

## **Speed Dating or Slow Dating? The Challenges of Interdisciplinary Analysis of Early Modern Materials**

Jane Anne Malcolm-Davies (Centre for Textile Research, University of Copenhagen & The Tudor Tailor)

Radiocarbon dating with Accelerator Mass Spectrometry (AMS) has been helpful in the study of a range of prehistoric, ancient and early medieval woven textiles. There is less evidence of AMS's successful application to later historical non-woven textiles, although pioneering work by Nockert and Possnert (2002) provided some relevant results, including dates for one early modern non-woven item (a nåhlbound mitten). Radiocarbon analysis of roman and coptic material (including sprang caps) found it to be earlier in date than that identified by art historical methods. Some woven textiles have been satisfactorily located in the medieval era (for example, the habits of St Francis in Italy) while others have continued to court controversy (most notably the fabric in Queen Margaret's golden gown in Sweden). The appropriateness and accuracy of the technique for early modern material is a matter of continued debate. This paper addresses the need to benchmark AMS analysis of early modern non-woven material. It reports a recent pilot study exploring the influence of sample sizes, archaeological and historical contexts, and storage condition variables on the results of radiocarbon dating knitted fabric. The sampling strategy for studying items from a variety of collections and from a range of original contexts is discussed as a case study. It addresses the cost-effectiveness of destructive analysis, especially in the context of dress accessioned to museum collections as early modern but without the benefit of conclusive provenance. The results illustrate the need for openminded interpretation through meaningful communication across the sciences and arts, and explores the challenges and benefits of what is variously termed crossdisciplinary, interdisciplinary, intradisciplinary, multidisciplinary and transdisciplinary collaboration. The aim is to provide illustrative information based on a controlled experiment to enable an informed discussion of radiocarbon dating and its usefulness to researchers of historical textiles and dress.

### **Biography**

Jane Malcolm-Davies is associate professor at the Centre for Textile Research, University of Copenhagen, where she works with *THREAD*, a refugee integration project, and is a collaborator in *Beasts2Craft*, which investigates parchment as evidence for sheep husbandry. Jane was a Marie Skłodowska Curie Fellow from 2015 to 2017 working on a new protocol for recording historical knitwork and running an experimental history project with citizen scientists. During three other postdoctoral fellowships and as co-director of The Tudor Tailor, Jane develops specialist research databases. Jane studied the CIETA textile analysis course in Lyon and now works to integrate Analytical Tools for Organic Material Studies into textile research. Jane lectures in entrepreneurship and heritage management, introduced costumed interpreters at Hampton Court Palace and coordinated training for the front-of-house team at Buckingham Palace. Her first degree was in journalism, and she holds postgraduate diplomas in heritage interpretation and law. Jane sits on the editorial board of the *Journal of Dress History* and the *Archaeological Textiles Review*.

## **Examination of Metal Thread for Comparison of 16th-Century Bobbin Made Gold and Silver Borders**

Lena Dahrén (Uppsala University)

Dress and Textile benefits from cross-scientific approaches of near-by historical and social subjects. It is a natural collaboration to give the preserved items a context of the time and its wearer. So, what will the studies of textile and dress benefit from collaboration of Science and Technology?

Using an ordinary Microscope has been used for long time to determine technique of for instance stitching and braiding – and that kind of study can very much be carried out by ourselves – if we only have access to a good microscope.

But when it comes to analysis in need for a proper laboratory – for analysis and studies which we are not able to do ourselves. – what can the technology and science on the cutting edge do for us? – can we benefit from the latest scientific developments? - how do we get access to it? – do we need it? To what cost in time and money?

In my current research I collaborate with Dr Sebastian Wärmländer, an archaeologist and bio-physics, affiliated to Stockholm University. He has earlier made analysis on metal threads of 15th century braids for the Swedish History Museum in Stockholm and he offered to do analysis of the metal-threads from a group of late 16th century bobbin-made borders which are of greatest interest for my on-going research. It was an offer which I could not resist – as he has access to the laboratory needed to make proper analyses of the metal-threads and fibres in order to compare the material of the different borders.

