He worked in a range of genres, but was particularly associated with seaside subjects; in 1877 he submitted two other paintings to the Royal Academy, *The Gull Catcher* (no. 182) and *Friends in Rough Weather* (no. 380).

NH

1. *'The Royal Academy Exhibition'*, *Art Journal* (July 1877), p. 198.

2. The Royal Academy: III', *Saturday Review of Politics, Science and Art* (19 May 1877), p. 614; W. H. Combes, 'Royal Academy Exhibition of 1877', *Tinsley's Magazine*, vol. 20 (June 1877), p. 588.

3. 'The Royal Academy: III', *Saturday Review*, p. 614.

4. *Athenaeum* (5 May 1877), p. 582, [emphasis added].

CATALOGUE ENTRY D2 | DISTANCE

WILLIAM LIONEL WYLLIE (1851 – 1931)

COMMERCE AND SEA POWER, 1897

91 X 152 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

Vessels with diverse functions share the same waters in William Lionel Wyllie's painting of the busy Thames. On the left sailing barges, sailing ships and steam ships engage in commerce, on the right the freshly-launched battleship *HMS Illustrious* is bound for fitting-out in the dockyards at Chatham. Suggesting the extent of marine technology's influence, Wyllie connects spectators to this bustling activity by placing them within the scene: in the foreground the wake of another, unseen, vessel spreads and disrupts the surface, a vessel from which we seem to observe the other ships. *Commerce and Sea Power* further suggests this extensive influence in that the horizon is lost in the indistinguishable blurring of what could be either masts at sea or industrial buildings on land; smoke and steam rise from and disguise both. Wyllie's picture alerts us to the close relationship between imperial trade and naval power in the late Victorian period. In Britain the telegraph first commenced and then grew as a commercial, potentially profit-making enterprise, but in the 1840s it was the construction of a line for the Admiralty that signaled its acceptance as a reliable means of communication.[1] Telegraphic messaging systems provided vital support for trade and for military prowess.

Commerce and Sea Power is one of many depictions of the Thames by Wyllie amongst a career focused on the sea. The *Art Journal's* review of the painting looks back to Wyllie's popular work on a similar theme, *Toil, Glitter, Grime, and Wealth*, which had been exhibited fifteen years earlier to great acclaim, described in the same magazine as 'remarkable'.[2] In the earlier work, Wyllie draws the viewer's attention to the human labour involved in the working life of London's great river; here in *Commerce and Sea Power* he focuses

on the vessels themselves, the technological machinery of empire, rather than the people operating it.

As well as painting marine scenes extensively, Wyllie also worked for many years as an illustrator of those subjects for the weekly periodical *The Graphic*. Wyllie himself had both naval and commercial interests in the sea; he worked for the White Star shipping line and he became increasingly involved with the Royal Navy in later life, sailing with the fleet during the First World War in order to make drawings. He was also a founder member of the Society for Nautical Research, campaigning for *HMS Victory*'s restoration at Portsmouth.

Wyllie began exhibiting at the Royal Academy in 1868 and this picture was shown there thirty years later (no. 210). At the same exhibition he showed four other pictures including *The harbour bar* (no. 883) and *Entrance to Barry Dock* (no. 886). Wyllie was elected to be ARA in 1889, RA in 1907, and RSA in 1927. The Corporation of the City of London holds a number of Wyllie's works. London Metropolitan Archives have some of his etchings of the Thames, and the Guildhall Art Gallery's collection includes two other of his paintings: *Scene on the Lower Thames* (1884) (which can be viewed in the Resistance section of *Victorians Decoded*), and *The Opening of Tower Bridge* (1894–5).

AC

1. For a more detailed discussion of this and the further commercial development of the telegraph in Britain see section 7.2 of Robert Wenzlhuemer, *Connecting the Nineteenth-Century World: The Telegraph and Globalization* (Cambridge: Cambridge University Press, 2013), pp. 168–176.

2. 'The Royal Academy, 1898', *Art Journal* (1898), p. 177; J. Penderel-Brodhurst, 'The Newest Associate of the Royal Academy', Art Journal (1889), p. 223.

CATALOGUE ENTRY D3 | DISTANCE

JOHN ATKINSON GRIMSHAW (1836–1893)

THAMES BY MOONLIGHT WITH SOUTHWARK BRIDGE, LONDON, 1884

75 X 127 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

This painting depicts the Thames from the South Bank just east of Southwark Bridge, looking west towards St Paul's Cathedral. A line of gaslights illuminates the city, which is otherwise shadowy and dark, but the river and sky are radiant with moonlight. The river is scattered with Thames sailing barges, which were important for goods transport; their sails are furled for the night creating a characteristic profile against the night sky. There are no distinct human figures, despite the sophisticated built environment and the street lighting.

The sky and river recede into the pictorial space, shining, rippling and paved with clouds, like a superhighway. The light of the moon is compared with the glowing points of gaslight, making a connection between cosmic energy and industrial lighting. The use of electricity was growing rapidly during this period, not least for lighting, as arc street-lighting spread through London and other industrial towns. Electric lights are not shown here, but they appear in other Grimshaw paintings, such as *Reflections on the Thames: Westminster* (1880, Leeds Museums and Galleries).

Telegraphy was by now well established throughout the British Empire: the way the moonlight pours down the river provides an image for the vast tracts of land and sea that were laid with telegraph cables, making the globe a vast, interconnected network. The distant moon, bringing light into this setting, is a reminder that electricity was a natural phenomenon. Furthermore it evokes the planetary scale of the imperial telegraphic project. There is an extensive rhythm of uprights across the painting, formed by the dark

posts in the foreground and reiterated by the furled sails, the towers and dome of St Paul's and the vertical stripes of light reflected on the water. This is counterbalanced by patterns of cloud and ripples in the sky and river suggesting pictorial depth and recession. Despite the overwhelming stillness of the picture, there is an implicit sense of flow in each individual element, from the bridge and the river to the clouds and the gaslights.

Grimshaw, who grew up in the north of England, was largely self-taught. His early landscapes are often considered to show Pre-Raphaelite influence, and it is thought that both theatre and photography had an impact on his aesthetic.[1] J. A. M. Whistler, a neighbour during the period when Grimshaw lived in Chelsea when this painting was made, is rumoured to have 'declared that he had thought he had invented pictorial "nocturnes" until he saw Grimshaw's moonlight pictures'.[2] Grimshaw worked prolifically, particularly during the 1880s while he was living in London. The majority of his work depicts moonlit landscapes but he also painted mythic or fantasy subjects (such as *Iris, Goddess of the Rainbow*, 1886, Peter Nahum) and brightly pigmented domestic scenes reminiscent of the work of James Tissot (such as *Dulce Domum*, exhibited at the Royal Academy Summer Exhibition of 1885, private collection).

Despite representation by the prominent gallery Arthur Tooth and Sons and respectable commercial success, Grimshaw only ever exhibited five pictures at the Royal Academy, and received little press attention: an *Athenaeum* article written in the prime of the artist's career and entitled 'The Private Collections of England' notes that 'A picture by Mr. Grimshaw, whose name is unknown to us, renders with acceptable tact tree shadows in moonlight, barring the long vista of a level road'.[3] Much of Grimshaw's work remains in private collections.

NH

1. See Frank Milner, 'The Mystery of the Self-Taught Pre-Raphaelite', in Jane Sellars (ed.), *Atkinson Grimshaw: Painter of Moonlight* (London: Mercer Art Gallery and Guildhall Art Gallery, 2011).

2. Guy Ragland Phillips, unpublished memoir, quoted in Mark Bills, 'Atkinson Grimshaw in London', in Sellars, *Atkinson Grimshaw* (2011), p. 76.

3. 'The Private Collections of England', *Athenaeum* (13 September 1884), p. 341.

CATALOGUE ENTRY D4 | DISTANCE

WALTER GREAVES (1846–1930)

THE POOL OF LONDON, C.1863–1869

61 X 102 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

Walter Greaves, whose father was a boat-builder, painted many pictures of the Thames at night. This one depicts the stretch just east of London Bridge, where the river opens out. The foreground expanse of flat open water is juxtaposed with the dense city arrayed along the opposite bank, forming a thick, straight, high horizon. This effect, combined with the powerful horizontal emphasis of the picture, produces an unusual, unsettling perspective, and the water seems to shift and tilt, producing a queasy floating sense of disorientation. Dark boats are silhouetted against the soupy water.

