



Short notice

Tracing Willem Kick: A Collaborative Journey in Reconstructing Seventeenth-Century Imitation Lacquer

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A growing interest in reconstruction as a methodological approach is being observed among conservators, art historians and historians of science, reflecting their increasing focus on understanding the material as an integral part of a work of art.¹ Researchers emphasize the valuable insights to be obtained from a personal involvement with specific materials. An inherent sense of material properties and workability can be gained from this direct personal engagement. In the words of Marta Ajmar, Associate Professor and Director of Research at the University of Warwick: 'even the first contact with it makes you aware of the resistance and potential of the material'.² Pamela H. Smith, founder of the Making and Knowing Project at Columbia University, claims that early modern craftspeople and experienced practitioners possessed a far greater 'intimate knowing' of materials than today's historians.³ Reconstruction is partly based on subjective and plausible, but unverifiable experiences and interpretations.⁴ A historically accurate reconstruction is impossible to achieve through the study of written sources, whereas approximations – 'historically informed' reconstruction attempts – provide a much better understanding.⁵

< *Detail of the lid of the casket (fig. 1)*

Reconstruction enables us therefore to approach historical sensory experiences more closely.⁶

Like porcelain, imported East-Asian lacquerware was a popular sensory object in the seventeenth century. Lacquerware was prized for its glossy surface, deep sheen and 'soft' appearance. A rich contrast was created by decorating the often dark black pigmented lacquer surfaces with powders and strewings of various metals as well as inlays of mother-of-pearl and other precious materials. To achieve a perfect lustrous surface, lacquer is applied in numerous layers most commonly to a wooden substrate. Raw lacquer derives from the refined sap of a tree from the Anacardiaceae family, found only in East Asia. Historically, this material was unfamiliar to European practitioners.⁷

At the onset of the seventeenth century, Willem Kick (1579-1647) was one of the first craftsmen in Northern Europe who attempted to imitate Asian lacquer, using available materials like linseed oil and various resins. Only a few of his works have survived to the present day. Already in Kick's own day, connoisseurs distinguished genuine Asian lacquer from his imitations produced in Amsterdam. Less influenced by East-Asian models, the design and style of his creations were adapted to a European taste.⁸

Kick's work was admired, exchanged as diplomatic gifts, staged in paintings and collected.⁹ One example is a casket by Kick in Amalia van Solms's (1602-1675) possession, that was displayed alongside her collection of genuine Asian pieces, and explicitly mentioned in her 1632 inventory as being 'from Amsterdam'.¹⁰

Over time, the objects created by Kick have aged and lost their pristine appeal.¹¹ Today it can be difficult to ascertain why these objects were once so highly valued. Either to revive the appearance or due to mechanical damage, many original surfaces have undergone restoration and conservation treatments. Scientific analysis can help reveal the material composition, condition, previous repairs and physical history of objects. At this time, only scant information exists regarding Kick's working methods. While he appears to have made no annotations documenting his work, contemporaneous recipe books reflect the materials and methods commonly applied in his day and speculatively may have been used by Kick. By combining the expertise from the fields of art history and art conservation, this article describes how a collaborative journey bridges the gap between historic recipe books and advanced technical analyses. Through the process of reconstruction light is shed on the appreciation of Kicks artefacts in the seventeenth century.

Reconstruction of Lacquer

Based on scientific and technical analysis carried out by Christina Hagelskamp and Jan Dorscheid on two caskets attributed to Willem Kick in the Rijksmuseum collection (inv. nos. BK-2007-6 (fig. 1) and BK-2014-1), linseed oil, rosin (also known as colophony) and Venice turpentine were identified as the main components of the varnish.¹² This material analysis made it possible

to select a comparable recipe for the reconstruction of Willem Kick's lacquer application. While recipes for imitating Asian lacquer proliferated in the late seventeenth century, only a few used in the early years after 1600 could be identified. Two recipes from Kick's time contain linseed oil and also explicitly refer to an East-Asian connection in the title.¹³ Both recipes are listed in the so-called Mayerne Manuscript (c. 1620-46), a book compiled by the physician Sir Theodore Turquet de Mayerne (1573-1655) containing numerous recipes and observations regarding various art and craft technologies.¹⁴