In this paper – I will tell about the journey to make these thread analysis. What have I gained and what might be a reason to warn others to walk the same path?

### **Biography**

Lena Dahrén holds a Bachelor of Arts degree in Ethnology and Art history. She was graduated with a PhD in Textile History, from Uppsala University in 2010. Her thesis concerns production, use and reuse of bobbin made borders and edgings of gold and silver 1550-1640.

She is a trained weaver by profession and has worked with handwoven textiles, bobbin lace and liturgical textiles for over 20 years.

Her research concerns church textiles made from fabric used for fashionable clothing and interior textiles in the 16th century and when not fashionable anymore re-made and donated to local parish churches in the 17th century. The start of her study is the decorations of gold and silver bobbin-made borders – and in the current research she collaborates with a bio-physician in order to examine the metal-thread.

The project reflects high fashion of the 16th Century and reveals an intricate network of aristocratic families.

## **Identifying Plant Fibre Finds from Hailuoto, Northern Ostrobothnia, Finland**

Jenni A. Suomela (University of Helsinki)

Hailuoto is an island in front of city Oulu which was an active trade centre in the bottom end of the Gulf of Bothnia. Hailuoto church, which was built in the early 17<sup>th</sup> century and got burned in 1968, was excavated in 1980s. Among other finds, textile remains dated to the period between 1620 and 1756, were found both from burials and ground soil underneath the church floor.

Plant fibre material preserves poorly in acidic Finnish soil and commonly preservation occurs only in close contact with metal objects. This was also the case with Hailuoto's finds. Altogether six (6) plant fibre samples were analysed in the means to identify the materials. All these samples were preserved due to an immediate contact with either a pin, a button, a coin or a hook.

The samples were analysed by using a three-stage procedure which is suitable for distinguishing flax, hemp and nettle among each other. Additionally, it can be utilised on identifying cotton even in relatively severely decayed samples. The procedure is based on the observations of the longitudinal surface characteristics and cross sections, combined with a modified Herzog test that reveals the microfibrillar orientation in the S2-layer of the bast fibres.

The results as the samples were versatile. Due to the small preservation areas and lacking in the excavation reports, the origin of some of the samples can only be speculated. The samples attached to a button or a hook, both used in fastening clothes, are definitely dress-related. The fragment with the pin is an example of fabric reuse for funerary attire, which was attached on the deceased with pins. Though, an interesting story might be told through a coin, wrapped and tied in rag-paper, and deliberately dropped through the planks of the church floor.

### **Biography**

Currently Jenni Suomela (MA, education) is a doctoral student in the University of Helsinki, Finland, in the field of Craft Studies. In her doctoral dissertation she is studying bast fibres (flax, nettle, and hemp), their identification methods and cultural history in the Finnish context. She has broad understanding about textiles from the fibre level to cultural meanings. Her field of interest includes especially ethnographic textiles from archaeological finds to the historical era.

The working title of her dissertation is *Application of bast fibre identification methods to material study of cultural historic textiles*, and it will be ready in the summer of 2020.

The paper will be prepared together with PhD Sanna Lipkin, who is Academy Research Fellow in the University of Oulu, Finland and Assistant Professor in SUNY, Buffalo, US. Doctor Lipkin is in charge of the Hailuoto textile research project.

## **Characterization of an 18th-Century Robe à la française from the Gemeentemuseum Costume Collection in The Hague (the Netherlands)**

Cesar Rodriguez Salinas (Gemeentemuseum Den Haag)

For the exhibition *Femmes Fatales (Sterke Vrouwen in de mode)*, that covers a journey of women designers throughout history, opened at the end of 2018 at Gemeentemuseum Den Haag (GM), a detailed conservation programme was put in place for an incomplete red brocade silk *robe à la française* dated around 1760.

The main goal was to understand the various production processes that existed for those costumes, resulting in huge differences in material qualities depending on the social status of the individuals who used to wear them.