The limited, greenish palette suggests a murky underwater world: the same tonal effect is used for sky, river and glowing lamps, so that air, water and light all share the same opaque luminescence. The closely packed, straight line of buildings is soft and smudgy: details are indistinct but the roofline is composed of protuberances, such as chimneys and gables. The masts of the boats participate and punctuate this uneven rhythm, producing a skyline that resembles a ticker tape read-out. This effect is reproduced in the pattern created by the grids of black windows on the row of buildings. The first telegraphic stock price ticker systems were being developed during the years this painting was made, with Thomas Edison patenting the Universal Stock Ticker, which could print about a character per second, in 1869.[1] The trading of stocks is a metaphor for the correspondence between the passage of material things and the transmission of messages and signals.

The river was essential as a conduit for the transport of goods through industrial London. A strong lateral pull seems to stretch the image, emphasised by the continuation of all

elements across the right and left edges of the picture. The river itself is described by layered lateral brushstrokes, underlining the flow across the pictorial plane. The boats, in particular, are cut off at each side; the one on the left, which contains a human figure, has just been moored but the current is pulling it away from the centre of the picture. The diagonal of the mooring rope is answered by the one created by the little fleet of boats on the right, which both recede into the depth of the picture and stretch across it, creating a sense of space in both directions.

Walter Greaves was knowledgeable about boats and spent his life on the Thames; his father was a boat-builder who had taken J. W. M. Turner out on the river. Walter had received no formal training but he and his brother Henry had both worked as assistants to J. A. M. Whistler; their own work received very little attention during their mentor's lifetime. When a painting by Henry was included in a Dudley Gallery exhibition alongside one of Whistler's, much of the commentary was negative, with one reviewer labelling him 'the ghost of a ghost and a shadow of a shadow'.[2] The controversy was more intense when Walter Greaves received his own exhibition at the Goupil Gallery in 1911, some years after Whistler's death. Some critics hailed him as 'a newly discovered master' or wondered 'that Whistler never did anything to bring to him the fame which he must have known was his due'; others were dismissive.[3] One particularly cruel attack judged him 'artistically speaking, deaf and dumb and blind', going on to end with the hypothesis that 'if Whistler were to come to life again I am sure he would kill Greaves. Any sensible jury would acquit him if he did'.[4] Walter Greaves remains very much in the shadow of Whistler's reputation.

NH

1. Edison's patent had a range of less commercial predecessors going back to the 1850s. See https://en.wikipedia.org/wiki/Ticker_tape (consulted 2 September 2016).

2. 'Dudley Gallery', *Illustrated Review: A Fortnightly Journal of Literature, Science and Art*, vol. 6, no. 98 (November 1873), p. 380.

3. 'By the Newly Discovered Master: Works by Walter Greaves', *Illustrated London News* (13 May 1911), p. 691. 'Pictures by Walter Greaves Reveal the Tragedy of Art', *Chicago Tribune* (7 May 1911), p. 6.

4. R. Strong, 'The Greaves Humbug', *Saturday Review of Politics, Literature, Science and Art* (3 June 1911), pp. 675–676.

CATALOGUE ENTRY D5 | DISTANCE

JOHN BRETT (1831 – 1902)

ECHOES OF A FAR-OFF STORM, 1890

107 X 213 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

This painting, suffused with atmospheric golden light, depicts unsettled weather on the Cornish coast. The turbulence, denoted by dark clouds and a rough sea, is in the distance; the foreground is tranquil in comparison, but the pooled water ripples gently in response to remote currents. The canvas is divided vertically into three layers, with the middle section, of sea and low cloud, showing the direct effects of the storm; the lower and upper layers, comprising a sandy beach with pooled water and a blue sky with sparse, high cloud, show a faint response to the energy evident in the middle section.

Each section merges with the others, in material and colour as well as form: water pools into hollows in the foreground and crashes against the distant rocks, splashing into the sky. The golden sand corresponds to the yellow light in the sky, and the sea reflects purplish storm clouds, also picked up in the dark rocks. In form, the picture is composed of a series of echoes: ripples in the pooling water are answered by the impressions they have made in the sand; the scalloped edges of the pool echo the creviced edges of the rocky outcrops; and the persistent waves on the sea rhyme with the low-hanging cloud in the sky. A flock of birds on the sand reprises the small group of gulls on the left of the picture.

The result of these slippages and repetitions is a disorientating pictorial space, a landscape that is as abstract as it is representational. The palette is unexpected for a British landscape, its heat and saturation echoing colours that were often used to depict the Middle East, although such unorthodox colours were typical of Brett.[1] As with so many of the paintings in the Distance room, there are no human figures, but the painting's title suggests the scene is being witnessed. There is a distinct sense of temporality: an echo is ephemeral, a sound that passes through time as well as space. Ripples, waves and clouds are equally

transient; even the rocks and sand are manifestations of years of weather.

In portraying rhythmic and repetitive forms of light, sound and motion in nature, Brett explores phenomena that had made enormous impacts upon post-industrial society. The telegraph, though still in constant use, was no longer cutting-edge technology when this painting was made; modern society was fully acclimatised to the significance of energy waves, pulses and patterns. By 1890, when the first 'phonograph parlor' opened in San Francisco, the potential of technologies that reproduced electrical signals as sound had become apparent; the telephone was already widespread, and the Gramophone had been patented in 1887. Pictorially, a distant storm, in which a series of electrical discharges are experienced first through sight and then through sound, was a perfect representation of these technological and commercial trends.

This picture was exhibited at the Royal Academy in the 1890 Summer Exhibition, along with three others. Their avant-garde approach was not particularly successful among commentators. One wrote that the 'three "Cornish Sketches" (430-2), … reveal much of [Brett's] power in seizing optical effects of light on sea and rocks, but … are not the more attractive because, as the artist assures us, they are "one-sitting sketches not retouched"'.[2] Brett's emphasis on pattern, repetition and persistence – elucidated by the title – seems lost on the *Illustrated London News* critic, who complained, apparently without irony, that *Echoes* was 'too suggestive of shore scenes already painted by him'.[3] Such comments suggest that Brett, along with two colleagues, were justified in being 'chief … Academic inveighers against the art-critic'.[4]

As a young painter, Brett had been associated with the Pre-Raphaelite movement; he focused on landscapes throughout his career, and was a keen astronomer. In 1890, Brett was elected Master of the Art Workers' Guild, a society of which he had been a founding member.

NH

1. The combination of orange and purple is particularly reminiscent of William Holman Hunt's very famous mid-century picture *The Scapegoat*, of which significant portions were painted in plein air at the Dead Sea (two versions, 1854–6, Lady Lever Art Gallery, Port Sunlight and Manchester Art Gallery).

2. 'Art Exhibitions', *Illustrated London News* (5 July 1890), p. 24.

3. 'The Royal Academy' *Illustrated London News* (17 May 1890), p.619.

4. The other 'inveighers' were Professor Richmond and Mr. Frith. M. H. Spielmann, 'Glimpses of Artist-Life: VIII', *Magazine of Art* (January 1890), p. 120.

CATALOGUE ENTRY D6 | DISTANCE

HENRY MOORE (1831–1895)

THE WRECK, 1875

43 X 66 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

This painting shows a wide sea under a stormy sky, all suffused with a strange, atmospheric light. The location must be coastal, as signified by the breaking waves, but no land is in sight. A skeletal wreck lies in the middle distance near the horizon; sea spray is showering through its punctured form. Sea and sky mirror one another, appearing to stretch away in all directions; the wideness of these expanses is enhanced by their formation of uninterrupted borders at the top and bottom of the canvas. The wreck interrupts this all-over pattern, answered by a break in the clouds above to create a kind of diagonal symmetry, the dark form of the wreck balanced by the bright blue of the sky. The result is a composition that appears wild and natural, but relies on an underlying mathematical structure.

