Still life with Bust (1936) by Mark Gertler [1891-1939]

From Southampton City Art Gallery

Painting Pairs Report: Art History and Technical Study

Anneke de Bont – MA History of Art

Jenny Gonzalez Corujo – PgDip in the Conservation of Easel Paintings

The Courtauld Institute of Art

June 2017

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Introduction to the Project

For the past several years, postgraduate students in the History of Art and Conservation departments at the Courtauld Institute of Art have collaborated to research paintings in need of conservation, technical examination, and art historical analysis. Each 'painting pair' is composed of one art history student and one conservation student who use their complementary skills to learn about a single object. This allows for the combination of a range of research methodologies such as historical, archival and biographical study, alongside technical and visual analysis. The findings were presented at two research forum events at The Courtauld, in January and May 2018. The report that follows is based on those presentations.

We received Mark Gertler's *Still Life with Bust* in late November from Southampton City Art Gallery where it has been exhibited since 1953. The painting is signed and dated 'Mark Gertler 36' and it was in overall good condition. The most concerning aspect was the presence of white crystalline deposits, which could have been misinterpreted as ground or part of the artist's technique.

Our first goal for this project was to characterize the degradation present in *Still Life with Bust* in order to determine how best to approach the cleaning of this painting, as well as to distinguish the deliberate elements from those which were products of degradation. Once we had gained better understanding of the artist's technique and the painting's material composition, we were then able to turn our focus towards questions of meaning in relation to technique, artistic influence and motif choice.

The report that follows documents our findings and presents opportunities for further research as given the time constraints of the project, there remains much to learn about the painting.

Fig 1.

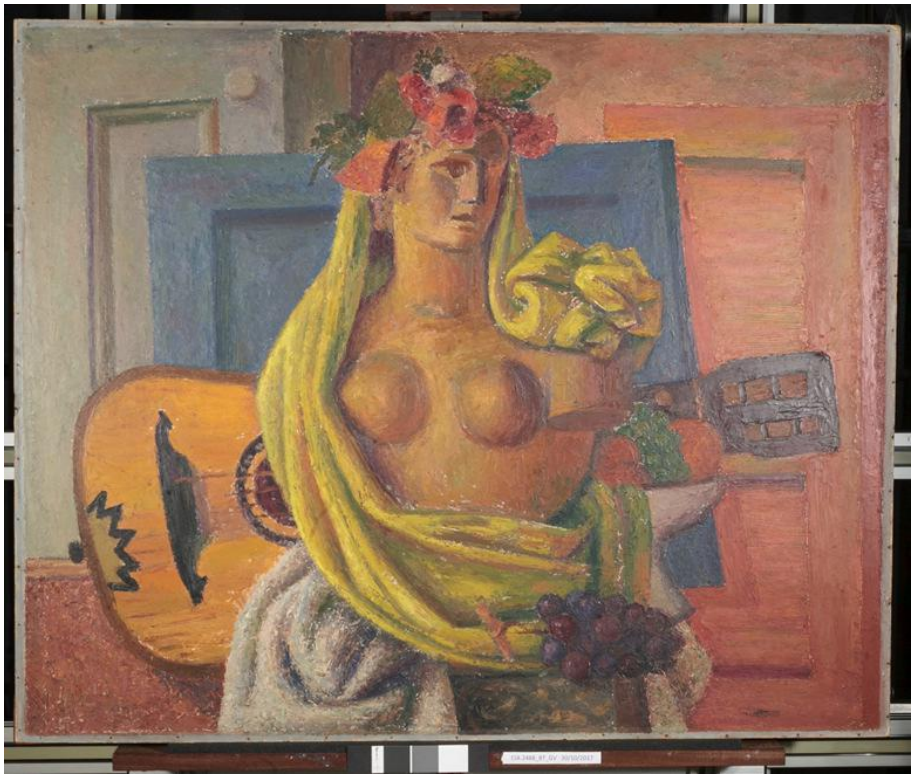

Fig 2.

Mark Gertler, Still Life with Bust, 1936, oil on paper and board, 106.8 x 130.7 cm (Southampton City Art Gallery). Figure 1: front; figure 2: back.

Introduction to Mark Gertler

Mark Gertler grew up as an immigrant in an East End Jewish Ghetto.[1] Though born in London in 1891 he spent his early years in his ancestral home in what is now Poland, until the Gertler family decided to return to London in 1896. Soon after his return, Gertler began to paint. The young boy would sit for hours on end in his mother's kitchen, attempting to translate the bowl and wooden spoon before him into painterly space (Fig. 3). He painted portraits of family members as well, as his family was very supportive of his artistic aspirations — particularly his mother who doted upon Gertler, her youngest child.

It is in this setting that Gertler was first 'discovered' by a social worker. Five years later, in 1908, painter William Rothenstein advised the sixteen-year-old Gertler to enroll at the Slade School of Fine Art, and thus he immersed himself in the world of art. Despite his attempts to acclimate to an upper class British lifestyle, Gertler was forever linked to this identity of the child prodigy plucked from the slums by a keen-eyed connoisseur who set him on the path to becoming an artist. His narrative was truly Giotto-esque.

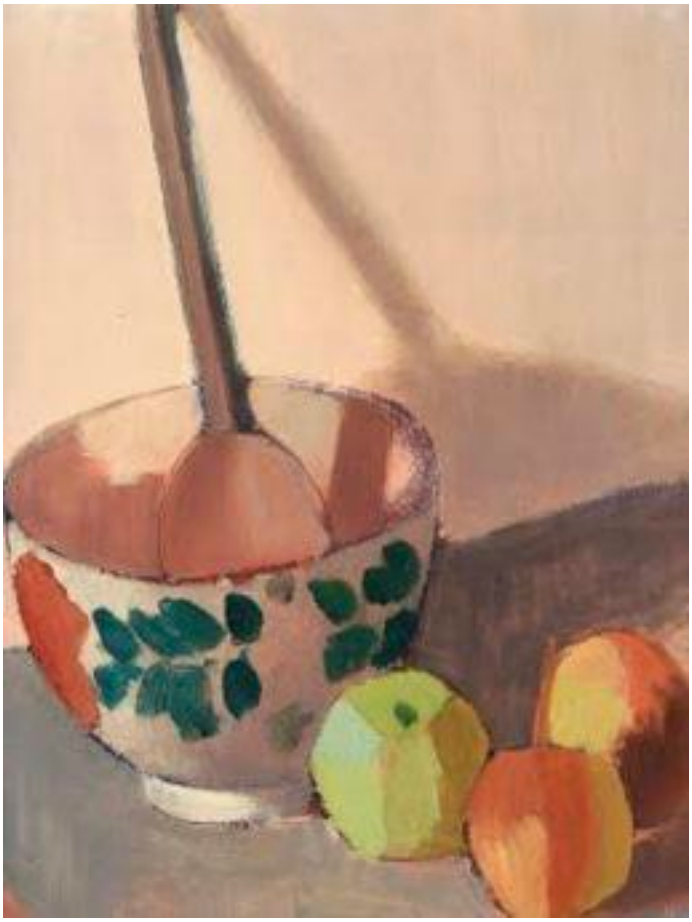

Figure 3: *Still Life with Bowl, Spoon and Apple,* 1913, oil on board, 29.5 x 29.5 cm (Hatton Gallery, Newcastle)

[1] For a detailed account of Gertler's discovery, education and prodigy label, see: MacDougall, S. (2002) *Mark Gertler.* London: John Murray Publishers, p. 1-60.

Gertler's path to a career as an artist was nevertheless long and winding. Gertler's formal artistic education began at the Regent Street Polytechnic in 1906 where he studied design. Gertler entered the design workforce the following year when he earned an apprenticeship at a stained glass company. However, the commercially oriented and repetitive nature of design deeply depressed and demoralized the young Gertler. As a result, under the encouragement of Rothenstein, he left the factory and enrolled in the Slade in 1908. Gertler's eyes were quickly opened to boundless possibilities as he began to find his own artistic voice. Thus the years immediately after graduating from the Slade were arguably the most successful and avant-garde of his career.

Despite how hard he tried to forge a new identity, Gertler's childhood in the ghetto would colour his artistic personality for the rest of his life — apparent not only in his early works, but also in his contemporaries' opinions of him. To many, Gertler's art was always qualified by its Jewishness, regardless of its subject matter; 'Mark Gertler: Jewish Painter' read the title of his first published obituary.[2]

Figure 4: *The Servant Girl,* 1923, oil on canvas, 63.5 x 47 cm (Tate, London)

[2] For a selection of contemporary sources commenting on Gertler's Jewishness in relation to his art, see: Wolff, J. (2003) *AngloModern: Painting and Modernity in Britain and the United States.* Ithaca: Cornell University Press, p. 130.

It is quite limiting to provincialize Gertler's work in such a way, particularly because the subjects of his later work had nothing to do with his Jewish heritage. His style cannot be pigeonholed as distinctly Jewish either, as it changed so dramatically throughout his career. One place where this change can be easily observed is in the quality of Gertler's surfaces. His earlier works from the 1920s are characterized by highly polished, finished surfaces: with subtle brushstrokes, he gently defused thin layers of colour (Figs. 4-5). However, by the 1930s Gertler was experimenting with thick impasto, as can be seen in *Still Life with Bust*. Texture became an integral component to Gertler's compositions; his surfaces were far from smooth (Fig. 6).

Figure 5: *The Servant Girl,* detail with raking light

By the time Gertler began this textural experimentation, he had fallen out of public favor. His work appeared outdated, even 'anachronistic' compared with the up-and-coming Surrealists.[3] He was forced to take on part-time teaching work at the Westminster School of Art in 1931 to fund his practice. But despite poor reviews and his continued struggle with depression and tuberculosis, Gertler continued to work and test his artistic boundaries, drawing clear inspiration from other artists, despite his vocal distaste for fashionable

[3] Shone, R. (1982) 'Mark Gertler - the Late Years' in *Mark Gertler - The Early and the Late Years*, London, Ben Uri Gallery, p. 14.

'movements' in the arts.[4] Richard Shone acerbically writes: 'In his later years he [Gertler] appears satisfied with the common coinage of French Cubism — the table-top still-lifes, drapery, musical instruments, the seated and standing nudes that became familiar throughout Europe. They had inspired some of his finest paintings in the twenties…But the often pale or clear colours associated with Gris or Braque became hot and even garish in Gertler's hands'.[5] Although his disregard was set aside in his moments of desperation, Gertler regretted these instances; one of his students even recalls the artist saying: 'I think I could have been a good painter if I hadn't chosen to be a fashionable one'.[6]

The painting at the heart of this project, *Still Life with Bust*, is from this period of insecurity, a decade punctuated by unsuccessful exhibitions, financial struggles and visits to sanitaria. This composition was completed some time before July of 1936, because on the first of that month, a flair of tuberculosis confined Gertler to a sanitarium. During the first week of his stay, Gertler attempted suicide, and the resulting injuries, as well as his failing health, prevented Gertler from working on any large paintings until the following year. As *Still Life with Bust* is indeed quite large, it was therefore completed before July.

Figure 6: *Still Life with Bust*, detail

[4] Gertler had felt this way for some time. Gertler wrote to his future wife Marjorie Hodgkinson on 20 September 1927: 'I am becoming more and more suspicious of 'movements', with their intricate and *startling* ways of painting and writing etc. I am more and more convinced that the best methods are after all the simplest and the traditional—and at the moment they are even the newest—because to *attempt* to be new and unusual for its own sake is so common now that the only possible newness and freshness left is in the simple and traditional'. Gertler, M. (1965) *Selected Letters*. Edited by Noel Carrington. London: Rupert Hart-Davis, p. 225.

