

Learning Curve: Education, Experience, Reflection

Forum of the ICON Textile Group

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Edited by Alison Fairhurst



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Foreword

Learning Curve: experience, education and reflection was a one day forum held by the Icon Textile Group on Monday 13 April 2015 at Birkbeck College, UCL.

Chaired by Deborah Phipps, it featured 11 papers and 10 posters covering all aspects of learning from new conservators' projects, to new materials like Formetal and techniques such as the Cragside Carpet via reflections on two very different careers. The forum also addressed training, the use of science and highlighted several collaborative projects between interns and mentors and between disciplines within conservation profession.

Grateful thanks must go to the hardworking and dedicated committee for producing the event, and to all the speakers and poster presenters for sharing their knowledge and expertise. Thanks also to Alison Fairhurst for yet another round of editing for these postprints.

Deborah Phipps

Forum Chair

Chair of Icon Textile Group

Textile conservation education: what are we training for?

Frances Lennard - Senior Lecturer in Textile Conservation

Sarah Foskett - University Teacher

Centre for Textile Conservation and Technical Art History, University of Glasgow.

The Textile Conservation programme

2015 marks the 40th anniversary of the establishment of the Textile Conservation Centre (TCC), making this a good opportunity to reflect on textile conservation education and its relationship with practice. The current MPhil Textile Conservation programme, based at the Centre for Textile Conservation and Technical Art History at the University of Glasgow, is the successor to the postgraduate diploma and MA programmes previously offered by the TCC. It owes a huge amount to these previously successful models and students from the TCC at both Hampton Court and Winchester would recognise a lot of what is taught today. The input of many colleagues over the years is acknowledged in the continuous development of the programme. The needs of the conservation profession are always changing and the programme has to keep developing, and it has moved on again in Glasgow. This paper aims to discuss recent developments and to reflect on how the programme prepares graduates for the real world.

Textile conservation education is both academic and professional, and the balance between the two is very important. Professional skills are paramount of course - practical treatments are at the heart of the curriculum and occupy the most time. Two and a half days of each week are devoted to developing practical skills and to gaining the necessary scientific underpinning. Although the programme now lasts two years rather than three, as at Hampton Court, it is much more structured. Each individual unit has specific learning outcomes which interact together to make the programme very cohesive. Because the programme is two calendar years long and extends across two summers, it is in fact only a few weeks shorter than the old three-year programme although this makes a very intensive learning experience.

Practical treatments cover a wide range in order to ensure that the students encounter the major types of treatments in the two years. For example in cleaning, students gain experience of solvent cleaning and wet cleaning white, coloured and three-dimensional objects and are introduced to treatments with enzymes and bleaches. In a workshop situation it might take an intern or apprentice a long time to encounter this whole range. Students are fortunate to be able to work initially on objects from the Centre's Karen Finch Reference Collection, and thereafter on museum artefacts. We are very grateful to colleagues, in the University's Hunterian Museum and Glasgow Museums in particular, and to those in other institutions around the country, for enabling students to work on such a huge and fascinating range of textile artefacts (Figure 1). This enables them to



Figure 1

Second year student Kate Clive-Powell undertaking the humidification of a seal gut parka belonging to Glasgow Museums.

©CSG CIC Glasgow Museums Collection and University of Glasgow.



Figure 2
 Visiting the store of The Hunterian, in preparation for making storage and access recommendations.
 ©University of Glasgow.

develop their own specialist interests in some cases but also to develop a good understanding of different objects and treatments. The different owners also make it necessary to tailor each treatment to a specific brief, underlining the important role of context in decision making. It is also important to look more widely at collections, putting individual artefacts in context (Figure 2).

The integration of theory and practice is vital; the programme is founded in the belief that it is fundamental to learn these together. A foundation in conservation science is integrated into practical work teaching and each science class is centred on a historic textile. A thorough grounding in science is vital in order to understand the chemical structure of textiles, how they deteriorate in relation to the environment, and how they are affected by different treatments (Figure 3). In effect, how do you choose a detergent or an adhesive with the right properties for a particular type of object based on its materials and condition? Graduates might not carry out the full range of treatments regularly but they need to understand how they work and why they might or might not choose to use them. Founding conservation decision-making skills on an advanced understanding of condition and treatment options is fundamental.

At the same time as developing practical and decision-making skills, students are learning professional skills, essential to help them make the transition to the workplace. These range from estimating to liaising with clients; students are responsible for discussing their projects with the object's curator or owner (Figure 4). Students share some teaching with students on other related programmes, particularly the MLitt Dress and Textile Histories. A joint object-based report with Dress History students is in itself a valuable experience in collaboration and contributing different



Figure 3
 Science class: making nylon with lecturer Anita Quye.
 ©University of Glasgow.



Figure 4
 Jamie Robinson discussing the conservation of a pair of shoes with the client, Glasgow Museums Textile Conservator, Maggie Dobbie, and tutor Karen Thompson.
 ©University of Glasgow.



Figure 5

First and second year students working together on a mount-making project.
©University of Glasgow.



Figure 6

Fiona Wain and Cecilia Voss working with pupils at Eastwood High School.
©University of Glasgow.

perspectives. First and second year students also undertake joint projects to give them experience of teamwork and of working on larger objects or collections of objects (Figure 5). Work placements of course provide invaluable experience of working in the real world and staff are indebted to colleagues in museums and other institutions for their support in providing stimulating and challenging placement experiences for the students. Teaching based on the PACR professional standards has been introduced, making a more direct link with the route into professional accreditation.

The programme has evolved in Glasgow to include aspects of conservation that have come to the fore more recently such as working with volunteers, a particular issue in textile conservation. While it has always been important to be able to talk to visitors and colleagues within the museum about conservation, public engagement has become far more important in the sector in recent years with more conservation taking place in front of the public and conservators playing a more visible role in the museum. The students now develop these skills by going out and talking about textile conservation to groups in schools, colleges and community groups around Glasgow (Figure 6). Students also write for the Centre for Textile Conservation blog, another contemporary professional skill (<http://textileconservation.academicblogs.co.uk/>).

However the programme is not just about professional skills. As it is at masters level, students need to develop academic skills such as the critical evaluation of information and reflective practice. Research skills are developed through the programme and particularly in the dissertation, the final assignment where students explore a particular issue in conservation. The programme is at postgraduate level because it fosters skills like problem solving and thinking outside the box, as well as communication skills. Of course these postgraduate attributes are all skills that conservators use all the time.

The wider context

Two years is a very short time, of course, and all teaching staff can do is to lay the foundation, creating a strong background in textile conservation from which students can go and develop new skills, and gain in confidence and speed. A post-training internship is a perfect next step. In reality this is often a better option than spending a third year on a training programme – it is a perfect balance between having the time and resources to carry on learning, under supervision, but in a working situation with real deadlines and responsibilities. The education of conservators is underpinned by this partnership between the training courses and the profession.

It is important that our graduates understand the basis for making their own decisions, based on the needs of the workplaces they move on to. They come from around the world and are going to go on to work in all sorts of different contexts, from museums like the Victoria and Albert Museum where preparing objects for display and loan is the priority, to institutions like the National Museum of the American Indian at the Smithsonian, where the emphasis is on engagement with native American communities as a key to understanding objects and making decisions about how they are treated, and where conservation might be directed to re-use rather than display. Graduates might work in private practice in the UK or be the first to introduce textile conservation into their own country. We hope that they will also go on to be PhD students and researchers, educators and leaders within the heritage sector. We need more managers and directors from a conservation background.

Conservators are constantly making decisions about how to treat objects, depending on their materials, their condition and their role. As you become more experienced this becomes a less conscious process. But perhaps that means that our skills tend to be unrecognised outside our own particular profession. It has often been argued that conservators need to do more to communicate what we do. At a conference on barkcloth in Cologne last year, British Museum conservator Monique Pullan gave an excellent presentation to delegates who were mainly curators and academics, explaining how British Museum conservators make treatment decisions for this material and demonstrating how much thinking and decision-making are involved, an excellent model. Icon's new Code of Conduct, recently approved by the membership, specifically says that we should document decisions made and demonstrate how we have evaluated conservation options. This is an explicit professional requirement. If we do this more publicly, that can only benefit us as a profession.

Graduates from this conservation programme and its predecessors have invested a huge amount of time, money and effort to enter the profession. They are entering a profession whose members are enormously skilled, a fact that tends to be taken for granted. It can only be beneficial for the profession if we can make ourselves more visible, whether by publishing our work in the wider world outside the conservation professional journals or undertaking and publicising activities which promote conservation to the general public. We need technical publications, on adhesive choices or specific techniques, but we should also think about the big picture – what conservation is aiming to achieve - and make sure our voices are heard. It is what our training is for.

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Positioning: where you stand

Katriina Similä - Project Manager, Collections Unit, ICCROM

Dinah Eastop - Consultant, Conservation and Material Culture

Cultural heritage collections can be sources of knowledge and enjoyment, as well as sites of dispute and contestation. This paper discusses an exercise developed by the authors to show how views vary and why it is useful to recognise and exploit such variation^[1]. In this context, positioning refers to the place from which each person gains his or her 'point of view'. The first cartoon in our presentation showed a man sitting at a desk, holding-up a length of string, which he is documenting in great detail; the resulting documentation is very long, the paper streaming onto the floor. The humour depends on the viewer agreeing with the cartoonist that a length of string does not merit such extensive documentation. Not everyone is interested in string, although one of the authors is (Eastop 2014). The challenge is to recognise how our interest, our 'point of view', is dependent on who we are, what we, as opposed to others, believe, as well as relations within and beyond the institutions within which we work (Davies and Harré 1990).

This paper draws on the direct experience of its authors in promoting effective learning during international programmes coordinated by ICCROM, the intergovernmental organization dedicated to the conservation of cultural heritage^[2]. Views differ about the challenges of conservation and access, and also about who is best placed to address them and how. These differences often reflect different points of view. For example, conservation can be defined as investigation, preservation and presentation of collections; or as supporting continuity of practice, as in the living traditions of Japan. Thus conservation may be viewed as preserving original materials and form (e.g. Gill 2010), or in returning an object to its deduced original appearance (Knutson 1991), or in retaining or restoring later additions to meet current community needs (e.g. Wharton 2008), or in replication (e.g. Willcocks 2002), or in continuity of iconography and technique (e.g. Dovgan Nurse *et al.* 2014). A remarkable variety in points of view is shown by this brief list. Our paper describes an exercise we developed around the challenges of clarifying different viewpoints and exploring how such differences arise.

Documentation

Documentation, which is recognised as a defining characteristic of heritage conservation, can be viewed as both an outcome and a social process. The resulting documents (e.g. hard copy reports, photographs, diagrams and digital files) being the outcome, and the action/s of documenting being the social process. As a process, documentation involves:

- making or selecting a system of classification (e.g. the documentation format used in a particular studio).
- classifying, i.e. placing the object in that system or in another system, or making it an exception (e.g. deciding what to call the object).
- making the record of the object (e.g. in text, images or sound recordings).
- ordering the record within other records so that it can be retrieved (i.e. naming a file and saving it so it can be found).

1. We developed this exercise initially for the *CollAsia* programme; we've used it in other contexts, e.g. *Sharing Conservation Decisions* and prepared a short account (Eastop and Simila 2007), which formed the foundation for this paper.

2. ICCROM: <http://www.iccrom.org/>

The person doing the documentation (the documenter) has to choose (or adapt) general systems of classification and the particular categories into which the object fits. A certain type of small, excavated cloth object provides a useful example. Some were used as bags and others as headwear: some were used for storing or carrying goods, while others bear traces of human hair, indicating they were worn as headwear in life or as funerary wear. One was found *in situ* covering the head and face of a deceased woman (Javér *et al.* 1999). If such a cloth object enters a collection without any contextual information, it might be categorized as headwear or as a bag. If categorized as a hat, the implicit classification system is one of clothing. If the same object is categorized as a bag, it may stay within the garment class as a costume accessory, or it may be placed within an alternative class, such as storage or transport. The choice of classificatory system becomes important when the record is stored (filed for retrieval), because the selected terminology will be crucial for facilitating or blocking processes of building and linking sets of data through cross-referencing.

The exercise

The documentation exercise we developed is in two parts. In the first part, each course participant is asked to document an object (Figure 1); in the second, the participants form a group and analyse the resulting documentation. For the first part of the exercise, the participants remain seated at their tables arranged around the room. Each person should see the middle of the room, but some people will be seated closer to it than others. During the exercise, the participants are asked to stay in their seats. Each participant is provided with a one-page documentation form with three sections. The first asks: what would you call this object? The second section is the largest, with space to draw the object. The third section is for the name of the documenter, and the date of documentation

The object is placed in the middle of the room, so each person can see it; the distance between the object and each viewer will vary. Some will be 2-3 metres away from it; others will be up to 5 metres away, depending on the size and configuration of the room and its furniture. We ask each person to fill-in a documentation form, and to 'prepare to tell the group about what you have seen and what you have drawn'. Approximately 15-20 minutes is allotted for this, enabling everyone to fill-out the form without the pressure of a ticking clock.

In the second part, the facilitator collects the forms, spreads them in random order and invites the participants to look at them. There is usually quite a lot of laughter as the participants comment on the drawings. After this initial reaction, the facilitator encourages discussion about the names given to the object and the various ways in which the object has been represented. This informal discussion, with everyone standing around looking at the forms, generates further discussion about the process and outcome of documentation.

What would you call this object?

One of the first questions raised in the discussion is *What is it?* There is no easy answer because the object selected for the exercise is hard to identify. The fact that the facilitator/s may not be able to identify the object helps to arouse curiosity^[3]. For example, it is not clear which is the front or back of the object; perhaps it is upside



Figure 1
Documentation as a solitary activity
Image credit: IICROM

down. Another question is *Where does the object start and finish?* Some of the drawings will include the cylinder (often a cardboard tube) on which the object is placed; others will not record it. Is the tube part of the object or is it a mount? If it is a mount, is it of any significance? The difficulty in identifying the object results in different names being recorded. In the presentation at the 2015 Forum, we showed the following answers to the question *What would you call this object?* The answers have been put in alphabetical order, with spelling standardised:

Artefact #1 Cylindric artefact made of blue velvet with design embroidery (white silver) cloth with a crown of red threads hanging down; bag; cap; child's hat; covering material; dancing hat; decorative cover of the ceremonial pole; face cover with hat; hanging accessories; hat; head acc.; lady; may be hat; monochrome strip sleeves with a mop head; oriental headband or head cap for performing arts or military accessory; part of sleeves; Persian text a hat; successor to the emperor's hat.

The name given to the object will depend on the observer's own experience of things that look like it, and the documentation conventions and vocabulary of his/ her profession.

What's your point of view?

Asking the participants to document the object from their seats means they become more aware of the effects of their 'points of view' - both physically and metaphorically. The physical viewing point of each participant is fixed in the room and therefore in relation to the object. Each person can only document his/her own view of the object, i.e. what can be seen from where s/he is sitting (Figure 2). The effect of this physical 'point of view' stimulates discussion about the effects of other 'points of view'. For example, a curator's view of the object may differ from that of a conservator or the exhibition designer or the mount-maker. Each specialist is interested in different aspects of the object, and therefore sees and records different features as significant. Each person will also describe the object in different ways, again according to his/her experience, institutional norms and professional role. An analysis of three influential conservation publications showed that conservators used words that suggested a primary allegiance to the conservation profession over that of the employing institution (Drysdale 1999). A diversity of physical viewpoint and professional perspective is reflected in the different drawings and diagrams produced by the participants. Some participants will have recorded its various components; some its size; others



Figure 2
Documentation as a community action or a collective process.
Image credit: IICROM

3. Neither author knows what the object is.

will have noted the colours of the object. Differences in colour perception and in the words used for colours are sometimes discussed.

Why are you documenting the object like that?

The variety of ways in which the object is represented on the forms leads to discussion about the purpose of documentation. The quick pace of the exercise makes it obvious to everybody that none of the forms should be considered as a finalized, complete record. In spite of the unfinished nature of the documentation, it is obvious that each documenter has made specific choices. The advantages and limitations of the various approaches are discussed, in order to underline that documentation is always ultimately subjective, and that there is no one right way to document, and acknowledging that each documentation system will have its own constraints. In the case of this exercise, the form is restricted in size to one page, with most space allocated to the drawing.

During the group discussion, the facilitator asks which of the documentation forms would be most helpful for different situations, e.g. when planning the storage of the object (e.g. when finding a box of the right size) or when planning an integrated pest management strategy (e.g. identifying the keratin-containing components) or when designing an Interpol poster (e.g. if the object was stolen). Discussion of each situation is likely to result in the selection of a different drawing. In this part of the exercise, the often unstated rationale behind documentation choices is articulated and thus opened-up for debate.

Looking at the forms next to each other highlights the variety of representational styles (examples are shown at the end of the paper). Some are naturalistic, life-like sketches of the object; others are simplified diagrams, with features viewed as significant by the documenter clearly identified. Each professional group tends to have its own style or conventions of representation. There is now increasing pressure to introduce computerized documentation, including digital imaging. This apparently simple exercise offers the opportunity to discuss the strengths and weaknesses of different systems, and demonstrates that fundamental decisions have to be made whatever the system used for making and storing the records.

Why the exercise works

The exercise works well for several reasons, but primarily because it is a way of learning together and 'learning by doing', key features of the ICCROM *CollAsia* programme. Recent research on knowledge-making has confirmed that the body has "a key role in the making and recall of a wide spectrum of knowledge, including the conceptual kind" (Marchand 2010: S18). The exercise is effective because it links direct physical experience of viewpoint with conceptual 'points of view'. The exercise demonstrates that documentation can be moved from a solitary activity to a community action or a collective process. The differences in the location (the physical viewpoint) from which each documenter looks at the object during the exercise can be understood as mirroring similar diversity in professional positions and institutional settings. Recognising this diversity is very helpful for the interdisciplinary field of heritage conservation.

Documentation as inter-disciplinary

The act of drawing links many disciplines, and looking at all the documentation forms together promotes group discussion in a friendly way. The exercise is therefore good for fostering a relaxed and cooperative style of working in a culturally mixed group (where cultural diversity may reflect differences in profession, institution and perceived status, as well as ethnicity, language and nationality). This exercise works well because it is viewed as non-threatening and fun, while provoking lively debate on important issues. It also provides a mechanism for those less confident in speaking to demonstrate their observation and documentation skills.

Documentation as processual

The exercise also works well because it replicates the four-stage process of documentation in a way that clearly shows each stage of the process. We see that the facilitator determines Stage 1 (*making or selecting a system of classification*) by deciding the format of the documentation form. Stage 2 (*classifying*) is seen in the names selected for the object, and by the later group discussion of naming, and of designating the front, back, top and bottom of the object. Stage 3 (*making the record*) is the work of each participant. Stage 4 (*ordering the record*) has two stages. There is the initial re-ordering when the documentation forms are laid out for group discussion. Later, once the exercise is over, each participant takes his/her form and adds it his/her own course files. The generic heading given to each course worksheet (including the documentation form) encourages participants to view the documentation form as a record within the larger set of course records. The inclusion of this account of the exercise in this CD is another stage in the documentation process.

Documentation as life-cycle

The documentation exercise should not be considered in isolation. For example, it is linked to the broader theme of understanding the 'life cycle' of objects and their various uses in the past and in the present (e.g. Clavir 2002; Wharton 2008). The exercise was developed as part of a wider strategy to demonstrate how objects are categorised differently depending on their 'life stage' and institutional setting, which often reflects broader social, political and economic contexts. 'Biographies' of objects can be a useful way of thinking about and documenting changes in the materials, structure, condition and social significance of objects and collections (e.g. Eastop 2000). It should be noted that classification systems have provenance and life cycles too. An excellent example of the biographical approach, and problems of categorization, is found in 'Reading and writing the restoration history of an old French bureau' (Sargentson 2015). Using both material and contextual information she outlines the changing significance of a bureau, reporting the alterations and restorations as part of the object's biography. Her analysis shows that the bureau is anomalous within established art-historical categories and it questions the heritage sector's tendency to seek to fix an object in a specific time and place, often failing to recognise how much change takes place in materials, construction and attributed historical values. The bureau is held at the V&A but is not on public display because it doesn't fit neatly into the existing categories of design history.