Mayerne's first linseed oil recipe, called 'Vernix de la Chine' (Chinese Varnish), contains both lead and a material known as 'litharge', a reddish-yellow lead-monoxide pigment.¹⁵ However, these substances did not appear in the technical analysis of the caskets, thereby ruling out this recipe. Mayerne's second recipe served as the basis for the reconstruction.¹⁶ Besides instructions on the various processing steps, the ingredients mentioned closely correspond with the materials found in the analysis and include: linseed oil, umber, amber, shellac, and oil of turpentine. An exact replication of the recipe proved challenging due to material availability and differences processing and handling certain materials given modern-day health and safety knowledge.

For the reconstruction (fig. 2), the first step was to mix the cold-pressed linseed oil with umber (fig. 2a). Due to difficulties obtaining the specified 'nut sized pieces' of umber, umber pigment was utilised. This mixture was brought to a boil. As directed, the reddest pieces of amber were simultaneously heated in a separate container.¹⁷ To control both processes precisely, the mixtures were heated using hot plates instead of an open fire. In the case of the highly flammable oil, the experiment was carried out with

extra care, overseen in its entirety by the responsible fire safety officer.¹⁸ The oil mixture was boiled and stirred several times. It was then ignited and allowed to burn until it became a thick, blackened substance with a brownish hue (fig. 2b). The heating of the amber resulted in a heavy, thick smoke formation, but failed to produce the intended liquefaction. The somewhat burnt amber was then ground into powder, before boiling it with some of the linseed oil that had been produced. Upon observing that parts of the amber dissolved well, the remaining amber was mixed with the oil and again brought to a boil (fig. 2c). In accordance with Mayerne,

crushed shellac was then added to the mixture, which was again brought to a boil. Once it had slightly cooled, the fragrant oil of turpentine was heated in a water bath and added to dilute the thick, honey-like, amber-linseed oil mixture. The result was a dark, viscous, shimmering liquid, interspersed with lumps and particles (fig. 2d). The undesirable lumpy aspect stemmed in part from the amber not being completely dissolved, and also, from using amber as a pigment, versus the aforementioned 'nut-sized pieces'. Even so, a positive effect was observed: due to the disproportionately large surface area of the amber pigment, its function as a drier in the oil,

Fig. 1
WILLEM KICK
(attributed to),
Casket, 1618.
Lacquered wood,
12 x 15.4 x 11.95 cm.
Amsterdam,
Rijksmuseum,
inv. no. BK-2007-6.





2a



2b



2c



2d



2e



2f

Figs. 2a-f
Preparing the varnish for the linseed oil recipe, top left to bottom right: raw cold-pressed linseed oil; igniting the hot oil; adding the amber; re-heating the mixture, sieving out any remaining particles; mixing lampblack into the basecoat on a glass grinding plate. Photos: Michèle Seehafer

Figs. 3a-e

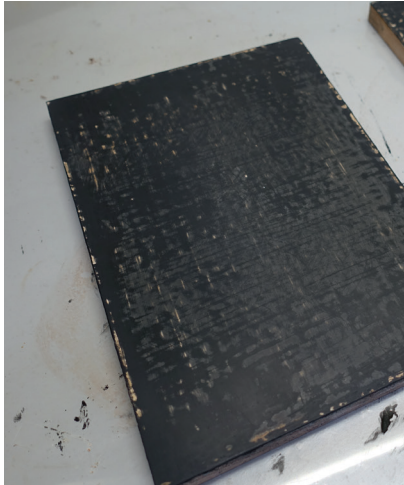
Various steps of the lacquer application, top left to bottom right: applying the final gesso layer with lampblack; sanding with horse tail; sanding the first black oil layers; polishing with charcoal; buffing the surface with leather. Photos: Michèle Seehafer