[5] Shone, 'Mark Gertler - the Late Years', p. 14.

[6] Recollection of Henry Ginsbury from Ginsbury, H., and Hamilton, R. (1982) 'Two Students Recollect' in *Mark Gertler - The Early and the Late Years*. Ben Uri Gallery exhibition catalogue, p. 18.

Introduction to *Still life with Bust*

The painting is signed and dated in oil at the top right corner 'Mark Gertler 36' (Fig. 7). Labels on the back of the painting confirm it was exhibited at Lefevre Galleries, London in 1937 as *The Bust*; at the International Exhibition of Paintings, Carnegie Institute, Pittsburgh, USA also in 1937; and at Leicester Galleries, London in 1942 (Fig. 8). It was also possibly included in an exhibition of British Contemporary Art at Rosenberg & Helft, London, in January 1937.[7]

Figure 7: Signature and date (detail)

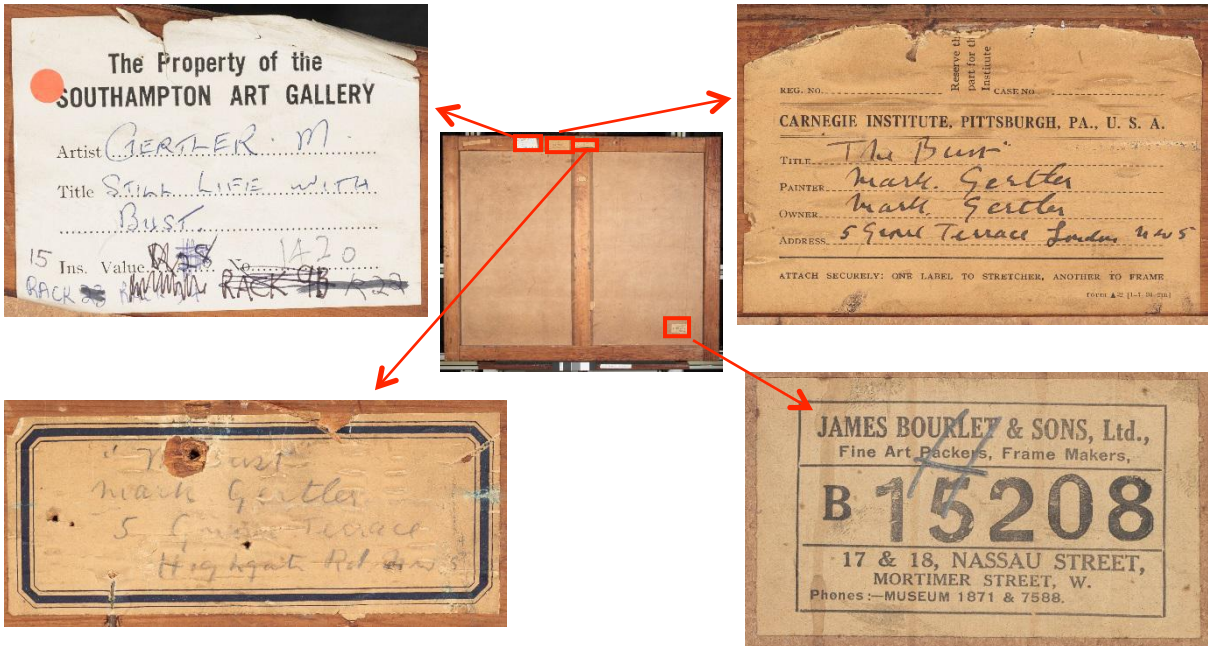

Figure 8: Labels at the back of the stretcher

[7] MacDougall, S. (2017) 'Mark Gertler (1891-1939): Notes on late works'. London, p. 2.

Still Life with Bust has been in Southampton City Art Gallery's collection since 1953, when it purchased the work with the assistance of the Chipperfield Bequest Fund.

The work was executed with oil paint on an industrial board with paper-laminated finish. The paint was applied directly onto the paper. The piece of paper seems to be sized, but no test for protein has been carried out to confirm (Fig. 9).

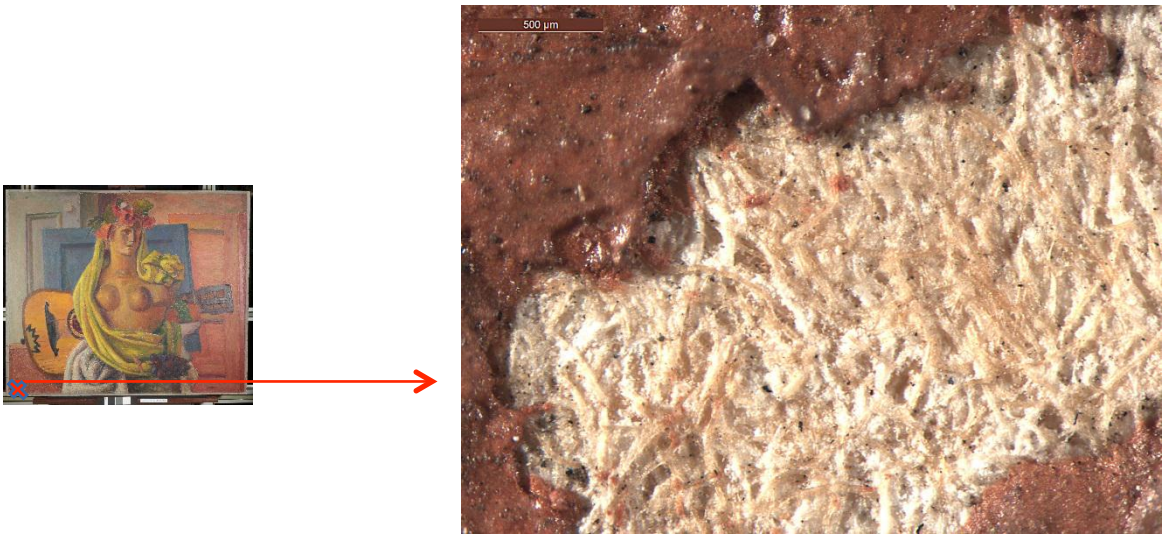

Figure 9: Paint applied directly over sized paper

Machine made paper was manufactured in the UK from 1807[8] and available as a prepared support for oil painting from Windsor and Newton and Reeves & Sons from 1856.[9] Dard Hunter explains that the use of paper as a support for oil painting was well established among professional artists in the early part of the nineteenth century, but it flourished in the second half of the century due to a growth in amateur painting. Attaching the paper support to an auxiliary support of wood, hardboard or other stiff material was common practice and would be done either at the time of production or later as a preservation treatment. Paper was generally sized during manufacture or by the artist to increase strength and reduce moisture absorbency. As for the board, the artist mentions in his 1937 studio notebook the use of 'Beany' and 'Beaver' boards, which we have been unable to trace as a material in the bibliography.[10]

[8] Hunter, D. (1978) *Papermaking: The History and Technique of an Ancient Craft*. New York, USA: Dover Publications, p. 341–373.
[9] Carlyle, L. (2001) *The Artist's Assistant: Oil Painting Instruction Manuals and Handbooks in Britain 1800-1900 with Reference to Selected Eighteenth-century Sources*. London: Archetype Publications, p. 277–280, 337–543.
[10] MacDougall, S., 'Mark Gertler (1891-1939): Notes on late works', p. 3,5,6 and 8.

Overall, the painting is in very good condition. The support has no planar deformations and there is generally good adhesion between paint layers and support. There is an unevenly present coating layer. Otherwise, it has layers of surface dirt that make the original paint appear dull and obscure subtleties and colour transitions. There is also a very faint eighteen-centimeter-long scratch at the bottom left-hand side, crossing the white cloth and the guitar. There is also some localised flaking on the guitar, next to the scratch and some very small paint loses in the brown strip underneath the grapes.

Figure 10: Detail showing crystalline deposits

Some localised white crystalline surface deposits present were visually disturbing, as they contrasted with Gertler's customary highly-finished works. They accumulated specially in brush stroke interstices (Fig. 10) and they could be misinterpreted as ground, and part of the artist technique because Gertler decides to leave some voids to let underlying paint layers and the paper support to show. Thus, we needed to determine which aspects were deliberate, and which are products of degradation; and to do so, it was necessary to carry out some technical analysis.

The Painting: Composition and Motifs

Gertler constructed *Still Life with Bust* with a pyramidal arrangement of for him familiar forms centered around a classical bust. A guitar, a crown of flowers, a Cézanne-esque bowl of fruit, and pieces of cloth frame this bust against an architectural background of colour-blocked window shutters and doors.

There is nothing novel about Gertler's choice of motifs in this painting — not in the artist's own oeuvre or in those of the artists from which he drew inspiration. Gertler painted this bust a total of five times, all in the 1930s (Figs. 11-14). Many of these compositions include similar motifs such as flowers, fruit and instruments, yet the expression and position of the bust has changed over time. The gaze of the bust in *Still Life with Bust* appears being downcast, even melancholic. It appears as if she was aware of her fate as a statue, quite literally disarmed and unable to experience the symbols of the sensorium that surround her.

Figure 11: *Classical Profile*, 1933, oil on canvas, 50.5 x 40 cm (Private collection, sold a Bonhams in 2005)

Figure 12: *Homage to Roger Fry,* 1934, oil on canvas, 71 x 96.5 cm (private collection)

Figure 13: Mark Gertler, *Violin and Bust*, 1934, oil on paper on board, 36.8 x 46.3 cm

Figure 14: *Flower Piece*, 1937, oil on canvas, 95.3 x 91.3 cm (Southampton City Art Gallery)

After examining the five paintings Gertler made of this classical bust from different angles, we determined that Gertler painted the Southampton version after a cast of an early 17th century bust copied from the full-length Medici Venus, much like the plaster cast currently on display in Yorkshire (Fig. 15). The Medici Venus is an antique Roman sculpture discovered in the 15th century that became renowned as a paragon of female beauty. It was particularly popular in 18th century England.

The slightly different angles from which Gertler painted this bust, as well as his penchant for painting ad vivum, suggest Gertler owned or had access to a cast of this bust.[11] We have been unsuccessful thus far in our efforts to locate any records that confirm this hypothesis, but the fact that the dates of these paintings coincide with the dates Gertler taught at the Westminster School of Art, suggest he encountered the cast there. We have found no record of its inclusion in the Westminster's collection either, but its location therein is likely

[11] On Gertler's lasting preference for painting from nature, see: Gertler, *Selected Letters*, pp. 179, 192, 211. Gertler himself stated in an interview from 1939 that he always painted from nature: 'The subject provides the starting point for a picture… I alter the positions and adapt the shapes to make my picture'. Gertler, M. (17 May 1939, reprinted 1992) 'Extract from an Interview' — 'Mark Gertler explains why he is not content with naturalism' *World of Art Illustrated*, 17 May 1939, p.10-2. Reproduced in *Mark Gertler: Paintings & Drawings*. London, Camden Arts Centre, p. 88.

as casts of the Medici Venus were common inclusions for student life drawing rooms, such as those at the Royal Academy (Fig. 16) and the Norwich School of Art (Fig. 17).[12]

Figure 15: Anon., bust of the Medici Venus, plaster, 71 x 33 cm (Nostell Priory, West Yorkshire)

[12] Despite our efforts, we have been unable to locate any information about the contents of the Slade's cast collection from this time period.