The boat and its environment embody interactions between knowledge and the natural world, visualised here as pattern and disorder. Such relationships resonated with recent developments in science and technology, particularly in a marine context. Electricity was a natural phenomenon that had been harnessed and was being put to a rapidly expanding range of uses, and the waveform was central to electricity, particularly since the development of alternating-current systems. Telegraphic signals were transmitted as shaped pulses of current which syphon machines recorded as waveforms, enhancing the knowledge that a varying series of waves could encode complex information. The perforated form of the boat, through which the water washes, manifests the permeability and perhaps predicts the obsolescence of matter in a world where long-distance communication was becoming liberated from paper and ink, to emerge as energy pulses conducted through telegraph

or telephone. The waves break rhythmically but not evenly, as though beating out a message, while rolling clouds answer the pattern.

Physicists were also investigating thermodynamic entropy, a principle that was based on the idea that energy was subject to transformation and was not an indestructible particle that had mass. Entropy considers the dissipation of energy as it transforms from one type to another in any physical process.[1] The sea offers an interesting illustration of the subject: it derives its energy directly from the sun and the weather, creating a continuous, cyclical pattern of energy transfer (the tide goes in and out and one wave is followed by another, despite variations in magnitude). The motion of the sea, in turn, enacts a particularly destructive and uncontrollable form of entropy, as exemplified by the wrecked boat.

The sea also symbolised the British imperial project, driven by naval technology and, by the 1870s, reliant on submarine telegraphy. Given the associations between naval power and British expansion, the choice of a wrecked vessel as the subject of this painting seems significant. There was considerable dissension about Britain's commitment to an aggressive foreign policy, not only because of the brutality it involved but also because of the resources it consumed. Moore's wreck is so dark and broken by the motion of the sea that its original form has been obliterated. But the spray of seawater emerging from the old hull and cascading through the air resembles the spout of a whale, a sign of respiration, suggesting an oblique return to associations with nature, rhythm and renewal, as well as scale.

In terms of subject matter and its coastal location, this is a slightly more conventional painting than Moore's later work *Summer Breeze on the Channel* (1893), also in this section of the exhibition. Its limited palette and close attention to the effects of cloud and water are striking indications of the direction Moore would take with his work over the coming decades, as he became ever more immersed in the abstractions of rhythm and light in a marine context.

NH

1. A good and straightforward description can be found here: http://tinyurl.com/j7dfaml (consulted 17 September 2016).

CATALOGUE ENTRY D7 | DISTANCE

JAMES CLARKE HOOK (1819 – 1907)

DEEP SEA FISHING, 1864

84 X 61 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

Alongside all the portrayals of space and distance in this section of the exhibition, this painting evokes a startling sense of proximity. It depicts three fishermen trailing lines from their moving boat. The weather-beaten faces on the right resemble one another, implying that this is a family enterprise: the central fisherman might be the father of the others. Despite the collaborative nature of their work, each man seems lost in his thoughts as he gazes along his line, held with a steady, practised hand.

The unusual portrait format and composition has the viewer occupy the water, peering upwards, like a fish, along the trailing lines into the men's faces. The boat's painted wooden boards are dramatically foreshortened and vividly tactile; the vessel fills and overlaps the canvas on the upper three sides, emphasising the sense of distance below. The swirling green water is rendered with a textured build-up of paint that shifts between transparency and opacity, conveying both depth and movement. In contrast, the sky above the boat is soft and even, a heavy curtain of diffuse cloud.

The harmonious palette suggests that these figures are familiar with their environment: the boat's hull is painted in a watery blue, but the tanned sail picks up the warmth of the men's faces. The boat's robust solidity is in contrast with the wild, insubstantial water. This maps a relationship between the accurate measurement of physical distance, marked by solid increments, and the abstract notion of distance, watery with slippage and relativity. Distance is also conveyed in potential terms, introducing tension and drama: the splashing water and dragging lines show that the boat is moving quite rapidly away from the picture plane, so the distance between the viewer and the subject is always on the verge of increasing.

The trailing of lines from the boat mimics on a diminutive scale the industrial operation of laying submarine cables. By 1864 this had been achieved across the English Channel and attempted four times over the much wider expanse of the Atlantic, where the stable connection would be made in 1866. The painting emphasises the transition between air and sea: both submarine telegraph cables and fishing lines passed through an underwater world, alien and inaccessible from the air. Similarly, telegraphic signals passed from text to code (transmitted in the form of electrical pulses), then back again. For the consumer, the raw electrical pulses are alien and unintelligible; they must be transformed or tamed before receipt. For the fishermen, the lines perform a primitive form of contact signalling, as they wait to feel a bite from below the water. Telegraphic signalling also relied on dexterity, with operators becoming highly skilled and deft in tapping out codes using a telegraph key (experienced operators could recognise one another from their distinctive tapping styles).

This was a prolific period for Hook; although he did not submit this painting to the Royal Academy he showed five others there that year, including *From Under the Sea*, which received positive attention. *Deep-Sea Fishing* was included, however, in a posthumous show at the Winter Exhibition of the Royal Academy in 1908. An admiring reviewer comments, 'As the inscription on the sturdy, picturesque boat makes clear, "Deep Sea Fishing" is one of many vigorous reminiscences of life on the Cornish coast'. Since Hook travelled frequently to coastal locations during the 1860s, 'reminiscences' presumably refers to the technique of working up *plein-air* sketches in the studio, or perhaps to the age of the painting. The reviewer goes on to establish the late artist's status as a longstanding Royal Academician: 'Until he retired a year ago, Mr. Hook was the Father of the Academy, inasmuch as he had been one of the "Faultless Forty" since 1860, nine years longer than Mr. Sant, sixteen than Mr. Leslie'.[1]

NH

1. 'Passing Events', *Art Journal* (February 1908), p. 58.

CATALOGUE ENTRY D8 | DISTANCE

HENRY MOORE (1831–1895)

SUMMER BREEZE IN THE CHANNEL, 1893

61 X 101.5 cm
ROYAL ACADEMY OF ARTS

This astonishing, strikingly modern painting was Moore's diploma submission on becoming a member of the Royal Academy, where it has remained ever since. It shows two ships far away on an otherwise uninterrupted ocean. Moore's assured technique encompasses a range of brushwork, from dense, tossing waves to the loose impressionism of the clouds to the finely blended hazy line of the horizon. The effects of aerial perspective, which make far-away objects appear blue, are both explored and undermined by the pervasive blueness of the whole scene. The patterns of waveforms echo the rolling clouds in the sky, but the weight of the water on each crest is viscerally described, so that the behaviour of each element – water and air – is quite distinct.

Moore refined his subject matter to produce full-scale paintings that were effectively studies of sky and waves, an approach contemporaries recognised as new and progressive. The way the distant ships harmonise and merge with powerfully atmospheric surroundings emphasises that phenomenology and the environment – not the vessels – comprise the subject of the picture. In 'A Modern Marine Painter' of 1890, critic P. G. Hamerton elaborates on the artist's revolutionary style, declaring him thoroughly modern 'in his separation from all marine painters who have preceded our own times', 'distinctly severed from the past'.[1]

Despite the overwhelming predominance of blue, the palette is warm and varied. Many new artificial pigments became available during the late nineteenth century, including a wide range of intense blues, which were paradoxically often used to depict the natural world (in

Pre-Raphaelite and Impressionist work, for example). The modern look of Moore's work suggests that he may have made use of this expanded tonal range. Critics dubbed his style *'note bleue'*, a term that described his prevailing palette, connected him with Whistler's fashionable musical references and also signified Moore's popularity on the Continent, particularly among French painters and critics.[2]

Hamerton notices 'that he ventures upon the true blue reflected from the sky'.[3] There had been considerable scientific interest in optical blueness during recent decades, exemplified by John Tyndall's famous 1869 investigations. This work was developed by James Clerk Maxwell, whose 'Tyndallic Ode' offered a humorous, lyrical commentary:

> What gleams are these of heavenly blue?
> What air-drawn form appearing,
> What mystic fish, that, ghostlike, through
> The empty space is steering?[4]

This poem, and John Ruskin's uneasy description of Tyndall's experiment as 'putting the sky in a bottle', not only made oblique reference both to vastness and miniaturisation, but also indicated the way that such research went to the very heart of questions about religion, nature and humanity's place in the world.[5] Towards the end of the century, such preoccupations intensified as the apparently ghostly and spectacular technology of early cinema emerged alongside the rise of spiritualism as belief, practice and entertainment.[6]