So taking the *robe a la française* from GM collection as example, an interdisciplinary approach with different institutions such as the Institute of Conservation and Restoration (IVCR) in Valencia (Spain), The Cultural Heritage Agency (RCE) in Amsterdam (The Netherlands) and the Fashion and Textile Conservation Department at Mode Museum (MoMu) in Antwerp (Belgium), among others were consulted during this investigation.

Different analytical techniques were used for this purpose such as ultra-high performance liquid chromatography (UHPLC), scanning electron microscope with energy dispersive x-ray (SEM-EDX), and Fourier-transform infrared spectroscopy (FTIR). All this data helped to identify on the one hand the quality of the dyes used for the confection of the fabric and its place of production, and on the other hand, the degradation products present on the dress.

Finally, the identification of the rigid materials on the dress, such as the rigid structure under the bobbin lace, helped to link it to local Dutch productions and discover the nature of the adhesives that were used on this sort of rigid structures at the XVIII century.

### **Biography**

Trained as a General Conservator, I studied Fine Arts at the University of Vasc Country (Spain) specializing in Conservation and Restoration of Cultural Heritage. Years later, I did my MSc specialized in analytical science techniques applied on Cultural Heritage, doing my master's degree dissertation on a Coptic Textile from the collection of Textile Museum and Documentation Centre in Terrassa (Spain).

Since 2011 I have been working solely with textiles and fashion items in different costume collections around Europe such as Balenciaga Museum in Spain, Mode Museum in Antwerp -Belgium-, Gemeentemuseum in The Hague -The Netherlands-, Musee Galliera or the house of Givenchy in Paris-France- among others.

Since 2018 I am the head of the Fashion and Textiles Conservation department at Gemeentemuseum in The Hague (The Netherlands).

## **Stitching History Together: Using Scientific Methods and Citizen Science to Understand Early Modern Stockings**

Piia Lempiäinen (Aalto University)

Knitted stockings gained popularity in the early modern period, since they could be made more form-fitting than tailored hose. Knitting was a specialised craft, and while people at all levels of society used knitted stockings, there was a stark difference between those that were used by ordinary people and those knitted for the wealthy elite. But what did these stockings look like and how were they made? The ERC-funded Refashioning the Renaissance project combines scientific testing, close reading of surviving objects and texts, and citizen science to reconstruct early modern stockings in order to gain a deeper understanding of the processes that were involved in making and wearing these stockings. In collaboration with 35 experienced volunteer knitters, our project reconstructs three different types of stockings, using surviving early modern stockings and knitting recipes. The most ambitious of these is the pair of mid-seventeenth century fine silk stockings from the coffin of Elisabeth Bure, in Turku Cathedral. The aim is to recreate the stockings as accurately as possible and produce a digitized pattern. To this end, we have studied the original pair both with the naked eye as well as with macro lens, and conducted a fibre and colour analysis of the yarn. This exciting new way of doing research allows us to think about and examine objects, their makers, and processes in new ways and ask new questions, such as: what technical skills were needed to knit these stockings in the past and what kind of creative decisions and processes were involved in knitting? This increases our understanding of early modern crafts and makers.

### **Biography**

Piia Lempiäinen holds an MA in Finnish and Nordic History from the University of Helsinki, and her research has focused on medieval and early modern clothing terminology and class. Currently she is the project coordinator for the ERC project Refashioning the Renaissance: Popular Groups and the Material and Cultural Significance of Clothing in Europe 1550–1650, led by Professor Paula Hohti in Aalto University, Finland. In this capacity she leads the citizen science initiative on knitted renaissance stockings, and is interested in the ways reconstructions and hands-on methods can open new perspectives in historical research.