We made an interesting observation during the recent *CollAsia* course in Kuching (January 2015). We prepared for the exercise as usual, making a temporary stand (mount) for the object: a cardboard box, with a roll of flip chart paper forming the upright element. The object was placed on the mount and the participants started their documentation work. After a short while, the mount began to move, listing to one side. Spotting the movement, one of the authors (Eastop) moved quickly (as in a rugby tackle) to hold the mount upright and prevent the textile and the mount falling. This drama provoked momentary anxiety and then laughter, as the exercise continued with its human mount-support in place until the documentation forms were completed. As noted by Similä during the group discussion of the exercise, a crisis (such as the sudden tilting of the mount) created an immediate and urgent change in each participant's point of view. It is at times of crisis that perceptions shift and institutions are most open to change.

Recognising different points of view

The power of this exercise is that participants come to strong views which they later recognise are structured by their position or physical viewpoint. During the exercise the physical or geographical metaphor of 'position', i.e. of bodies in space, extends to social perspectives of

professional roles, diverse cultural beliefs and institutional mandates. The exercise embodies the metaphor of 'point of view'; the participants have a direct physical experience of the effect of their physical positioning, their point of view: each person sees a single, unique view of the object. This direct physical experience facilitates the move to the conceptual understanding of 'points of view'. Becoming conscious of one's own position in social, cultural and professional arenas is an essential first step in recognising the positions of others; in this way the exercise facilitates understanding of decisions made and of decision-making. The participants become conscious of the complexities of positioning, and the lessons learned in the exercise can be transferred to other situations.

The intense, solitary engagement of documenting an object is broken when each participant gives-up his or her own documentation form and they are placed in random order for group scrutiny and discussion. Comparison leads to recognition of differences in content and viewpoint. The enforced detachment of the second part of this exercise makes it easier for each individual to see that, first, s/he was so positioned that s/he had a single, clear but restricted view of the object, and second, that each and every participant had a different, but similarly positioned and restricted view. Such detachment from one's own work is recognised as important in conservation work (Yarrow and Jones 2010). The resulting documentation is both co-operative and comparative, leading to explicit articulation of presumptions, such as, ' Oh, I assumed that was the front of the object'.

The exercise encourages awareness of documenting and the outcomes of documentation. The lively discussion demonstrates that 'documenting' is a contested, social process. In this exercise, participants are actively engaged in showing how views of objects change, depending on:

- ways of seeing (including the physiology of perception);
- the physical point of view (positioning);
- the professional point of view;
- how the aims of documentation are understood;
- the system of classification (e.g. a system designed primarily to identify an object's location in a museum, compared to one designed for condition assessment and monitoring);
- styles of representation (e.g. stylised diagrams versus life-like sketches).

This exercise uses documentation as an exemplar of an approach that can be applied much more widely. Recognising that there are different points of view is an important step in sharing conservation decisions. We have been encouraged by the interest shown in this exercise beyond the *CollAsia* and *Sharing Conservation Decisions* programmes. It attracted a lot of interest at the *Artefacta* conference, held in Helsinki in May 2014 [4] and at the London College of Fashion in April 2015. Two participants at the Icon Forum reported that they are thinking of using our 'points of view' exercise as way of exploring differences within their institutions. Both work for large institutions (one with a national remit and one with a regional mandate) and with staff spread across many sites. We are delighted that they are considering the use of this exercise as a means of promoting productive reflection within their institutions.

We concluded our presentation with a cartoon showing a rat, standing on its hind-legs, looking up at a bat flying overhead. The rat says "OMG! [Oh My God] AN ANGEL!", understanding the winged creature as an angel (a rat-angel). We cannot help but see things from our own point of view. However, if we learn to acknowledge that we are positioned, and to reflect on this, we may find it easier to recognise alternative viewpoints as complementary or as opportunities for constructive debate and perhaps even change.

4. *Artefacta* – the Finnish Network for Artefact Studies: <http://www.artefacta.fi/tapahtumat/cfp>

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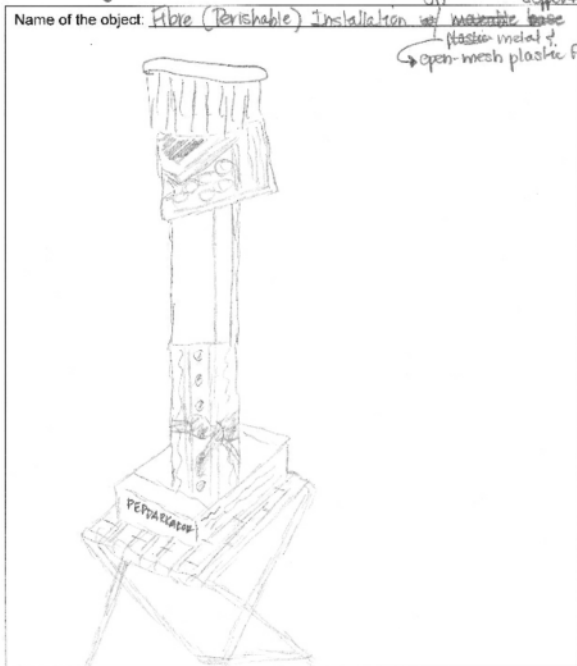
Documentation sheets, showing diversity of representations [Image credit: ICCROM]

ICCROM Rome
International Summer School 2013
Communication and Teaching Skills in Conservation and Science



Date: 18. July 2013

Name of the object: Fibre (Perishable) Installation on support
material base
plastic metal &
open-mesh plastic fabric



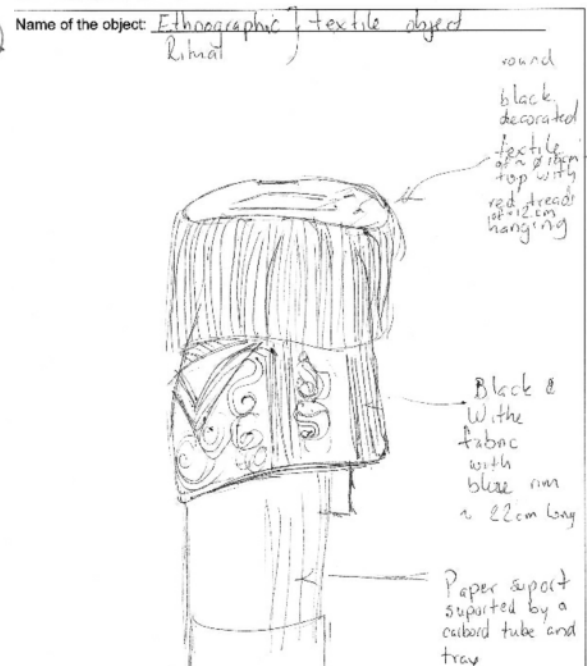
Your name Elisabet

ICCROM Rome
International Summer School 2013
Communication and Teaching Skills in Conservation and Science



Date: 18.07.2013

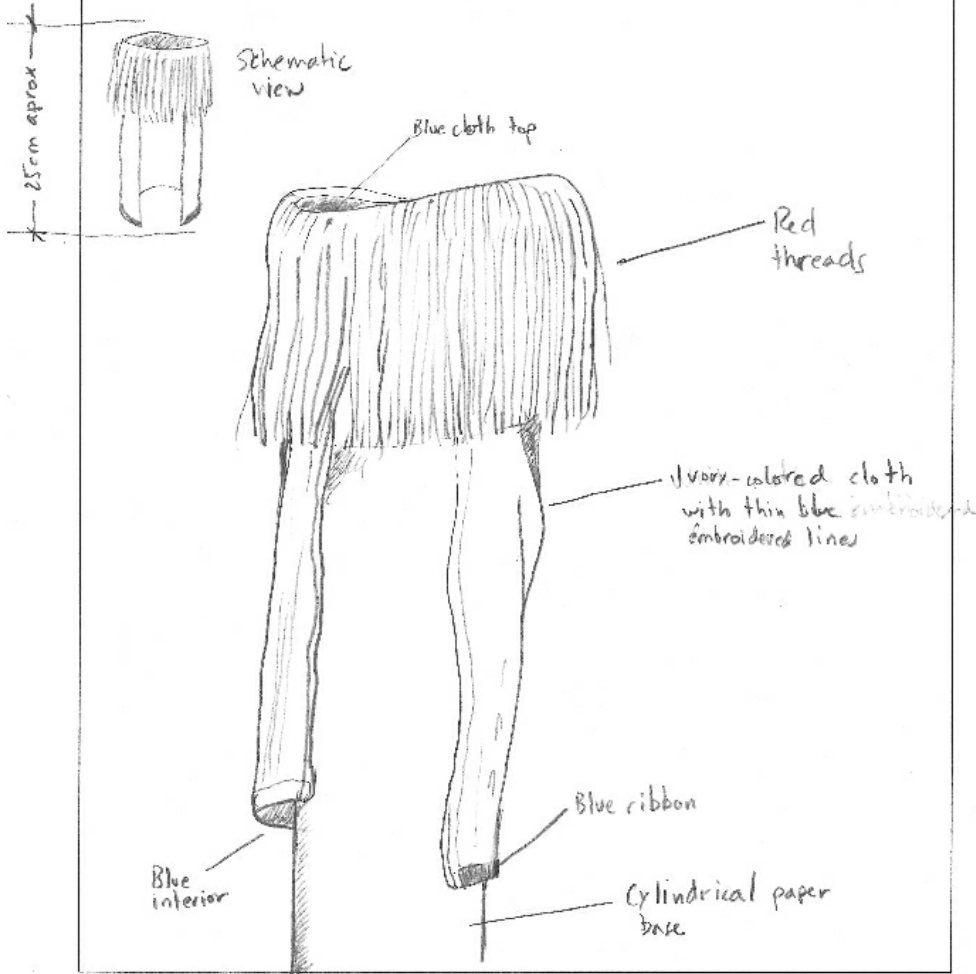
Name of the object: Ethnographic / textile object
Ritual



Your name Veira

Date:

Name of the object: Mushroom-shaped cloth + thread ceremonial object



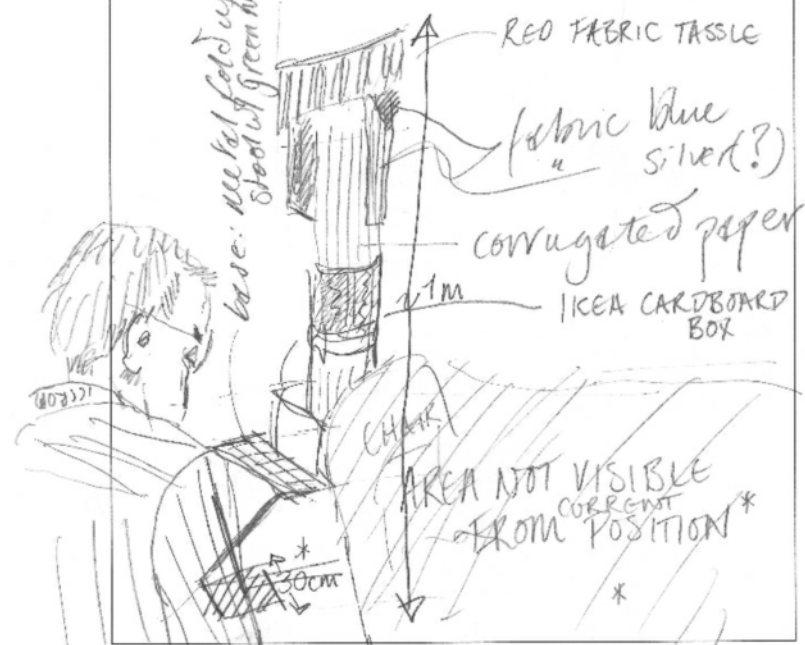
Your name _____

LOCATION
 ROOM C21
 3rd FLOOR ICCROM

Date: 18-07-13 14⁵⁸ SUNNY DAY 27°C; NOT TOO HOT
 ROME

Name of the object:

Object appears somewhat precarious in GPS coordinates construction, & was not fully accessible (obscured line of sight @ TIME of documentation)



Your name _____

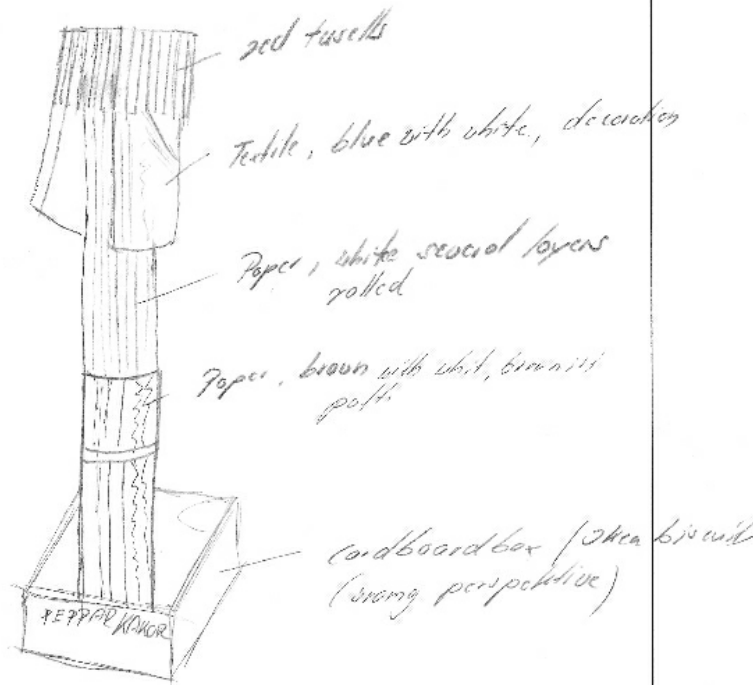
PERSONAL DOCUMENTATION * using floor tile as a guide

(FELLOW DOCUMENTOR)

NOTE TO FILE: COMPARE W/ THEIRS.

Date: 18. July 2013

Name of the object: Textile - Paper Object

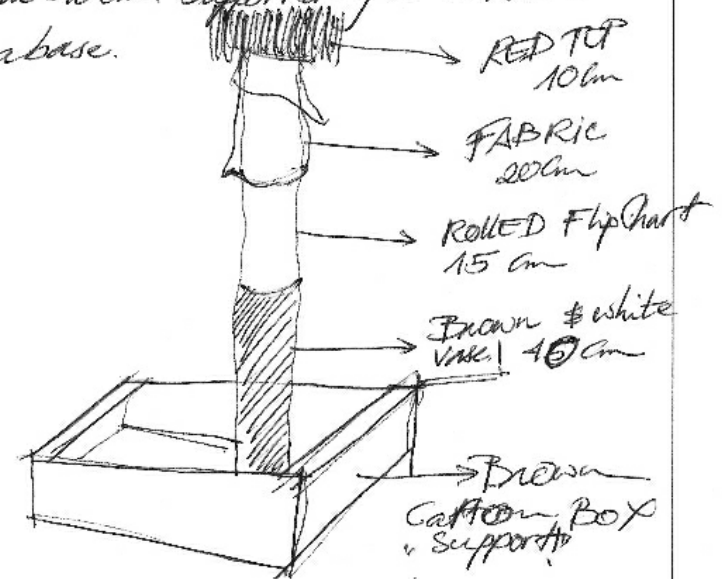


Your name Barbara

Date:

Name of the object: PAPER THE RED TREE

A combination of hard board & fabric made into about 1m tall cylinder with red tree-like leaf-like upper part of less than 10cm. Supported by a carton box as a base.



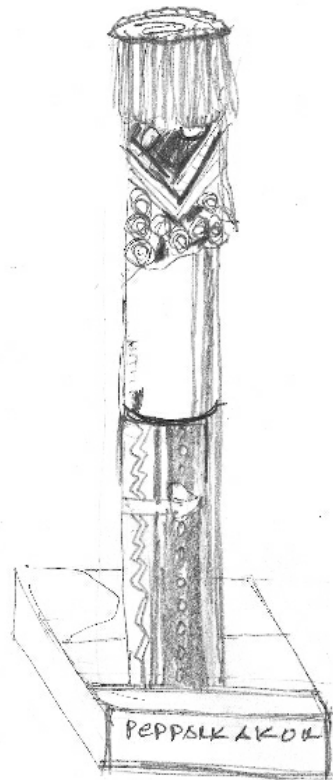
NOTE: Description was provided with the chance for a proper examination of the object.
* "!" is intended to mean not certain

Your name _____



Date:

Name of the object: El cilindro, el pañuelo y la monteta

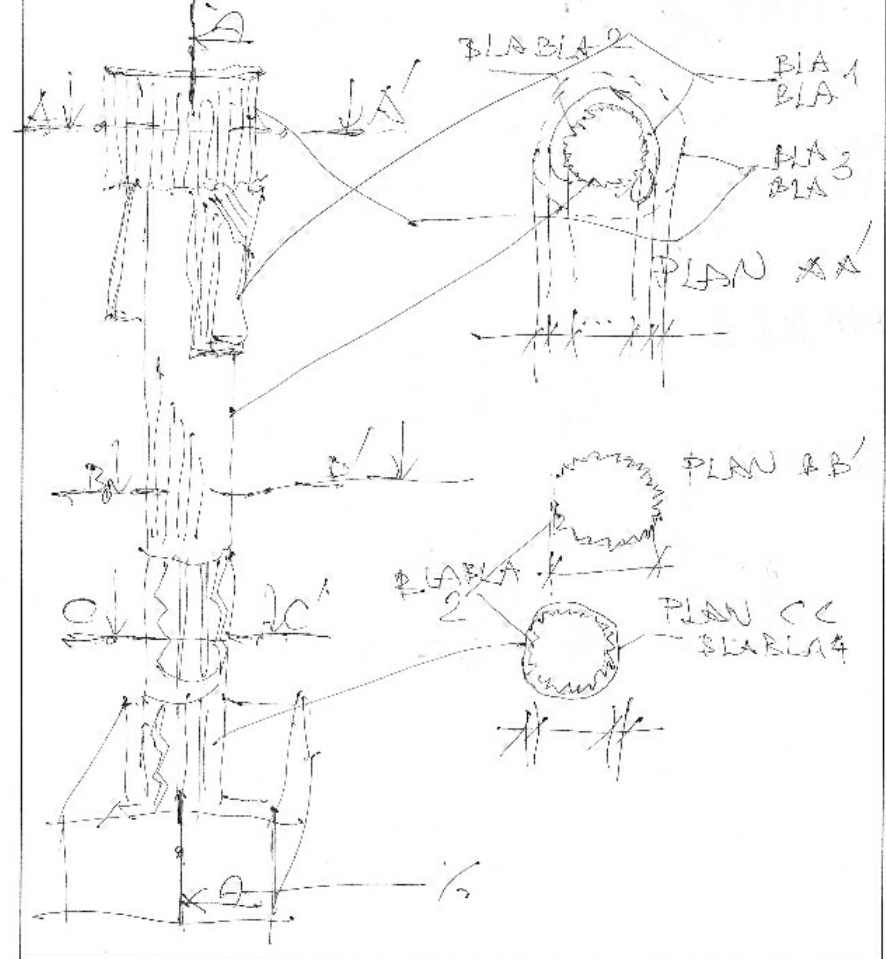


Your name ROSANNA



Date: 12.7.2013

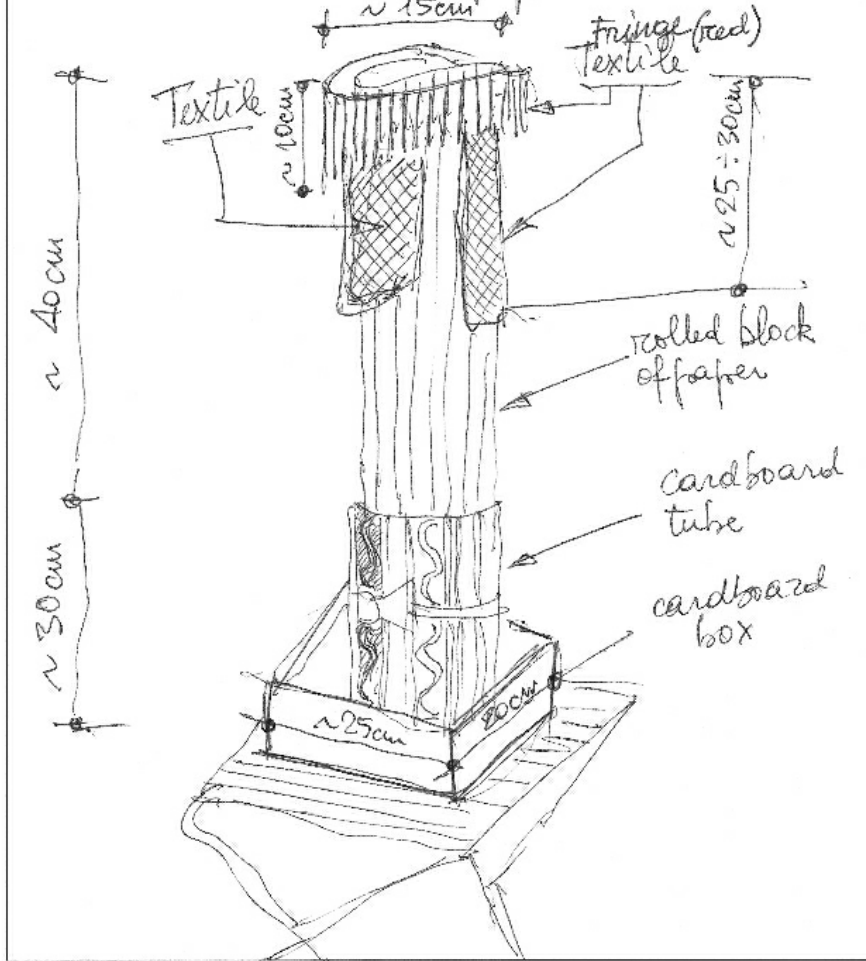
Name of the object:



Your name VESENKY

Date:

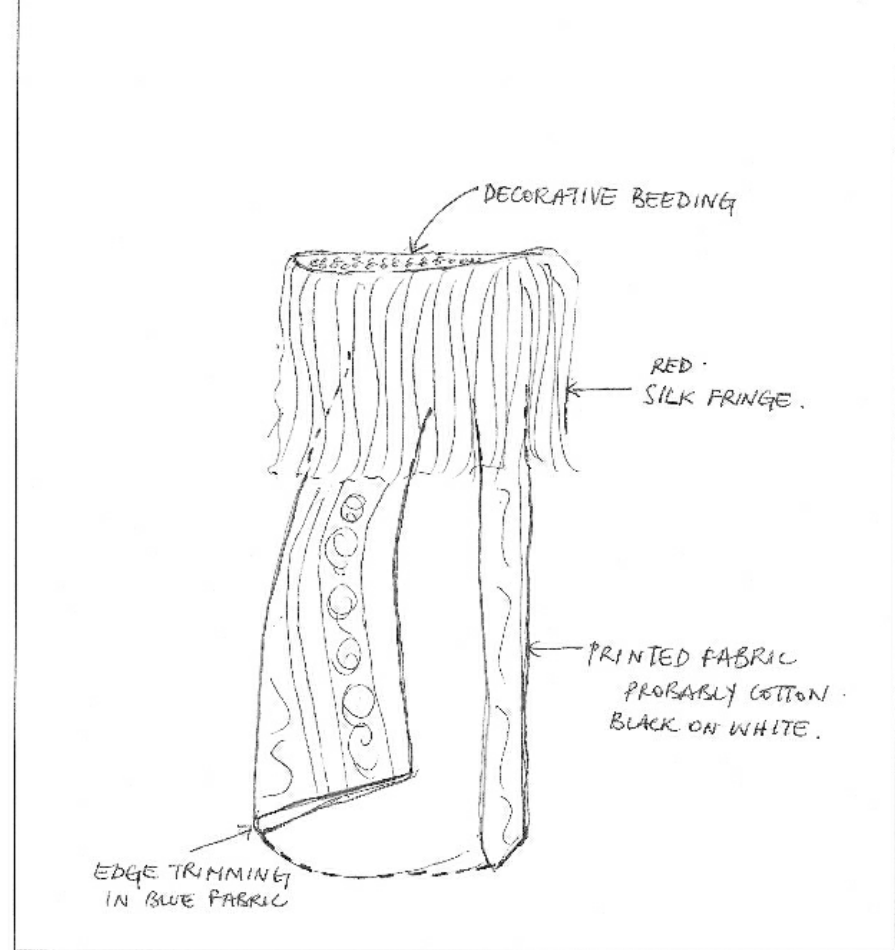
Name of the object: Combination of paper and textile materials



Your name _____

Date:

Name of the object: DECORATIVE HEAD PIECE OR SIMILAR ITEM OF CLOTHING?



Your name THERESA

Public and private studio collaboration for interns

Jaqueline Hyman - *The Textile Restoration Studio*

Pierrette Squires - *Bolton Library and Museum Services*

For many years Jacqui Hyman and Pierrette Squires have developed a collaborative working experience for interns/students, to enable them to gain a broad overview of the conservation profession from both the private and public perspectives. Using their complementary working knowledge and experiences, they have developed an appropriate and instructive working module which provides skills for both museum and freelance business future employment. During the intern/student work placement period, the individual works at both conservation studios to gain their broad range of work experiences.

Jacqui begun her freelance business, The Textile Restoration Studio based in Altrincham, South Manchester in 1982, offering a textile conservation service to a broad range of private clients, churches, stately homes and museums. Pierrette has been the Objects Conservator at Bolton Museum since 2004 and, being the only conservator employed by the Museum, her job requirements are extremely varied.

The differing working practices introduce the intern/student to the flexibility of the freelance practice and the more formal museum environment as regards working hours. For the freelance business, the practical conservation restraints of working a nine to five day does not exist. Visiting and working on-site can lead to a long working day with varied working environments to which to adapt. Clients may be met in their own homes, rather than a museum setting, so one has to be aware of their surroundings but keep the same level of professionalism and ethics. Working time scales can vary but flexibility of hours within the working day can be used to the maximum, when necessary. Working in the freelance field, single handed, is not for every conservator. The lack of interaction with other colleagues can be daunting and the necessity of understanding practical business skills is essential. In addition, The Textile Restoration Studio offers the intern/student an opportunity to learn about the necessary elements to running a business, such as accounts, tax etc - an invaluable insight into the necessities of freelance work.

By collaboration with Bolton Museum, the intern/student is able to learn and gain new working skills from being within a museum working environment. Conservation skills and knowledge can be put into practice, first hand, with the additional opportunity of undertaking environmental monitoring, both within the museum and at local historic properties, overseen by Bolton Museum. Pierrette and Jacqui also encourage other interns/students to come and visit their studios, especially during their placement period, to build on their exchange of skills, knowledge and to create a wider networking experience (Figure 1). Often, the knowledge they gain may not be in just their specialist field. The opportunity of working with volunteers and giving presentations, when appropriate, is included thus enabling the intern/student to build their own confidence (Figure 2).

Both Pierrette and Jacqui feel their joint collaboration within the conservation profession broadens the understanding of the interns/students and helps to break down much of the public/private sector divide. The interns/students respect the differing methods of work and learn to appreciate the advantages and limitations of each working practice and, at the same time, gain appropriate experience for their CV and a valuable insight for their future working career.



Figure 1
Project discussion for two interns from different studios.



Figure 2
Presentation at a stately home, in the staff quarters.

Standing on the shoulders of others: further developments in polychrome patterned nylon net.

Maria Jordan - Textile Treatment Supervisor

Libby Thompson - Senior Textile Conservator

Historic Royal Palaces

Introduction

Over the past 5 years Historic Royal Palaces (HRP) has developed the use of digitally printed nylon net with commercial textile printers. The first part of this work was published in a paper for ICOM-CC 16th Triennial meeting in Lisbon 2011 (Takami and Roberts 2011) in which the specifications and testing of the net was outlined. In 2010 the printing had only been tested on a small scale, approximately 190 cm wide by 23 cm; this was successful and gave us the reassurance to continue with printing the net on a larger scale.

HRP's work in this area has not been without its lessons and this paper will first of all review the commercial production of digitally printed net on a large scale and then will discuss the methodology of hand painted polychrome patterned nylon net for smaller scale objects. Both methods will be compared and evaluated for their suitability and use in conservation to enable others to benefit and build on this work.

Background

Developing a printed nylon net came about when the conservation of Queen Anne's State Bed (Figure 1), on display at Hampton Court Palace, was started. The bed is dressed in the original polychrome cut and uncut figured silk velvet ordered for the bed at the extraordinary cost of £674 in comparison to the bed frame's bill of just £30. The impact of the bed is entirely due to the incredibly bold Bizarre pattern of the hangings, with a repeat of an impressive 150 cm/ 64", in 3 colours; red, yellow and cream. The weaving technique of cut and uncut pile brings a further subtlety to the pattern, with darker and lighter shades of red and yellow. As the velvet has



Figure 1
Queen Anne's state bed 1714

degraded, the subtleties have been lost as the warp faced satin ground has worn away, the pile has abraded and the loops have broken.

To maintain the pattern, previous generations used a number of techniques but predominantly embroidery, worked through the velvet onto a cotton sateen support fabric. Subsequently to support the velvet further, some elements were netted with a monochrome cream nylon net. In 2005 when the bed was re-evaluated, having been taken off display in 1992 due to the fragility of the foot curtains and headcloth, it was clear that the textiles would need a complete support, but by using a monochrome overlay, the impact of the pattern would be diminished.

However a 21st century solution suggested itself. The idea was not only to protect the now 300 year old silk velvet but also to enhance it by printing the pattern onto the net. Due to the scale of these elements of the bed (200 cm x 400 cm) screen printing or hand painting were rejected due to practical complications and technical difficulties. With the development of digital printing, investigations were started into this new printing technique.

Commercially printed net on a large scale

As conservation nylon net can be produced in a 5 metre width, a one piece overlay was envisaged for the large scale elements of the bed. Once the curtain was photographed and the nylon prepared, the printers would produce the finished overlay.

Technical Issues

Digital printing is a fast, evolving industry both in the development of software and machinery. Upgrades are regular, every 4 to 6 months. Key to the process is a high quality digital image of the textile. Some companies, for example Eyemats, offer to undertake the photography themselves, other companies do not but give clear specifications.

Photography and Computer-aid design (CAD)

Photographing on a large scale is difficult. With digital photography, these large scale pieces were photographed in sections and pieced together. However distortion can occur but through the use of CAD, with detailed measurements from the object, the images can be rectified. Where the textile has been lost or the pattern is very worn, CAD will infill to recreate the pattern. It is through this work that the pattern of the overall object is enhanced and brought back to life but in missing areas, it can only be an approximation of the original. When employing a photographer, it is important to check with them that they can do both the digital photography and CAD work and the time required.

Colour rendering and choice

Conservators are completely dependent on the technicians at the printers for colour choice and as the technicians cannot see the object, they have to work from the photographed textile and CAD drawings. Therefore there are already two interpretations of the colour of the textile. However, on a degrading textile the colours are unlikely to be uniform and therefore the conservator will choose a colour palette which works for the whole object which may differ from those chosen by either the printer or the photographer. This discrepancy is well illustrated in Figure 2 for the foot curtains. The net on the left was the colour palette chosen for the headcloth and valances which compliments and enhances the overall colours of the textiles whilst the net on the right is the first trial sent by the printers for the foot curtains.



Figure 2
Colour Matching

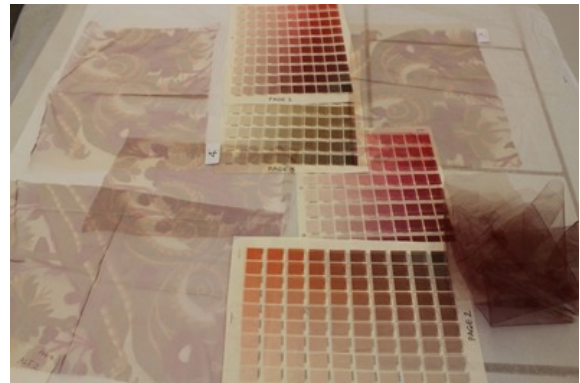


Figure 3
Printed colour squares

To overcome this problem, the printers were asked to print the colour palette used by them on to the nylon net (Figure 3) and the colours were chosen from these by the conservators. Understanding which colours enhance the degraded textiles is crucial. The experience of the studio at HRP is that matching to the current faded and degraded colours of a textile tends to give a dull effect, whereas choosing a tone to pick up the original colours and feel of the textile will lift it and bring it to life.

It is important to ask for at least 2 print trials, with different colour combinations. The nylon net trials for HRP measured approximately 40 cm x 30 cm. If the trial is not correct, choose a colour square adjacent to the one in the trial; even a very small variation can make a considerable difference to the balance, particularly when dealing with 5 colours.

Dimensional change

Large scale is a different beast to small scale particularly on net! Given the weave structure, dimensional change or stability is the most pertinent element. This was found to be the case both horizontally and vertically.

Given the width of conservation nylon net, it had been planned to print the entire headcloth in one piece (240 cm x 330 cm) but when the piece arrived from the printers, it was distorted and none of the pattern could be aligned. Printing narrower pieces seemed to be a possible solution. As the headcloth was made up of 3 whole loom widths and 2 partial loom widths, it was decided to use these natural divisions as a guide. The art work and nylon net were both prepared to match the loom widths. Even so, one print run was distorted with an expansion of 4cm or an 8% increase in width and therefore had to be reprinted.

In terms of the vertical dimensional changes, 300 cm length proved to print without stretching or shrinkage. However, on the curtains at almost 400 cm, the first printed pattern had shrunk by 17cm overall, so that at the bottom of the curtain (Figure 4) the pattern was completely misaligned. This represented approximately 4.5% shrinkage.

To rectify this problem, the 400 cm long loom width velvet was divided into two sections, one of 300 cm and one of 150 cm, allowing for an overlap of the design. When the pieces were delivered, they were found to



Figure 4
Cumulative shrinkage on 400cm length of printed nylon net

align accurately with the velvet curtain. The bottom section was pinned in place and stitched around the design and then the top section was laid over and the net held in place around the same motifs, to “bury” the join.

Regular technical upgrades and need for re-testing

Given the regular technical upgrades, over a long term project, the colours chosen in April are likely to be slightly different by December. Each time there is upgrade of dyes/inks, they need to be retested for light stability and Oddy testing.

Production time

It is important to establish with your printers their print schedule and turnaround time; this can be up to 3 weeks. Allowing time for re-testing of upgraded dyes/inks is essential as this can add up to another 4 weeks. Equally it is vital to factor in time for net preparation as well as shipping. The months pass quickly!

Evaluation

Despite the many technical difficulties, the overall effect and impact is impressive. The use of digitally polychrome nylon net on these large scale, very fragile textiles not only protects but also enhances the fragile textile. Previously these curtains had a monochrome net which, when seen at an angle, can give the curtain a milky/opaque look, taking away from the impact of the pattern. This is no longer the case with the printed net. The results are very pleasing but acknowledge that the production negotiations and trials are lengthy and need to be added to the testing of dyes each time there is a change at the printers.

With this in mind, it was decided to trial an in-house production of polychrome nylon net to protect the same velvet and compare the feasibility.

Producing patterned net in-house

The second part of this paper will focus on an early 18th Century wooden-framed fire screen with a central panel of velvet (Figure 5). This panel measures 115cm x 55cm and has the same Queen Anne patterned velvet described above. Due to some of the problems that were faced with the digital printing technique and the smaller scale of this object, it was decided that a different technique should be used to create a multi-coloured overlay for treatment; that of painting dyes onto the net.

Background

This technique built on work that had been done previously in-house in treating another object, William III’s state bed headboard cover. In this case a di-chromic net overlay was required to compliment the metal braid pattern on pink silk and a method was adapted from use on silk habotai (Zagorska-Thomas 2011) for use on nylon net. This was where conservation safe dyes, in this case Lanaset®, were made more viscous with sodium carboxymethyl cellulose (SCMC), meaning that it could be effectively painted onto the nylon net and would bind in place to successfully form a pattern. However, the



Figure 5
The fire screen before

fire screen required an overlay with a greater pattern complexity and palette of colours, with there being three very distinct colours within the Queen Anne velvet.

The textile was carefully removed from its wooden frame for treatment. Once removed it could be seen that the textile was mounted onto an internal wooden frame and consisted of two sides which are both exposed when the screen is on display. Both sides have been heavily restored with yellow, red and cream embroidery in its treatment history, although no documentation survives. This embroidery work has been stitched through the original textile onto a cotton sateen support fabric, a similar treatment to other elements of the bed. This support material is now integral to the object and so its removal was not considered as part of the treatment.

Both sides have very little of the velvet pile left, although one side is in a lot worse condition with almost complete loss of velvet pile and of the restoration embroidery thread. It is also very faded from light damage meaning that the distinctive pattern of the velvet is almost lost, as is the darker and lighter shades of the red and yellow that was originally created by the cut and uncut pile. There was quite a marked difference in appearance between the two sides of the fire screen due to this difference in condition. The focus of this treatment was therefore the side in worse condition which had greater treatment needs. The primary aim of the overlay treatment was to provide a structural support to the degraded velvet on this side of the object, however it was also an aim to enhance the very faded appearance and loss of pattern and therefore reduce the difference of appearance between the two sides of the fire screen.

Initial Testing

From previous work, the percentage SCMC that gave the best consistency had been established at 2%, so for this treatment, dye work began by experimenting with colour recipes and different percentages of the Lanaset® dye stock solutions to see what reds and yellows could be achieved. The base colour of the nylon net was solution dyed to a cream colour that was colour matched to the cream restoration embroidery that survived on the fire screen. The red and yellow would be layered on top of this to create the distinctive pattern.

It was decided that in order to enhance the pattern and colour of the fire screen and lessen the difference in colour between the two sides, colour matching would not be done to the current muted colour of the side of the fire screen being treated, but to the brighter colours within the embroidery threads on the other more complete side. Some of the surviving velvet that was revealed on the edges of the textile, when it was removed from the wooden frame, were also taken into consideration when the colour matching was undertaken.

Different recipes were first chosen through solution dyeing, then concentrated solutions were made which were painted onto a test piece of net and steam set, a process described more fully later. Through this process two colour recipes, one yellow and one red, were chosen to be appropriate colours to help enhance the current appearance of the fire screen.

Method

The process of dyeing the final nylon net overlay began with a Melinex® tracing being taken of the velvet pattern. A pre-dyed cream net was attached to a Correx® frame ensuring that the 'grain' of the net was in the correct orientation. This was placed on top of the Melinex® tracing and weighted so that it could not move during the painting process. Using the Melinex® tracing as a guide, the red dye was painted onto the net. With different sized paint brushes quite intricate pattern designs were achieved (Figure 6).



Figure 6
The red dye being painted onto the nylon net



Figure 7
The adapted dye vat with Correx drum



Figure 8
The net after the dye treatment

After drying overnight, the net was carefully peeled off the Melinex® and a coloured film was left. The Correx® frame that the net was attached to had been designed to fold and fit inside a Correx® drum which sat on top of the in-house dye vat (Figure 7). This was secured in place using tape and a Correx® lid was made which was lined with Sympatex® to try to absorb some of the steam and reduce condensation which may drip onto the net during steaming and effect the dyeing. A depth of 30 cm of water was used in the vat and this was heated to 85°C and steamed for 1 hour. Once the steaming was complete the excess dye film was rinsed from the net and it was blocked out over the Melinex® tracing to ensure it dried in the correct position. This method was then repeated with the yellow dye. The process was undertaken in two stages as initial experimentation showed that this provided the best results so that colour run or overlap would not occur between the two distinct colours. Overall this process, including testing, took 36 hours, with costs being relatively low, that of materials.

Limitation of scale

The ultimate limitation of this technique is the size of the dye vat which limits the scale of the object being treated. To date, the largest single piece of net dyed with this method has been 220 cm x 140 cm.

Evaluation of technique

The result of this dyeing technique produces quite a block colour result as compared to the more shaded version of the digital printed net (Figure 8). Testing did allow appropriate colours to be found. However, as the dye is in its concentrated form and not in solution, as with piece dyeing, there is slightly less control over the depth of shade of the recipe. It is felt that there is scope to test further to see if the piece could be over-dyed multiple times to create more shading within the pattern as with the digital printed net. However, the block colour effect was appropriate in this case where not much of the pattern and colour variation remained on the object being treated. The painted dye process also allowed the control and minimisation of distortion of the net so that when the overlay was applied to the object, it was found that a relatively accurate translation of the pattern had been made.



Figure 9-11
Left – side with more complete restoration embroidery
Centre – side treated before treatment
Right – this side after treatment with the dyed net overlay

Overall the net overlay subtly enhanced the colour and pattern of the fragile Queen Anne velvet whilst providing a surface protection. The difference in appearance between the two sides of the fire screen was also reduced so that a more uniform look was created (Figures 9-11). A comparison can now be made between the older restoration technique of replacing the lost velvet pile pattern with embroidery shown on the more complete side of the fire screen, with this newer, completely reversible conservation technique, which implies the pattern whilst not fully restoring it. The reversibility of the technique also maintains the integrity of the original object.