Figure 16: William Etty, *Female Nude with a Cast of the 'Venus de' Medici'*, 1835-1837, made while attending the Royal Academy (The Courtauld Gallery, London)

Figure 17: Gertrude Offer, *Interior of the Old School of Art, Norwich*, detail 1897 (Norwich Art School)

An alternate possibility is that Gertler rented a cast of the Medici Venus from the Roberson Archive. We have determined from the archive's published index that Gertler's wife, Marjorie Hodgkinson, had an account at Roberson. Marjorie was a painter herself, so it is possible that she only purchased materials for her own practice; however, as the index clearly identifies her as Gertler's wife, the possibility remains that their account was a shared one. Despite our efforts, we have been unable to access the archives, so we can only speculate on its contents.

As mentioned above, the motifs present in still life with bust often appeared in the oeuvres of artist from which Gertler drew inspiration — Picasso and Cézanne.[13] And the fact

[13] Andrew Causey puts a kinder spin on Gerter's citation than art historians like Shone. Causey writes: 'other artists' work could be not just an influence but a point of reference for Gertler to diverge from'. Causey, A. (1992) 'A Certain Gipsy Gaudiness: Gertler After the First World War', in *Mark Gertler: Paintings & Drawings*. Camden Arts Centre p. 31.

of citation cannot be dismissed as accidental. Gertler had indeed seen similar works before, and as he himself stated, it is most important for artists 'to study the great paintings of the past'.[14] It seemed he felt this to be true of contemporary art as well. Gertler owned a monograph of black and white Picasso reproductions which included two still lifes featuring similar motifs as *Still Life with Bust*.[15] Picasso's *Still Life by a Window* (Fig. 18) includes a profiled classical bust, flowers and fruit set against an architectural backdrop, and *Still Life with Guitar* (Fig. 19) depicts a guitar and fruit-filled compotier balanced on a forward tipped table before an equally angular backdrop. It is important to note that both Picasso still lifes were published before the first time Gertler painted his Medici Venus bust.

Figure 18: Pablo Picasso, *Still Life by a Window*, 1932 (black and white reproduction from Christian Zervos, *Pablo Picasso*, Arte Moderna Straniera N. 2, 1932)

Figure 19: Pablo Picasso, *Still Life with Guitar,* 1924 (black and white reproduction from *Pablo Picasso*, Arte Moderna Straniera N. 2, 1932)

Gertler's letters also confirm that he saw many paintings by Cézanne, beginning with those shown at Roger Fry's now famous *Post-Impressionist* exhibitions. The compotier in *Still Life with Bust* (Fig. 20) is an undeniable allusion to Cézanne's work, referencing the appearance of the dishes present *Still Life with Fruit Dish, Apples and Bread* (Fig. 21) and *Still Life with Fruit Dish* (Fig. 22). Cézanne's technique also inspired this British painter during his period of textural experimentation. Gertler indeed took note of the French artist's compressions of pictorial spaces, his generation of haptic surfaces, and his attention towards contour lines. Art historian Carol Armstrong's description of Cézanne's rendering of fruit could easily be applied to Gertler's work; she writes: 'They are barely apples, but rather

[14] Gertler in 1939, cited in Wolff, *AngloModern.*
[15] Shone, 'Mark Gertler - the Late Years', p. 16.

spheres, ever so slightly distended, and in that too they chart the territory between the general idea and the particular sensation of the apple'.[16] We will expand on this technical influence in more depth below.

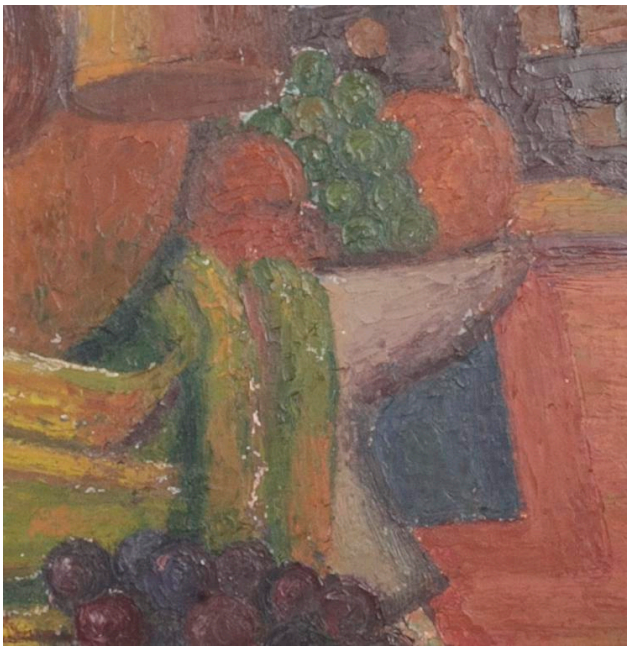

Figure 20: *Still Life with Bust*, detail

Figure 21: Paul Cézanne, *Still Life with Fruit Dish, Apples and Bread*, c. 1879-80, oil on canvas, 55.1 x 74.4 cm (Oscar Reinhardt Collection 'Am Römerholz'. Winterthur)

Figure 22: Paul Cézanne, *Still Life with Fruit Dish*, 1879-80, oil on canvas, 46.4 x 54.6 cm (MoMA, New York)

[16] Armstrong, C. (2004) *Cézanne in the Studio: Still Life in Watercolors*. Los Angeles: Getty Publications, p. 46.

Through researching Gertler's biography, we also discovered that his choice of motifs was not derivative, nor simply humble in the way that Cézanne's work is often labeled: Gertler's choices were also highly personal.[17] The objects in this painting are more than just tired still life paraphernalia — many hold personal significance for Gertler. The flowers, for example, recall the life-long object of his infatuation Dora Carrington who often brought bouquets to Gertler's studio for him to paint.[18] The guitar evokes the importance of music in Gertler's life from the artist's earliest memories in what is now Poland. In a letter to Carrington, Gertler even equated the creativity of a musician with that of a painter.[19] The inclusion of fruit calls to mind the paintings Gertler made in his mother's kitchen when he was just a child, paintings that set him on a path to a career as an artist. And finally, the bust of the Medici Venus relates back to when Gertler was a student at the Slade where he was assigned countless classical casts to draw and paint.

[17] For an example of this reading of Cézanne's work, see Armstrong, *Cézanne in the Studio*, p. 4.
[18] MacDougall, *Mark Gertler.*
[19] On 17 January 1921, Gertler wrote to Carrington: 'Just as there is such a thing as an ear for music, so is there such a thing as a sense for painting… [an] eye for the juxtaposition of coloured forms as an equivalent to that in music of the ear for sound'. Gertler, *Selected Letters*, p. 196.

The Painting: Technique and Paint Application

To best understand these motifs, we must also consider the ways in which Gertler rendered them. The objects in this painting appear solid, but without volume. They are flat and weightless. They are also rendered in curious textures. Gertler gives his motifs a haptic quality which is concerned with the overall texture of the painting rather than the objects depicted. In other words, Gertler does not texturize the grapes in a grape-like texture, nor does he paint the fabric in a fabric-like texture. Instead, he focuses on creating a textural unity across the painting. This creates a sort of disconnect between that which was rendered and the rendering itself — and meaning resides where these two planes intersect.

Texture does more in this painting than create a unified surface. Gertler uses the directionality of the markings to carefully distinguish forms from each other. This can be well observed when looking at this painting in raking light. We can see that he carefully built up each form with palette knife and brush, keeping not only the colour but also the texture different for each form, with few exceptions. Gertler even used textural directionality to render shadows.

Thus in these later works, Gertler began using paint not just to provide colour, but also to provide texture. In place of his recognizably finished canvases were surfaces now ridged and peaked with thick impasto. His spaces became compressed, and marbled blends of wet-on-wet color replaced his careful outlines. Overall, the works became more gestural (Fig. 23).

Figure 23: *Still Life with Bust*, detail

Gertler built up this painting with thick layers of impasto that he shaped with a palette knife and brush. Unlike earlier impasto techniques, which only thickened the paint in the areas supposed to be closer to the viewer, Gertler covered the entirety of his work with this texture. This gives the painting a tactile, even sculptural quality, with forms being distinguished not only by their color but also by their three-dimensional shaping. This surface texture, which almost completely obfuscates its support, can be best seen when looking at the painting in raking light (Fig. 24).

Figure 24: *Still Life with Bust*, with raking light

Close looking reveals a few white spots of visible paper between some of the built-up forms, demonstrating the care Gertler took to enforce his contour lines.[20] He wanted no confusion between forms; and so, they all fit together like puzzle pieces. These gaps can

[20] Not all these white specks were there by the artist's intent. As will be discussed in depth below, our examination revealed that many of these white spots were not visible ground, but rather crystalline efflorescence that had formed on the painting's surface.

be best observed under UV light because the brighteners in the paper fluoresce (Fig. 25). This repeated reinforcement of contours indeed recalls Cézanne's technique. With regards to the French artist's line, art historian Erle Loran writes: 'Throughout the process of painting and repainting, the line was constantly being reinforced, redrawn. In his work there is no particular difference in approach between a loosely brushed and a highly developed or "realized" painting'.[21]

Figure 25: *Still Life with Bust*, detail in UV light

In a way, this painting is not all that different from his earlier works discussed above which exhibited completely polished surfaces. While they are characterized by very different effects, Gertler, in both types of paintings, was mostly concerned with creating a uniformity of surface. The different textures in *Still Life with Bust* are unified by their consistent height of protrusion, evenly occurring throughout the entire surface of the work. This has the effect of there being no moment of rest, no relief from this texture. Unlike his earlier works, where we have moments of reprieve and where we can even glimpse the texture of the canvas, the entire surface of this painting is covered with undulating, three-dimensional strokes.

[21] Loran, E. (1963) *Cézanne's Composition: Analysis of his Form, with Diagrams and Photographs of his Motifs*. Berkeley and Los Angeles: University of California Press, p. 27.

A notebook entry on a painting made in a similar style to *Still Life with Bust* describes that Gertler began with a thin underlayer of wash-like color, upon which he built his impasto using Winsor and Newton paints. He goes on to note that he intentionally left 'specks' of what he refers to both as 'undercolour' and 'undercoat' to show through the impasto (Fig. 26).[22] When examining the few 'specks' [sic] of under layer that do not appear white, we can see that the color of the underlayer is nearly always the same as the impasto (Fig. 27). This, in conjunction with the Infrared reflectography (IRR), x-radiography (x-ray) and raking light images, suggests that Gertler's composition changed little from his original wash sketch. It also means we ought not to interpret the thickness of the paint as a result of an extended re-working of forms. While some subtle shifts may have occurred in process, the general composition is consistent from the ground up.[23]

Figure 26: *Still Life with Bust*, detail

Figure 27: *Still Life with Bust*, detail

By drawing attention to the process of this painting's creation, Gertler invites viewers to consider the still life as a physical, three-dimensional object, and an intentionally designed one at that. The artist visibly recorded the gestures he made to construct this painting: brush strokes, indents from the back of his brush, scrapes from his palette knife, even fingerprints.

[22] These notes appear in a brown hardcover notebook, inscribed 'Notes', further inscribed '[Notebook A]' in pencil on flyleaf: containing notes (mostly pasted in) on paintings, c. 1937, property of the artist's estate. Transcription kindly provided to us by Sarah MacDougall.