## **Proceeding Precious Pearls: Using Material Science and Technical Studies on 17th-Century Objects Embroidered with Pearls**

Marjolein Koek (Rijksmuseum, Amsterdam)

The collection of the Rijksmuseum Amsterdam holds a number of accessories which are embroidered with pearls, namely six pairs of gloves, two bags and one knife holder, dating from the early 17th century. These are considered top pieces within the collection. So far, no research has been done on the material and techniques used. However, material-science has become a significant part of the conservator's role. This paper focuses on the types of material and application techniques that were used for embroidering pearls on these objects. The aim of the research is to document and understand the manufacturing process, and to analyze and document the different types of pearls and their origin.

For this research on the material-science aspects of pearls different techniques were used. First using a digital microscope system (Hirox) as an optical examination tool, to take precise measurements and to examine traces of the preparation of pearls, such as hole-drilling and finishes. Secondly, X-ray fluorescence (XRF) facilitates the elemental analyses on the pearls. It was used to identify the material and to distinguish other forms, such as possible fake pearls made from glass or synthetics. Also, further methods of identification are discussed, focusing on their (non-)destructive properties. The above methods are combined with a study of historical sources on production and trade of pearls, as well as the embroidery techniques used for pearls as ornaments on precious objects during the first half of the 17th century in the Netherlands.

### **Biography**

Marjolein Koek (1982) (MA, MMus, MPdRes) has been working as a textile conservator at the Rijksmuseum since 2014. She graduated from the University of Amsterdam in 2014, with master's and post-master's degrees in conservation and restoration, specializing in textiles. During her training she did internships at the Victoria and Albert Museum (London, United Kingdom), the Abegg Foundation (Riggisberg, Switzerland), and the Rijksmuseum (Amsterdam, the Netherlands).

## **Gold and Silver Discovered: Two Archaeological 17th-Century Textile Finds Adorned With Metal Threads Revealed by EDX- analysis and X-radiography**

Maj Ringgaard (Centre for Textile Research, University of Copenhagen)

A long piece of silk, decorated with some woven bands and lined with coarse woollen twill was among the early modern textile finds in connection with the construction of a new Metro station in Copenhagen. The bands placed as stripes on what may have been a belt, had now the same brownish colour as the silk. During cleaning subsequent freeze-drying a small black residue less than 1 mm on the band was found in a fold. Could this be part of a metal thread? The suspicion was confirmed by the help of EDX-analysis – it was pure silver. X-radiography using a special technique (performed by Signe Nygaard) could reveal exactly where the silver once had been on the belt. Even if absolute no visible traces of the original metal thread was left it is now possible to reconstruct the original pattern on the silver-woven bands.

Some creased brownish rags attached to a piece of corroded iron was found during an excavation in a crypt among much deteriorated coffins and infill. The archaeologist noticed there were some stitching –perhaps embroidery? Again by the use of X-radiography the embroidery could be distinguished in the hidden layers of the textile. By careful unfolding during conservation, a beautiful 17th century night cap was revealed. EDX- analysis showed how both gold and silver threads and copper sequins was used for the decoration. The cap was made of six pieces separated with golden woven bands, each piece had flower embroidered. By comparing with the X-radiograph image it was possible to identify the different materials used, gold for the outlines and the rest mainly silver. The textile for the cap is silk satin and the lining a silk taffeta. The owner of this fine night cap is still unknown but it must have been a nobleman.

These two early modern textiles embellished with gold and silver were both revealed by the combination of X-radiography, EDX-analysis and skilled conservators.

### **Biography**

Maj Ringgaard holds a MSc in conservation from the Royal Danish Academy of Arts and a PhD (2010) from the Saxo-institute in post medieval archaeology and textile research. With the PhD thesis "To par strixstrømper oc en nattroe naccarat" Filtede og strikkede tekstiler fra omkring år 1700, fundet i Københavnske byudgravninger - og sammenhænge mellem tekstilers farve og bevaring. (17th century textiles from excavations in Copenhagen - and the impact of dyes in preservation). Ringgaard participated as a PI in the HERA funded research project "Fashioning the Early Modern: Creativity and Innovation in Europe, 1500-1800" in theme "Creative Communities: Knitting in Europe, 1500-1800"

Ringgaard has many years of experience as a textile conservator mainly at the National Museum of Denmark. Is currently guest researcher at the Centre for Textile Research CTR at the University of Copenhagen.