Conclusion

Both these methods of producing polychrome nylon net have a part to play and are additional tools in the arsenal of techniques in conserving textiles. Both offer useful, reversible methods of protecting, enhancing and conserving textiles, one for larger scale objects where time is not a priority and the second for smaller scale objects (up to 220 cm x 140 cm). A summary of the requirements for each method is given in Table I.

Cost is an issue. Disregarding the cost of the nylon net, the production cost of the digital printed net for Queen Anne's State Bed, over a 5 year period, has been approximately £2000. Whilst in production with the printers, the conservator can undertake other conservation work whereas the time needed for a conservator to undertake the hand painting method requires their time for the trials for the dyeing and the final production and this time needs to be quantified as a cost.

As always, the textile conservation profession borrow technical know-how from other industries and HRP are very grateful that RA Smart were willing to work on this demanding but ultimately, from their point of view, small scale project. Interestingly, over the 5 year period of this work, the production costs of the printing have fallen as shown in the Table I overleaf.

Acknowledgements

We would particularly like to thank Historic Royal Palaces for their encouragement and support in this work, in particular Kate Frame, John Barnes and Sebastian Edwards. We would like to acknowledge the work of all our colleagues in the treatment team of Conservation and Collection Care who have been involved in this project over many years and in particular Mika Takami and Branwen Roberts. We would also like to thank the Royal Collection for their support and permission to publish.

	Digitally printed nylon net	Hand painted nylon net
Cost	Material + production (from £28.90/m to £12.90 per metre) + delivery costs + photography	Material + conservator's daily rate
Time	3 week turn around for each print run including trials + 3 week turn around for CAD. A month for any testing required (see below)	Conservator's time for design and dyeing each colour. On this project, 36 hours/ 1 week
Preparation	Scour and cut to size for print run. Dispatch	Scour and cut to size
Testing	Oddy test, dye bleed and light fastness for each change of inks/dyes	Oddy test once as dyes remain constant
Product	Subtler as can print shades of colour; in this case 5	3 colours
Impact	Good	Good
Suitability	Large scale with no time constraint	Smaller scale; quicker turn around

Table 1
Summary of production requirements for polychrome nylon net

References

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Zagorska-Thomas, N. (2010) *Baskt where it belongs: reproducing polychrome silk painted panels of a costume by L Baskt for S Diagilen's Ballet Russes*. In: A. Fairhurst (ed.) *Mind the Gap! Structural and aesthetic options for the treatment of loss in textiles*, London: ICON, 75-83.

Materials

Conservation nylon net Dukeries Textile & Fancy Goods Ltd.

Spenica House
15a Melbourne Road
West Bridgford
Nottingham
NG2 5DJ

Tel: 0115 981 6330

Lanaset dyes

Townend Dyes

Tel: 0113 256 4251

www.textile-dyes.co.uk

Melinex
Sympatex

Preservation Equipment Ltd

Vinces Road
Diss
Norfolk
IP22 4HQ

Tel: 01379 647400

www.preservationequipment.com

Correx

Cordek Ltd

Spring Copse Business Park
Slinfold
West Sussex
RH13 0SZ

Tel: 01403 799600

www.cordek.com

Digital printing

R A Smart Ltd

Clough Bank
Grimshaw Lane
Bollington
Macclesfield
Cheshire
SK10 5NZ

Tel: 01625 576231

www.rasmart.co.uk

Photography and CAD

Mike Halliwell

32 Clatford Manor
Upper Clatford
Andover
Hants
SP11 7PZ

Tel: 01264 361694 or 07734 806287

Email: m.b.halliwell@soton.ac.uk

Borrowing from the neighbours: using the technology of other disciplines to treat difficult textile conservation problems

Sarah Glenn, Joanne Hackett, Elizabeth-Anne Haladane and Sung Im

Victoria and Albert Museum, London

Introduction

In the spring of 2013, Professor Richard Wolbers of the Winterthur/University of Delaware programme in art conservation led a five day training programme for the conservation department of the Victoria and Albert Museum. The aim of the workshop was to increase the department's knowledge and skills in new methods of cleaning objects across the collections. The cross-disciplinary training programme consisted of lectures and practical sessions on various cleaning methods developed by Wolbers, primarily with paintings conservation in mind, however with wider applications for other fields of conservation, including textiles.

The training programme took the form of lectures in the morning and practical sessions in the afternoon to put the theory into practice (Figure 1). As the week progressed the experiments became increasingly complex, beginning with the basics of making different forms of gels and emulsions and then progressed to include additives for specific cleaning purposes.

The first lecture was a thorough review of cleaning practice with an emphasis on understanding the object starting by measuring its pH and conductivity. These factors are key to practicing Wolbers' techniques; the aim being to not to vary more than 1 or 2 units either side of the original measurement during cleaning to avoid disruption to the object. By measuring conductivity it is possible to measure the amount of salts in the object which will interact with the water used for cleaning.

Wolbers (2013) explained the osmotic effects of three possible scenarios of applying *hypotonic*, *isotonic* and *hypertonic* solutions to a painted surface. A *hypotonic* solution is one which has a higher (lower ion) water content than the paint and after application the paint will swell through osmosis. A solution with exactly the same water concentration as the paint, resulting in minimal swelling, is *isotonic* and a *hypertonic* solution is one which has a lower (higher ion) water concentration than the paint, leading to the paint losing water and shrinking.

Choosing an appropriate solution is particularly important for sensitive surfaces where the material could be swollen and damaged. For textiles, for example, it is likely that a *hypotonic* solution that will swell the textile fibres and release soils will be required.



Figure 1
Using a biopsy pen to cut samples of agarose gel during the Wolbers' workshop

Other topics discussed throughout the week included the use of buffers to adjust the pH of the cleaning solution, the different types of chelators available, the use of surfactants, enzymes and other cleaning materials such as solvents all of which make up Wolbers' Cleaning 'Tool Kit'.

Wolbers' aqueous cleaning 'tools' (Wolbers, 2013):

1. Water (distilled, de-ionized, etc.)
2. pH (acid, bases, buffers, etc.)
3. Ionic Species (specific ions and amounts)
4. Surfactants (type and amount)
5. Other Materials (enzymes, "redox" materials, chelators, solvents, etc.)
6. Viscosity (polymer type and amount)

Once the solution that is most appropriate for cleaning has been identified, the next step is to determine the best method of application. Wolbers described the use of a wide range of thickeners including xanthan gums, methyl cellulose and hydroxymethylcellulose, agarose, polyacrylic acids, carbopol and pemulen. The properties and appropriate applications of each were discussed.

The first three of our case studies in this paper follow the method of preparing an aqueous cleaning solution and gelling it with either agarose to form a rigid gel or methylcellulose to form a viscous gel, as these proved to be the most effective for textile applications.

Agar is a polysaccharide product derived from seaweed that is commonly used as a thickener in the food industry. Approximately 70 % of agar is composed of agarose and the rest is composed of non-gelling agarpectin. Both agarose and agar come in powdered form and have to be heated up in water to between 80 – 95°C (depending on the grade purchased) in order to form a gel. Once set, both form a rigid, porous gel that holds liquid like a sponge but is not itself water soluble. When the gel is placed on an object liquid can pass in or out of the gel through diffusion and capillary action.

Agarose gel is described in terms of a weight to volume percentage with water. In the workshop, Wolbers recommended making gels between 2% and 5%, however a stable gel can be formed with 0.7% agarose. The higher the percentage of agarose, the smaller the pore size of the gel. The concentration has an effect on the rate of diffusion; liquid more easily transfers out of the gel onto the object when there is a lower percentage of agarose. Learning how to control the transfer of liquid in and out of the gel on different substrates is a key factor to any treatment, especially when applied to textiles.

The gels are versatile and can be made to incorporate buffers and chelators. Wolbers recommends adding a preservative Germabem II to prevent mould growth in the gel. Adding enzymes can be difficult as the gel needs to be cooled down to 40°C before stirring in the enzyme to avoid denaturing it. A gel with a large pore size is also required to allow movement of the enzyme from the gel to the object and so can only be used with a gel up to 1.5% w/v. Solvents cannot be added during the creation of the gel as they prevent the gel structure forming properly. However it is possible to soak the gel in a solvent after the gel has formed.

Chelating gels

Case study: the use of iron chelating gels to reduce rust stains on textiles

One of the chemicals introduced during the Wolbers workshop was a new chelator for iron, N,N'-di-(2-hydroxybenzyl)-ethylenediamine-N,N'-diacetic acid, which is usually referred to by the

shortened name of HBED. HBED has been developed to work without the need for other chemicals to convert insoluble Fe³⁺ ions to their more soluble Fe²⁺ form first, and so it will remove both ions directly.

During the workshop, historic samples from the V&A's handling collection were used for testing HBED, including reducing rust stains in eighteenth-century dyed cotton chintz fragments. The HBED was made up in 2.5% agarose gel solution as this allowed sufficient transfer of the solution into the textile. The agarose gel turns a deep pink colour when the HBED is working and the corrosion is solubilised and released from the object. In tests, the pink colour was released into the fibres and caused a tide line. This can be quite alarming as it looks like it is staining the object, however it was found to be easily removed with a plain water agarose gel or it can be flushed away with water and blotted. Aside from the obvious problem of controlling application and resulting tide-lines the main issue is that despite the amount of solubilised iron obviously being removed the stain still remains despite repeated applications. However, it has been successfully used by colleagues in the furniture conservation studio to remove iron corrosion from furniture. Therefore it is thought that the problem of removal on textile surfaces is probably due to the fact that the rust is not sitting on top of a surface but is deeply embedded in fibres over a large surface area. Another drawback for the conservator is that HBED is very expensive at approximately £72 for 1 gram. To date, this has somewhat inhibited extensive testing so although the initial results were promising it has not yet been found to be completely effective at removing iron stains on textiles (Figure 2).

Recipe for HBED in 2.5% Agarose Gel (Wolbers, 2013)

100 ml De-ionised water

0.5g HBED

0.5g Citric Acid (acts as both buffer and chelator)

Mix the above and then adjust the pH to 6.5 with drops of 1M NaOH

Add the agarose and heat to make the gel

Germaben II preservative can also be added

Case study: The use of copper chelating gels to reduce corrosion on a 1930's lamé dress

An evening dress designed by Madeline Vionnet in 1937/8 (T.35-1977) was due to go on display in the *Horst: Photographer of Style* exhibition in late 2014-15. Overall the condition was very poor; indeed the dress had never been on display due to its fragile state and therefore a long interventive



Figure 2
Using HBED in agarose gel to reduce rust stains

treatment was necessary (Figure 3). During the cleaning of the lamé underskirt, smoke sponges were used to take off the greasy surface soiling which had begun to tarnish the dress in some areas, especially in the underarm. There was also a large stain at the front of the dress, the source of which could not be identified. Despite careful vacuuming of the object after the chemical sponges had been used, some small residues remained in the straps and smaller spots of new corrosion began to appear in these areas.

Smoke sponges have been tested in the past and found to contain vulcanized poly(isoprene) with a calcium carbonate filler (Hackett, 1998). Therefore traces and residues left on the object could have an adverse effect on the textile surface. It was concluded that this was the case on the surface of the lamé. Due to the new nature of the damage, it was possible to speculate about the best way to treat these areas, and also gave a good indication of what might work for the larger stain. Fortunately, Richard Wolbers happened to be visiting the V&A studios on the same day that the new corrosion spots were discovered and could advise appropriately. It was suggested that the corrosion was likely to be copper sulphate corrosion, due to the trace materials found in the smoke sponges and that a chelating gel treatment could work to help to remove the corrosion spots.

A solution of bicinchinonic acid was used with agarose gel at a concentration of 2%. (HBED gel was also tested in case the corrosion was of an iron nature but found not to be the case and so could be eliminated from the tests). Initial tests were carried out using a biopsy pen to cut small uniform amounts of gel of 2mm depth and then these were applied to discreet areas of corrosion on the dress. The agarose gel turns a purple colour when corrosion products are reacting with the chelating agent, which indicates that the gels are indeed working. The tests confirmed that this was the case and the treatments was extended to all areas of the corrosion, both new and old. The gel was the same for each area; the full treatment used the same 2mm depth of gel at the same 2% concentration. Each of the spots were treated with a gel cut to roughly the size of the spot, applied to the area and left until dry (Figure 4).

The treatment worked well in some areas of staining and not so well in others. The gels did not remove stains entirely, but reduced the appearance of the corrosion areas especially on the ties, probably because the corrosion in those areas was new. The reduction on the older stain was less successful. The colour change in the gel indicated that the expected chemical process was occurring and that something was indeed being removed from the area, however the appearance of the stain remained the same. The treatment also unfortunately left a purple tide mark on the underside silk ground fabric of the skirt. This was removed by flushing water through the area



Figure 3

The Vionnet dress is separated during treatment



Figure 4

Before and after applying the copper chelating gel

and blotting and use of plain gel with no additives on the edge of the tide mark. In future, a higher concentration gel would be tested and a more controlled application of the gel would be advantageous, including the use of cyclododecane to limit the tide line and carrying out the treatment on a suction table would be considered.

Case study: The use of an enzyme gel to reduce oily staining on an 18th-century silk counterpane

The Jacob Bed (V&A 8459-1863) is a significant piece of French furniture by Georges Jacob made in Paris in around 1780. The carved and gilded beech wood day bed retains its original silk damask hangings. The recent redevelopment of the European galleries at the V&A, which will open later in 2015, allowed the bed to be removed from display, thoroughly documented and conserved for the first time since the galleries were last renovated in the 1970s. The condition of textile section was fair overall with heavy ingrained soiling due to long term open display. Structurally the silk was in fair condition, although there were some areas of splitting and failure of previous adhesive supports. There was a particularly noticeable area of grey staining on the center panel of the counterpane (Figure 5). The stain, which has penetrated through to the linen lining, was approximately 15cm x 15cm and appeared to have caused the silk fibres to become brittle. Heavy darning stitches had been used to support the stained area onto a silk gauze support. The stain had also caused the support to become degraded, weak and powdery. The grey staining and corresponding yellow rings on the lining indicated that the stain was an oxidation product of an oily substance. Testing with the enzyme Lipase type VII confirmed this and proved effective in reducing the stain.

Due to the complex and multi-layered construction of the counterpane wet cleaning was dismissed as being too intrusive. The older adhesive conservation treatment had involved making cuts on the lining and these were still accessible and provided limited access between the silk and lining. Spot cleaning on a suction table was considered to reduce the stain and degradation product, however, the possibility of further tideline staining and soil transfer during treatment was a grave concern. It was felt that a gel poultice containing Lipase might prove effective in reducing the stain if the moisture from the gel could be contained and the residues rinsed away using a suction table. The heavy darning stitches were left in place until the cleaning was completed as they were holding fragile fibres in place but the severely degraded and stained previous support fabric was removed



Figure 5
The Jacob bed

before cleaning. The support fabric was so degraded it was easily removed without removal of the darning stitches.

A lipase enzyme gel was made according to Wolbers' recipe. A solution was made with 100ml of deionized water and 0.5g of tris(hydroxymethyl)aminomethane (TRIS). The solution was adjusted to pH8.5 with citric acid and then gelled with 2g of methylcellulose. The enzyme was added to the gel by dissolving 0.5g of Lipase Type VII in a few drops of water and mixing it with the gel, making sure not to create air bubbles that would denature the enzyme and reduce its working strength. Tests were carried out in a small area of the staining with the Lipase gel and it was found that a 15 minute application of the gel was the most effective at reducing the stains while leaving the treated area aesthetically similar to the rest of soiled counterpane (Figure 6). The gel proved straightforward to apply and control and the liquid released did not spread to any unwanted areas. However, in order to remove the gel residue and degradation product, rinsing with de-ionised water was necessary. In the initial tests this caused tide lines on the silk and so a way of limiting the spread of the rinsing water was required.

In previous treatments at the V&A in the textile and other studios, cyclododecane has been successfully used to protect water sensitive or fugitive materials during wet cleaning. Cyclododecane ($C_{12}H_{24}$) is a white solid cycloalkane, and has similar properties to wax. It melts at $61^{\circ}C$, is insoluble in water and sublimates from a solid to a gas at room temperature, making a very useful self-removing consolidant and water barrier. When melted it can be applied to a surface using a brush or tools used for wax batik techniques. Cyclododecane sublimates fully from most substrates and appears not to alter the long-term appearance of textiles, and has no serious health and safety implications (Hackett, 2015).

To prevent water marks on the silk counterpane during the rinsing process, cyclododecane was applied around the outer layer of the staining (Figure 7). In order for form an effective barrier during rinsing the cyclododecane had to be applied to both the front and the lining of the counterpane. Several key points on the application of cyclododecane were noted during this experiment and from previous experience:

- i) cyclododecane has to be hot enough to penetrate through fibres before it hardens.

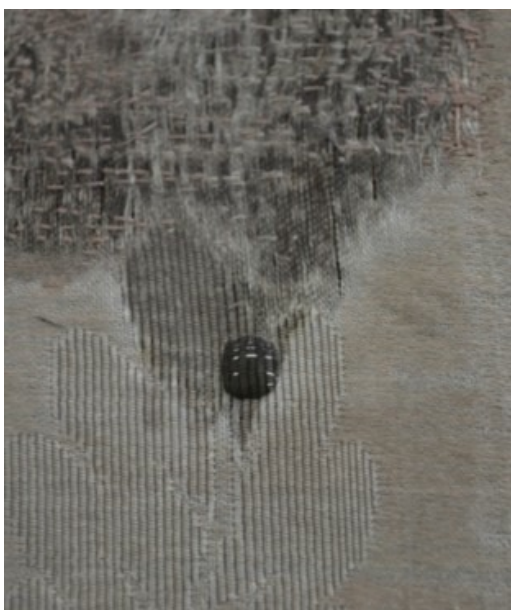


Figure 6
Lipase gel test



Figure 7
Testing the application of cyclododecane



Figure 8
During the rinsing process the water is constrained by the cyclododecane



Figure 9
The stain before and after treatment

- ii) For thicker fabric and fibres, coats should be applied on both sides of the textile to get a desirable result.
- iii) Depending on the amount of application, it could take several days to sublime.

An additional Melinex® cut out was also inserted between the two layers of the counterpane to minimise any chance of leaking of rinsing water. In the process of rinsing it was noticed that the barrier line of cyclododecane was reduced noticeably (Figure 8). This was possibly due to the increased air circulation by using suction table. After treatment, the soiling and degradation product were removed successfully without causing water marks. The blotting papers and cotton muslin placed between the textile and suction table revealed the amount of soiling removed. The condition of embrittled fibres was improved and some flexibility was regained after the cleaning. After removal of the darning stitches, the area was supported between a dyed silk backing and a net overlay support.

In conclusion, this combined technique of enzyme gel and cyclododecane enabled the removal of the oily soiling successfully without causing disruption of the object's construction and further damage (Figure 9).

Low-water micro-emulsions

Micro-emulsions differ from conventional emulsions because of the very small size of the micelles dispersed within the continuous phase. Micro-emulsions appear clear when mixed and do not separate into different phases over time, as a conventional emulsion would. A micro-emulsion typically consists of a non-polar solvent (often a silicone solvent), a surfactant with a low HLB (hydrophilic-lipophilic balance) and water. If needed, the water can be modified with buffers or chelators for added cleaning efficiency. By combining a non-polar solvent and water together in one cleaning system it is possible to clean away soiling that is oily and soiling that is ionic in nature at the same time. It is somewhat analogous to dry-cleaning clothing (Wolbers, 2013).

Typically micro-emulsions for conservation are applied by brush or cotton swab to a surface, and then removed with both physical clearing with a cotton swab and rinsing with a 'free' solvent such as cyclomethicone or hexamethyldisiloxane. These methods are especially useful on water sensitive surfaces where 'free' aqueous materials would be likely to damage or extract materials from the delicate surfaces. Typical applications could be on modern acrylic paints, some types of leather, parchment, and Asian lacquered surfaces. During the workshop Richard Wolbers pointed out that cleaning poly(vinyl chloride) (PVC) and polyurethane was similar to the cleaning of aged acrylic

paint, and so using micro-emulsions widened the scope of treating PVC textile objects with surface soiling.

Case study: The cleaning of PVC shoes and garments using low-water micro-emulsions

The V&A holds a number of objects made from or containing elements of PVC. Cleaning objects with surfaces such as these has proved problematic in the past. One such object, a short raincoat (otherwise referred to as a rainsmock) was made by Mary Quant in 1963/4 (T.3-2013) and is a rare example of her early designs; few survive from this period (Figure 10). It was acquired by the V&A in 2012 with no particular plans for display but was recently requested for a small display of rainwear in the fashion galleries and so treatment was necessary.