There is something otherworldly about *Summer Breeze*, with its perfect, unpeopled ships – ghostlike or illusory, like *The Flying Dutchman* – in the distance. It was its ethos of spectacular detachment, as much as the palette and the subject matter, which was so absolutely of its time. An exchange between Moore and Hamerton demonstrates tension around the pervasiveness of technology, with the artist responding defensively to the critic's suggestion that instantaneous photography must have aided his study of waveform, insisting 'all his pictures … are either direct from nature or painted from his own studies made at sea'. Hamerton would not fully accept Moore's position, reiterating that 'It seems impossible that any artist who observes transient phenomena can have failed in these days to gain some knowledge from instantaneous photographs'.[7]

Distance was evidently a persistent subject. An 1887 review of Moore's Clearness *After the Rain* could equally be applied to *Summer Breeze*. It describes 'an ever-shifting wilderness of blues, clear, opaque, and semi-transparent as the light allows… The vastness and loneliness of the "waste of waters wide and deep" are emphasized by the few sails which, separated from each other by leagues of sea, pass on the horizon'.[8]

NH

1. P. G. Hamerton, 'A Modern Marine Painter', *The Portfolio: An Artistic Periodical*, vol. 21 (January 1890), p. 88.

2. 'Mr. Henry Moore … contributes three magnificent examples of his finest work – all of them in his favourite note bleue … one … is almost too blue for nature …. as studies of sea and sky they probably equal anything the English school can show'. Editor, 'The Royal Academy Exhibition: II', *Magazine of Art* (January 1893), p. 256. Another critic notes that 'his reputation is European … and has been greatly honoured at Paris and other Art centres.' 'The Royal Academy Elections', *Art Journal* (June 1893), p. 192. During his career, Moore received a Médaille d'honneur and was made a Chevalier of the Légion d'honneur.

3. Hamerton, 'A Modern Marine Painter' (1880), p. 88.

4. Tyndall presented his experiment at the Royal Institution, 15 January 1869, to accompany his lecture 'On Chemical Rays of the Light of the Sky'. James Clerk Maxwell wrote his 'Ode' in 1871. For more on this, see D. Brown, *The Poetry of Victorian Scientists: Style, Science and Nonsense* (Cambridge: Cambridge University Press, 2015).

5. '… I'll thank them the men of science – and so will a wiser future world – if they'll return to old magic – and – let the sky out of the bottle again, and cork the devil, in'. J. Ruskin, letter to Charles Eliot Norton, 1 May 1869, J. L. Bradley and I. Ousby (eds.), *Correspondence of John Ruskin and Charles Eliot Norton*, (1987) (Cambridge: Cambridge University Press, 2011), p. 135.

6. See, for example, S. Natale, *Supernatural Entertainments: Victorian Spiritualism and Media Culture* (University Park, PA: Penn State University Press, 2006).

7. P. G. Hamerton, 'Mr. Henry Moore's Marine Pictures', *The Portfolio: An Artistic Periodical*, vol. 21 (January 1890), p. 110.

8. 'The Royal Academy', *Athenaeum* (11 June 1887), p. 773.

CATALOGUE ENTRY D9 | DISTANCE

WILLIAM AYERST INGRAM (1855 – 1913)

EVENING, 1898

104 X 182 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

The pink-tinged clouds are lit from below as sunset occurs, giving them sculptural form. Golden-hued sky stretches across the broad horizon. The clear atmosphere allows the viewer to see for miles. The water heaves and shifts, throwing up mountainous forms, heavily shadowed on our side. Ingram uses one far-off sail to indicate the immense scale of the scene. The soothing warm light from the distant horizon is countered by the chilly, gloomy bulk of intervening waves.

This picture was exhibited at the RA in 1898 (no. 30). At the same exhibition Ingram showed two other pictures: *Derelict* (no. 536) and *A breezy day* (no. 562). The *Athenaeum* reviewed the picture, finding the treatment of the water better than the clouds: '"Evening" (30); where the surface of an opaque sea is excellently treated, is fresh, and if the clouds were less painty it would be thoroughly welcome'.[1] The work was also shown to an East End public at the South Londondon Art Gallery in 1899.[2] Some critics found his colour and light effects to be overdone on occasion. He could produce work that was 'luminous in tone' or else 'rather lurid and opaque'.[3] The composition of Evening can be compared to *Schooner On the High Seas* (Falmouth Art Gallery, n. d.).[4]

Ingram, an artist with a base in Newlyn, and later Falmouth, and a studio in Chelsea, was known as a traveller to distant spots of the globe through his exhibition of marine landscapes, oils, watercolours and sketches relating to his travels particularly to Australia. He was often bracketed with Henry Moore as a specialist in painting the sea. Two pictures by Moore are included in this section of the exhibition. Indeed the *Saturday Review*

speculated that 'Mr. Ingram must be tired of hearing that some of his work resembles Mr. Moore', going on to emphasise their shared merits. In both cases their work was said to be based on careful observation: 'both have been so lucky, or so observant, as to perceive some peculiarities in the forms of waves, billows or rollers which, while they are eminently difficult to draw, are well worth the attempt'.[5] Observation, or 'fidelity', was often the keynote of critics' responses to his work; a lack of exaggeration and broad treatment avoiding finicky detail were appreciated.[6]

Ingram was elected to be a member of the Society of British Artists in 1883. He was also founder of the Anglo-Australian Society of Artists, and its President in 1888. The society was instrumental in bringing the work of British artists to Australia.[7] A journal item of 1889 about the Anglo-Australian Artists exhibition (superintended by Ingram) at the National Gallery in Sydney (also travelling to Melbourne and Adelaide) mentioned the inclusion of twenty etchings by Ingram's friend J. A. M. Whistler as well as works by a number of artists featured in *Victorians Decoded: Art and Telegraphy*: G. F. Watts, F. Leighton, W. L. Wyllie and S. J. Solomon.[8] It is interesting to think that the waves, billows and rollers in his pictures represent the distance across which (at his instigation) artworks were physically transported.

CA

1. *Athenaeum* (18 June 1898), p. 797.

2. Information from object file, Guildhall Art Gallery.

3. *Graphic* (18 Dec 1886), p. 651.

4. See Falmouth Art Gallery website for detailed biography and reproduction of this work, http://tinyurl.com/h7vfd6z (consulted 11 Sep 2016).

5. *Saturday Review* (4 Feb 1893), p. 124.

6. 'Mr. Ingram, it is evident, has long been a close observant of waves', *The Field* (21 Feb 1885), p. 217; '"Cloud" represents with rare fidelity, a cloudy but luminous sky vividly reflected in the calm sea', *Graphic* (18 Dec 1886), p. 651; 'His methods are broad and straightforward'; 'Mr. Ingram's work is spontaneous and inevitable', *Academy* (30 May 1914), p. 694 and p. 695.

7. 'Art in October' [re Oct 1889] p. iii, in 'The Chronicle of Art', *Magazine of Art* (January 1890).

8. *Academy* (26 Jan 1889), p. 64.

CATALOGUE ENTRY D10 | DISTANCE

JAMES HENRY NIXON (1802 – 1857)

QUEEN VICTORIA'S PROCESSION TO THE GUILDHALL, 9 NOVEMBER 1837, 1838

142 X 173 cm

GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

This painting depicts the procession of Victoria's visit to lunch with the Mayor at the Guildhall. It was the young Queen's first public appearance since her accession on 20 June; she was only eighteen years old. The procession is passing the south side of St Paul's. The Guildhall Archive identifies key members of the procession: 'the Common Cryer carrying the City Mace and the Swordbearer wearing the fur cap. Behind them rides the Lord Mayor in his Coronation robes and bearing the Pearl Sword point upwards. Alongside the Lord Mayor walks a Beadle followed by the footmen in state liveries'.[1]

Nixon has chosen a viewpoint that looks back along the route, showing off the eight grey horses and the Queen herself, sitting inside the carriage, tiny amid the opulent surroundings. The palette makes a clear distinction between the scarlet flags and livery of the guardsmen, which stands out against the coats of the horses and the gold of the carriage, and the more modest browns and greys worn by the onlookers. The scene is dramatically lit, with sun bursting through grey clouds to fall upon the procession like a natural or divine blessing.