## **Seeing' What it Was Like without Touching: A Replica Approach for Holistic Research**

Annelena de Groot (independent)

In 2016 a great amount of textile objects from the 17th century were recovered from a shipwreck near Texel. one of these special objects is a bodice, now lying flat. My Master's Thesis about this special bodice considered the following question. How can a 'replica approach' to costumes improve the diagnostic process when considering flat-lying costumes, and how can imaging techniques substitute for the object when the object considered cannot be extensively handled? In this paper I will share my findings and will discuss both the 'replica approach' and information I was able to gather using visual light photography and X-radiography. This paper will present a holistic way of researching, combining costume history, knowledge of materials and digital and physical reconstruction to obtain a (more) complete image of an object with minimal physical intervention.

### **Biography**

Annelena de Groot has a bachelor degree in art history, during which she researched 'the merci train mannequins', from which she presented the results of here literature on the ICOM-Costume committee meeting in 2018. Being drawn to the material side of textiles and the stories objects tell in themselves she obtained a master degree in technical research from the University of Amsterdam in which she focused on textiles and replication as a research method. During her thesis she both investigated an unique bodice from the 17th century and 18th century dresses and liturgical vestments, related to René Lugtigheid's PhD research.

## **Applying Material Culture to the Study of an Eighteenth-century New Hispanic Court Dress as Means for Conservation**

Laura G. García Vedrenne (Fine Arts Museum San Francisco)

A late eighteenth-century court dress, which belongs to the collection of the National Museum of History (MNH) in Mexico, is one of the few civilian garments that shows taste in New Spain during the colonial period. The dress, made out of green silk velvet and decorated with silver sequins, threads, enameled foils, and glass pastes, was donated to the museum in 1900 by the wealthy Duchess Isabel Pesado de la Llave. Since then, the dress was permanently displayed at the museum as an example of luxurious New Hispanic female attire.

Although the object had often been shown in publications and news media, precisions about its date, provenance, material composition and previous conservation treatments were unknown. It was not until 2015 that the court dress was studied with means of conservation, following an object-based approach. Based on the material culture methodology proposed by Jules Prown, the materiality, historical values, and social aspects of the dress were investigated. The research included looking at written records and photographic evidence to define how the court dress had been displayed in the past, describing the threads, weaves, decorative elements and garment construction for allowing proper documentation, and completing scientific analysis (mainly microscopy, XRF, FTIR, and X-radiography) to understand the rationale for previous repairs and to inform future conservation treatments.

From a misinterpreted train that was shown as a cape during display to a dissociated stomacher in the storage rooms, findings throughout the two-year research project showed how artifact-based studies are essential because dress can be easily misunderstood when its materials, history and function are unknown by museum staff. Conservation literature was used to underpin the results from scientific analyses, concluding that preventative conservation is the most appropriate pathway to promote that the court dress can be appreciated by future generations.

### **Biography**

Laura G. García Vedrenne finished the MPhil in Textile Conservation program at the Centre for Textile Conservation and Technical Art History, University of Glasgow (2018). She completed her bachelor's degree in Restoration of Portable Heritage at the Western School of Conservation and Restoration (ECRO) in Guadalajara, Mexico (2014). While completing her bachelor's dissertation, she worked as a conservator at the National Museum of History in Mexico, where she mainly developed activities focused towards textile conservation. Her research interests include textiles artifacts as material culture, conservation of historic dress, and ethics within the conservation field. Laura will be the Andrew W. Mellon Textile Conservation Fellow at the Fine Arts Museums San Francisco starting October 2019.