The raincoat has been analysed by Fourier transform infrared spectroscopy (FTIR) and determined to be PVC with a cotton lining. The condition was rated as poor, and objects are not normally accessioned in this state. However, it was felt that the condition could be improved with conservation using techniques practised during the Wolbers' workshop. The PVC itself is in a fairly stable condition, with no signs of degradation. The surface however is soiled with dirt, mould growth, green staining from contact with metal buttons, spots of green soiling (thought to be ink or paint) and white soiling (possibly paint). The general type of soiling is likely to be a combination of oily materials from handling and use, and particulates from the air. The lining was also heavily soiled, particularly around the neck, indicative of wear.

According to Wolbers, the general dirt and mould on the PVC can be removed by surface cleaning with a micro-emulsion of de-ionised water, a non-polar solvent, and a surfactant.

For the rainsmock treatment the surfactant tested was the non-ionic surfactant Ecosurf-3. The aqueous phase used was a buffered solution of 0.5g citric acid, modified with 1-5ml triethanolamine to produce a pH of between 6.5 and 8.5. After successful testing, the Quant rainsmock was cleaned with a simple low-water micro-emulsion containing no chelators.

Heavily soiled areas of the rainsmock were swabbed with this micro-emulsion, followed immediately by clearing the area with swabs of Decamethylcyclopentasiloxane. This method was very efficient at removing all visible soiling, while not interacting with the surface of the PVC. It also removed all areas of mould growth (Figure 11).



Figure 10
Mary Quant PVC rainsmock



Figure 11
Detail of PVC surface during cleaning with micro-emulsion.



Figure 12
The PVC boots during cleaning

The same treatment also worked successfully on a pair of Pierre Cardin boots from 1966-9 (T.667:1+2-1997). They are made from two different materials; the 'shoe' part at the bottom of the boot is polyurethane while the shiny uppers are PVC. The two materials are aging quite differently, with the polyurethane becoming dulled and matt in comparison to the PVC uppers which are becoming sticky and prone to collecting dust. The PVC portions of the boots were surface cleaned with the same low-water micro-emulsion used to clean the rain smock (Figure 12). The overall appearance of the boots was much improved, although the longevity of the treatment is not known. Regular checks will be carried out to assess the condition and results of the treatment.

Simple low-water content micro-emulsion (Wolbers, 2013):

- 75ml Ecosurf-3
- 25ml Decamethylcyclopentasiloxane (D5)
- 5ml de-ionised water

(NB. In this simple low-water content microemulsion, a small amount of water is held in a very non-polar solvent. A large quantity of surfactant is required to create this emulsion)

Conclusion

The methods illustrated in this paper show the importance of looking to research in other conservation disciplines in order to further interventive techniques in textile conservation. The Wolbers' workshop was instrumental in encouraging and widening the scope of treatments carried out in the V&A conservation department. The textile conservation studio in particular hopes to continue to experiment and implement these new techniques on suitable objects in the collection in the future. Certainly the initial results are very promising but refinement of some of the techniques still need to be developed and investigated thoroughly.

Acknowledgements

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Supplier's information

Ecosurf-3	Dow Chemical Co Ltd Diamond House Lotus Park, The Causeway, Staines, Middlesex TW18 3AG Tel: 020 3139 4000
Agarose Binchininonic acid Citric acid Hexamethyldisiloxane (D5) Methyl cellulose TRIS (tris(hydroxymethyl)aminomethane)	Sigma-Aldrich Company Ltd. The Old Brickyard New Road Gillingham Dorset SP8 4XT Tel: 0800 717181
HBED	Strem Chemicals UK, Ltd. Newton Hall Town Street Newton Cambridge CB22 7ZE Tel: 0845 643 7263
Cyclododecane	Kremer Pigmente www.kremer-pigmente.de/en

Conserving the Cragside Carpet

Aimee Grice-Venour - Textiles Conservator, National Trust Textile Conservation Studio

Introduction

The National Trust Textile Conservation Studio has recently completed the conservation of a nineteenth-century chenille carpet from Cragside, a National Trust property in Northumberland.

The 6 x 9 metre Chenille carpet from the dining room of Cragside House holds significance, not only as an important part of the property's collection, but also as an object of technological and manufacturing importance. Cragside was home to an extraordinary man - William George Armstrong (1810-1900). One of the most successful industrialists of his generation, he was a scientist and technical innovator (National Trust, 2007). The building of Cragside in the 1860's produced a house which combined outstanding architectural design, some of the most advanced technical innovations of the day, and pioneering furnishings and fittings. From a technical point of view, it is thought that the Chenille carpet would have appealed to Armstrong. Made to fit the dining room and dating to the 1870's, the Axminster construction Chenille carpet is attributed to James Templeton & Co of Glasgow. It is thought that this carpet could possibly be one of the last few hand woven Chenille carpets to be produced by Templeton before the production process became fully mechanised on power looms in 1884^[1].

Construction

Also known as chenille Axminster, chenille carpets emulated the cut pile of the hand-knotted Axminster carpets and so borrowed the prestigious name. However, in actual fact, the invention in no way resembled the structure or weaving method of a hand knotted carpet (Sherrill 1996: 228). The woven structure for chenille is very specific with the production process being undertaken in two stages.

Firstly, a cloth was woven on a loom, consisting of cotton warps and the required palette of coloured woollen wefts. This cloth was cut into fur-like chenille strips (resembling caterpillars- in French, *Chenille*) which would later form the pile of the carpet^[2] (Figure 1). The loose edges of the chenille were then folded together so that a double pile projected upwards from the firmly woven centre or back (Figure 2). Secondly, the strips, each constituting a line of pile and design, were then woven in a setting loom as supplementary wefts into the warp threads which formed the base of the carpet. Both the pile and the design developed as the weaving process progressed.

The construction of the Cragside chenille carpet consists of a wool warp and weft foundation, with jute stuffer yarns

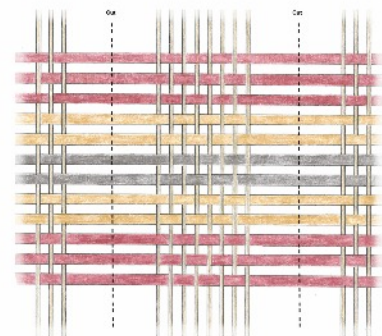


Figure 1: Chenille strips are cut from a plain weave cloth of cotton warps with coloured woollen wefts



Figure 2: Woollen chenille strips are folded together so that a double pile projects upwards

Figures 1 and 2

1. Chenille carpets were hand woven until power looms were adapted for that weave by James Templeton and Company between 1871 and 1879. At that time power looms became operational for both forming the furlike weft and setting it into the warps. By about 1884 the Templeton factory was making all their chenille, or patent Axminster, carpets on power looms (Sherrill, 1996).
2. The depth or thickness of the pile to be made is regulated by the spaces missed in passing the cotton warp threads through the reed when setting up the loom.

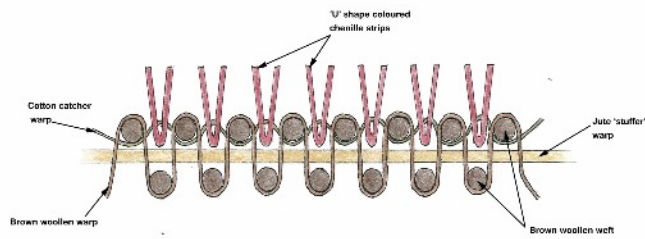


Figure 3: To form the carpet chenille strips are woven as supplementary wefts onto the complex base weave

Figure 3



Figure 4

Condition before conservation - extensive loss of chenille strands revealing the brown sub weave.

(warp) beneath a second layer of wool wefts. A supplementary weft of wool chenille strands form the face pile (Figure 3).

By the mid-twentieth century the production of chenille carpets had ended. As there are only 12 recorded on the National Trust collections database, it was felt that the technological and manufacturing importance of this carpet needed to be preserved and so the choice was made to undertake conservation.

Condition

With almost 100 years continuous use within the dining room of the family home, and a further 50 years on display by the National Trust, the carpet is now showing serious signs of damage that threaten its continued existence. Some areas of the carpet are in very good condition with pile assumed to be close to its original height. These areas would have been protected beneath large pieces of furniture. On the other hand there are significant areas of the carpet which are worn to varying degrees. To one side of the carpet, which has experienced the most traffic historically through use, there is widespread wear and loss of chenille strands.

In places where the condition is at its worst, the loss of chenille strands is extensive, revealing large areas of the brown sub-weave (Figure 4). In a few small areas, this sub-weave has been worn away to expose the jute stuffer yarns. There are also numerous repairs of varying age to both the back and face of the carpet. In addition, the carpet has suffered significant fading to the area directly in front of the window, and there has also been historical water damage which has caused dye bleed and discolouration, predominantly from the brown dyed wool. It is believed that water damage is a contributing factor to the deterioration of the carpet, affecting the fine cotton catcher warps on which the carpet construction relies.

Surface cleaning on-site

To allow full conservation treatment to be undertaken, the carpet first had to be prepared for transportation to the studio. In January 2014, Aimee Grice-Venour and manager, Ksynia Marko spent one week onsite undertaking surface cleaning.

Firstly, the druggets and underlay on the visitor routes were lifted. This revealed a lot of lint from the underlay that had to be removed from the surface of the carpet before vacuuming could be undertaken effectively. The carpet was sectioned into one metre squares and a soft rubber dog brush was used to brush the surface to remove the lint fibres. Initial vacuuming tests were undertaken using muslin squares over the vacuum pipe to catch the dirt removed. By sampling the amount of soiling removed using a given suction level and time, each square metre of the



Figure 5
Preparation for transportation - Ksynia Marko
vacuuming the carpet in situ at Cragside



Figure 6
Glyn Charnock undertaking tamping on
the reverse of the carpet

carpet needed to be vacuumed for a total of 16 minutes at 90 milibar suction (Figure 5). In total, the entire carpet was vacuumed for 13 hours and 20 minutes whilst in situ.

The carpet was then rolled within the dining room. It was a challenge as the roller used could be no wider than the carpet due to the limitations imposed by the dimensions of the room. It took a team of 10 staff to roll and package the carpet ready for transportation by lorry. On arrival at the Studio, the Blickling countryside team (based at a nearby National Trust property) were on hand to help unload and position the carpet within the studio.

Surface cleaning within the studio

The main challenge in cleaning the carpet was identifying the methods and equipment which would be effective, whilst preventing damage both during and after the clean. In particular, the jute stuffer yarns within the weave are brittle and sensitive to moisture, which could cause swelling and fibre degradation.

The Studio worked alongside Glyn Charnock of the Carpet Cleaners Association to undertake preliminary investigations, exchanging ideas on the products, methods and equipment that would be appropriate for cleaning the carpet.

Although the carpet had been meticulously vacuumed whilst onsite, there was still an amount of gritty deposits deep within the pile of the carpet. As gritty dirt can be quite problematic, wearing away at the structure of the carpet over time, a dry soil removal process was considered to be beneficial before undertaking wet cleaning.

Back beating or 'tamping' the carpet with latex paddles is the usual way to deep clean gritty deposits from carpets, but as this carpet measured 6m x 9m, a less labour intensive method was developed using a rotary beater bar vacuum cleaner and a piece of sacrificial modern carpet (Figure 6).

The method used for tamping:

- the chenille carpet was placed face down on the studio's vinyl floor.
- modern carpet was placed face up on the reverse of the carpet.
- the modern carpet was agitated using a Sebo BS36 twin motor vacuum cleaner (with beater bar) – vibration causes grit / dust to fall from historic carpet below.

- the reverse of the chenille carpet was cleaned using Nilfisk UZ964 vacuums with soft brush tools, at 90mb suction.
- lint from the underlay was removed using a rubber dog brush.
- the soil released from the pile of the carpet by agitation was swept away as the carpet was rolled.
- the front was vacuumed again and the pile groomed.

Wet cleaning

After initial testing of conservation detergents, a solution of 0.3% Dehypon LS45 (low foaming nonionic surfactant) and 0.05% SCMC (sodium carboxy methyl cellulose) was prepared using deionised water. A dye bleed test using this cleaning solution found all colours to be stable.

The carpet was gridded out and cleaned section by section using the following procedure:

- to evenly dampen the carpet surface, the cleaning solution was sprayed on (at a rate of 100 to 200ml per sq. m). Areas with reduced pile depth or missing pile received less solution to prevent over-wetting.
- the cleaning solution was agitated into the carpet using a soft polypropylene pile brush. The deep piled areas in stable condition were agitated both with and against the direction of pile. Worn areas were agitated only in the direction of the pile. Areas with no remaining pile or loose chenille weft and catcher warps were agitated through a fine polypropylene net (stretched over a wooden frame) to prevent damage.
- the cleaning solution was allowed some dwell time on the surface of the carpet before using the Sapphire Scientific hand tool to extract suspended soiling. This allowed jets of rinse water to be passed over the pile before being extracted by vacuum. Each wet pass to an area was followed by 2-3 dry passes, using vacuum only (eg. 2 wet passes followed by 4 to 6 dry passes), minimising the amount of moisture remaining. The recovery rate of applied solution was approximately 90% of the total volume applied.

The carpet was dried using pieces of white cotton towel, the under floor heating set to approximately 20°C, and a DriEaz Dripod air mover, which distributes air horizontally across the surface. The entire surface of the carpet was cleaned twice over a two day period, leaving the carpet to dry completely each time. This process was concluded with a final vacuum to remove any further soiling released during the treatment.

Adhesive removal on the reverse

Due to the limitations of viewing the carpet whilst in situ, it was not until the cleaning of the front of the carpet had been undertaken that an assessment of the condition of the reverse was possible. Here, staining from the previous water damage was visible. Tests were carried out to determine whether this could be removed by wet cleaning on the reverse, but financial restraints did not allow this. Numerous webbing clothes moth cases were found nestling within the ridges of the base weave all over the reverse, and not just confined to the edges. These had to be removed by hand and the reverse carefully vacuumed.



Figure 7
Manually removing softened latex adhesive from the reverse of the carpet.

Hessian tapes had been adhered onto the carpet in many places to provide support where repairs had been worked through to the reverse and also where the weave had begun to fail due to moth attack. There were two adhesives present; shellac and latex and both were failing. Due to the hard nature of these adhesives they needed to be removed prior to conservation stitching to allow a needle to be passed through the carpet.

Extensive tests using different solvents, solvent mixes and poultices were undertaken. The shellac adhesive was finally removed by applying pressure with hand tools and removing the dusted shellac by vacuuming. The latex was easily softened by the application of white spirit (mineral spirit) but, like the shellac, was difficult to remove from the textured weave. Using a dental wax working hand tool, the sticky jelly-like adhesive was slowly and methodically lifted from the surface (Figure 7). Not all of the residual adhesive could be removed from the weave, but it was enough that the surface was no longer sticky and conservation stitching was then possible.

Consolidation of reverse

With the shellac and latex adhesives removed, the brown woollen wefts, which had been damaged or lost due to wear and moth attack were more evident. In order to stabilise and consolidate the reverse of the carpet, conservation stitching had to be undertaken. Laid couching was used, running the laid threads parallel to the existing wefts with holding stitches catching down both the new laid thread and the original broken weft. This stitch helped to realign and reattach the loose wefts and consolidate areas where the weave had broken down.

Dyed linen patches were applied to the reverse of the carpet over holes where both the warps and wefts of the weave construction had been damaged. These patches were stitched in place to provide a stable support for conservation stitching once working through from the front.

The entire edge of the carpet was further reinforced by the application of a wide linen webbing tape.

Conservation to front - infill and stitching

When work to the reverse of the carpet had been completed, it was then rolled onto a large diameter pipe and set up over tables so that conservation stitching could begin on the front. The carpet was divided into 45 sections, each 20cm deep by the width of the carpet (580cm).

As previously stated, damage and wear to the surface of the chenille carpet varied. At its worst, the loss of chenille strands was extensive, revealing large areas of the brown sub-weave. These areas appeared very untidy with light coloured cotton threads laying loose over the surface.

Though many different conservation techniques were considered, the final techniques chosen were combined to conserve the carpet and at the same time provide an aesthetic infill to the areas of loss, to imitate the missing design as much as possible.

Coloured yarns were laid across areas of loss, channelled into the carpets weave, to reintroduce elements of the design. In conjunction, using a curved needle, a neutral-coloured polyester thread was passed under the brown woollen weft within the weave and stitched over the coloured yarn to secure it (see Figures 4 & 8). Spaced at 8mm intervals, this stitching followed the original construction weave of the carpet, to imitate the light coloured cotton catcher thread holding the chenille in place. In areas where only the pile is worn, there is still a risk of the original fine cotton catchers failing, and therefore the same polyester catcher stitch was used. The spacing was increased to 16mm (every other weaving line) and taken into surrounding areas where the condition improves.

Throughout the carpet there are historic repairs, varying in stability, condition and aesthetic appearance. As the client was keen to keep some of the historical repairs, these were assessed on a case by case basis and those that were unstable or disfiguring were removed and the area conserved.

In some areas the pile of the carpet had been completely lost and the foundation weave had been worn away, exposing the jute 'stuffer' warps sandwiched within the complex weave of the carpet. Here, the new jute 'stuffer' warps were reintroduced along with new brown woollen wefts to replace any that were worn and missing (see Figures 9, 10 & 11).



Figure 8
*Damaged area after conservation
infill and stitching*



Figure 9
*Leaf detail before conservation - damage to wefts and
stuffer warps within the ground weave*



Figure 10
*Leaf detail during conservation - replacing damaged jute
stuffer warps and brown woollen wefts*



Figure 11
*Leaf detail after conservation -
coloured yarns infill and holding stitches*

Yarn and dyeing

In the search for an appropriate infill yarn, many different wools were considered for their desired properties of texture, strength, appearance, durability and dye take up. The Blue-Faced Leicester yarn was eventually chosen. All yarns for the conservation of the carpet were purpose dyed using Lanaset dyes so that they matched the many varying colours and shades of the chenille, including stains and areas of wear seen on the surface of the carpet. At the end of the project, 129 samples and 65 final colours and shades of wool had been dyed.

Challenges of the project

Throughout the project there have been many challenges of how to handle, move and work on a carpet of this size and weight. From preparing the carpet for transportation on site to working in the studio, the carpet has always required many people to assist in its movement. At any given time, as many as 6-10 people were required for lifting as well as rolling and unrolling the carpet. Due to the large size and the area the carpet occupied within the studio, it was not possible to view the carpet in its entirety at any stage during the conservation treatment. This proved challenging when predicting treatment times on a section by section basis. Some thought and design had to go into how to handle the carpet during the course of the work. As resources were limited, equipment had to be effective but simple in design and low in cost.

The chosen set up method had one roller carrying the carpet set behind a table. The carpet was brought (face up) over the surface of the table onto a second roller situated at the front (Figure 12).

The table had to have central 'T' shaped legs so that the rollers could be pushed beneath the worktop on both sides to accommodate the knees of the worker. The table also needed to be 6 metres long to accommodate the width of the carpet. Five IKEA lock-together desks were purchased to fulfil this function.

As standard rollers only come in a maximum length of 6 metres, two custom made thick core cardboard rollers (measuring 7 metres) had to be purchased. In addition, two narrower gauge aluminium beams were custom made to carry these cardboard rollers, allowing the rollers to be rotated more easily.

Due to the sheer weight and size of the carpet it would rotate and slump on the roller during handling, so aprons were attached to the carpet and Velcroed to the rollers to control the roll. To make rolling through sections easier, the rollers and carpet need to be lifted above the height of the table. Four motorcycle scissor jacks were adopted for this function and modified by strapping a wooden tapestry block to the top of each to act as carriers for the aluminium beams. Simple wooden levers on straps were also introduced to help rotate the carpet rollers on the aluminium beams.

Conclusion

In terms of working on carpets of this scale, this was a rare venture for the studio and has been a steep learning curve for all involved. It has provided a valuable lesson in dealing with objects of this size and highlights that there is a limit! The carpet dimensions and weight were as large as could be handled within the studio without specialist equipment being developed. Within the eight months of conservation stitching, the technique proved to be incredibly intensive and demanded a lot from the team. Working in conjunction with Glyn Charnock of the Carpet Cleaners Association was very successful. Sharing expertise of two specialist fields provided a new professional relationship, which it is hoped, will be beneficial to both parties in the future.

The conservation techniques thus adopted had to be very robust. When back on display the carpet will remain in a high traffic area, being close to the start of the visitor route. Once re-instated the property is planning to install druggets in the form of Eyemats over the area accessed by visitors. The Eyemat will be printed with the design of the carpet to maintain the visual integrity of the room.