Victoria described the scene vividly in her journal, recounting her morning routine before continuing: 'Dressed for the Lord Mayor's dinner, in all my finery. At 2 I went in the state carriage and 8 horses … Throughout my progress to the City, I met with the most gratifying, affectionate, hearty and brilliant reception from the greatest concourse of people I ever witnessed; the streets being immensely crowded as were also the windows, houses, churches, balconies, every where'.[2]

In distinction from many of the works in the Distance section of this exhibition, where distance is conveyed through a sense of disorientation and emptiness, the Nixon painting is anchored by specific landmarks and crowded with human figures. The rank of each member of the procession can be identified: the costumes act as a code to make the personnel legible. The members of the crowd are also differentiated, with a range of types and responses to the event. A matron stands earnestly in the foreground, gazing straight ahead, while a tall, dashingly dressed man at the front of the crowd plants his feet wide and stoops far over to get a better view of the spectacle. Many of the men have removed their hats as a sign of respect. On the far left a man holds a little girl up in the air, but she looks away from the procession, innocently indifferent, straight out of the painting.

The fluttering pennants lining the street animate the scene and suggest that there is a brisk breeze. This emphasises the idea of flow, implying that traffic, goods and information, just like the procession, will find a natural steady passage through the city's streets. At the same time, the picture is congested and busy: the orderly formation of the procession is compared to the almost anarchic multiplicity of the crowd, waving from every window and perching precariously on every ledge. The little dog in the foreground offers light diversion from the solemnity of the subject matter, but it also embodies a potential threat of chaos and congestion: it is positioned playfully, perpendicular to the direction of flow, its face irritatingly obscured by a large hat. This is one of the earliest paintings in this exhibition, produced in the early days of electrical telegraphy.

This painting was exhibited at the Royal Academy exhibition of 1838, where the catalogue announced that 'You would have thought the very windows spoke'. F. H. Nixon, the artist's son, sold the picture to the Guildhall in 1880.

NH

1. Object file, Guildhall Art Gallery Archive.

2. 'Journal Entry: Thursday 9 November 1837', *Queen Victoria's Journals*, vol. 4, p. 9. Available at http://tinyurl.com/hw7d85p (consulted 2 September 2016).

CATALOGUE ENTRY D11 | DISTANCE

JAMES BAKER PYNE (1800–1870)

LAYING MONSTER TUBES FROM THE NEW RIVER, 1855

43 X 60 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

This is an unusual painting showing an improvement to London's infrastructure as it grew rapidly in the mid-nineteenth century. The scene, 'almost certainly in north London, most probably around Islington or Stoke Newington, or near the artist's home', which was in Camden Road.[1] Large cast-iron underground pipes (those in the foreground are probably terracotta) were used to modify the path of the New River, a seventeenth-century artificial waterway, and divert more water to the city. The lengths of pipework are scattered on the ground, alongside a deep trench that has been dug for them. Figures work along the route, leading away from the picture plane into the distance. A triangular structure holding a winch is shown in the middle distance; far beyond is a faint suggestion of the city's outline. The artist's signature is playfully foreshortened along the ground, stretching away alongside the trench, as though to establish the artist's work in dialogue with the labour represented in the picture.

The magnitude of the pipes is demonstrated by their position, allowing the viewer to see through them, and by their proximity to the human figures and horse. The figures' poses reveal the stress of hard labour: the man in red leans heavily on the harness, while the boy balances precariously on the edge of the trench. A resting figure on the right –a foreman or a worker on his break – offers a counterpoint to their discomfort. A large building

on the left, probably a public house, signifies the expansion of the built environment into the suburbs; a tree on the right stands for the natural landscape that was being edged out.[2]

The trench splitting the canvas illustrates a dichotomy at the heart of the subject matter. The progressive modernity that called for ambitious engineering projects was conceived in terms of efficient, frictionless flow: underground channels provided a conduit for water, sewage, gas and telegraphic messages; a year before this painting was made the Metropolitan Railway had been granted permission to build an underground train line. But the picture shows that this industrial revolution was powered by horses and, to a large extent, by human labour. The hard stones in the foreground are a reminder of this struggle, and the titular reference to 'monster tubes' hints at the grotesque scale of the project; it is easy to imagine the labourers referring to the great rounds of pipework in this way.

Distance is presented as work in this painting: each precisely cut section of cable embodies a certain amount of effort. The industrialised economy relied on efficient flow of goods and information over long distances; and the potential difference that sends current around a circuit – or electronic pulses through a telegraph cable – is rather like the pressure ensuring that water will flow through a plumbing system. In each case the magnitude of the signal or quantity of water has a relationship with the length and diameter of pipe or cable. The triangular structure holding the winch focuses the viewer's eye on the distance the system had to traverse; but in contrast to the clear lengths of tube, this extent is uncertain in the milky light. Pyne was famous for his aerial perspective, a chromatic device that conveys a sense of distance and recession. One obituary reads, 'His works were specially distinguished by pearly atmospheric colouring; his effects of light and air … were founded on an ingenious theory of chromatic harmonies'.[3]

Pyne exhibited regularly at the Royal Academy, but this painting was shown at the British Society of Artists, where he had been a member since 1839 (and eventually became vice-president). One favourable review appreciates that 'the geometrical forms are treated so cleverly, with the help of a little misty effect of light, as to render it a pleasing subject'.[4] There is a kind of ironic disingenuousness to the way this scene of industrial labour has been 'rendered pleasing' while losing none of its bite. Pyne's interest in social matters is also in evidence in his dramatic 1830s series depicting the Bristol Riots.[5] Pyne travelled widely through Europe, and provided the pictures for a series of Lake District lithographs published by Agnew's in 1853.

NH

1. *National Art Collections Fund Annual Review* (1994). The Guildhall Art Gallery Archive notes state that 'in 1855 Pyne was living at 43 Camden Road'.

2. 'The building to the left is such a significant size and style that I have checked through our archives for possible identification. From its design I am inclined to say that it is a public house.' Letter, Mr D. Witney of Finsbury Library to Ms Knight, Corporation of London (10 May 1994).

3. 'The Late Mr. J. B. Pyne', *Illustrated London News* (20 August 1870), p. 193.

4. 'Fine Arts', *The Lady's Newspaper* (29 March 1856), p. 201.

5. Pyne was a native of Bristol and had studied under Francis Danby, an early member of the Bristol School. The Queen Square Riots of 1831 were a response to the Lords' rejection of the second Reform Bill, which would have given growing industrial towns including Bristol greater representation in the House of Commons.

CATALOGUE ENTRY D12 | DISTANCE

W. J. BAKER (1800–1870)

POOL OF LONDON, 1892

50 X 69 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

This painting offers a highly congested depiction of the Pool of London, east of London Bridge, by day. A central thoroughfare leads into the depth of the picture, where the familiar profile of St Paul's can be seen in the distance. Crowds of ocean-going vessels throng the edges of the river, obscuring the shore, and the air is filled with smoke and steam, drifting up to blend with the thick grey banks of cloud. In the foreground, blackened men are working on barges loaded with coal.

A progressive tonal lightening leads into the picture, from the coal barges to the white stones of St Paul's, exaggerating the aerial perspective that helps to give a sense of depth. The palette reinforces the industrial subject matter: the blacks, greys and rusty reds are redolent of naval engineering and London skies, but also evoke the fiery furnaces that power the steam engines. Older vessels are arrayed alongside more modern boats, an anarchic accumulation of technology building up from both sides of the canvas.

This picture contrasts dramatically with the same subject painted by Walter Greaves. Abstract and dreamlike in comparison, Greaves's painting looks across the river rather than down it, and depicts shadowy, indistinct buildings and boats that seem to replicate one another. Baker's Pool of London is a jostling bustle in comparison: the proliferation

of unique vessels, with their rigging and sails, describes a crowded, cacophonous milieu negotiable only to the initiated.