## **The CarpetACT Project: A Non-Invasive Automatic Approach for Unprecedented Interpretations about The Construction of Islamic Carpets**

Ana Filipa Serrano (Cultural Heritage Agency of the Netherlands)

R. Erdmann, S. Meijer, S. van Dijk, E. Hermens, R. R. van Rijn, S. Coban, M. van Bommel

Islamic knotted-pile carpets are remarkable art objects and rich historical sources in museums around the world. The study of their complex characteristics can tell plenty about the date, the context and the societies in which they were produced. Art historians usually focus on the visual observation of their design and weaving structure, but this can be a rather subjective and laborious examination. Analytical methods that enhance this approach urge further exploration, so that more accurate art historical interpretations can be obtained.

The interdisciplinary CarpetACT project combines art history with analytical and data sciences, with the aim to improve the weaving examination of these complex carpets, by considering the spin of threads; the ply and twist of yarns; the thread count and density; and the weaving structure of warps, wefts and piles. Several non-invasive analytical techniques, namely video spectral comparator (VSC), X-radiography, tomography and (micro) CT scanning are tested to assess a small group of 16th- and 17th-century Islamic knotted-pile carpets or fragments of these objects, belonging to the Rijksmuseum collection. Machine-learning methods are developed to process and compare digital photographs from these objects and a large quantity of data obtained with the tested analytical techniques. Ultimately, the outcome of this approach is compared with the results obtained with the traditional technical examination based on visual observations of the carpets.

Within this feasibility study, it has been possible to highlight the possibilities and limitations of the tested imaging techniques, and the potential of data science to enhance the interpretation process of their results. Indeed, this approach has enabled to identify technological details about the carpets' weaving structure, as well as about their present condition and past restorations that passed unnoticed with the traditional technical examination. Therefore, the outcome of this research brings unprecedented contributions to art historical and conservation research and, in particular, to the future of the technological study of historical textiles.

### **Biography**

Ana Serrano studied Conservation and Restoration of works of art at the Universidade Nova de Lisboa, specializing in textiles. Her Master thesis focused on the study of insect dyes in historical textiles, and this evolved into a PhD project in History (thesis entitled "The Red Road of the Iberian Expansion: Cochineal and the global dye trade"), funded by the Fundação para a Ciência e Tecnologia, and carried out at the Centre for Humanities (CHAM, NOVA FCSH—UAc) and the Netherlands Cultural Heritage Agency (RCE).

She is presently a postdoctoral researcher at the RCE, collaborating with the University of Amsterdam, in the context of several projects dedicated to the scientific investigation of the materials and the technological construction of historical textiles. She has been recently awarded with a Rijksmuseum Migelien Gerritzen Fellowship to further her research on insect dyes and to finalize her book, bound to be published in 2021 with Palgrave-Macmillan.

## **Using Multimedia Data Programs for Detailed Analysis of Early Modern Dress**

Cecilia Aneer (Textile Studies, Department of Art History, Uppsala University)

If we look back over time studies that covered and compared large amounts of sources studied on a detailed level were more unusual. With the fast technical development seen over the last two decades, it has become much easier to collect big data sets, object-based as well as archival. The amounts of images taken in costume studies have risen enormously, so has the access to open digitised data. This makes it possible to do more of the object analysis at the desk instead of in the collections. The large amounts of data have also changed the questions asked by researchers. Earlier object studies were often concerned with questions of use, trade and production in a close context, whereas today's tools allow questions to be addressed on a more organisational level.

What is still a problem is how to overview and analyse the large data sets, especially if these cover several different types of media. The large amounts of data requires the sources to be organised and labelled so that it is possible to move between different levels, such as the details observed, the objects and the setting there they were originally used. Conclusions also need to be easily traced back to the original sources for references to be made.

In this paper I want to show how multisource data programs for qualitative analysis can be used as a tool to structure and analyse large sets of object centred data. The paper will discuss how data may be sorted and labelled to allow for comparison on different levels, as well as weaknesses in the tools that needs to be overcome.

### **Biography**

Cecilia Aneer is a lecturer in Textile Studies at Uppsala University, Sweden. She graduated with a PhD in textile history from Uppsala University in 2010 and is also a trained tailor. Cecilia teaches textile and dress history, as well as theory and method. Her main field of research is renaissance and baroque dress and tailoring from a Scandinavian perspective. She is currently working on the 16th century wardrobes of the Swedish royal family and the organisation that provided the court with the supplies needed for textiles and dress. Cecilia has in her research worked in collaboration with several Swedish museums; among them are the Royal Armoury and the Vasa Museum in Stockholm.