Full treatment of the carpet was concluded at the beginning of May 2015. On completion, the conservation project took a total of 2905 hours.

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Tapestries in time: the Doddington Hall tapestry project

Alice Brown and Sophie Minnis

Tapestry Conservators, Doddington Hall and Lincolnshire County Council.

Background

The Doddington Hall tapestry project is a two year project to conserve and rehang a scheme of six tapestries back into the Holly Bedroom of Doddington Hall, a privately owned Elizabethan stately home just outside of Lincoln. The tapestries were hung in 1762 by the then owner of the house, Sir John Delaval, although the tapestries are believed to date to the 1620s. They depict scenes of rural life and include a cobbler, falconer, pedlar, bagpipe player, hunter and courting couple. They were brutally cut to fit, lining the room like wall paper, nailed in place with over 1600 tacks around the doors, fireplace and corners of the room (Figure 1). The tapestries remained hanging on the walls for almost 250 years until they were taken down by a team of students from The University of Lincoln in 2010, under guidance from Ksynia Marko, Textile Conservation Advisor for the National Trust. They were sent for wet cleaning at De Wit Manufacturers in Belgium and on return remained in store awaiting further funding for their continued conservation.

A partnership

The next phase of the project began with the formation of a partnership between Doddington Hall and Lincolnshire County Council. The involvement of the County Council provided the opportunity to set up a conservation studio at the Heritage Skills Centre in the grounds of Lincoln Castle in January 2014 (Figure 2). Two tapestry frames were kindly donated by Hatfield House and additional equipment such as yarns, needles and day light lamps were purchased for the studio. Three emerging conservation professionals were recruited as Tapestry Conservators: Alice Brown, Louise Joynson and Sophie Minnis with Elaine Owers as Consultant and Project Manager to manage and oversee the conservation work, visiting the project two days a month.

The project began with funding for two years, to complete the conservation of the scheme and re-hang the tapestries in the Holly Bedroom. As the project was being sited at Lincoln Castle, the County Council were keen for there to be a significant level of public engagement, adding to the visitor experience at the castle.



Figure 1

The tapestries on display in the Holly Bedroom at Doddington Hall before conservation.



Figure 2

Two frames set up in the tapestry conservation studio at the Heritage Skills Centre, Lincoln Castle.



Figure 3
Sophie Minnis talking to member of the public on a studio open day.

These differing expectations meant that considerations needed to be made with regards to balancing time spent on the conservation with time for public engagement. However as the project has progressed over the last year the team has found the management of time not necessarily to be an enemy. It has provided many learning opportunities encouraging efficient and flexible working through the use of the available resources such as volunteers and estimating tools.

Public engagement

In 2014 the studio had regular open days with the tapestry project proving to be a popular attraction, encouraging people to visit the Heritage Skills Centre. This provided the opportunity not only to promote the project, but also communicate conservation methods and ethics, an ethos important to the Heritage Skills Centre itself (Figure 3). Other areas of public engagement have involved providing talks to local interest groups and students studying the Conservation of Historic Objects course at The University of Lincoln. The team also write a regular blog allowing readers to follow the progress of the project.

Although these activities take time away from conservation stitching, they are important to the team's professional development. Additional interest in the project is also important to the future funding of the project. It is hoped that future funding will be extended to include the conservation of a second bedroom of tapestries from Doddington Hall.

Volunteers

To help balance the provision of public engagement with completion of the conservation work, we enlisted the help of a local tapestry weaver Liz Rance, who is also a volunteer guide at Doddington Hall. After spending time with the team Rance then delivered training sessions to both the Castle and Doddington Hall guides. The castle guides were then able to bring small tour groups of no more than 15 people to the studio and talk to them for 5-10 minutes causing minimal disruption to the conservation work. This addition to the daily castle tours provided added interest when much of the castle was closed due to redevelopments last year. These redevelopments included restoration of the rampart walls, Georgian prison and the building of a vault to house and display Lincoln's copy of Magna Carta. These trained volunteers are also able to help on open days, talking to the public to enable the team to continue stitching, however this is not always possible depending on the volume of visitors.

Although it was initially unnerving to open the studio to so many visitors the experience has been very rewarding, providing an even greater impetus to complete the conservation of the tapestries so that they can be seen hanging back in the Holly Bedroom. Following its closure for a short time to complete the redevelopment project, the Castle reopened on the 1 April 2015. The studio has committed to regular open days on the second Saturday of every month for the remainder of the year.

Other volunteers that have helped to conserve time for the project were a group of five international students, all studying heritage related subjects, on placement with Bishop Grosseteste University during the summer of 2014. They were invaluable in assisting the conservation team to complete the take down of a second set of tapestries from Doddington Hall, so that the tapestries were ready for transportation to De Wit Manufacturers for wet cleaning. This was also an important opportunity for the conservation team (alongside Elaine Owers, Project Manager) to experience guiding volunteers.

Project planning

The redevelopment works at the Castle has meant that the Heritage Skills Centre is regularly used for meetings by both Castle and County Council staff and of course the craft courses run by the centre. Therefore when the project has needed to use additional space it has been important to plan time carefully so that this can be booked with the centre manager. Key moments in the project must also be coincided with the project manager's monthly visits. The ability to be flexible and to adapt the work programme around the many requirements of the project has developed as time has progressed and with the confidence of the team. This has been largely aided through the use of a detailed estimating tool and careful calendar planning.

In January 2014 estimating of stitching times was carried out by laying out the first two tapestries and marking the 20cm working sections with lines of thread, then carrying out an overall assessment of condition within each section. The team had just three weeks with Project Manager Owers to set up the studio, complete linen preparations and get the first two tapestries onto the frames and start stitching.

Where established studios would be able to look back at previous work to help get an idea of how long similar conservation treatments have taken, initial estimates were based on the Project Manager's experience, but as a newly established team, with limited experience in tapestry conservation it was unknown what the working pace would be.

The team then settled into the conservation stitching, with each conservator keeping a time sheet for recording hours spent on each tapestry. This information was then translated onto a spreadsheet to monitor progress against estimate. Quite early on it became clear that estimates were regularly being exceeded by 10-25%. Could we take a less interventive approach without compromising a full conservation treatment? Had the team been over optimistic on what was realistic to achieve within a day?

Reviewing the methodology

After a couple of months, when the project was more settled, the client asked for the working methodology to be re-evaluated to help speed up the conservation process. The team looked at what could realistically be achieved, what was essential and what was desirable in recreating the scheme of tapestries within the Holly Bedroom. The original specification which had been written by the National Trust Studio a number of years ago when the project was expected to go out to tender, was adopted by the team. Full conservation techniques were to be used, which included re-sewing all woven slits with re-warping and couching throughout. As there are large areas of some tapestries that are unseen due to overlapping, it was decided that laid couching could be used as a quicker and more cost effective method to support holes in these areas. The design and construction of the tapestries means that there are many small slits throughout, it was also decided that the number of slits stitched could be reduced but still keep a good level of support to the tapestries.



Figure 4
Louise Joynson setting out a grid of 20cm sections for estimating.

After working with these changes to the methodology for a while, it was thought to be a good time to re-estimate (Figure 4). This would also provide an opportunity to see how our expected end date would fit with the secured funding for the project. Three days were set aside to work on-site at Doddington Hall for the purpose of estimating the remaining tapestries and a further day to re-estimate the tapestries back at the studio. This was a great opportunity for all members of the team to work on developing their tapestry estimating skills.

Development of an estimating tool

Owers had adapted a tool used by The National Trust Textile Conservation Studio for tapestry estimating. As with the initial estimates the tapestries were laid out on the floor and a grid with 20cm sections placed on top. The tapestry estimating form (Figure 5) breaks down the estimate into three main stages of treatment, preparation, conservation stitching and finishing. Each of these is then broken down further into specific tasks, which you can see on the form. For the Doddington Hall scheme of tapestries it was necessary to include additional columns for tasks such as paint removal from doors and skirtings, with additional time for stabilizing door and fireplace cuts. This provided conservation hours for each tapestry. Additional time would be required for re-hanging the scheme on-site at Doddington Hall.

Calendar planning

Estimates were translated into calendar completion targets, establishing how long it would take the team of three conservators to finish the project. For instance if it is calculated that it should take 1480 hours to complete a tapestry, how many, days, weeks, months in the studio should this take? In the studio the team are working on a guide of 100 stitching hours a month per conservator. This figure takes into account time spent on public engagement, admin, housekeeping and time off for annual leave. If an average of five hours a day stitching can be completed, this target can be comfortably met. Using this five hours a day target and the estimates, a plan can be made as to when each section of the tapestry should be completed. This is then marked on to a wall calendar, which gives a quick and easy visual reference for targets, helping the team to use their time most efficiently and to plan for the Project Manager's visits. This information is also used to keep the Doddington Hall Conservation Charity, the owners of the tapestries, up to date on progress and provide them with six monthly reviews.

With the re-evaluated estimates there are still tasks which are exceeding the estimated times but equally there are tasks which are being completed in less time. A final estimating document keeps a record of all finished times for preparation, conservation stitching and finishing. The actual times are recorded against the estimated times. Times under estimate are recorded in green and times over estimate are recorded in red. Again this provides a very quick visual reference. During this

Tapestry number/name
Dimensions

Doddington Hall - Holly Bedroom
No.5 (B) - The Falconer
360 cm (h) x 154 cm (w) approx

	Preparation and finishing	1	2	3	4	5	6	7	8	9
Prepare pre-shrunk linen scrim	30									
Dyeing										
Applying patches										
Paint removal	8									
Frame up	14									
Blanket stitch warp ends	16									
Extra scrim line	4									
Scrim line		4	4	4	4	4	4	4	4	4
Sits		2	26	30	36	30	30	30	30	20
Wool couching & reweaving			1	4	15	4	31.5	5.5	6	10
Silk couching & reweaving			1	2	2	1	5	5	1.5	2
Galloon repair			1		1	0.5	0.5	1		4
Grid lines			2	0.5	2	1.5	0.5	0.5	0.5	0.5
Laid couching		4	2	1	1.5	2	1	1	2	1
Stabilising door cut										
Damage in lower half of tapestry										
Check through	20									
Turning back support scrim	10.5									
Prepare lining	3									
Attaching lining	35.5									
Attaching door webbing tape										
Prepare and attach velcro	27									
Roll and pack	2.5									
Report	10									
Section Totals	180.5	30	37	41.5	51.5	43	72.5	47	44	41.5

Total hours for tapestry 568.5

Figure 5
Tapestry estimating form.

project it has been observed that more time has been taken dyeing wool weft and patch in fills than had been estimated for. This is due to unsuitable colour availability commercially and only having a small dye recipe file to refer to. While linen preparations have been completed regularly under estimate. Since the re-estimate it has been noted that stitched section times are now averaging between about 10% over and 10% under estimate. The third tapestry panel to be completed came only an hour over estimate on conservation stitching. The team have also found that where they are sometimes coming in overestimate in hours, they may be ahead of the plan on the wall calendar as they are often able to work more than the targeted average of five hours a day.

The future

Conservation stitching is well underway and several of the panels have now been completed. All the panels are to be lined and rehung in the Holly Bedroom as they were originally hung in 1762, with an aim to complete the project by the middle of 2016. Additional funding is being sought for the conservation of a second set of tapestries from the Yellow Bedroom of Doddington Hall.

Conclusion

The careful management of time throughout this project has provided focus and regular goals to work towards. This has kept the momentum of the project moving forward and kept all those involved well informed as to the progress of the conservation. It has facilitated the inclusion of regular public engagement, which has not only been an important part of raising the profile of the project in relation to future funding but has also provided opportunities for volunteers to become involved. All members of the conservation team have found talking to members of the public on studio open days very rewarding, increasing the impetus to complete the project. The use of the estimating tool has been invaluable to the planning of time allowing the team to increase their understanding of tapestry conservation, but most importantly to work systematically towards the ultimate goal of rehanging the tapestries back in the Holly Bedroom of Doddington Hall.

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Missing links: utility, access and communication of science in conservation

Jennifer L Cruise

Professor, University of St. Thomas, St. Paul, Minnesota, USA

Introduction and background

This report outlines the results of a study examining information transfer at the intersection of textile conservation and conservation science. Almost from its inception as a professional field, scientific inquiry has been a part of conservation. From the post-war period of international museum sector development, a central place was claimed for the role of science in modern conservation. The following quote is from the 1956 UNESCO General Conference documents (ICCRUM, 2009):

‘Considering that modern scientific research has led to the use of new methods for the preservation of cultural property, more reliable and more effective than those employed in the past . . . it is essential that, in the treatment of the treasures making up the world’s heritage, due account should be taken of the latest scientific advances.’

Despite this long tradition of scientifically informed conservation, it can sometimes be unclear just how much science actually assists the work of conservators. At the start of this project, reports were just appearing from the National Heritage Science Strategy (Williams 2009a, 2009b, 2009c), which sought to identify strengths and weaknesses in the use of science in support of the heritage sector. The Textile Conservation Centre had not yet reopened, and there was significant concern in the professional community about conservation education and research capacity. Textile conservation is one of the specialties that deals with a very wide range of materials, and yet is not as well supported by science resources as are some other areas. While science education is an integral part of the training of textile conservators, they seemed, from the perspective of this study’s author, to have limited access to new information that they could use in their practice.

The study took the form of an examination of the published literature, together with a series of semi-structured interviews with conservators and with conservation scientists. The overall aim of this study was to identify factors that limit the utility of conservation science for conservators at the bench.

An investigation of science literature resources: availability and utility

In assessing the utility of science for conservators, two primary components were identified - the accessibility of the scientific information, and the relevance of the science for the work of the conservator.

A science-content sampling of the periodical literature available to textile conservators was conducted. To get a snapshot of literature that conservators might come across if they were searching for information, use was made of an extensive bibliography of textile- and costume-related articles by Miranda Howard Haddock (2000), which annotated English-language publications over a 16-year window. Haddock provided enough information for each article to be categorized by science content, and to classify those containing significant science as either: scientific research papers, case studies that included significant scientific analyses, or technical reviews – papers that gave an overview of a scientific technique and/or its use in conservation.

For non-periodicals - books and monographs - the holdings of the British Library were searched, for English-language textile sources with some science content, and science sources with any relevance for textiles. Only 60 items were identified that met these criteria. Each was evaluated for three characteristics key to their utility as resources for conservators. Each was scored based on (1) its use of accessible language to describe important findings, rather than specialist jargon; (2) whether it presented data in a way that was understandable; and (3) whether it discussed the meaning of the work in the context of conservation.

Literature snapshot summary

Details of the analyses completed on the surveyed literature may be found elsewhere (Cruise 2010), and only a few of the key points will be noted here.

- About half the textile-focused periodical sources examined had significant science content, indicating that textile conservators make a significant effort to apply science where and when they can.
- One important finding in the literature was also echoed in interviews with conservation scientists: much research never makes it into print beyond a conference proceeding, and much of that is limited to abstracts and summaries.
- Although research papers were the most common science-content source, they scored lower than other publications in 'utility.'
- Technical reviews were most likely to use accessible language, present data clearly, and discuss findings in the context of conservation applications.

Conservation science literature: addressing two audiences

However useful the literature may be, are conservators likely to see it? In the literature analysis and in interviews with conservation scientists, it became clear that they felt the need to publish their work in two distinct streams, for two distinct audiences: one of scientists, and one of conservators. This means that much relevant science is spread across a wide range of scientific journals, in chemistry, physics, engineering, material science, and in conservation. What is driving this?

Those scientists based in academic institutions must maintain a satisfactory level of research productivity, which means publications and grant or contract funding. Department chairs and deans evaluate numbers of papers published and the visibility of the journals the papers are published in, using what are termed 'impact factor' ratings. This affects decisions on job retention, tenure, promotion, and access to internal funds and support.

Unfortunately, there are not many conservation or conservation science journals. Almost none have the kind of impact factors seen in science journals, and they often take much longer to evaluate and publish submitted work. In some quarters there remains an element of academic bias against applied work of any kind that also limits the investment some scientists are willing to put into this challenging work. It's not surprising that academic scientists publish less of their work for a conservation audience.

Even those conservation scientists housed within heritage institutions or working independently felt the need to maintain a publishing presence within their scientific disciplines, both in order to participate in networks of scientific collaboration with each other, but also to make the young

specialty of conservation science more visible and appreciated. Indeed, all applied work rests on a broad foundation of basic science, and so much work done in support of conservation is rightly within the sphere of basic science journals.

Finally, sources of funding for conservation-specific work are fewer, although technically the work may be more demanding of time and resources. Science is expensive, and funding drives research topics in key ways. There is usually more of it for basic science.

What are the important science sources for conservators?

Given the limitations to using published literature as a source of science information, conservators were asked to identify the sources they actually used for information that might influence their practice. Those interviewed indicated that much of their information, and, incidentally, most of their interaction with conservation scientists, came during their formal education in conservation. After that, they were mostly dependent on the science content of workshops, which were hugely influential. On those occasions when sample analyses were budgeted into projects, they were also a source of science information. Conservators in heritage institutions usually had access to affiliated scientists. These were also mostly used as occasional consultants, although some provided workshops for conservators within their organizations. Lastly, conservators reported attending science-content presentations at meetings, although these varied in their utility, with some unfortunate presentations of science that did not successfully address the needs and interests of conservators, actually doing some damage to their appreciation of conservation science, it must be said.

Driving forces and consequences

It may be useful to appreciate the driving forces that are behind some of the weaker links between scientists and conservators, in order to focus future resources where they may best help us to work in concert. Some key issues are summarized in Table I, and are discussed below.

	Drivers	Consequences
Scientists	Strategic initiatives <ul style="list-style-type: none"> • Regional/International • Institutional 	Object-based research less supported than work on the built environment
Conservators	Project-driven	Access science almost exclusively on a need-to-know basis
Scientists	Visibility in the scientific community	Some research has little utility for conservation <ul style="list-style-type: none"> • foundational, but not applied • not accessible as presented
Conservators	Project-driven, time-limited, training and workshops are primary information sources	Limited up-to-date exposure to science, rarely see it adding value to their work

Table I
Some key issues that have an impact on the utility of science for conservators.

In the UK and Europe, the influence of international strategic initiatives that fund conservation science, such as the EU Frameworks Programmes and the UK Science and Heritage Programme, has been enormous. These often drive institutional priorities, and influence the kind of research that gets done over several years. These programs have supported a lot of excellent work, but, on average, they have tended to focus more on the built environment and on heritage site visitors than on objects-based research.

The need for scientists to produce work for a scientific audience, and to produce foundational work that supports development of applied work but is not itself applied, means that only a fraction of conservation science that gets documented influences conservators' thinking and practice. This becomes increasingly important where scientists and conservators are physically separated from each other, as more conservation is done by independent contractors. Institutions expect conservators to be up-to-date in their methods and practices, but contract conservators often have less access to new science, and lack the professional development support that they might have as institutional staff.

It is important to note that, outside workshops, conservators' needs for science are almost entirely project-driven, and are thus highly unpredictable. This is especially true for textiles and objects conservators, who encounter a staggering array of materials and their associated technical challenges during their careers.

What conservators want from science, and what scientists want from conservators

Together, the factors noted above contribute to limiting conservators' access to new science information, and to limiting the impact that science can have on their practice. This means that networks of collaboration and consultation are needed, as well as other science resources that conservators can access when they encounter new materials and problems.

Textile conservators were asked during interviews to suggest what they would like from conservation science. They asked for more studies whose findings they could apply in the studio, for workshops and other science resources - to update the information they received during their training, and to help them become more proficient with analytical equipment, and for something akin to the 'find a conservator' resources that both ICON and AIC have, which would allow them to locate conservation scientists.

The conservation scientists interviewed were interested in collaborating with conservators to shape research questions to better fit their needs, while also meeting the rigorous demands of publishable scientific investigation.

Needs and mechanisms

Returning to the two components of utility identified above, relevance and accessibility, what needs have been identified, and how might they be addressed?

- To improve research relevance for conservation, it behoves us to work to educate our educational institutions about the value of applied research to conservation, in order that academic allies are supported in doing the work the field needs them to do.
- Among the conservation scientists interviewed, those who had the most organic feel for what conservators need had received their doctoral training 'embedded' in a conservation environment. There have been good programs that accomplish this, but they have been few and small in size.