[23] This practice recalls Cézanne's *Still Life with Fruit Dish, Apples and Bread*, on which conservator Elisabeth Reissner notes 'a strong impression of a work that has been produced by a patient and incremental action. The surface quality shares some characteristics with a relief landscape or contour map'. Reissner, E. (2015) *Technical study within art historical scholarship: 'Meaning in Making' with particular reference to the works of Paul Cezanne*. PhD. Department of Conservation and Technology. The Courtauld Institute of Art, p. 242.

This painting is a clear record of its making. Extremes of texture provide this painting with a haptic, yet touchless quality. In other words, the raised, textural surfaces of this painting evoke a sense of tactility that does not require actual touch to experience it.[24]

Now that the surface layer of dirt has been removed, we can better appreciate Gertler's careful, if jarring, use of colour. His bright, almost primary reds, blues and yellows are carefully, prismatically modulated to give the impression of light hitting surface (Fig. 28). Close looking is definitely rewarded in this painting, for it is then that we see Gertler's dynamic creation of colour. In a 1939 interview, Gertler said of his paintings that 'colour is of vital importance. It is essential for the emotional effect. It expresses something I cannot put into words'.[25] This statement, of course, prompts the question: what is the emotional role of colour in this painting? We know from his letters that the 1930s was a decade defined by unsuccessful exhibitions, financial struggles, visits to sanitaria and suicide attempts. Perhaps such shouting colours reveal the manic desperation Gertler felt to recapture some of the success of his earlier years. Or perhaps the use of bright colours was a way of contradicting or resisting his darkening internal state.

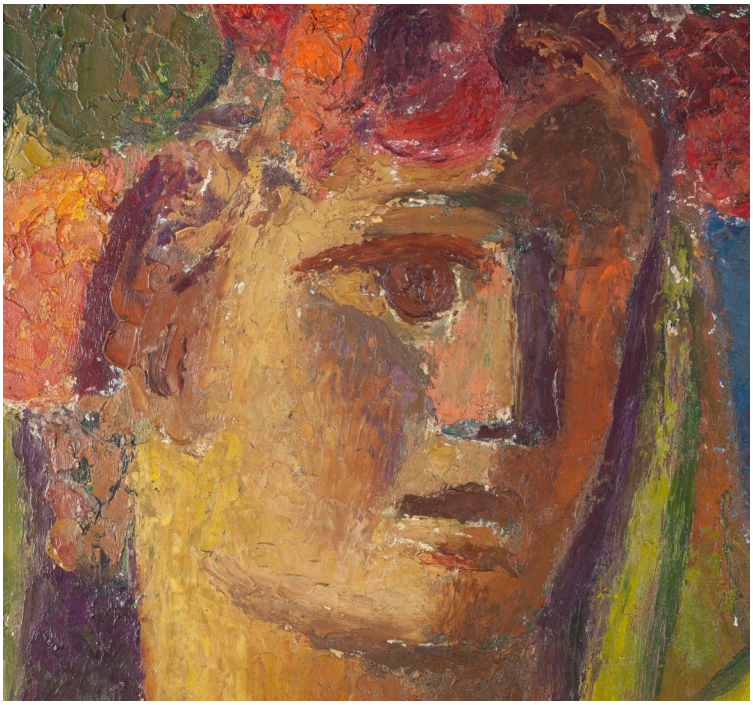

Figure 28: *Still Life with Bust*, detail

[24] Reissner makes a similar comment on the paintings of Cézanne: 'Although the degree to which qualities of paint can cause particular experiences in a neurobiological sense is conjectural, related contentions — such as the sense of empathy experienced when images of touching are viewed, or the stimulation of "motor-memory" by seeing or handling particular tools — are the subject of ongoing research in the field of neuroscience'. Reissner, *Technical Study,* footnote 1042, p. 245.
[25] Gertler 'Extract from an Interview', p. 88.

But emotion aside, Gertler's use of colour was very clever. He placed the warm-toned bust in front of the blue canvas back — a perspectival trick of generating depth with colour alone that he adopted from Cézanne.[26] Gertler then painted the spaces behind that blue trapezoid in warm tones to unify the composition (as well as to provide a subtle perspectival distortion). The conscious effort to arrange the colours in this way can be seen in how Gertler took care to isolate the bust from the warm backdrop through the placement of fabrics and flowers.

[26] On Cézanne's use of this technique, see: Loran, E. (1963) *Cézanne's Composition: Analysis of his Form, with Diagrams and Photographs of his Motifs*. Berkeley and Los Angeles: University of California Press, p. 28.

Mark Gertler's Painting Materials

To gain more insight into Gertler's process of building up this composition, we examined S*till Life with Bust* using IRR and x-ray. Studies of his other works made with similar techniques have revealed pentimenti (Fig. 29). In our painting, no carbon-based underdrawing was detected. The x-ray and raking light photograph indicate that no major changes in composition were made.

Elemental analysis of the paints allowed us to identify the following pigments:

Colour hue	**Elements**	**Possible pigment**
Black	$Ca_5(OH)(PO_4)_3$	**Bone black**
Yellow	CdS	**Cadmium yellow**
Black	C	**Carbon black**
Yellow	Pb CrO_4	**Chromium yellow**
Blue	$CoO \bullet Al_2O_3$	**Cobalt blue**
Yellow	$K_3[Co(NO_2)]_6$	**Cobalt yellow (Aureolin)**
Red / yellow	Fe_2O_3	**Iron earths (red and yellow)**
White	$2PbCO_3 \bullet Pb(OH)_2$	**Lead white**
Yellow	$BaCrO_4$	**Lemon yellow**
Black	$MnFe_2O_4$	**Manganese black**
Red	Mix of organic compounds. Identified due to specific tone and pink fluorescence in UV light.	**Red lakes**
Blue	$(Na,Ca)_8(AlSiO_4)_6(SO_4,S,Cl)_2$.	**Synthetic ultramarine**
Red	HgS	**Vermillion (cinnabar)**
Green	$Cr_2O_3 \cdot 2\ H_2O$	**Viridian**
White	ZnO	**Zinc white**

Gertler's 1937 studio notebook referred to above carefully recounts his technical experimentation, and methodically documents the stages of his process. It also revealed his use of Windsor & Newton paints.

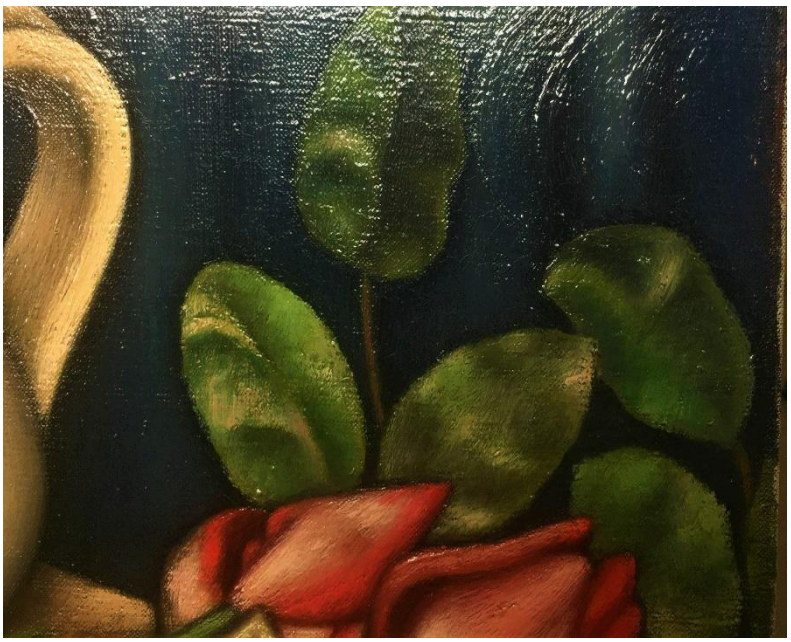

Figure 29: *The Fruit Basket*, 1925, oil on canvas, 78.5 x 100 cm (Tate, London) (detail pentimento)

Degradation Processes and Perception

-Magnesium sulphate heptahydrate

Recent research carried out through CMOP (The Cleaning of Modern Oil Paintings program), has associated the use of Windsor & Newton paints with the formation of Epsomite,[27] which is a degradation product. This research is the result of the collaboration between the Courtauld Institute of Art, London, TATE, London and the Cultural Heritage Agency of the Netherlands (RCE), Amsterdam.[28]

As we suspected that the crystalline deposits in *Still life with Bust* might relate to Gertler's use of Winsor & Newton paints, we examined other paintings from the same period by the artist in the collections of Southampton City Art Gallery and Tate. In the case of *Flower Piece*, 1937 (Southampton) and *Mandolinist* 1934 (Tate), we noticed the existence of similar crystalline efflorescence, although to a lesser degree than in the painting in question. We can only speculate on why *Still Life with Bust* exhibited such an extensive amount of efflorescence compared to the others. We suspect that this painting may have been stored in an uncontrolled environment before it arrived in Southampton.

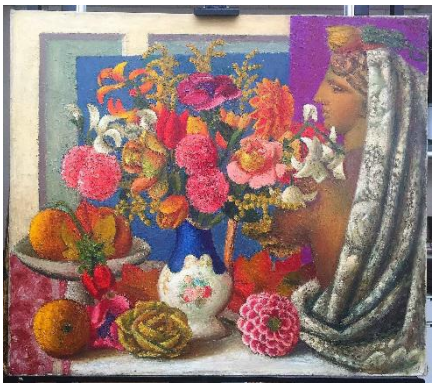

Figure 30: *Flower Piece,* 1939, oil on canvas, 95.3 x 81.3 cm

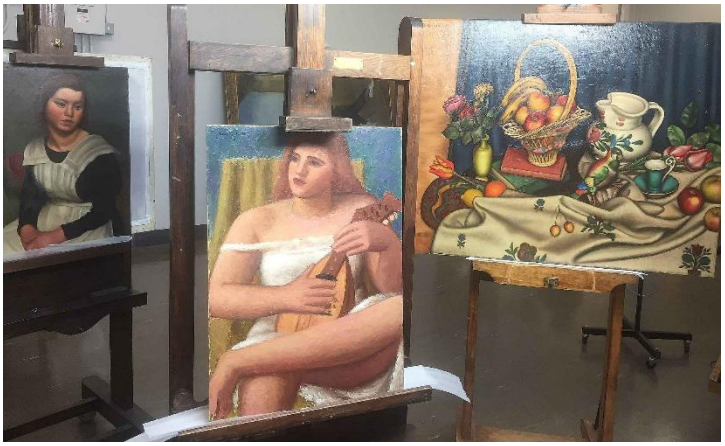

Figure 31: *The servant girl,* 1923, oil on canvas, 64 × 47 cm

Figure 32: *Mandolinist,* 1934, oil on board with paper laminated finish, 77 x 56 cm

Figure 33: *The basket of fruit,* 1925, oil on canvas, 81.5 x 101.5 cm

[27] Silvester, G. *et al.* (2013) 'A cause of water-sensitivity in modern oil paint films: The formation of magnesium sulphate', *Studies in Conservation*, 59(1), p. 38–51.
[28] Cooper, A. *et al.* (2014) 'Water Sensitive Oil Paints in the Twentieth Century: A Study of the Distribution of Water-Soluble Degradation Products in Modern Oil Paint Films', in *Issues in Contemporary Oil Paint*. London: Springer, p. 295–310.

Selected twentieth-century oil paints formulated by this manufacturer that contain magnesium carbonate, which was used as an extender, have been shown to form hygroscopic sulfurous crystalline compounds at the surface of the paint, identified as magnesium sulfate heptahydrate Epsomite[29].