The river provides an important thoroughfare through the city, a role that is demonstrated by the diffuse light falling on the water, creating a shining path leading into the picture. This promise is diluted though, by the two coal barges, each towing further vessels, which both try to proceed along the river, making the way ahead seem narrow, almost inadequate. The river's edges are undefined and overburdened with information: manned craft, their active participation signified by figures on deck or funnels pumping out exhaust, emit signals liable to travel in all directions at once, across the river as well as down it. The layers of rigging resemble clogged telegraph wires, in which messages sometimes seemed to get lost or garbled. The boatmen hard at work, arms raised, outstretched or akimbo, perform a kind of unconscious semaphore, their roles, actions and intentions apparently legible to one another but opaque to the uninitiated.

The painting offers a somewhat ambivalent portrayal of industry, commerce, and imperial power, all of which depended both upon the Thames as a shipping route and on efficient distribution – and sometimes containment – of information. Although this busy working stretch of river is illustrated with confidence and energy, the composition lacks order. The river is open in the foreground, but a bridge with the city gathered behind it obstructs the distance, and plumes of exhaust veil the way ahead. The combination of areas that have been effaced by clouds of smoke or sails and the intricacy of detail produce an impression of clutter, confusion and uncertainty. Baker's Thames appears to be a metaphor for a system running at maximal capacity after years of unchecked growth and development.

NH

CATALOGUE ENTRY D13 | DISTANCE

CLARKSON STANFIELD (1793–1867)

MEN-OF-WAR OFF PORTSMOUTH, HAMPSHIRE, 1855

47 X 77 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

This painting depicts a fleet of warships in the English Channel on a choppy sea, under a large cloudy sky. A dinghy full of sailors is travelling either towards the central ship or away from it. Although there is a buoy in the foreground and some distant vessels are shown far away on the horizon, most of the subject matter appears in the middle distance, and around the line of the horizon. This gives a sense of shallowness to the picture, but this is undermined by the cloud formation, which produces a telescopic effect, as though the clouds form a tunnel leading into an endless void. John Ruskin, who admired Stanfield and called him 'the leader of the English Realists', complained about his treatment of 'the sky, which is apt to be cold and uninventive … with a kind of hesitation in the clouds whether it is to be fair or foul weather'.[1]

The double impression of shallow flatness and illusory depth is probably a result of Stanfield's early training as a scene decorator in the theatre. He later progressed to easel painting, specialising in marine subjects; having spent a short time in the Navy, he had a sophisticated understanding of rigging and other naval technology. Ruskin had another complaint with regard to Stanfield's boats, which he considered to be accurate but also idealised: they 'always look newly painted and clean'.[2] In his 1836 book *Stanfield's Coast Scenery: A Series of Views in the British Channel*, the artist notes the strategic importance of Portsmouth Harbour, which was both protected by the Isle of Wight and 'unrivalled for capaciousness'. The Spit, a hidden sandbank 'marked out by buoys at regular intervals', was 'often the spot for the assembling of the English fleet'.[3]

In this painting, the presence of the Spit can be inferred from the rough foamy waves in the foreground. Marked by a connected string of buoys, its submerged bulk can be seen as a referent for the Anglo-French cable that was laid under the Channel in 1850. The carefully rendered rigging on the line of vessels, meanwhile, holds pennants as well as sails, providing infrastructure for a primitive optical signalling; rigging is also reminiscent of aerial telegraphic cables.

The calm, deep waters where the ships are gathered seem to rise behind the foamy shallows, an odd optical effect that gives the painting a theatrical and slightly mysterious atmosphere. The choppy waves in the foreground, meanwhile, establish a rhythm that is picked up by the distribution of vessels and splashes of red across the canvas. The brightly coloured British flag, standing out against a muted palette, heralds an era of increasingly aggressive colonial expansion facilitated by the Navy. The telegraph was considered an important military tool, particularly early on, before its enormous commercial potential had emerged.

Stanfield became a full member of the Royal Academy in 1835, and although this painting was not shown there he did exhibit three other works at the Summer Exhibition in 1855, including *Ilfracombe, North Devon* (no. 87) and *Dutch boats entering harbour* (no. 142). His European travels provided rich subject matter in addition to his British coastal scenes; he produced two series of Venetian views and a collection of European river lithographs. He also illustrated editions of works by Lord Byron and Samuel Johnson.

NH

1. John Ruskin, *Modern Painters*, vol. 1 (1843), in E. T. Cook and Alexander Wedderburn, *The Complete Works of John Ruskin*, vol. 3 (London: George Allen, 1903-1912), p. 226, 227. Online at http://www.lancaster.ac.uk/users/ruskinlib/Pages/Works.html (consulted 2 September 2016).

2. Ibid., p. 228.

3. C. Stanfield, *Stanfield's Coast Scenery: A Series of Views in the British Channel* (London: Smith, Elder and Co., 1836), p. 30.

CATALOGUE ENTRY D14 | DISTANCE

GUSTAVE DE BREANSKI (1859 – 1899)

HASTINGS, EAST SUSSEX, 1884

76 X 127 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

Ferocious winds batter the south-east coastal town of Hastings, huddled beneath a dark and stormy sky. The foreground shows waves crashing onto the beach at low tide; further along men struggle to pull a large object from the surf. The idea that they are recovering a wrecked boat, partially obscured by rushing water, is further evoked by a pile of dark seaweed tendrils resembling shattered timber, which lies prominently in the foreground. A smack, with distinctive reddish sails, lies out at sea beyond the breakers, while above the seawall a crowd gathers beneath a tall, skeletal structure, which could be a flagstaff, crane or possibly an electric 'moonlight tower', a high lamp for illuminating large areas (here serving traffic on the water as well as onshore, and presumably offering valuable signalling opportunities).[1]

Hastings had traditionally relied on its fishing industry, but after becoming connected by rail in 1851 the town became a popular tourist destination, leading to rapid westward growth and the opening of a pier in 1872. Despite the town's dependence on fishing, historical attempts to build an artificial harbour had failed; even today boats still have to be launched from the beach, making them vulnerable to bad weather. One commentator complained that '[s]ome of the most picturesque boat-houses were literally carried into the sea during one of the recent gales off this coast';[2] while a letter published in the *Morning Post* suggests that town's development was a direct threat to the safety of the fishermen and the survival of the fishing community.[3]

De Breanski makes a strong visual distinction between the modern pier far in the distance, crouching grey and reptilian grey in the stormy sea, and the earthy palette of the Old Town with its residential buildings and ant-like population. This was the domain of the fishermen and their families; its colours harmonise with the vibrant, reddish sand and forest of timber masts on the beach. The low viewpoint further suggests an earthbound perspective, but also enhances the enormity of the steely sea and sky that occupy most of the canvas; the figures and town are crowded into one corner, threatened by the advance of the sea. The smack stands out against the grey waters, picking up the warm palette of the shore as though drawn inland, although the prospect of landing is fraught with danger.

The open stretches of sea and sky with their grey, abstract patterns of cloud and wave suggest spaces that are still unmapped and unknowable, in juxtaposition with the more legible recession of the land. On shore, familiar representational forms give shape and metre to the pictorial space, from the nearby stones and seaweed to the groups of men scattered along the beach and the boats stored above the tide line. In the distance the land rises above the Old Town, offering a vertical mapping of space, with the castle on the hill as a landmark. This depiction of hubris portrays humanity as locked in a struggle with the elements, with modern advances and ingenious technology destined to be dwarfed by Nature's power: erosion and violent weather had damaged the castle over centuries, while the closely packed boats on the shore have a temporary air that infects the town above them.

Gustave de Breanski's sister Julie and brother Alfred, who was the most famous of the three, were also painters. Gustave specialised in coastal and marine subjects and was drawn to the depiction of weather. In 1885 he exhibited two paintings at the Royal Academy exhibition: *Seaton Bay* and *Peel Harbour*. He also showed work extensively at less established London venues, including the Dudley Gallery Art Society where he received favourable attention for another 1884 marine painting, *Return of the Brixham Fleet*, in the *Illustrated London News*.[4]

NH

1. The red sails of the smack were the result of tanning. Moonlight towers were very tall arc lamps, for locations where street lighting would have been impractical or expensive: here such lighting would have illuminated the beach and water as well as the old town.

2. 'The Hastings Fisheries', *Graphic* (6 December 1884), p. 603.