## **Re-Dressing the Evidence: A Database of Henrietta Maria's Clothing Accounts**

Erin Griffey (University of Auckland)

Given the low survival rate of early modern garments and the limited picture provided by documentary sources, dress historians have traditionally looked to artworks, particularly portraits, for evidence of clothing. And yet scholars have also demonstrated the role of artistic license or fantasy in the visual representation of early modern dress. This paper considers the Stuart queen consort, Henrietta Maria (1609-1669), to ask if the dress displayed in her portraits matches the clothing detailed in her household accounts. These wide-ranging clothing accounts have never been systematically studied, and a database has been developed to organise the material and facilitate analysis.

Henrietta Maria arrived at the English court in 1625 and there is extensive documentation from the late 1620s through the early 1640s that records the fabrics and trimmings supplied for her clothing as well as the work done by her tailors and embroiderers. The sartorial variety and splendour laid out in these quarterly bills or 'household vouchers', which survive in the National Archives at Kew, warrant comparison with the clothing depicted in her portraits. These bills –there are hundreds of them – are kept in three large boxes and are not organised by date or supplier. While there are not quarterly bills for each supplier over this period, one can glean patterns of supply, including types of garments, colours, fabrics and, to some extent, styles. The bills come from 40 different suppliers and specialists, and in a number of cases a single ensemble can be tracked across several bills. Thus it is important to compare bills across a single quarter and to analyse broader patterns across the period. The archival material, database and initial conclusions about the relationship between Henrietta Maria's dress as documented in the accounts and as displayed in portraits will be presented here.

### **Biography**

Erin Griffey is Associate Professor of Art History at the University of Auckland. She is a specialist in early modern visual and material culture and has published widely on the Stuart court, including the edited collection, *Henrietta Maria: Piety, Politics and Patronage* (Ashgate, 2008) and articles in *The Burlington*, *The Seventeenth Century*, *Studi di Memofonte*, and the *Journal of the History of Collections*. Her monograph, *On Display: Henrietta Maria and the Materials of Magnificence at the Early Modern Court*, was published by Yale University Press in 2015. She has a forthcoming edited collection, *Sartorial Politics: Fashioning Women at the Early Modern Court* (Amsterdam University Press, July 2019).

## **Newspanish Red: Antonio Alzate and the First Scientific Observations of Grana Cochinilla**

Andreia Martins Torres (CHAM-Centro de Humanidades)

This work claims the need to include the specificities of the Hispanic monarchy in the large debate about the history of science and, particularly, the New Spanish contribution to the knowledge about grana cochinilla in the illustrated circles of the second half of the 18th century. We take the initiative carried out by Antonio Alzate to attend several ideas. Firstly, we will demonstrate there was in New Spain some people dedicated to scientific research. Imbued with the spirit of the time, they read the main literature produced in Europe and were able to make their own observations, participating in the prime international debates. Secondly, we want to explore the idea that Alzate's option to study this insect was related to a Creole mentality that was forged throughout that century, which was the ideological support of the independence movement. This research led him to value indigenous natural resources and, secondarily, to highlight the potential of the Mexican nation. As it was a highly prized raw material on the international market, used in the manufacture of different products such as textiles, Alzate has put its research on the service of the local economy while exalting its importance. As will be demonstrated throughout the exposition of the subject, this has resulted in considerable efforts to assemble a microscope with which to observe and record the anatomical details of the grana and to develop considerations regarding their conditions of reproduction. This is one of the first initiatives to use science and technology in the field of textile dyes which is still a common practice today.