In the 1930s in London, environmental levels of sulfur dioxide were high. Atmospheric sulfur dioxide (SO_2) could rapidly oxidize to sulfur trioxide (SO_3), presumably catalysed by ultraviolet light. As this gas dissolves in water, high relative humidity gives rise to sulfuric acid H_2SO_4, creating the conditions for sulfate salt formation. As the provenance of the painting between 1937 and 1953 is incomplete, it is possible that it was affected by high relative humidity levels. The presence of mould in certain areas of the painting, like the guitar, will support the notion of the painting being stored in a humid environment.

Some scholars have argued that the manufacturing process of Windsor & Newton included leaving vats of 200-300 litres of premixed paint exposed to air until they reached the desired viscosity for filling into tubes. During this time, the paint may have interacted with sulfur dioxide from factory furnaces[30].

In this case, we believe that *Still Life with Bust* was affected by this noxious gas because while it was stored at Southampton City Art Gallery, close to the port, big ships released great quantities of sulfur dioxide from diesel combustion[31]. Sulfuric acid deposited on the paint underwent a neutralisation reaction with magnesium carbonate from the paint film, forming magnesium sulphate heptahydrate crystals.

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[29] Cooper, A. (2012) *Water sensitive oil paints in the 20th century - a study of the phenomena in W&N artist and student quality oil paints, with a focus on the relationship between dirt and the paint surface in paint swatches*. 3rd Year Project (unpublished). Department of Conservation and Technology. The Courtuald Intitute of Art, p.10.

[30] Cooper, A., *Water sensitive oil paints in the 20th century - a study of the phenomena in W&N artist and student quality oil paints, with a focus on the relationship between dirt and the paint surface in paint swatches*, p.10.

[31] Eighteen wheelers, dump trucks, and buses—including most school buses—emit 15 parts per million (ppm) of sulfur dioxide into the atmosphere while idling whereas, cruise ships release 1000 ppm of sulfur dioxide at idle, that is 66 times more sulfur dioxide than what those diesel vehicles emit. While idling, 18 wheelers burn 1 gallon of diesel fuel per hour. One large cruise ship burns 320 gallons of diesel fuel per hour while idling in port to produce electricity.
Environmental Protection Agency (EPA): "Diesel Fuel Standards and Rulemakings", Available at: https://www.epa.gov/diesel-fuel-standards/diesel-fuel-standards-and-rulemakings.

These hygroscopic entities have an influence in the degree of water sensitivity of paints[32] which in this case affected the dark green passages, the darkest shades of red, some areas of the yellow and orange.

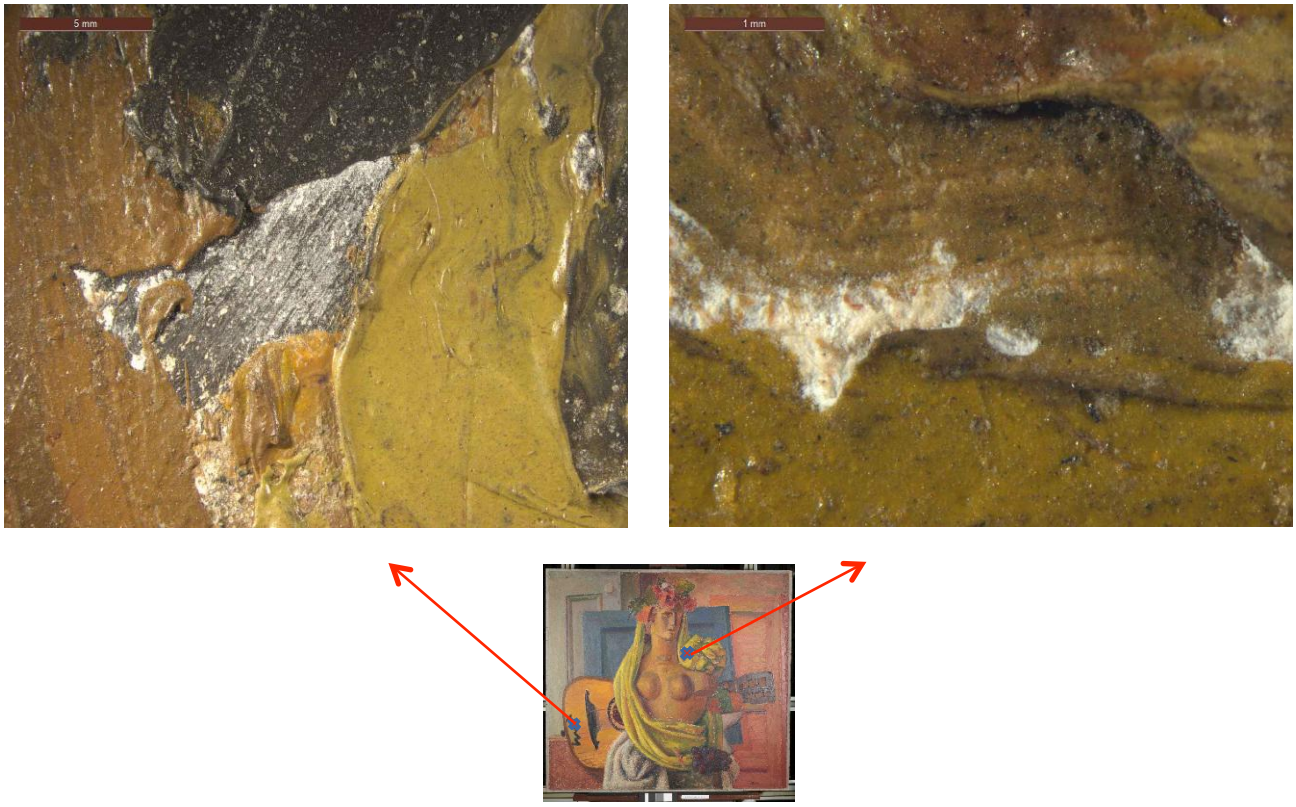
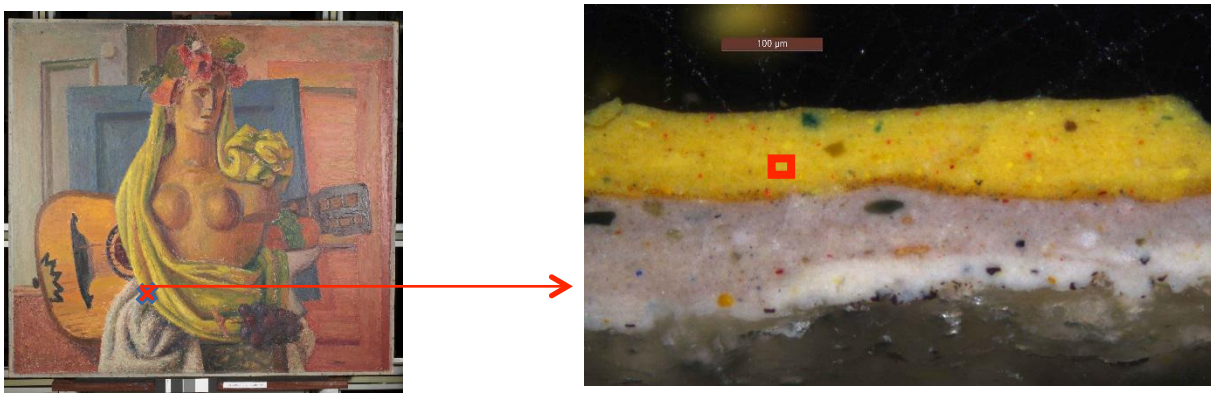


Figure 34: *Still Life with Bust*, details of white crystalline deposits accumulation

Elemental analysis allowed us to identify the presence of magnesium within the paint layers. And an elemental colour map of the crystalline deposits present on the painting's surface allowed us to infer the presence of Epsomite. Given their water-soluble nature they could be dissolved by targeting the specific specs with a PH 5.5 adjusted water and micro brushes.

[32] It has been proposed that the formation of the variety of soluble salts, irrespective of composition, contributed to the physical disruption of the film structure, leaving an open, disturbed network with reduced cross linking and enabling increased vulnerability to swelling. The mechanical failure and the water-soluble degradation products formed is attributed to be one of the major causes of water sensitivity in twentieth century paint films: Silvester, G., *An experimental investigation into the formation of sulphates in oil paint films exposed to gaseous sulphur dioxide and the relationship between sulphates and water sensitivity*. 3rd Year Project (unpublished). Department of Conservation and Technology. The Courtauld Intitute of Art. Also, Silvester, G. *et al.* (2013) 'A cause of water-sensitivity in modern oil paint films: The formation of magnesium sulphate', p. 38–51.



Cross-section from the yellow paint at 100 µm. Normal light

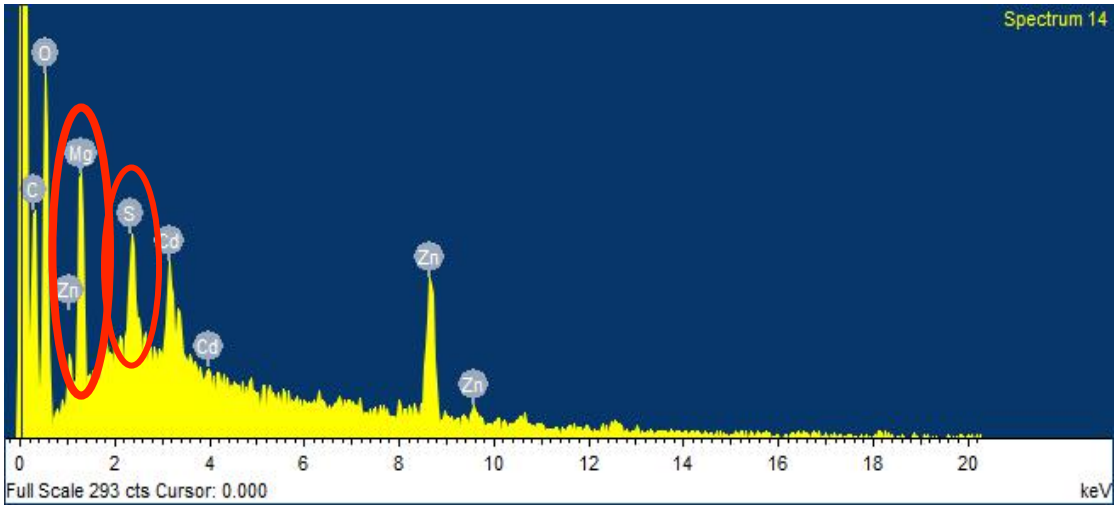


Figure 35: EDX spectra showing the presence of magnesium (Mg) and sulfur (S)

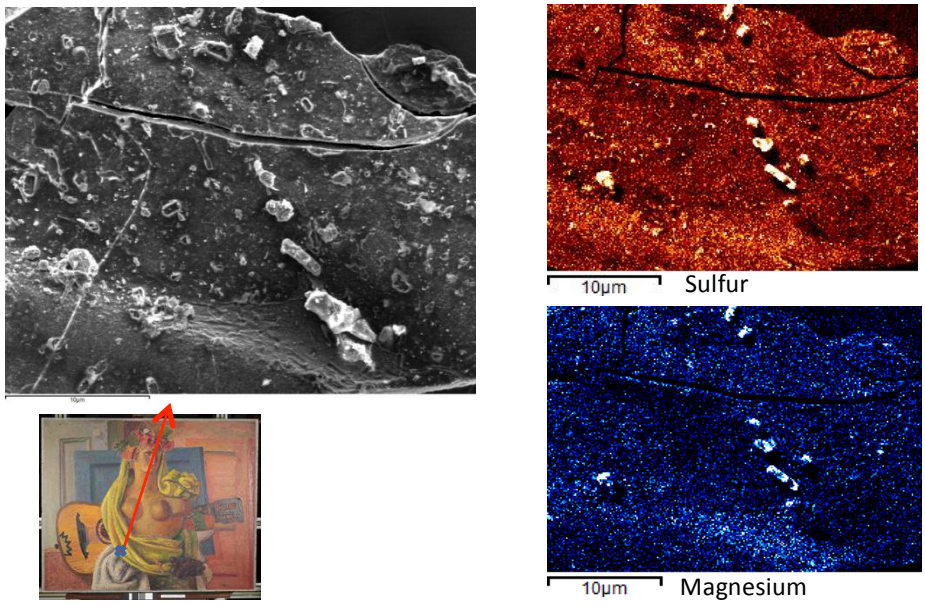


Figure 36: Colour maps showing greater concentration of sulfur and magnesium in correspondence with the crystalline deposits on the surface. Magnification 10 µm

-Cadmium Yellow

We also observed orthogonal networks of cracks following the lighter passages of yellow (Fig. 37). The paint in cracks and in areas of paint loss is a lighter yellow than the one at the surface, suggesting that some degradation of the pigment has occurred presumably in relation to exposure to high humidity levels.