3. 'The town authorities have for years been squeezing the fishing craft from their ancient quarters nearer and nearer to a point bearing the appropriate name of "Foul ness," and the danger to the fishing craft has been increased. … The old town is very dependent upon the fishery … but the west end of the town has grown too strong for the old part … and these poor fellows' lives are endangered more than formerly.' 'The Wreck of the Fishing Lugger at Hastings', *Morning Post* (16 December 1884), p. 6.

4. 'M. Gustave De Breanski's "Return of the Brixham Fleet" (206), a group of fishing boats beating round the point into harbour, is full of life, and well renders the cold grey sky and water which even the Devonshire coast can at times show'. 'The Dudley Gallery Art Society', *Illustrated London News* (1 November 1884), p. 419.

CATALOGUE ENTRY D15 | DISTANCE

ALBERT GOODWIN (1845–1932)

THE TOILER'S RETURN, 1877

97 X 142 cm
GUILDHALL ART GALLERY, CITY OF LONDON CORPORATION

This painting shows a village on the north Devon coast, from a high inland viewpoint. A mother in simple working clothes and apron rushes with her children to the edge of the cliff to gaze at a fleet of approaching boats, still only specks in the distant water. Beneath them lies a bright, busy village, smoke pluming from a chimney and laundry hanging on a line; at the water's edge tiny foreshortened figures are dispersed along the beach. Several devices, including the curve of the shoreline, the jetty and the upright posts holding nets and laundry, all draw the eye to a distant point of deep blue in the sky, just above the horizon, where the clouds have parted.

The work was exhibited at the Royal Academy summer exhibition of 1877 (no. 1329 as *The Returning of the Toilers*), along with *A Baptism of Flowers* (no. 509), which elicited more critical attention. Of that painting, Tom Taylor commented that its effect depends 'on the combination of figures and landscape, the former telling the story to which the latter is attuned. This is always likely to be the form in which landscape will be most impressive to a mixed public such as that which fills the rooms of Burlington House'.[1]

Taylor's comment is equally applicable to *The Toiler's Return*, which has a strong narrative component. The bright colours of the diminutive village, arrayed below like children's toys, emphasise the built human environment, as distinct from the vast scale of the sky, open sea and wild, far-away cliffs across the water. The poses of the figures are emotive and

characterful, with each responding in a distinct way to the impending arrival: the mother twists her body to gaze wistfully out; the little boy grips the fence and peers through it; another boy leans over the fence close to his mother; the girl runs with arms outstretched, a pose echoed by the baby raised aloft. Their averted faces make them universal, while their vulnerability, conveyed by their simple clothes and the children's bare feet, further arouses empathy.

The painting is suffused with a golden light that evokes the nostalgia of childhood memories and enhances the emotional quality of the landscape. The laundry catches the breeze like the sails on the distant boats, the snowy whiteness standing out, along with the waving baby, as a form of semaphore signalling to the returning fishermen. The baby holds up its arms in excitement, as though embodying this message. The dark, perforated nets also resemble sails, a shadowy counterpoint to the hopeful whiteness and a reminder of the dangers facing the fishermen, the insecurity of their livelihood and the uncertainty that this particular husband and father is among those returning. This threat is underscored by the broken fencing barely protecting the family from a precipitous drop down to the shore.

Such details contrast with the wide, flat, indifferent blue of the sea and the pale sky, exhilarating and vast. The immensity is driven home by the great shadow visible in the bay, a reflection of the sky or of the seabed. These effects were noticed by a critic who described the painting as a 'fine, expansive, and noble view in cloudy light, and almost stereoscopic in treatment'.[2] This three-dimensional effect derives partly from the high viewpoint and the treatment of colour, but the comparison with a stereoscopic view is appropriate given that the painting is as much about travel as it is about distance, comparing the relative stability of village life with life at sea.

Goodwin travelled extensively during his lifetime, in Britain, Europe and beyond, to India, America, the West Indies and Antipodes. John Ruskin had been impressed by Goodwin's precocious talent (he made his first successful Royal Academy submission at fifteen) and sponsored some of the early European travel. Goodwin was best known for his watercolour landscapes and was widely considered 'the legitimate successor of Turner', an artist whose work he admired enormously.[3] An 1876 review of two landscapes describes Goodwin as 'a true artist, who is looking at nature for himself, free from recipes and conventions… Like some of the French impressionists, he prefers to deal with exceptional effects and aspects'.[4]

NH

1. 'Royal Academy Exhibition: IV', *Graphic* (9 June 1877), p. 543.

2. 'The Royal Academy', *Athenaeum* (26 May 1877), pp. 675–678.

3. 'Mr. Albert Goodwin's Drawings at the Fine Art Society's', *Standard* (30 October 1893), p. 2.

4. 'Fine Arts. Exhibition of the Society of British Artists', *Illustrated London News* (8 April 1876), p. 354.

CATALOGUE ENTRY D16 | DISTANCE

NICKEL SILVER MICROMETER, ELLIOTT BROTHERS, LONDON

KING'S COLLEGE LONDON ARCHIVES K/PP107/11/2/4

What separates Victorian engineering from that which had gone before is scale. Big projects, such as the Atlantic Telegraph, needed not just big ideas but new kinds of engineering. The micrometer brought the precision and attention to detail which made large, ambitious projects possible.

The micrometer began its life as a seventeenth-century tool for astronomers to measure the distance between stars. Its popularity increased through the eighteenth century in other precision industries such as machine tool making, screw-thread cutting and die making. Up until the mid-nineteenth century micrometers were large bespoke specimens only to be found mounted on the chief engineer's bench in specialist workshops. The best of these bench-mounted units, such as Henry Maudslay's 'Lord Chancellor' could measure accurately to one ten thousandth of an inch (0.00254mm).[1] The first hand-held micrometer was patented in 1848 by Jean Laurent Palmer of Paris and was capable of measuring to 0.05mm. The micrometer is still referred to as a 'Palmer' in France.

The micrometer in the exhibition is made by Elliott Brothers, a long-established London instrument makers.[2] Elliott Brothers offered a wide range of surveying, navigational, and philosophical instruments and produced a large proportion of the standard instruments

sold to both home and overseas customers. Elliott Brothers worked closely with academics and engineers to remain at the forefront of instrument making. Their customers included James Clerk Maxwell, Charles Wheatstone, Lord Rayleigh and other leading scientists. The micrometer from Wheatstone's collection is engraved Elliott Bros London, a mark used between 1873 and 1916. As Wheatstone died in October 1875 it serves to illustrate how Wheatstone remained research-active; purchasing cutting-edge engineering tools right up to his unexpected death on a work trip to Paris.

Perhaps more than any other instrument, the micrometer underpinned the nineteenth-century doctrine of Interchangeability; the idea that each component could be replaced by an exact copy without it having to be specially made. Previously, if a part broke or wore out, a new, bespoke part would be machined to replace it. A standard component, however, could be quickly swapped for a new one, 'out of the box'. Objects taken for granted today, such as the humble nut and bolt, became possible for the first time.

This trend was reflected across science and engineering and driven for a large part by the telegraphic industry. Landline engineers demanded - and received in 1883 - an agreed Wire Gauge as a measure of cable and wire diameter.[3] Atlantic cable engineer William Thomson lobbied parliaments for the standardisation of purity in metals, making telegraphic conductors reliable over long distances.[4] And, from 1862, telegraphic engineers and physicists strived to find ways to measure and define electrical engineering units; the volt, amp, ohm and farad. Interchangeability was not simply about standardisation, it was also about mass manufacture; bringing the costs of engineering down and allowing previously uneconomic projects – such as the Atlantic cable – to be undertaken.

The success of the telegraph rested upon the idea that every cable house, everywhere in the world had access to the same screws, the same clamps, and the same instruments, all manufactured to the same, micrometer-exact specifications. If any part failed, a new one could be taken from the store or sent from any other nearby cable house. Interchangeability underlies all large, networked technologies, which rely on each individual node being able to operate independently and at arms' reach.

CN

1. R. H. Maudslay, 'Henry Maudslay, Engineer: Paper prepared from a lecture given to the Newcommen Society, Manchester Assoc. of Engineers and Museum of Science and Industry, 29 Jan, 2008', http://www.mae.uk.com/Maudsley.PDF (consulted 4 September 2016).