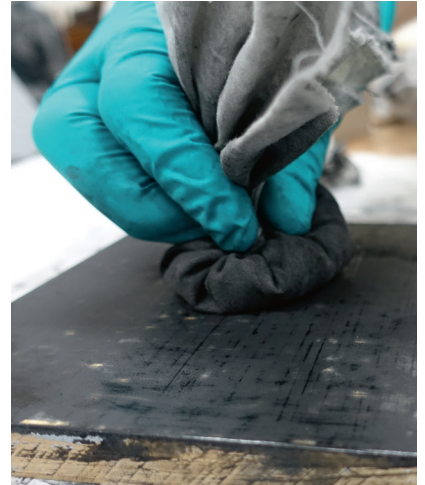
3a



3b



3c



3d



3e

speeding up the film-forming process, was considerably stronger than usual. Lastly, as stipulated in the recipe of the varnish, the mixture was strained to remove any large particles (fig. 2e).

Before applying the initial varnish layer to the oak sample board, an undercoat consisting of a layer of rabbit-skin glue and three chalk gesso layers was prepared. Lampblack was mixed into the final gesso layer (fig. 3a) and the first layer of varnish (fig. 2f).

When it came to the varnish's application, the recipe lacked sufficient detail. This suggests Mayerne wrote his recipe book with highly skilled craftsmen and experienced practitioners in mind.¹⁹ For more detailed descriptions of the use of the materials, *A Treatise of Japaning and Varnishing* (1688) by John Stalker and George Parker, the first book solely dedicated to the manufacture and application of imitation Asian lacquer, was consulted. The treatise states that the surface to be lacquered must be absolutely smooth: 'spare no place, or pains'.²⁰ Horsetail (also known as 'Dutch rush') and tripoli, a fine abrasive powder, were recommended for sanding.²¹ Horsetail proved to be a highly effective but rather coarse option (fig. 3b). During the lacquering process, meticulous sanding turned out to be crucial to achieving the desired result (figs. 3c-e). The Mayerne recipe places no emphasis on this aspect. The importance of trial and error during reconstructions is evident, as has been pointed out by others.²² With each subsequent layer of varnish, the imperfections in the underlying gesso ground became increasingly noticeable. To achieve the desired final result and gloss effect, many more varnish layers therefore had to be applied with intermediate polishing, thus underscoring the importance of sanding and polishing the preparatory layers to perfection, a highly cumbersome task. After applying two layers of the varnish with lampblack, the pure unpigmented varnish was added. As more layers were



applied to the surface, the drying times continued to increase. This time-consuming working process explains why unfinished caskets were kept in Kick's warehouse alongside completed ones, as described in his estate inventory.²³

To compare the material aesthetic of Kick's work made of linseed oil varnishes, another recipe containing shellac, a widely used material in various lacquer recipes towards the end of the seventeenth century, was also reconstructed on an oak sample board. The recipe originates from Johannes Kunckel's (1630-1703) *Ars Vitruvia Experimentalis* from 1679.²⁴ The book soon grew in popularity and was used by artists and practitioners throughout the centuries.²⁵ Although today best known for glass production and its compilation of glass recipes it also contains several recipes for different lacquers. These recipes originate from various sources, including other recipe books, oral accounts by Dutch artists and Kunckel's own experiments.²⁶ The recipe chosen called for a blond shellac-to-spirits ratio of 1:6 and a high-proof alcohol; therefore, we used a 96% Ethanol.²⁷ Except for applying the same preparatory layers, consisting of a perfectly smooth gesso ground, the only time-consuming step was that the mixture had to be stirred for several hours and then allowed to settle for several days. To reproduce Kunckel's technique, the first varnish layers were again mixed with lampblack.

A side-by-side comparison of the two sample boards showed that the lustre on each board differed significantly, with the oil providing a somewhat deeper shine and the shellac a rather hard brilliance (fig. 4). A comparison of both methods revealed that the materials' application also called for diverging approaches. Because shellac dries rapidly, multiple coats can be applied on a given day;

with each added layer, however, material handling becomes increasingly complex. Conversely, lacquer application with linseed oil varnish is trickier in the initial stages, but subsequent coats are easier to handle. With both recipes, a skilled hand and the prompt application of the varnish were essential.