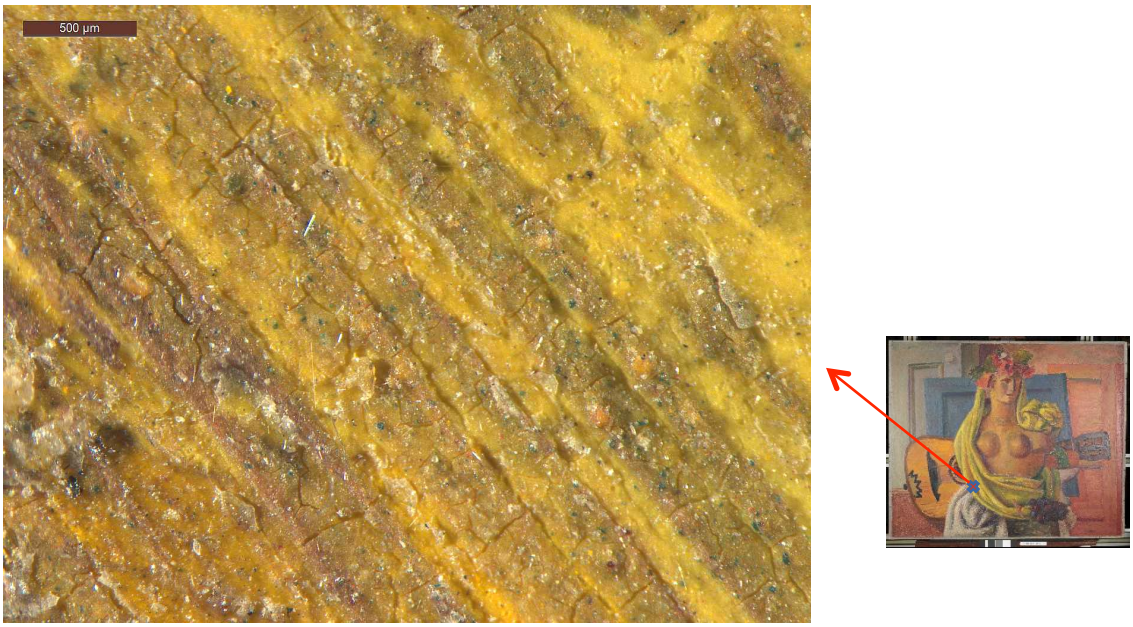


Figure 37: Orthogonal cracks and ochre coloured areas of degradation in the cadmium yellow

EDX analysis of the elements in the yellow area revealed the presence of elemental cadmium (Cd) which is usually indicative of cadmium yellow. The lighter shades are manufactured with zinc (Zn) or barium (Ba), two elements that are also present in this painting. It is unclear whether barium is present due to lithopone or a barium sulfate extender.[33]

The cadmium yellows were introduced to the market in the second half of the 19th century as intense, opaque and stable replacements for the unstable and toxic chromium

[33]Cadmium lithopone was made with up to 60% barium sulfate and Cadmium zinc sulfide was produced calcining cadmium and zinc sulfides with either zinc or magnesium oxide, containing up to 25% zinc in Eastaugh, N. *et al.* (2004) 'Cadmium sulphide. Cadmium sulfide, amorphous type. Cadmium sulfide, Greenockite type. Cadmium sulfide, Hawleyite type. Cadmium sulfide Lithopone, Cadmium sulfides and selenides group. Cadmium sulfoselenide. Cadmium yellow. Cadmium yellow lithopone. Cadmium zinc sulfide', in *Pigment Compendium. A dictionary of historical pigments*. Oxford: Elsevier, p. 70–73. Eastaugh, N. *et al.* (2004) 'Cadmium sulfide, Greenockite type. Cadmium sulfide, Hawleyite type and cadmium sulfide, amorphous type. Cadmium selenide sulfide and cadmium selenide. Cadmium mercury sulphide and cadmium zinc sulfide.', in *The pigment compendium. Optical microscopy of historical pigments.* Oxford: Elsevier, p. 132–139.

yellow, but not all varieties of cadmium yellow are indeed stable. Deterioration appears to occur mainly in the lighter yellows, often cadmium zinc sulfides, and leads to discolouration (either a fading or whitening, or a darkening to a dull ochre-like colour). Due to its semi-conductor and photocatalytic properties, can promote the degradation of organic binders responsible for the breakdown in the cohesion within the paint itself[34], producing a chalking and crumbly surface that is sensitive to any sort of cleaning.[35] *Still Life with Bust* exhibits darkening of the light shade of yellow, cracks related to an incipient loss of cohesion and some water sensitivity.

The introduction of the lithopones in the 1920s, which cost a half to a third of the price of pure cadmium sulfide, was an important factor in bringing the cadmium pigments into widespread industrial use[36]. Lithopones are precipitated simultaneously as[37]:

$CdSO_4 + BaS = CdS + BaSO_4$

The product of early manufacture processes had impurities and adulterants.[38]

In relation to the formation of magnesium sulfate heptahydrate discussed before, free sulfur is commonly associated to the paler varieties of yellow.[39] The deterioration of cadmium yellows gives raise to the production not only of cadmium oxide, cadmium sulfates, and zinc oxide, but also sulfur dioxide gas, which in this case comes from inside the paint

[34] It has been also suggested that there are significant discrepancies in the literature, with some investigations showing the overall effect of cadmium sulphide to be photo-stabilisation. It must be noted that as yet no study has been reported on the effects of cadmium sulphide on oil paint media, in Leone, B. (2003) *An investigation into the deterioration of cadmium sulphide yellow artist's pigments*. 3rd Year Project (unpublished). Department of Conservation and Technology. The Courtuald Intitute of Art, p.3.

[35] "Zinc oxide in the presence of moisture can catalyse the formation of hydrogen peroxide when irradiated by near UV light, the presence of which is strongly implicated in the chalking of zinc oxide-based paint films.", in Leone, B. *An investigation into the deterioration of cadmium sulphide yellow artist's pigments*. p.1

[36] Fielder, I. & Bayard, M.A. (1986) Cadmium yellows, oranges and reds. Artists' Pigments: A Handbook of Their History and Characteristics, Oxford, UK: Oxford University Press, p. 69.

[37] Lithopones were introduced in the United States in 1921 (Marston, R. Patent No: 1,399,506, December 6, 1921), although were only produced industrially form the 1930's in Leone, B., *An investigation into the deterioration of cadmium sulphide yellow artist's pigments*, p.10.

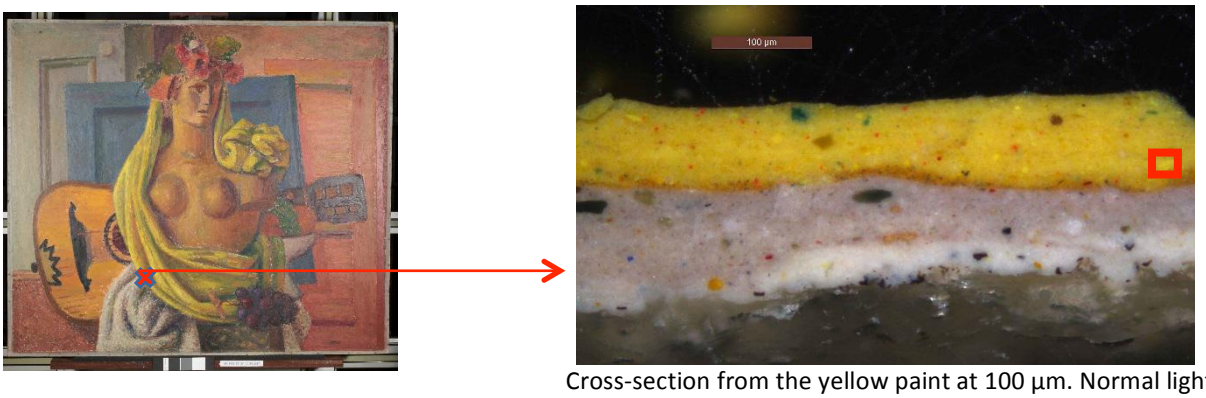
[38] Leone, B., *An investigation into the deterioration of cadmium sulphide yellow artist's pigments*, p.13-15. Impurities include: Iron, lead, bismuth and any material resulting in a colured sulphide, even if only present in traces, could have detrimental effects on the resulting pigment. This pigments were adulterated and extended with orpiment, lead-, strontium-, zinc- or barim chromates, iodine yellow, compounds of copper, bismuth, and mercury.

[39] Leone, B., *An investigation into the deterioration of cadmium sulphide yellow artist's pigments*, p.15.

film.[40] In 1924, Weber explained that the "lemon or citron and light tints of Cadmium Yellow are usually not the pure sulfide, but the same in combination with flowers of sulfur, zinc or white pigments, and are then invariably not quite as permanent as the medium or deeper hues".[41]

In most cases the combination most prone to serious deterioration appears to be light exposure at high RH (85%) with films comprising cold-pressed linseed oil.[42] Organic analysis (GC-MS) could confirm the presence of oleic acid indicating the slow drying of the linseed oil binder, which could contribute to the solubility of the film.[43]

Due to the scope of this project we could not determine which variety of cadmium yellow paint Gertler used. Cadmium zinc sulfide is known to exhibit degradation problems in paintings and could explain the crack pattern present. It also remains unclear if the darker shade in the yellow paint is a product of pigment mixing or degradation.