2. Grace's Guide, 'Elliott Brothers', *Grace's Guide to Industrial History*, (8 August 2016), http://www.gracesguide.co.uk/Elliott_Brothers (consulted 4 September 2016).

3. Aashish Velkar, 'Accurate Measurements and Design Standards', *Working Papers on the Nature of Evidence:* How Well do 'Facts' Travel?, *London School of Economics*, Vol. 18, No. 07 (2007), http://www.lse.ac.uk/economicHistory/pdf/FACTSPDF/FACTs18AV.pdf (consulted 4 September 2016).

4. Bernard Crossland, 'Kelvin and Engineering', in Raymond Flood, Mark McCartney, Andrew Whitaker (eds.) *Kelvin: Life, Labours and Legacy* (Oxford and New York: Oxford University Press, 2008).

CATALOGUE ENTRY D17 | DISTANCE

THREE SAMPLES OF SIEMENS' ATLANTIC TELEGRAPH CABLES

KING'S COLLEGE LONDON ARCHIVES. K/PP107/11/1/18

The completion of the 1866 and recovery of the 1865 cables was inspiring. It showed that the great spanning of the Atlantic was possible. It gave governments and engineers confidence. It also gave them a test-bed on which ideas could be worked out, proved and disproved. Bandwidth – initially restricted to 8 words per minute – was in high demand and the market was ripe for expansion.

Siemens brothers had begun experimenting with submarine cables back in the early days of telegraphy. Indeed, in 1846, Werner von Siemens was already experimenting with gutta-percha (a natural sap, a bit like latex) sent to him by his brother William. Impressed with its insulative properties, Werner sought the support of the Prussian Telegraph Commission and trials took place, which were a resounding success.[1] His design for gutta-percha insulated cables formed the basis for most subsequent submarine cables.[2]

The successful Atlantic cables of 1865 and 1866 featured several innovations which were rapidly adopted throughout the industry. These included a double layer of armouring on the 1865 shore-ends and the introduction of stranded wires to provide a more flexible armouring. The Siemens brothers improved upon this successful design for their Direct United States and Compagnie Française Paris-to-New-York Atlantic cables.

The 1874 Direct United States Cable was the first to feature a larger diameter central wire surrounded by a number of smaller wires. More copper could in this way be fitted into a smaller volume which made for lower resistance, lower capacitance and better signalling speeds.[3] More words per minute meant better profits and at 50 words per minute in both directions (known as duplex working) the first of the new Siemens cables brought about a sea-change in telegraphy speeds.

Also built for the 1874 Direct United States cable was the CS (Cable Ship) Faraday, the first purpose built cable ship. Her design was highly innovative featuring a sharp, bow-like stern giving her distinctive lines. She was fitted with twin-screw propulsion for manoeuvrability and swinging sheaves at both the bow and stern to reduce strain on the cable during laying. The Faraday would go on to complete 50 years of cable work.[4]

The 'Direct', as it became known, was sold to the Anglo-American cable company in 1877 and bought again by the General Post Office in 1920. In 1943 the cable failed and engineers were not able to repair it until 1952 when it was finally put back into working order.[5] The cable continued in use well into the 1950s and is the only cable known to have had the shore end landed through a petrified forest.

CN

1. W. Feldenkirchen, *Werner von Siemens: Erfinder und internationaler Unternehmer* (Berlin: Piper, 1996).

2. G. Preece, 'On Underground Telegraphs', *Journal of the Society of Telegraph Engineers*, vol. 2, no. 6 (1873).

3. B. Glover, *Direct United States Cable Company* (2015), http://tinyurl.com/hb2pgu6 (consulted 4 September 2016).

4. W. Siemens, 'The Steamship 'Faraday' and her Appliances for Cable-laying', *Journal of the Royal Institution of Great Britain*, vol. 7 (1874).

5. Glover, Direct (2015).

CATALOGUE ENTRY D18 | DISTANCE

CHART SHOWING THE INTENDED TELEGRAPHIC COMMUNICATION BETWEEN NEWFOUNDLAND AND IRELAND, TRACKS OF STEAMERS BETWEEN EUROPE AND AMERICA AND THE ICE FIELDS IN THE NORTH ATLANTIC OCEAN (WITH SECTION OF THE BOTTOM AND OF THE CABLE TO BE USED). SCALE: 1 INCH TO ABOUT 150 MILES. SURVEYED BY CYRUS W FIELD. ENGRAVED BY DAY AND SON, ENGRAVERS AND PUBLISHERS. MADE FOR THE NEW YORK, NEWFOUNDLAND AND LONDON TELEGRAPH COMPANY, 1856

THE NATIONAL ARCHIVES, UK, MPG 1/392.

Maps are not neutral devices. Maps have power. They shape our understanding of places and of the relationships between those places. They tell us what is important and what may be disregarded. They determine our world view. Harley speaks of maps as 'a collection of codes' and urges us to deconstruct the map in search of the social forces that have structured cartography;[1] to read between the lines of latitude and longitude for the implicit politics, economics and cosmologies there printed.[2]

The two charts juxtaposed in this exhibition (D18 and D19) were chosen because they capture beautifully how the Atlantic Ocean was envisioned by people in Britain and America both before and after the laying of the Atlantic cable. In this, the first chart, Atlantic cable power-house Cyrus Field shows the intended telegraphic communication between Newfoundland and Ireland. His map depicts an Atlantic full of ice-flows, shoals, currents and wrecks. It is scrawled over by the wavering trails of ships, whose wind-driven paths meander, overlap each other and diverge. Superimposed over these comings and goings (for the benefit of potential investors), is the hard line of the proposed telegraph. It curves smoothly between Newfoundland and Ireland, slicing through, under and over the petty and frantic travellings of ships, currents and people; cutting edge and unstoppable. On land the telegraphs snake across Europe and the Americas, temptingly projecting the onward journeys for trans-Atlantic messages. The chart tellingly dates from 1856, the beginning of the Atlantic cable project and before the three expensive and high profile failures. It naively imagines the Atlantic telegraph cable as a serene triumph of Victorian engineering rather than the pitched and improvised battle against the elements it became. The message Cyrus Field intended this chart to convey was 'we understand this', 'we can do this' and, importantly 'give me all your money'.

CN

1. J. B. Harley, 'Deconstructing the Map', in T. J. Barnes and J. S. Duncan (eds.), *Writing Worlds: Discourse, Text and Metaphor* (London: Routledge, 1992), p. 238.

2. J. B. Harley, 'Deconstructing the Map', *Cartographica*, vol. 26, no. 2 (Spring 1989), p. 3.

CATALOGUE ENTRY D19 | DISTANCE

COAL AND TELEGRAPH CHART': SHOWING TELEGRAPHS AND COALING STATIONS. ADMIRALTY CHART 1188: ENGRAVED BY EDWARD WELLER; PUBLISHED, 8 AUGUST 1889.

THE NATIONAL ARCHIVES, UK, MPHH 1/454.

This chart, engraved for the Admiralty in 1889 shows overland telegraphs, submarine cables, steamer routes and coaling depots; an Atlantic criss-crossed by communications technologies. It was made twenty three years after the successful laying of the 1866 cable, which at this date figures as just one of several threads almost casually spanning the Atlantic Ocean. The world has been changed. Known infrastructure now takes the place of wild waves. Unpredictable ocean currents are replaced by calm electrical ones. Messages cast out into the sea are now tethered safely by the cable. The impossibly ambitious Atlantic cable project is now just one link in a near-global network; simultaneously indispensable and ubiquitous. In this chart, the novelty has worn off. The slim, pioneering thread now finds itself integrated into a wider-reaching network of landlines, direct steamship routes, forts, train-lines, ports and harbours. The telegraph has morphed from pioneer species to networked object; jig-sawed into an increasingly anthropocentric landscape. The chart speaks of the expansion of minds, the permeation of Admiralty views to land-lubbers; that oceans are traversable and vast distances communicable. These ideas now belong to everyone. We know that for the price of a telegram that infrastructure can be mobilised. For pounds, shillings and pence oceans can be shrunk and the least of our thoughts sent out to conquer icebergs, tides and storms.

CN