Reconstruction of Decorations

Kick's patrons were probably not only attracted to his creations because of the black lacquer. They would also have been drawn to the combined effect of the surface's glossiness and the shimmering, gold ornamental decoration, comparable to the rich contrast of genuine Asian models. Accordingly, efforts were also made to reconstruct the decorative work. By tracing Kick's designs, insight was obtained into his delicate brushwork. That said, even the initial steps of transferring them onto the plates proved difficult. Mayerne, Stalker and Parker all suggested the use of chalk for this purpose.²⁸ While this technique worked well on the shellac, the chalk could not be wiped off the linseed oil. Whether Kick himself encountered this issue is uncertain. As a skilled craftsman, he may not have had to trace his designs.

For the decoration, Kick utilized mordant gilding and shell gold, common methods at the time (fig. 5).²⁹ For the reconstruction, both oil mordant and gum arabic mordant were compared side by side. Mayerne's recipe for 'Making Oil for Applying Gold' involved heating up oil and mixing it with lead powder and garlic, serving as the mordant.³⁰ Due to health concerns, lead powder was not used in the reconstruction. The oil mordant was effective on the shellac surface but was repelled on the oil sample board. The surface tension was reduced with soapy water. Unfortunately, this had the undesirable consequence that the gold leaf adhered to both the mordant

< Figs. 4
Samples showing
the various stages
of application.
Left: linseed oil
varnish; right:
shellac varnish.
Photo: Iben Bølling
Kaufmann



Fig. 5
WILLEM KICK
(attributed to),
Casket, c. 1620-25.
Lacquered wood,
19.5 x 20.6 x 15.2 cm.
Amsterdam,
Rijksmuseum,
inv. no. BK-NM-5267.

and the varnish surfaces on the board, with no conclusive solution to resolve this issue. To at least approximate the effects of Kick's technique, a gum arabic barrier was used to mask the background of the decoration and subsequently removed once the mordant and gold leaf had been applied. In comparison, the handling of the gum arabic mordant described by Kunckel – recommended only for experienced practitioners by Stalker and Parker – indeed proved difficult (fig. 6).³¹ The process was eventually successful, after abandoning the mastic recommended by Kunckel and through reactivating the gum arabic mordant

by breathing upon it. Overall, the application of the decoration turned out to be highly laborious and more challenging than expected, especially in the case of the linseed oil sample board, which posed numerous difficulties.

Conclusion:

Addressing the Senses

Imitating Asian lacquer is a time-consuming endeavour, requiring patience and attention to detail. During the reconstruction, various senses were utilized. Through visual and tactile examination, for instance, the surface smoothness was evaluated.



Figs. 6
Left: final result with
the linseed oil varnish;
right: final result with
the shellac varnish.
Photo: Iben Bølling
Kaufmann

Through olfactory inspection, the scent of the oil of turpentine mixed with the drying oil, or absence thereof, was used as a distinct indicator that the next layer of varnish was ready to apply. Also external factors, e.g. weather and physical conditions, affected the outcome. The embodied intrinsic knowledge of the materials and tools reveal Kick's artistic and manual skills.

Exactly why Kick's objects were so highly prized remains an open question. What we know from traveller Jan Huygen van Linschoten's description, however, is that one quality people admired about the Asian lacquer at the time was the 'brightness of [the] colour' and that it was as 'smooth as a mirror'.³² During the reconstruction, these were precisely the qualities we ourselves encountered. Perhaps

Kick was unique in that he was able to create an intensely shimmering, mirror-like surface while also possessing the knowledge and skills of how one subsequently added gold decoration to said surface.

Joining the expertise of art history and art conservation proved invaluable in the interpretation of the appreciation of Kick's work, as there is often a tendency for the knowledge of surface perception and material processes to become lost amidst written art historical sources and analytical results. The reconstruction gave valuable insights into art-technological processes and shed further light on Kick's workshop practice, bringing us closer to understanding the original state and appreciation of his works and of the objects now on display in the Rijksmuseum.