Cross-section from the yellow paint at 100 µm. Normal light

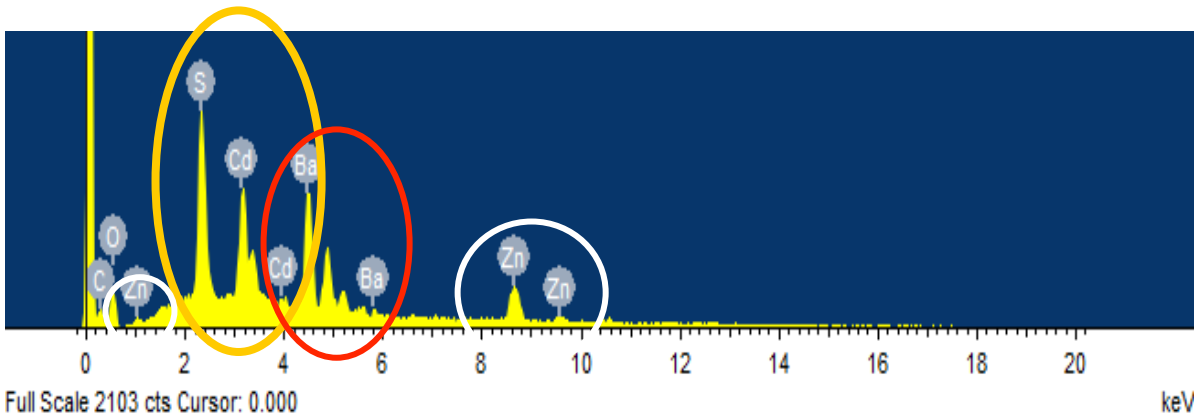


Figure 38: EDX spectra showing the presence of cadmium (Cd), sulfur (S), zinc (Zn) and barium (Ba).

[40] Leone, B., *An investigation into the deterioration of cadmium sulphide yellow artist's pigments*, p.34.
[41] Weber, F.W. (1924) *Artist's pigments: their chemical and physical properties*, London: Scott, Greenwood & Son, p.29.
[42] Leone, B., *An investigation into the deterioration of cadmium sulphide yellow artist's pigments*, p.48.
[43] Leone, B., *An investigation into the deterioration of cadmium sulphide yellow artist's pigments*, p.24-26.

In a sample mounted as a cross section a very thin coating layer can be seen. This coating is degraded making it no longer even and transparent.

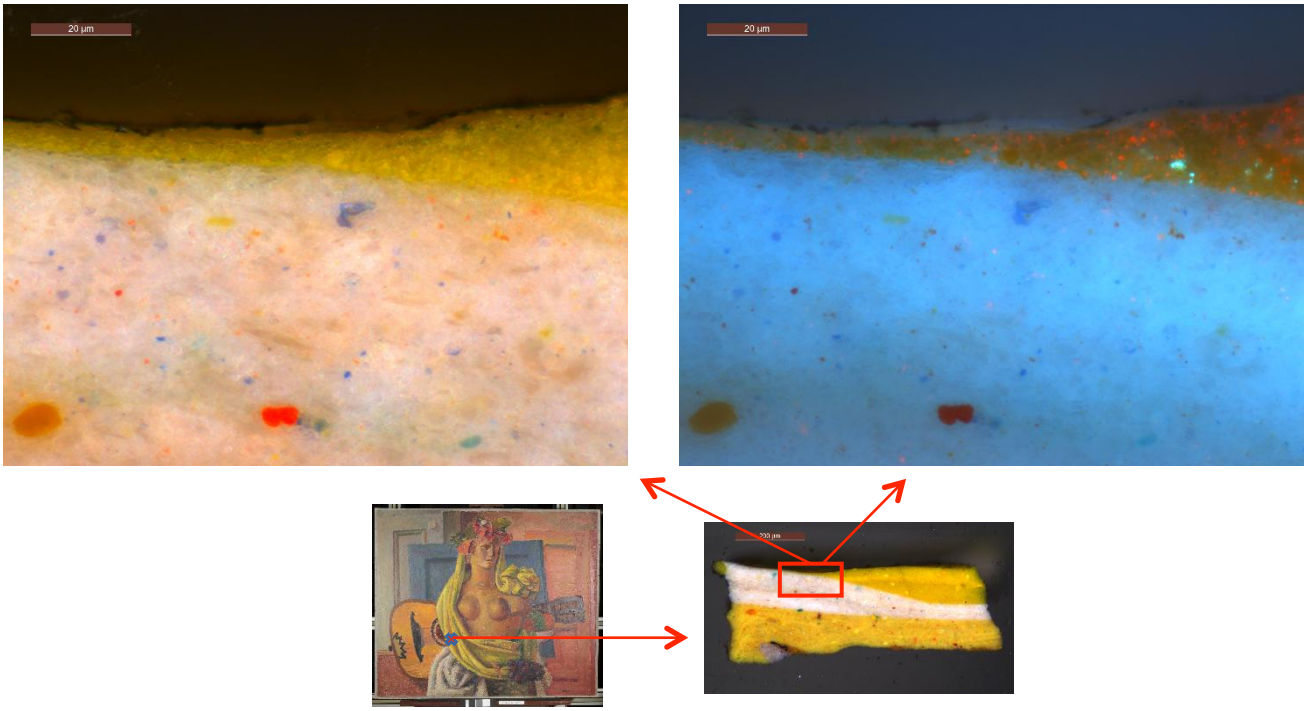


Figure 39: Thin coating layer in a yellow paint sample. Normal light (left) and fluorescing in UV light (right). Magnification 20 µm

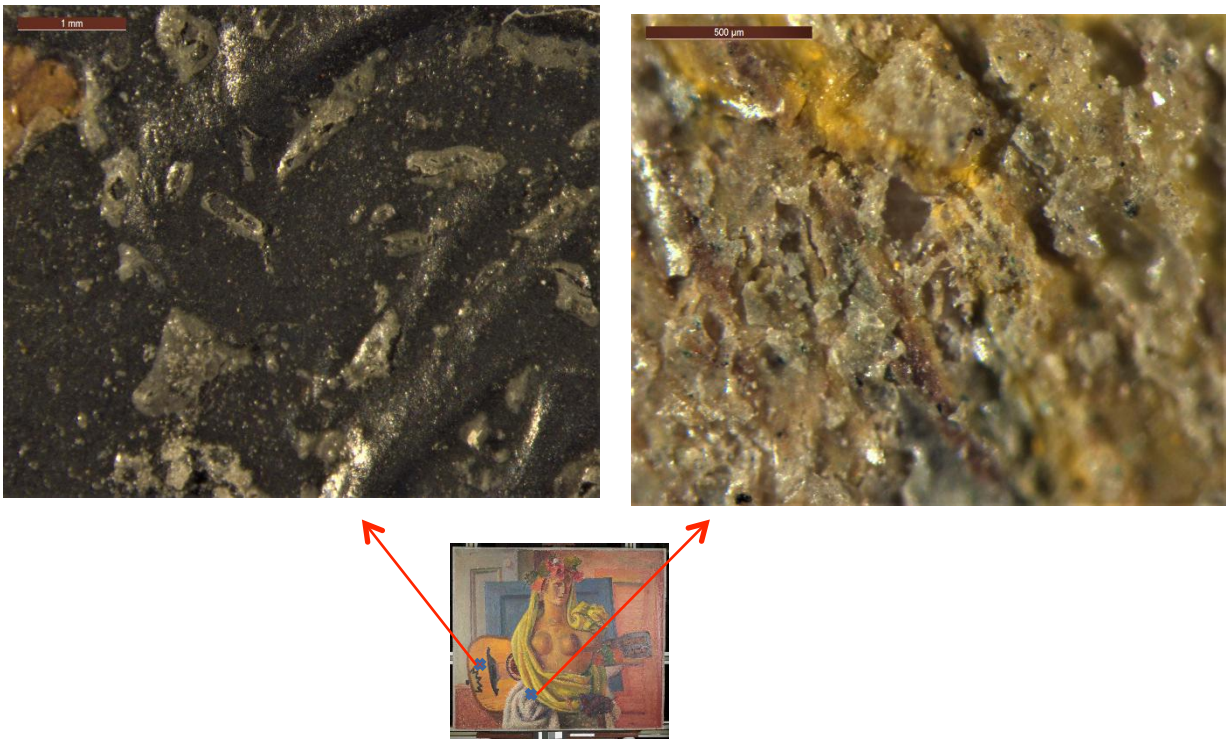


Figure 40: Coating layer degrading, no longer even and transparent. Magnification 1 mm (left) and 500 µm (right)

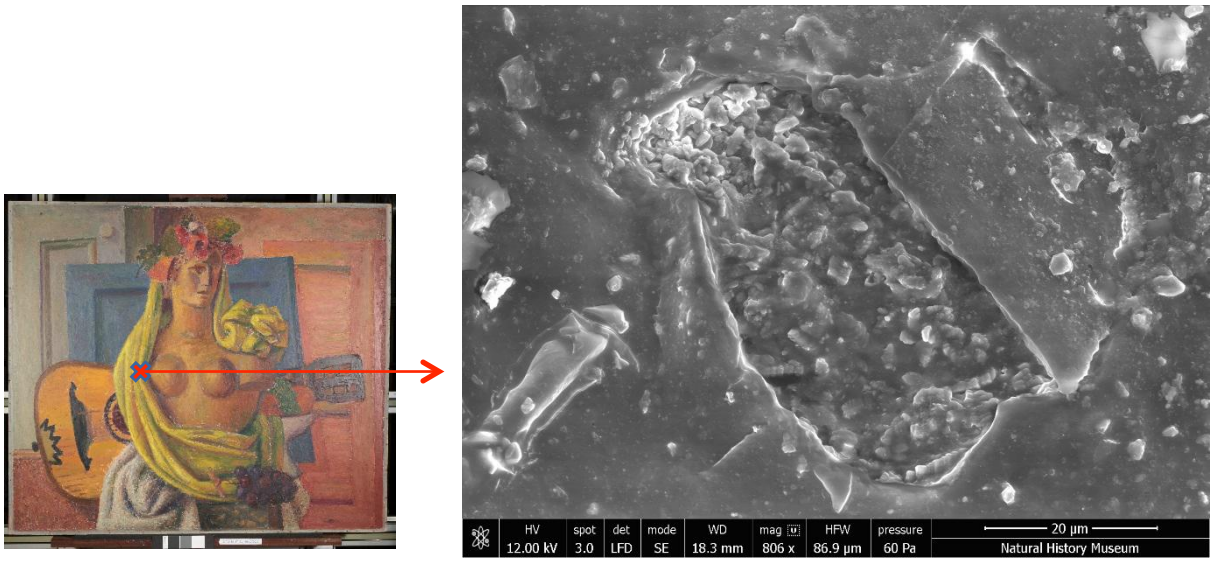


Figure 41: SEM NHM topography of a yellow sample. Magnification 20 µm. The topographical analysis of the coating corroborates its thin and uneven nature. This examination also revealed areas of loose pigment particles in the gaps of the coating.

There are several plausible reasons for the lack of cohesion between the pigments and the binding media in the paint layer but constrains within the project would not allow for their exploration here. However, regardless of its cause, this lack of cohesion is what caused some areas of water sensitivity observed during cleaning tests.

Tate has kindly analysed this coating for us with GC-MS and it is a natural resin varnish. This coating facilitated the safe cleaning of the painting's surface dirt during treatment (Fig. 42).