- Conservators also need help finding scientists when they need them. A directory would be a start.
- We need to continue to try to make collaborations easier, and to leverage our resources as well as we can. Pulling more university science departments into consortia with heritage institutions and other stakeholders could give conservators and conservation scientists access to students, at both the graduate and undergraduate level, who need research projects and who could provide valuable manpower to do research and to prepare it for dissemination.
- In the communication materials we do disseminate, we need to accept the fact that there are diverse support systems and thus multiple target audiences that conservation science needs to address. This paper has not touched on the topic of conservation science as outreach to the public, which is another, valuable but potentially competing audience. Some research work will simply not hold much interest or utility for conservators. It would benefit communication between scientists and conservators to better clarify which projects are foundational and which are applied, so that conservators don't see conservation science as a costly process that rarely adds value to their work.
- More scientists who can periodically review and summarize new research of value for conservation are needed, as is the translation of science into more practical guidance materials.
- Technological means of making the most of the research that gets done are important, including centralized access to proceedings and abstracts, wikis, and webinars. Our professional organizations are doing this and it is vital.

Communication models

Some examples of science information communicated with high utility for conservators were identified during this study, and may provide inspiring models for future work.

Translating research into application: *First Aid for the Excavation of Archaeological Textiles* (Gillis and Nosch 2007) is a short handbook for archaeologists to use in the handling, sampling, and documentation of textile finds, providing short methods bibliographies, a contributors contact list, a glossary, and a list of suppliers. This booklet was created after a conference on ancient textiles, which also produced published proceedings.

Making conservation science 'findable:' Porck and Teygeler (2000) reviewed five years of recent research on the preservation of paper, film, other photographic materials, and magnetic tape, highlighting key advances. Its target audience is the preservation community. The final chapter addresses trends, gaps, and future needs. Appendices supply names of investigators and their institutional affiliations, and index projects by institution. This has been made available for downloading.

Making science accessible: The American Chemical society publishes a journal of brief overviews of basic research and applications. In Brunetti *et al.* (2010), it devoted an issue to techniques used in conservation. This content is available to view online or to download.

The US Library of Congress (2012) hosted a preservation science meeting on iron-gall ink research, and, importantly, made a webcast of the meeting available from their website. Much more of this kind of dissemination of conservation science is needed.

Missing links?

This may be a propitious time to examine the intersection of science and conservation. Our access to electronic resources continues to improve, although more needs to be done. There is funding for conservation science at the doctoral and postdoctoral level, although there needs to be more. Some recent initiatives, such as the National Heritage Science Forum and SEAHA (Science and Engineering in Arts, Heritage, and Archaeology), will provide training opportunities and frameworks for research collaborations. It remains to be seen how much these programs will benefit textile and objects conservators. Much of the emphasis may remain centred on the built environment, and on the visitor experience.

Thus, some links between conservators and scientists may be missing, others somewhat tenuous. Existing limits to communication and collaboration may be further strained by distance and by different driving forces shaping our work, but we have a large shared agenda on which to base collaboration. We should continue to use and develop both personal networks and virtual ones, and work to create resource materials that address the needs of our cultural heritage and that have real utility for conservation practitioners.

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Learning from interdisciplinary collaboration during an internship at the National Maritime Museum

Nora Meller

Assistant Textile Conservator, National Maritime Museum

Introduction

In 2013-2014 the author of this paper undertook a Heritage Lottery Fund 'Skills for the Future' textile conservation internship at the National Maritime Museum in Greenwich. During the year of the internship one of her main projects was devising treatment and storage for a collection of newly accessioned ethnographic items, donated to the Museum in 2013 by the Council for World Mission, successor of the London Missionary Society. The challenging task was to ensure the long-term preservation and accessibility of a collection in which the objects represent a wide range of materials, age and level of deterioration. Although the objects were primarily prepared for safe storage, some of them may go on display in the Museum's new Pacific gallery, scheduled to open in summer 2018.

This paper introduces a holistic approach taken towards the documentation, condition assessment and conservation of 48 objects treated in the textile studio. It explores opportunities for collaboration between paper and textile conservators which proved beneficial in devising storage solutions for all items, and greatly aided the conservation of nine Polynesian bark cloths. The topic of interdisciplinary collaboration is discussed using case studies, and the author's learning experiences gained during the project are summarised.

Institutional background

In September 2013, newly graduated from the Centre for Textile Conservation at the University of Glasgow, the author began her twelve month long internship at the Museum as a Textile Conservation Intern working with Nicola Yates, Senior Textile Conservator. The intern's role was to contribute to the Museum's exhibition, new acquisitions and public access programme.

The author quickly learned that the National Maritime Museum's collections are very varied and that there are many mixed-media objects which require input of expertise from different conservation specialisations. This is fortunately facilitated by the conservation studios being located next to each other, in one building near the main museum site.

The London Missionary Society acquisition and conservation project

The Museum acquired 171 objects from the Council for World Mission, successor of the London Missionary Society (LMS) in July 2013. The majority of these were ethnographic items, but also included were oil paintings and miniatures; prints and drawings; relics; collection boxes; ship equipment; ship models; commemorative medals and flags. In the textile studio, 48 items (46 ethnographic items and two flags) were condition assessed and prepared for long-term storage and potential future display, providing the conservators with approximately 500 hours of work.

From missions to museums: the object journey

How did the objects become part of the LMS collection and later the Museum's collection? The *Missionary Society* was founded in 1795 with the aim '...to spread the knowledge of Christ among

heathen and other unenlightened nations' (Lovett 1899). Throughout the nineteenth and twentieth centuries the Society has sent many missionaries to the Pacific islands, China, Southeast Asia, Australia, India, Southern and Central Africa, Madagascar and the Caribbean. A large number of objects and natural specimens were brought back to Britain to be used mainly to promote the cause of the Society, which changed its name in 1818 to *London Missionary Society*. After the Society's Missionary Museum (open since 1814 on Blomfield street, London) closed down in 1910, many of its objects were acquired by the British Museum, Pitt Rivers Museum and the Horniman Museum, amongst others.

The London Missionary Society merged with the Commonwealth Missionary Society in 1966 and became the *Congregational Council for World Mission*, which was restructured to form the *Council for World Mission* in 1977. Between 2012 and 2013 the Council secretariat relocated from London to Singapore, deciding to leave large part of their remaining historic collection to the National Maritime Museum. Their archives are now held at the School of Oriental and African Studies.

Research value and potential display

Before the new acquisition, the Museum has had a significant ethnographic collection assembled as a result of maritime trade, surveying and military operations between the eighteenth and twentieth centuries. The LMS acquisition further strengthened the Museum's ethnographic profile, as it is the only group of objects in the collection which tells us about world cultures affected by missionary activity.

The Museum is planning to expand its exhibition area adding four new permanent galleries by 2018. The LMS items came in time to be built in to the exhibition plans. The decorative Polynesian bark cloths particularly caught the curators' attention, and have potential to be displayed in the future Pacific gallery.

Project outset and objectives: a holistic approach

The objects assigned to the textile conservation studio represented a range of very diverse materials and construction techniques (e.g. silk embroideries, objects made of plaited palm fibre and tree bark, etc.) They also largely differed in age and level of deterioration (e.g. severely degraded nineteenth-century items versus contemporary objects incorporating plastics).

The objects were all considered to be vulnerable to fluctuations in environmental conditions and to pest damage, and would therefore be sent after conservation to the Museum's environmentally controlled store. The Museum is re-developing its storage facilities in the next three years to ensure space for its entire collection in an environmentally controlled building.

The objectives of the project were the following:

1. to prevent pest infestation in the store by freezing treatment where this was possible without damaging the constituent materials;
2. to record the objects' condition;
3. to measure their dimensions to facilitate exhibition and storage space planning;
4. to carry out conservation treatment where required in order to facilitate safe storage;
5. to photograph the objects in the studio;
6. to label them with appropriate methods depending on their materials;
7. to pack them either flat, rolled or in purpose-made boxes;
8. to improve access to them by supplying rolled and boxed items with identifying photographs;
9. to upload all information to the Museum's electronic database Mimsy XG.

The majority of the above objectives were routine processes for the textile conservator, except No. 4 (conservation treatments on non-typical textile objects), No. 6 (labelling different types of materials) and No. 7 (creating three-dimensional storage solutions) where discussions between several conservation studios were needed to proceed.

Routine textile conservation treatments

Some of the treatments carried out on the LMS items fall into the category of routine treatments for the textile conservator. However, they were customised for each object's needs which provided plenty of learning opportunities due to the variety of shapes and materials present in the collection.

Most common was surface cleaning of heavily soiled items in order to prevent further degradation, and of those which later underwent humidification to avoid the soiling being driven further into the fabric. This was generally done using low-power vacuum suction and a soft brush through fine nylon net mesh.

Humidification was carried out in many cases in order to lessen strong creasing which could have caused further damage in storage. This was done using either an ultrasonic humidifier or via contact humidification through Gore-Tex® (semi-permeable membrane containing polytetrafluoroethylene). Eight of the nine Polynesian bark cloths needed humidification to enable their rolled storage, which was labour intensive due to their large size but effective in every case.

Conservation treatments enhanced by protective storage

It is sometimes little appreciated how much protective storage may contribute to the long-term preservation of objects. As the first example, a pair of nineteenth-century bound foot shoes underwent a complex conservation treatment including humidification and mounting to return them into their original shape, and stitched support of the extremely damaged silk binding and decorative lace strip along their top edge (Figure 1). Due to their sensitivity to light and handling, these were the first LMS items which needed their own custom-made storage container (Figure 2).

The paper conservation studio was consulted about methods generally used at the Museum for making boxes, trays and inserts. They could advise not only on materials and construction, but gave practical advice on how to use the different marking, folding and cutting tools to make the



Figure 1
The bound foot shoes (ZBA5567) before treatment and the left shoe after conservation.
©National Maritime Museum, Greenwich, London.

Figure 2
Corrugated card box made for the bound foot shoes (ZBA5567).
©National Maritime Museum, Greenwich, London.



Figure 3

The embroidered banner (ZBA5540) is long and it has elaborate decoration.
©National Maritime Museum, Greenwich, London.

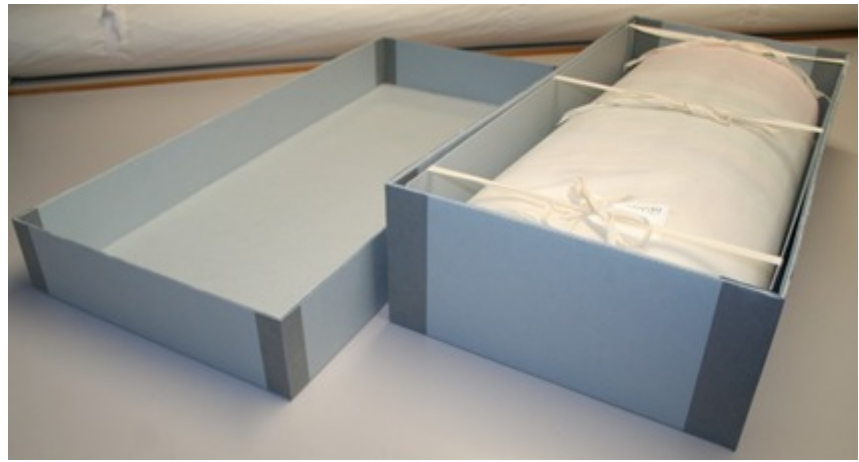


Figure 4

The banner (ZBA5540) received a corrugated card tray which slots into a box.
©National Maritime Museum, Greenwich, London.

assembly process simpler and quicker. A box made of acid free corrugated card was constructed for the shoes; its sides held by strips of acid free paper adhered with ethylene-vinyl acetate (EVA), which is standard practice at the Museum. A fitting baseboard with cut-outs made of Plastazote® (polyethylene foam) covered with acid free tissue was also created to hold the shoes in place. The box was supplied with the identifying photograph, object name and number placed in a Melinex® (transparent polyester sheet) sleeve.

Another example of protective storage was made for a Chinese embroidered banner, which is too large to be stored flat but its fringe contains a row of hollow glass beads which are extremely vulnerable and some have already broken or are missing (Figure 3). The textile was loosely folded up with a layer of thick polyester wadding interleaved with acid free tissue, to prevent the glass beads from breaking. A tray was made for the banner from acid free corrugated card, held at the top by cotton tapes, which slots into a box (Figure 4). These two together provide easy handling and protection from light and dust.

A simple treatment on a mixed-media object

Textile and paper also appeared in conjunction in the collection. A bobbin lace sample was in relatively good condition, but its paper support and backing card had become soiled in storage. Paper conservator colleagues advised on a simple treatment, including surface cleaning with sponges made of vulcanised natural rubber, labelling with soft pencil, and packing the object on archival card in Melinex® sleeve. Melting the sleeve to hold the two parts of the object in place was also discussed, but it was decided that this would make the examination of the lace too difficult.

Stabilising fragile bark cloths with adhesive treatment

Last but not least, the nine beautifully decorated Polynesian bark cloths proved to be the most challenging objects of the new acquisition. Before they came in to the Museum's collection they had been stored tightly folded, which caused sharp fold lines, creases and damage. Four of them needed support treatment, as they were too fragile either in small areas or overall to withstand rolled storage, which was the only storage option for them due to their large size (Figure 5).



Figure 5
 One of the bark cloths (ZBA5503)
 before conservation treatment.
 ©National Maritime Museum, Greenwich, London.



Figure 6
 The torn edge of the bark cloth (ZBA5503)
 Before conservation treatment.
 ©National Maritime Museum, Greenwich, London

Time was allowed for conservation literature research in order to become more informed about treatment options, and there was opportunity to get in touch with fellow conservators with experience in bark cloth conservation who kindly offered their advice and recipes. Paper conservators at the Museum were consulted about paper support treatments which could be modified to meet the needs of the bark cloths, and experiments were done using different support techniques and materials on new and artificially damaged bark cloth samples. Different Japanese tissues were tested as support materials, and the adhesives applied to them included wheat, arrowroot and rice starch pastes and Klucel G™ (hydroxypropyl cellulose adhesive) gels. Besides, remoistened Japanese tissues coated with Klucel G™ and/or gelatine, and tissues sprayed with Beva® 371 (multi-component conservation adhesive containing ethylene vinyl acetate copolymers) were also tested.

The preferred treatment option was to stabilise the fragile areas of the bark cloths using patches of untinted Japanese tissues of differing thicknesses in conjunction with starch pastes (Figures 6 to 8). Wheat starch paste was found to work well in case of three of the bark cloths, while a very fragile and thin bark cloth was supported using an arrowroot starch - sodium alginate paste. Two bark cloths which had larger losses may require coloured infills on the front before going on display.



Figure 7
 Japanese tissue placed onto the area of damage
 on the reverse, before pasting (ZBA5503).
 ©National Maritime Museum, Greenwich, London.



Figure 8
 The torn edge of the bark cloth (ZBA5503)
 after treatment.
 ©National Maritime Museum, Greenwich, London.

After the support treatments all the bark cloths were physically stable enough to be safely rolled. By September 2014 every LMS item have been accommodated in the Museum's environmentally controlled store.

Personal development and project outcome

The London Missionary Society conservation project has greatly aided the author's professional development and has made an impact on the treatment and storage of ethnographic objects in the Museum's collection.

I found that having a holistic approach to a group of newly accessioned objects facilitated the items later fulfilling their desired role in the collection. She discovered a great deal about a variety of materials by handling, condition assessing and examining their construction techniques. She understood the importance of communicating with colleagues about treatment options, particularly when one is working with unfamiliar materials. She practiced conservation skills both within the textile specialisation and beyond, and learnt to make bespoke storage solutions in a more practical and time-efficient way. As a way of engaging the wider public she published a blog on the Museum's website, titled 'Preservation of nine bark cloths from the South Sea Islands' (Meller 2014).

The London Missionary Society conservation project also highlighted the importance of further improving the conditions for the wider ethnographic holding of the Museum. In preparation for the stores being moved to a new site in 2017, the author is involved in the treatment and protective storage of the Museum's ethnographic material.

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Thirty years on: connecting personal self reflection to professional change

Ann French

Collections Care Manager/Conservator (Textiles), The Whitworth, University of Manchester

Introduction

This paper is a slightly edited version of the talk as presented at the Textile Group Forum - Learning Curve: Education, Experience, Reflection on 13 April 2015. The theme of this forum came at a specific and critical moment that provoked me into contributing the following text. It is a personal reflection, rooted in a career and experiences working in various institutions across the UK heritage sector. I am sure it cannot and does not represent the experiences of others, but rather than attempt to turn the spoken lecture into a more impersonal and more academic paper; I have decided to leave it as a “provocation” rather than as a piece of research. The context is personal and the opinions expressed do not necessarily reflect those of my employers or of my colleagues past or present.

Paper as given

On 24 September last year, I reached my 30 years in conservation; not an anniversary I took much notice of at the time given where I and my team were with The Whitworth’s capital redevelopment project. The theme of the 2015 Textile Group Forum, however, presented the catalysis for me to try to put into words some thoughts on the experiences I have had as a conservator, and how these have evolved and changed. I am not concerned with stories of the good or bad old days, but rather I want to reflect on what working in conservation has become for me personally. And does this have any wider relevance? Writing this, I discovered how much has already been written by others, so I hope my journey will act as a corresponding echo, rooted in experienced empiricism.

Accredited or not, conservators are supposed to keep records of our continuing professional development and if accredited we can be asked by ICON to produce one for review, but for a profession that is so keen on the context of practice, action plans, personal development, new understanding of skills etc, are we as rigorous in critically reviewing our profession? We have statistical snapshots – the 2012-13 ICON report by Kenneth Aitchison for example, but this did not interrogate what we are doing and why. We are part of a much wider sector – beyond textiles and conservation – we exist as part of heritage, culture and society. Given the ravages of current and future public spending cuts – this kind of review to positively position conservation seems to me ever more imperative.

So this is what I am going to suggest, but first I must provide my personal context that has provoked these thoughts. After working in a classic conservation mode across four employers carrying out a mixture of interventive practical work and much preventive conservation at Glasgow Museums, the now defunct South West Museums Service, the National Trust for England and Wales and The Whitworth; for the last five years, I (and many others) have been immersed in a capital development for The Whitworth that has included a collections decant; a collections recant; working off-site in the studios of the conservators of Manchester City Galleries; a total re-installation of twelve galleries; new stores and – critically – now being challenged to enable new forms of collections care and access including a public facing conservation room and a collections centre.

At the same time, (and not to be recommended), my sister and I supported two sets of parents 'downsizing' from large houses into small flats, involving much complex negotiating over what to do with accumulated 'STUFF'. What else is material culture but stuff? To add to this busy mix, I made the reluctant decision to give up my PhD studies, and last, I was sent on the Clore Leadership Short Programme in October 1014. These multiple experiences have coalesced to make me wonder whether what inspired me into conservation is in fact what it is all about after all?

My PhD studies initiated the first doubts about conservation, what it is and what its consequences might be. A PhD in Museum Studies these days requires much reading of material culture texts. All new to me, and many were far from easy reading, but they did what they were supposed to do which was to introduce me to alternative ways of research and looking at things. In my case examining collectors and collections of embroideries and to do this I went and examined as many of the extant embroideries as I could. They were to be found across three institutions. Coming from two collectors who collected together, the embroideries entered these three institutions in similar condition and form. One collection has left them in a state of benign neglect, another has had attention lavished on them and the third is somewhere in between. I started with examining the collections of the first, and I could not help initially reacting as a conservator. I noted condition and my fingers were twitching to do something transformative. A typical conservator's reaction perhaps? Several hundred such embroideries later, I was at the second institution wondering at a sense of unease. Realization came to me later. The embroidery had been "conserved" along with several others that now set it/them apart from the others collected at the same time and the same place. Thus the embroidery, via the hands of the conservator, now reflected the culture and value systems of the institution in which it now resides, rather than those of its originating function, culture and context or even of the collector.

This realization which linked to another empirical observation, that conserved objects in collections often give one more issues than un-conserved ones and that the same objects tend to be conserved and re-conserved, I began to see conservation – concept and consequences – differently and as an entirely subjective process. It is typical, however, that I came to this conclusion via object examination, reading difficult texts did not achieve this for me.

This is where emptying a house of eighty years worth of family possessions comes in. What does one decide to keep? Who in the family gets what? What does one do with the "unwanted" stuff? What value does "stuff" have? And to whom? The drawn out negotiations and sorting process of doing this for and with my family encapsulated the process of decision-making that lies behind "conservation" and management of change. Conservation can be viewed as a subjective decision contingent on a series of value systems – personal, social, economic, cultural, locational and historically specific. The decision to keep something is thus a social practice – not everything is or can be kept, but by whom and why is this decision made? To get to grips with "conserving" something – understanding the value systems underpinning its "survival" is crucial. There is nothing objective behind such decisions.