NOTES

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1 Pamela H. Smith and the Making and Knowing Project, 'Historians in the Laboratory: Reconstruction of Renaissance Art and Technology in the Making and Knowing Project', *Art*

History, Special Issue: Art and Technology in Early Modern Europe 39 (2016), pp. 210-33; Ulinka Rublack, 'Renaissance Dress, Cultures of Making, and the Period Eye', *West 86th: A Journal of Decorative Arts, Design History, and Material Culture* 23 (2016), no. 1, pp. 6-34; Susanna Burghartz et al. (eds.), *Materialized Identities in Early Modern Culture, 1450-1750: Objects, Affects, Effects*, Amsterdam 2021. There are several major research projects where reconstruction plays a significant part in generating understanding of a given technique or material and is used as a source of evidence: The Making and Knowing Project (Columbia

- University, New York), *Recipes and Realities* (NICAS, Amsterdam), *ARTECHNE* (Utrecht University, Utrecht), and *Minding Making* (Harvard University, Cambridge). Sven Dupré et al. referred to several terms regarding performative methods in relation to different disciplines. They combined Reconstruction, Re-enactment, Replication, Reproduction and Re-working under the heading of RRR. Sven Dupré et al., 'Introduction', in Sven Dupré et al. (eds.), *Reconstruction, Replication and Re-enactment in the Humanities and Social Sciences*, Amsterdam 2020, pp. 9-34; Michèle Seehafer, 'Shimmering Virtue: Joris Hoefnagel and the Uses of Shell Gold in the Early Modern Period', in Susanna Burghartz et al. (eds.), *Materialized Identities in Early Modern Culture, 1450-1750: Objects, Affects, Effects*, Amsterdam 2021, pp. 281-321.
- 2 Michèle Seehafer, 'Interview with Marta Ajmar', <https://www.materializedidentities.com/single-post/2018/06/13/interview-with-marta-ajmar> (consulted 30 October 2024).
 - 3 Smith and the Making and Knowing Project 2016 (note 1), p. 227.
 - 4 Historical research cannot be conducted in isolation from subjectivity. William Whitney, 'Back to Basics: What Do we Do with Art Technological Sources once We Have Found them?', in Sigrid Eyb-Green et al. (eds.), *Sources on Art Technology: Back to Basics*, London 2016, pp. 9-14; Indra Kneepkens, *Masterful Mixtures: Practical Aspects of Fifteenth- and Early Sixteenth-Century Oil Paint Formulation*, Amsterdam 2021 (diss. University of Amsterdam), p. 37-38. Scholars of reconstruction are well aware of the limitations of the method. See for example Hjalmar Fors, Lawrence M. Principe, and H. Otto Sibum, 'From the Library to the Laboratory and Back Again: Experiment as a Tool for Historians of Science', *Ambix* 63 (2016), no. 2, pp. 85-97, esp. p. 89; Sven Dupré, 'Re-enactment in Teaching Art History (Part 1)', <https://artechne.wp.hum.uu.nl/re-enactment-in-teaching-art-history-part-1/> (consulted 30 October 2024).