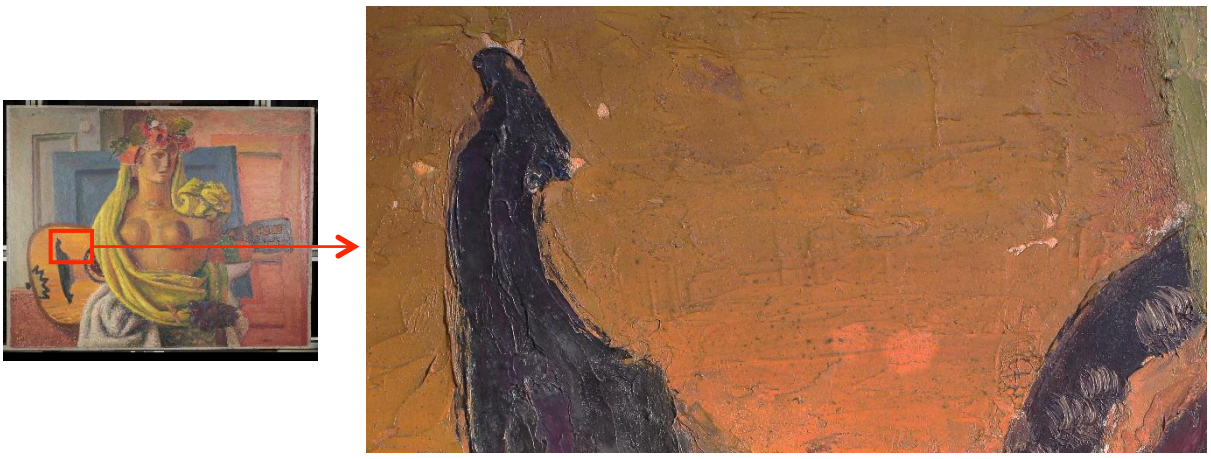
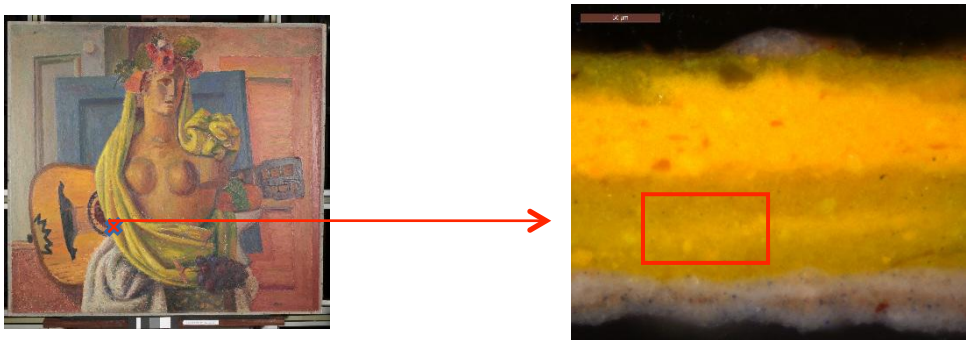


Figure 42: cleaning test

-Cobalt Yellow (Aureolin)

We have also identified in the painting another pigment that could change appearance under specific circumstances: Potassium hexanitrocobaltate (III) or cobalt yellow, also called Aureolin.[44]



Cross-section from the yellow paint at 50 µm. Normal light

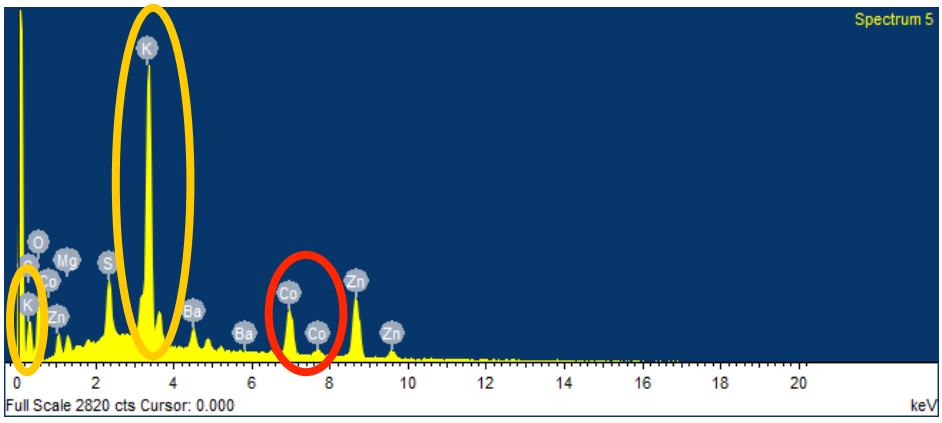


Figure 43: EDX spectra showing the presence of cobalt (Co) and potassium (K)

The literature has reported that this pigment could fade, brown, blacken[45] or even explode[46] while still in tubes, but little reference is made to the process by which it was prepared, hence, there is little documentation concerning its instability.[47] Its replacement by

[44] Eastaugh, N. *et al.,* 'Aureolin', p. 28.
[45] Weber, F. W. (1923) 'Aureolin', in *Artist's pigments. Their chemical and physical properties*. New York: D. Van Nostrand Company, p. 22. Ash, N. (2018) *Cobalt yellow (Aureolin) inorganic*, *The Book and Paper Group wiki. Media problems (PCC)*. Available at: http://www.conservation-wiki.com/wiki/Media_Problems_(PCC)#Media_Problems.
[46] Page, H. (1997) *Aureolin Alert. The defective paint*, *Hilary Page's Guide to Watercolor Paints*. Available at: http://www.hilarypage.com/AureolinAlert
[47] Cornman, M. and Feller, R. L. (1986) 'Cobalt yellow (Aureolin)', in *Artists' pigments. A handbook of their history and characteristics*. National Gallery of Art, Washington: Cambridge University Press, p. 37–46.

more reliable and less expensive pigments soon eliminated interest in investigating its properties.[48]

However, the present compound is known to accelerate the decomposition of organic pigments like lakes and in the process, cobalt yellow itself turns brown.

Both pigments are present in close proximity: The presence of cobalt yellow, also known as Aureolin, was confirmed by Scanning Electron Microscopy / Energy Dispersive X-ray spectroscopy (SEM-EDX) and Fourier Transform Infrared Reflectography (FTIR) analyses. The red lake present has been identified based on its colour and pink fluorescence in ultraviolet (UV) light. This lake has been used in areas of the red door at the right-hand side of the composition and wet on wet in the bust's carnation. It has not been possible to investigate if the complex reaction between cobalt yellow and the red lake is taking place in this painting.

[48] Eastaugh, N. *et al.,* 'Aureolin', p. 28.

Conclusion and possibilities for future research

Through a combination of art historical analysis and technical study, we were able to meet the research goals established at the outset of our project. Technical examinations of *Still Life with Bust* allowed us to better understand the materials Gertler used, as well as their degradation processes. This ultimately informed our distinction between deliberate elements of the painting (exposures of paper and undercoat) from products of degradation (most notably the Epsomite deposits). We have concluded that only a fraction of the white specs we initially observed were part of the artist's design. Our analyses also provided clues to the painting's history, as the conditions needed to form these crystals suggest the painting had been stored in a humid environment with high levels of sulfur dioxide.

The study of Gertler's use of colour was another important area where technical analysis informed art historical study. The analyses of cadmium yellow and cobalt yellow's degradation processes, as well as our study of the varnish, indicate that the painting's original appearance was much more vibrant than it is today. Because of these findings, we could better appreciate the change in Gertler's palette in the last decade of his life, which allowed us to hypothesize on a relationship between Gertler's use of bright colours and his darkening internal state.

Indeed this project is but a starting point; there is much more research to be conducted into Gertler's experimental techniques, colour choices and recurring motifs. In our research, we have traced personal as well as professional influences of the style and content of this painting. One potentially fruitful area of future study may lie in a comparison between *Still Life with Bust* and *Violin and Bust* from 1934, now at the Fitzwilliam Museum in Cambridge. In addition to being strikingly similar in style and technique, photographs of this painting indicate the presence of white specks, further recalling the appearance of *Still Life with Bust*. Unfortunately, our project coincides with the complete remodeling of the 20th century section of that museum, meaning there will be no public access to the work until the end of June. We were also unable to locate any conservation records of this painting.

Another avenue for linking the effloresce to the artist's materials may exist at the Roberson archive which houses information on Windsor & Newton paint formulations. We know from the artist's studio notebooks that he used this brand, which in the 20th century added magnesium carbonate, as an extender, to make larger batches and therefore cheaper

paints. Learning about the components of their paints from this period could confirm the presence of this additive, which reacts to form Epsomite. In addition to housing records on the Windsor & Newton paints, the Roberson Archive also preserves accounts of materials purchased and loaned to artists, including plaster casts, which could provide us with information relevant to the objects depicted in *Still Life with Bust* — most notably, the bust itself.

Despite our efforts, we have been unable to access the archives, so we can only speculate on its contents. But if we, or any other scholars, decide to continue this project, the Roberson archive would be a great place to explore.

Other areas in need of exploration include: the missing years in the painting's early provenance following the artist's death [1937-1952]; the question of the manufacture process of the cadmium yellow which could be a lithopone or a cadmium zinc sulfide; and when and by whom was the varnish applied.

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Figure 21: Paul Cézanne, *Still Life with Fruit Dish, Apples and Bread*, c. 1879-80, oil on canvas, 55.1 x 74.4 cm (Oscar Reinhardt Collection 'Am Römerholz'. Winterthur)

Figure 22: Paul Cézanne, *Still Life with Fruit Dish*, 1879-80, oil on canvas, 46.4 x 54.6 cm (MoMA, New York)

Figure 23: *Still Life with Bust*, detail

Figure 24: *Still Life with Bust*, with raking light

Figure 25: *Still Life with Bust*, detail in UV light

Figure 26: *Still Life with Bust*, detail

Figure 27: *Still Life with Bust*, detail

Figure 28: *Still Life with Bust*, detail

Figure 29: *The Fruit Basket*, 1925, oil on canvas, 78.5 x 100 cm (Tate, London) (detail pentimento)

Figure 30: *Flower Piece,* 1939, oil on canvas, 95.3 x 81.3 cm

Figure 31: *The servant girl,* 1923, oil on canvas, 64 × 47 cm

Figure 32: *Mandolinist,* 1934, oil on board with paper laminated finish, 77 x 56 cm

Figure 33: *The basket of fruit,* 1925, oil on canvas, 81.5 x 101.5 cm

Figure 34: *Still Life with Bust*, detail of white crystalline deposits accumulation

Figure 35: EDX spectra showing the presence of magnesium (Mg) and sulfur (S)

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Figure 37: Orthogonal cracks and ochre coloured areas of degradation in the Cadmium yellow

Figure 38: EDX spectra showing the presence of cadmium (Cd), sulfur (S), zinc (Zn) and barium (Ba)

Figure 39: Thin coating layer in a yellow paint sample. Normal light (left) and fluorescing in UV light (right). Magnification 20 μm

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Figure 41: SEM NHM topography of a yellow sample. Magnification 20 μm. The topographical analysis of the coating corroborates its thin and uneven nature. This examination also revealed areas of loose pigment particles in the gaps of the coating.

Figure 42: cleaning test

Figure 43: EDX spectra showing the presence of cobalt (Co) and potassium (K)

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Acknowledgements

We would like to acknowledge with gratitude the following individuals and institutions:

-Silvia Amato, Aviva Burnstock, Miriam Gillman, Pia Gottschaller and Elisabeth Reissner (The Courtauld Institute of Art)

-Ben Blackburn and Bill Luckhurst (Analytical Lab King's College)

-Sara Harrop and Molly Hughes-Hallett (Hamilton Kerr Institute)

-Rebecca Hellen, Judith Lee, Bronwyn Ormsby, Harriet Pearson and Joyce Townsend (Tate)

-Sarah MacDougall (Ben Uri Gallery)

-Rebecca Moisan and Ambrose Scott-Moncrieff (Southampton City Art Gallery)

-Henrietta Ward (Fitzwilliam Museum)

-Tate Reading Rooms