### **Biography**

Andreia Martins Torres is a researcher at CHAM (FCSH, UNL and UAç), and NEAP (UFG). She holds a B.A in archaeology (UNL) and a Master's Degree in American History (UCM). In the last few years she enjoyed a research grant by FCT to pursue his PhD investigation in History and Archaeology at UCM. At the same time, she carried out several research stays in different museums, archives and institutions, both in Mexico, Argentina, Peru, Brazil, Spain and Portugal. She also participated in research projects in several areas and in collaboration with international institutions. One of this areas she has been working about, was clothing and textiles through historical records, archaeology and museums collections, especially on Kimono and print cotton in the viceroyalty of New Spain, since the 16th century, and with a global history perspective.

## **A Black Powdered Enigma: Soiling as Historical Evidence Depicted on a British Military Jacket from the Late 18th Century**

Eva Maria Catic (Centre for Textile Conservation, University of Glasgow)

Dr. Margaret Smith, Karen Thompson<sup>†</sup>, Dr. Mahesh Uttamlal

Analysis was performed to identify valuable historical evidence on a military jacket from the late 18<sup>th</sup> century belonging to the Dumfries Museum as part of the conservation. The jacket had staining with an unknown black substance. Could it be black powder, a traditional mixture of saltpeter (potassium nitrate), sulphur and charcoal, which was used for an explosive prior to the advent of modern smokeless gunpowder developed in the mid-19<sup>th</sup> century?

First impressions were gathered by examining the object with digital magnification and Fourier Transform Infrared Analysis (FTIR). This indicated the black stains on the jacket could be black powder.

Elemental mapping with Scanning Electron Microscope with Energy-dispersive X-ray spectroscopy (SEM-EDX) confirmed further elements used for black powder. The outcome of the analysis together with historical research methods enhanced the contextual significance of the staining when the jacket was in use. This helped to inform a conservation treatment that preserved the staining as an important part of its history.

It was possible to identify such evidence with the help of this interdisciplinary approach of scientific analysis together with historical methodologies to enhance the contextual understanding of an object and the story it can tell.

### **Biography**

Eva Maria Catic gained a Mag.phil. in History of Art at the University of Graz, Austria. She worked as a conservator in trainee in historic houses and state-founded museums in Austria and Germany and also in the private sector where she specialized in costumes and flat textiles from the 18<sup>th</sup> century. Catic is currently a postgraduate at the Centre for Textile Conservation and Technical Art History in Glasgow, where she focuses on her research interests in various treatment options, costumes and ethics within the field of conservation.

## **From Microscope to Archive and Back Again: How Microscopes, Social Media, and Collaboration Can Lead to New Findings in Dress History**

Sophie Pitman (Aalto University)

This paper discusses how historians can learn from the tools and techniques of conservators when working with surviving objects in museum archives, and in turn how historical research can add to a complex curatorial understanding of extant garments. Focusing on a pair of Elizabethan embroidered gloves in the Metropolitan Museum of Art which were photographed under microscope by the conservation department, and then were shared them on social media, the paper will offer a case study of the potential of collaboration and close looking. Microscope images of the gloves enabled me to undertake a study of their lining material, which turned out to be scraps from a pattern book. I was then able to identify the exact pattern source, thus giving us new insights into the ways early modern makers used and reused printed pattern source books, and further evidence about the provenance of these gloves. The paper will also explore how historians can adapt these techniques for making small-scale investigations themselves, without expensive and time-consuming equipment.

### **Biography**

Sophie is a cultural historian of the early modern period, with a particular interest in clothing, textiles, and material culture. She is a postdoctoral research fellow on the Refashioning the Renaissance Project, an ERC-funded project based at Aalto University, Finland. She holds a PhD in History from the University of Cambridge and was a postdoctoral scholar on the Making and Knowing project at Columbia University. She has published on sumptuary law and issues of luxury and identity in the seventeenth century, and is interested in tailoring during and after the English Civil War and colour and dyes in the early modern world. For the Refashioning Project, Sophie co-ordinates the reconstruction experiments and is investigating surviving garments across European collections.

My PhD was on clothing in early modern London, and was completed in 2017. I am a postdoctoral researcher at Aalto University, Helsinki, Finland.