 - 5 Kneepkens 2021 (note 4), pp. 28, 37-38.
 - 6 Michèle Seehafer, 'Interview with Sven Dupré', <https://www.materializedidentities.com/single-post/2017/08/02/interview-with-sven-dupre-%C3%A9> (consulted 30 October 2024).
 - 7 For the interface between the Asian and European lacquers from a material technical perspective, see for example Michael Kühenthal (ed.), *Japanische und europäische Lackarbeiten: Rezeption, Adaption, Restaurierung | Japanese and European Lacquerware: Adoption, Adaption, Conservation*, Munich 2000; Michael Kühenthal (ed.), *Ostasiatische und europäische Lacktechniken | East Asian and European Lacquer Techniques*, Munich 2000, and the report from the European Lacquer in Context project: https://www.belspo.be/belspo/brain-be/projects/FinalReports/ELinC_FinRep.pdf (consulted 30 October 2024).
 - 8 Monika Kopplin, 'Gelact ende verguld: New Discoveries from Willem Kick's Workshop in Amsterdam', *Studies in Conservation* 64 (2019), pp. 4-13. For example, Constantijn Huygens distinguished between original lacquer and what was produced in Amsterdam. See Jaap Jongstra and Jan van Campen, 'Constantijn Huygens and his "East Indian Writing Tray"', *The Rijksmuseum Bulletin* 71 (2023), no. 2, pp. 150-59.
 - 9 Reinier Baarsen, 'Kistjes van Kick? Hollands lakwerk uit de vroege 17de eeuw', *The Rijksmuseum Bulletin* 56 (2008), no. 1/2, pp. 12-27.
 - 10 In the inventory of the Stadhouderskerk Kwartier and the Oude Hof in Noordeinde from 1632 'een cantoorken met vogelkens en bloemen en goude loffewrk, t'Amsterdam gemaect' is listed among other objects originated from 'Jappaen'. Sophie Drossaers and Theo Lunsingh Scheurleer, *Inventarissen van de inboedels in de verblijven van de Oranjes en daarmee gelijk te stellen stukken 1567-1795*, 3 vols., The Hague 1974-76, vol. 1 (1974), p. 193.
 - 11 Michaelsen speaks of a 'slow alienation of the original surface'. See Hans Michaelsen, 'Transparente Überzüge auf Holzoberflächen in den Quellschriften zwischen 1750 und 1850', *Zeitschrift für Kunsttechnologie und Konservierung* 11 (1997), pp. 332-51. See also Paul van Duin, 'Transparent historical finishes on Dutch furniture', *Proceedings* 12 (2015), pp. 124-33.
 - 12 Christina Hagelskamp, 'Technische analyse', can be found in Baarsen 2008 (note 9), pp. 24-27; Jan Dorscheid, *Restauratierapport: Meublen Restauratie; BK-2014-1*, 2016 (unpublished), both utilized pyrolysis Gas-Chromatography/Mass-Spectroscopy (py-GC/MS) and microscopic cross-sections for material analysis. For more technical information on individual materials, see the CAMEO, https://cameo.mfa.org/wiki/Main_Page.
 - 13 There are many previously dated recipes that deal with modifying linseed oil. See Kneepkens 2021 (note 4).
 - 14 London, British Library, MS Sloane 2052, c. 1620-46. <https://www.bl.uk/manuscripts/>

- FullDisplay.aspx?ref=Sloane_MS_2052 (consulted 25 November 2023). In the following, the English translation from 2001 was used. See Donald C. Fels (ed.), *Lost Secrets of Flemish Painting: Including the first Complete English Translation of the De Mayerne Manuscript*, B.M. Sloane 2052, Floyd 2001.
- Vera Keller, 'Scarlet Letters: Sir Theodore de Mayerne and the Early Stuart Color World in the Royal Society', in Vera Keller, Anna Marie Roos, and Elizabeth Yale (eds.), *Archival Afterlives: Live, Death and Knowledge-Making in Early Modern British Scientific and Medical Archives*, Leiden 2018, pp. 72-119; Jenny Boulboulé, 'Drawn up by a Learned Physician from the Mouths of Artisans: The Mayerne Manuscript Revisited', *Netherlands Yearbook for History of Art* 68 (2019), pp. 204-49.
- 15 Fels 2001 (note 14), p. 192.
 - 16 It is entitled 'Vraye description du Vernix d'Ambre & de la Chine que m'a dicté Jehan Haitier' (True description of the amber varnish and of the Chinese one which Jean Haitier dictated to me 9 March 1633). Fels 2001 (note 14), p. 193.
 - 17 Theophilus already mentioned a varnish with amber and linseed oil. Charles R. Dodwell (trans.), *Theophilus: De Diversis Artibus*, London 1961, p. 19-20.
 - 18 At the beginning of his first linseed oil recipe, Mayerne notes 'Make it with God'. He is certainly referring to the heating process. Fels 2001 (note 14), p. 192.
 - 19 Pamela H. Smith, 'In the Workshop of History: Making, Writing, and Meaning', *West86th: A Journal of Decorative Arts, Design History, and Material Culture* 19 (2012), no. 1, pp. 4-31, esp. pp. 4-5.
 - 20 John Stalker and George Parker, *A Treatise of Japaning and Varnishing: Being a Compleat [sic] Discovery of Those Arts [...]*, London 1688, p. 17.
 - 21 *Ibid.*, p. 2.
 - 22 Already Stalker and Parker mention 'Trials and Experience will give you more accurate, more satisfactorie directions'. *Ibid.*, p. 35. See also Smith 2012 (note 19), p. 22; Kneepkens 2021 (note 4), p. 226. Sven Dupré argues that the 'codification of error' in the seventeenth century was a new strategy to emphasize the epistemic significance of failure and error in the arts and science of the early modern period. Sven Dupré, 'Doing it Wrong: The Translation of Artisanal Knowledge and the Codification of Error', in Matteo Valleriani (ed.), *The Structures of Practical Knowledge*, Cham 2017, pp. 167-88.
 - 23 Robbe Vanmassenhove, *Kicking-off European Lacquer: A Comparative Material-Technical Research into the Oeuvre of Willem Kick, The Pioneer of European Lacquer*, Antwerp 2022 (thesis University of Antwerp), p. 42.
 - 24 'Eine andere Art von Lacc-Fürniss mit welchen man rothe und dunckle Farben anmachen und folgends überstreichen und beglantzten kan'. Johannes Kunckel, *Ars vitraria experimentalis oder vollkommene Glasmacher-Kunst*, Frankfurt 1679, p. 28.
 - 25 Tiedtke mentions Christoph Lochner, who, in his *Laccir- und Fürniß-Künste* from 1714, copied several recipes from Kunckel. Sabine Tiedtke, 'Von der "Auszierung": Techniken der Oberflächenveredelung von Glas in der Frühen Neuzeit', in Annette C. Cremer (ed.), *Glas in der Frühen Neuzeit: Herstellung, Verwendung, Bedeutung, Analyse, Bewahrung*, Heidelberg 2022, pp. 251-91, esp. p. 255.
 - 26 *Ibid.*, pp. 251-91. For Kunckel, see also Thijs Hagendijk, Márcia Vilarigues, and Sven Dupré, 'Materials, Furnaces, and Text: How to Write About Making Glass Colours in the Seventeenth Century', *Ambix* 67 (2020), no. 4, pp. 323-45.
 - 27 Koller and Baumer indicate that it was not until around 1670 that a method was developed that did not contain excess water and had sufficient dissolving power to produce spirit lacquer. Johann Koller and Ursula Baumer, 'Schwarze Lacke: Historische schwarze Lacke in Europe', *Restaurio: Zeitschrift für Kunsttechniken, Restaurierung und Museumsfragen* 106 (2000), no. 5, pp. 336-42.
 - 28 Stalker and Parker 1688 (note 20), p. 39; Fels 2001 (note 14), p. 114.
 - 29 Dorscheid 2016 (note 12); Hagelskamp 2008 (note 12), p. 25; Vanmassenhove 2022 (note 23).
 - 30 Fels 2001 (note 14), p. 191. Garlic also has an adhesive property. See Thomas Brachert, *Lexikon historischer Maltechniken: Quellen, Handwerk, Technologie, Alchemie*, Munich 2001, p. 138. Already Cennino Cennini mentions garlic for mordant gilding. See Lara Broecke (trans.), *Cennino Cennini's Il libro dell'arte: A New English Translation and Commentary with Italian Transcription*, London 2015, pp. 198, 217.
 - 31 The recipe 'Ein anderer Glas-Gold-Grund' was used. Kunckel 1679 (note 24), p. 7; Stalker and Parker 1688 (note 20), p. 17.
 - 32 'ende ons een verwonderinghe gheest vande schoonheijt en gladdigheijt van verwe', 'ende soo glat als een Spieghele'. Jan Huygen van Linschoten, *Itinerario: Voyage ofte Schipvaert ...*, Amsterdam 1596, p. 92.