When emptying the family home, it was (but only in hindsight) fascinating to see who valued what and who wanted to keep what. The colour transparency slides had no appeal to the teenagers; brown furniture, dinner services and silver teapots are not currently desirable household items and have no economic value; but the pieces cared for most were those associated with memories. Memories inexplicable to others. And indeed much was disposed of or destroyed.

I have presented a family context, but institutions are similar. The decision to acquire something – the initial 'conservation' decision – is equally subject to such value systems. Are not mission statements and collecting policies just an articulated set of current value systems? I asked all the

institutions that own the embroideries I was studying whether they would acquire them today and their answers were doubtful. The value systems behind collecting have shifted in the sixty years since acquisition.

For me, this is the critical theme of Kopytoff's (1986) seminal article: *The Cultural Biography of Things: Commoditization as Process*.

“The biography of things in complex societies reveals a similar pattern. In the homogenized world of commodities, an eventful biography of a thing becomes the stories of various singularizations of it, of classifications and reclassifications in an uncertain world of categories whose importance shifts with every minor change in context. As with persons, the drama here lies in the uncertainties of valuation and of identity”.

That is our attitude to objects is about us, as much as it is about an object. If then, attitudes to objects/things are so value ridden – where as a “conservation profession” do we fit into the process? Do we make or influence the decisions? Do we share the value systems that made the decisions to keep the things/stuff in the first place? Do we practice on an understanding of shifting value systems? Think back to the embroideries discussed above. Can interventive conservation treatments fit within such shifts? I have suggested otherwise before in my re-evaluation of the Othry Cope at a previous forum. How good are we at probing why something is offered for conservation treatment? What social forces or values have suggested that intervention is “needed”? For example, how many of us have worked on material due to funding coming on stream? A lottery-funded project for example?

I suggest we should be more critically reflective of ourselves – that is to analyze and to challenge our pre-suppositions and to assess the appropriateness of our knowledge, understanding and beliefs within the overall context in which we practice. This is now the academic norm for the humanities and other cultural practices. A humorous yet very self-aware read is Grayson Perry's (2014) *Playing to the Gallery*. Great fun, but the theorist I was encouraged to read for my PhD studies was Pierre Bourdieu – really difficult and I am not going to over emphasize my limited understanding but I am mentioning his ideas as they help to position conservation within a wider cultural context regarding influence and systems of power.

As I understand it, Bourdieu's contention is that we behave culturally according to socially formed dispositions that are acted out whenever we engage in diverse areas of culture. His phrases are 'habitus', 'capital' and 'field' and these combine to form 'practice'. “Art Rules” by Grenfall and Hardy (2007) is a more accessible Bourdieusian analysis of the art world. The ideas are complex but make me wonder whether what brings many of us into conservation - our unconscious dispositions or 'habitus' – usually the love of objects and a desire to preserve them preferably via treatment – is inhibiting? I suspect these dispositions brings us little 'capital' – cultural, economic or social, and we are thus disempowered and easily overlooked. Conservation barely features in works such as “Art Rules” for example. One could apply Kenneth Aitchison's (2013) report here – the conservation profession is generally white, middle class, low paid, 65% female and largely based in Southern England – in this context what political or economic capital can conservators wield?

Like I suspect most conservators, I was primarily trained to do practical work, but unlike today little emphasis was given to preventive conservation such as insect pest management, or storage and display systems. Instead I learnt these skills on the job via experience. While training, I was taught to employ my sewing and other manual skills to “treat” objects. I loved it and I still have my daybook and notes. Reading through them, what strikes me now is how interventive the work

was thirty years ago and how little consideration was given to context of any kind. Of the sixty or so pieces I worked on as a student, I suspect I would not now feel many of them needed much treatment if at all. So why were they treated? Is this our unconscious disposition here - the finger twitching I mentioned earlier - to employ our skills to add 'value' or our perception of value? We want to engage with objects, and handling them and working on them via wet-cleaning, beautiful dyeing and colour matching, exquisite stitching and so on is our way of doing this? It is pretty hard wired but how does it benefit the object and indeed us as conservators? Are we over emphasising this skill? What, if any, influence does this skill give us?

I am less able, now, to carry out such treatment as my eyesight is not what it was but more significantly the context in which I now work does not necessarily require it. I do not mean just acquiring a more managerial role within an institution. The Whitworth, while having nationally designated collections of textiles, wallpapers and works of art on paper, has also been re-positioning how these collections are used, for whom and why. The gallery is as much a social engagement and a performance space as a display space for the contemplation of art. The art too has changed; time-based media, installations and performance being as usual as framed watercolours or mounted textiles. We are not alone here; there is much debate going on about where museums, galleries and culture fit into this austerity world and whom it is for and why.

While The Whitworth's capital development has brought the gallery more space and new facilities, the ambitious and challenging programmes that preceded closure meant that traditional treatment work had become far more minimal some time ago. To manage such demands, concentrating on developing holistic mounting and storage systems became the norm. I/we combine the two and make one interact with the other. For example sliding textiles out of Melinex storage sleeves onto sloping boards within cases with no stitching or securing mechanisms used. This approach takes into account re-interpretation as value systems shift, and also looks to the function and care of the collection as a whole. But equally important has been realising a shift in practice to emphasise enabling and problem solving to create a shared outcome for all in the gallery. To do this we must negotiate which means engaging with people not objects. And as with all negotiating, there has to be give and take.

Acknowledging conservation as a social practice is empowering and enabling but it requires something I think we do not necessarily sufficiently develop or emphasise - our social skills. Our promoted image is often isolating - one of science, white coats and work benches - exemplified if one googles the words "conservator and "image". I would rather, however, we work to create a "culture of care" within and across an institution that acknowledges conservation as a shared social practice for all within that institution. This means understanding a variety of value systems. Contexts involving the application and use of objects must be probed. The words "no" or "yes but" should be avoided, rather use "how". It means emphasising shared outcomes; conservation treatment as such is not the sole outcome but rather it enables collections and spaces to be used, applied and enjoyed, and compromises are necessary. Nor is conservation assumed to be the sole responsibility of conservators. I give an example here - a genuine e-mail received:

"I'm overseeing an event as part of the 'Sex and the Stereotype' Thursday Lates which is due to include a solo dance performance entitled 'Woman with Eggs'. I was hoping for the performance to take place in Gallery 3 but wanted to check if that would be OK as at the end of the performance, the dancer places 10 eggs on her hands and dances on the spot until they have all dropped on to the floor from her arms, so the eggs would break on the floor. I will be around to clear up the eggs as soon as the performance has ended and she wouldn't be near to the artwork (I was going to position her in the middle of the room by the windows) but I just wanted to check this with you first to see if you would be happy with it?"

Of course I was not 'happy' with the proposal but I was delighted to be consulted. After meeting for coffee, discussing the events, who was coming, what it was about, the role of the artist and how the performance would be managed; the artist withdrew this particular performance. In substitution, a couple dressed as genitalia danced round the galleries instead – but no raw eggs to clear up!

This shift of emphasis was reinforced for me on the Clore Leadership Short Programme in October 2014. I spent two weeks working with a small group from the wider cultural sector - theatre, museums, galleries and music - engaging with issues of leadership. Much was covered making me realize that more conservators need to participate in such programmes. I was a minority, as indeed were those working on the delivery side of the cultural sector. I found I had more in common with a stage manager than I did the others from museums and galleries. But being exposed to the pre-occupations of the wider sector was so useful. The idea of conservation as management of change is known, but should we apply that to ourselves as well and include change management in our thinking and practice? Understanding negative and positive change curves, push and pull influencing models is instructive and illuminating. I suspect conservators use "push" and that switching styles to "pull" would help us. Change as a necessity for survival was stressed, as was understanding change as either a negative process or a positive process. All of us have or will experience the former – it is based on the psychology of grief – but critical reflection will enable positive change.

This bricolage of personal experiences have led me to conclusions reached elsewhere and by others. I will conclude, however, with an irony I have observed – that to get where I am and what I think - I had to carry out a lot of practical conservation work. Whether I would be here without that foundation of learnt practical skills is, I think, a difficult dichotomy that all conservators grapple with.

Acknowledgements

Thanks to all those I work with and have worked with over the last thirty years – as I would not have survived or enjoyed a career in conservation without their patience, help, support and humour.

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<http://www.cloreladership.org>

The literature for these concepts is vast – but quick and un-academic guides can be found (with more academic citations given to follow up) via googling “Kubler Ross Change Curve” and “Push/Pull Influencing” models.

Recruiting, selecting, training and managing volunteers at Hatfield House, 1977-2014

Joan Kendall

Textiles Consultant, Gascoyne Holdings Ltd, Hatfield House

By 1976 the early seventeenth-century set of the Four Seasons tapestries at Hatfield House were greatly in need of conservation since, after an unsympathetic restoration of Autumn (Figure 1) was completed in 1921 by Morris and Co., all four appeared to have been patched and darned, sometimes clumsily but safely, by household staff and in 1940, hastily before wartime storage, by two restorers from a London company. There were very many areas of damaged or missing warps and in certain areas a considerable loss of wefts (Figure 2).

The Sixth Marchioness of Salisbury wished to set up a group of volunteers to conserve these tapestries in a similar arrangement to the group which was then conserving the textiles of the King's Bed at Knole and I was asked if this could be organised.

After being encouraged to consider this by friends who were textile and museum professionals a meeting was arranged in 1977 with Donald King, the Keeper of Textiles at the Victoria and Albert Museum and Sheila Landi of the Textile Conservation Department after which Ksynia Marko was asked to teach me the appropriate textile conservation techniques which the Hatfield group then applied.

As well as many other tapestries, there were, in the House, embroideries, lace, upholstered furniture and window curtains in need of conservation and many other items to be sorted and stored. It was agreed that this work would deal only with objects of historic interest on view in the areas of the House shown to the public.

In order to contact as many people as possible with knowledge of and skills in working with a range of textiles, letters about the project were sent to the Embroiderers' Guild; the Guild of Spinners; Weavers and Dyers; the Lace Guild; the W.I.; NADFAS and to local newspapers and journals.



Figure 1
Spring. One of the Four Seasons tapestries



Figure 2
One of the very many damaged areas in a tapestry border emblem

At two separate preliminary meetings the 242 applicants, all women, were told that they would be expected, after training, to work to a professional standard in one of five groups of objects, to follow instructions exactly but also to be aware of when the instructions might need to be modified for a particular damaged area and then to ask for advice. They must be prepared to pass their unfinished area of work to another to complete. The work would need strong eyesight, dry hands, patience, a friendly temperament, an ability to place a needle precisely and to stitch with the correct tension.

The applicants would be expected to attend between rush hour driving times on a regular basis one particular day each week or fortnight during the year, except when illness or family matters prevented this. Through a personal experience of working as a volunteer while having young children there was an awareness of the possible conflict between a commitment to regular attendance and duty to the family. To maintain their memory of the methods of work their regular attendance was soon changed, when possible, to a weekly visit. They found this helpful. Their travelling expenses were to be paid at the AA recommended rate.

After asking questions and looking at some of the objects to be conserved the applicants were asked to write to me a fortnight after the meeting with details of their experience, their personal interests, the type of object they would wish to work with, their preferred attendance day and any other information which might be helpful and interesting.

These letters were invaluable in sorting about a hundred and twenty replies into people with similar skills and interests. Some already taught or attended classes in traditional upholstery, lace making, weaving or embroidery. Some offered additional useful skills and there were those who were happy to sort, catalogue and store the very many items.

Some applicants then, and also at a later date when applying to fill places left by retirements from the Group were obviously unsuitable. To save their self respect they were put on a waiting list. New suitable applicants at later dates, after a personal interview when they would be encouraged to talk about their own interests and expectations, were invited to meet the Group members working on the day with a vacancy so that they could all give me their opinion of compatibility.

Having chosen and allocated applicants to work on a particular type of object on her preferred day, they were introduced in small groups spaced over a few weeks so that each one's capabilities, likes and dislikes could be noted. This made it so much easier to understand and guide them.

The agreement was that if it was felt on either side after eight visits that they were not suited to the work that they would leave. If their work was good but there was on their day a person with whom for any reason they found it difficult to work they would, when possible, be moved to another day. There was a diary in which everyone signed for the next day they were due to come and they were expected to let me know if they had to cancel.

As most of them were very busy with family duties before arriving by 10.00 am they relaxed with coffee or tea and biscuits and caught up with their own news and that of the progress of their work and the House and the estate. This also allowed time to talk with people about particular problems for that day. They would then settle down to work by 10.30 am until they had a light lunch for about half an hour, or a little longer if it was a significant birthday, beginning when there was a natural break in the work between 12.30 and 1.00 pm. Depending on how far away they lived, they would leave at 4.00 or 4.30 pm or occasionally earlier to collect a schoolchild.

It was hoped that they would be happy to discuss privately with me before the others arrived in the morning anything, however small, about which they were concerned. Equally if there was

anything which was causing concern in their work or behaviour that also should be discussed privately.

People's circumstances change over time, as does their eyesight, physical dexterity, attention span and energy. Sometimes, if a person's work was not of her usual standard, it could indicate illness or distraction caused by some private problem. In these instances her incorrect work might be quietly undone and another person chosen to re-stitch it correctly the next day. For a while simpler tasks would be chosen for her or it might be suggested that she take a short break. The Group was especially supportive at these times.

Over the years there were, sadly, people who eventually became problematical in their work or their behaviour. This was sometimes caused by no longer being interested in their work or even by the realisation that they were not capable of continuing to work to the expected standard and an understandable reluctance to resign. One cure was to give them a small single household object suitable for ordinary careful mending and sit them apart from the others. They usually lapsed in attendance and then left.

More difficult to deal with were those who, after a few years good work, decided that they did not want to continue to follow the methods or techniques which were laid down and without discussion introduced their own ideas which were neither correct nor appropriate. They were told of the surprise caused by their feeling that they could change or discard an agreed working method without discussing it, that this was unacceptable and they were asked to explain their reasons for this. There was one instant resignation and at another time, after talking about the need for all to conform so that the results would be consistent, a return to the accepted methods. When one person persisted in wanting to use her own method the numbers of people working on each day were rearranged so excluding her.

After many years working with the volunteers on five days a week it was found that the number of individual projects was increasing and the difficult aspects of the work, the administration, the research, the chemical treatments and the occasional private work for the Family, was taking too much personal time to fit into the hours before the volunteers arrived or after they had left. To cope with this, if Lady Salisbury approved, there was a need to work one day each week without having to supervise the volunteers. After this was decided the volunteers were asked on which day and with which people they would prefer to be allocated.

At the beginning of the project the stitching skills and boredom threshold of all were tested by working laid and couched very fine thread on identically coloured fragile silk damask. A few people who realised that they were not suited to the demands of the finest stitching resigned but others decided to stay to give general help where needed. After this introduction the ninety plus people who remained moved to their permanent work. By focusing on one type of object, and sometimes one type of work within the object, they developed confidence and skills of a high standard so that very little time was wasted in teaching and they had pleasure in their work and satisfaction in the result.

The history and construction of each object on which they would work was discussed and the reasons for the method and style of conservation were explained. The more information they were given the more focused and involved with the object they became and their work was more thoughtful and efficient and was completed more quickly.

After discussion and sourcing samples the final choice of composition, colour and design of textiles to re-furnish the House was that of Lady Salisbury. She was interested in the conservation materials and methods which were used but took no part in these decisions. For consistency across the

days the choice of these materials and threads and the choice of colours was my responsibility as the only person present on each day.

People were made as comfortable as possible and encouraged to exercise when feeling stiff. There were posters on the walls so that people could exercise their eyes by focusing on them. The working angle of the original flat frames was increased not only to put less strain on neck and shoulders, but also because this angle of viewing the work caused less distortion in their lines of stitching and their area of work was limited to within a line seven inches (eighteen centimetres) above the beam (Figure 3).

It was most important to work near each group member at regular intervals to check quietly on the way that the work was done as well as the result.

For those working in the Tapestries group and the Embroideries group, both of which met each working day, written instructions and stitch diagrams were displayed on all the frames.

Their individual area of work was allocated, prepared and pinned to the support textile and then indicated with red glass-headed pins before they arrived for each visit. Contrasting coloured thread was pinned in lines parallel to the beams and at right angles if needed to help to keep the stitching lines straight and graph paper of eight squares to the inch was provided to help with spacing their lines and stitches.

As they worked they marked each area where they had stitched with their own colour of pinhead and their initials and their work was checked each day after they had left. Two red headed pins together spearing an explanatory note marked mistakes. Very occasionally three red pins marked a possible disaster. When instructions had been misunderstood or wrongly applied, without mentioning the name of the person involved, the mistake was studied by people from all the days who were working on that object to prevent re-occurrence. Good work in a particularly difficult area was also shown and praised.

The Lace group which met on Mondays included two members who taught lace making and all made lace. There were five sacks of lace to sort, catalogue with reference to reliable publications, clean when necessary and to store correctly. These identifications were later checked by Santina Levey.



Figure 3
*Volunteers working on one of the
three modified frames*

The Furniture group, all practising amateur upholsterers, met on Thursdays to re-upholster and re-cover seating where necessary and were guided by a member who was a teacher of traditional upholstery techniques. As the nailing, buttoning, coverings and upholstery were removed detailed notes and patterns were taken and the group replicated these when replacing them. Treatment of the standard frames when necessary was done by them or by the House carpenter. The important frames were allocated to professional conservators.

The Varied Skills group was very flexible as it dealt with such diverse items as combing out newly dyed fringing, mending, modifying or constructing new braid and fringing and mending and applying decorative tassels, braids and fringing to chairs and old and new bed and wall hangings. They gave invaluable and flexible help with cleaning, dyeing and storage and became skilled at removing and applying textiles to complicated wooden surfaces using traditional animal protein glue. They unpicked panels of badly damaged woollen tufted curtains in the Library, washed and re-assembled the lengths, supported them on linen scrim and painstakingly re-tufted the missing areas.

Important items in need of analysis or specialist treatment beyond the Group's abilities were allocated to chosen professional conservators or institutions.

To comply with the original agreement and to give satisfaction to the volunteers examples of their work were exhibited in the House each year, so that they could feel pleased and proud to show and explain it to their friends and family. After the first year an illustrated talk about the technical complexity of their work was given in the Old Palace at Hatfield to husbands and friends to allow them to appreciate the seriousness of the work and to confirm that it was not just any old mending and gossiping group.

When the State Bed in the private side of the House was dismantled so that structural repair work could take place in the bedroom a repeat of the original silk damask was dated by Natalie Rothstein. After the detailed upholsterer's bills of 1711 for the whole room were found in the House archives, great interest was shown by many volunteers in the possibility of working on the bed and the rest of the textiles in the room. Only those who wished to do so worked on the contents of this bedroom which could not be shown to the general public because of its position in the House. They enjoyed this so much that later some people chose to work on other interesting beds in the private side of the House. Lady Salisbury suggested that these rooms and other private rooms could be shown to small groups with specialist interests as an acknowledgement of this work and suitable visits were arranged.

On the same basis, those who wished to do so, happily worked on three beds with crewel work hangings and on two pairs of crewel work window curtains as well as a bed with damask furnishings and various tapestries in the Manor and an altar frontal and reredos in the church at Cranborne in Dorset even though the house is not open to the public. In gratitude both Lady Salisbury and Lady Cranborne invited them down a number of times to lunch and to see their work in place in the Manor.

After the Group worked on the decorative outer textiles of curtains and panels these were finally assembled by the same professional curtain maker who made up all the curtains at Hatfield and Cranborne.

Lectures by experts in their field, study days and short tours were organised for the volunteers to introduce or to widen their knowledge of the history, manufacture and decoration of textiles, of work in other conservation studios and examples of decorative arts and architecture. Visits were arranged to the mills, studios, museums and houses in which these were to be seen. All were conscious of the generosity of the conservators, scholars, curators and owners who gave

their time and knowledge so willingly. This also brought together people working on different days into a companionable and very supportive group. These study occasions were varied so that everyone was able to afford the time or cost to attend at least one occasion each year. The personal collection of textile reference books was available for reference or for study on a non-working day and occasionally for loan for home study. Very important was the notice board in the workrooms on which people were encouraged to pin items of interest to the Group and also questions, which it seems someone could always answer. All have learned so much from each other's experience and skills.

From the beginning both Lord and Lady Salisbury took constant and appreciative interest in the work and Lady Salisbury gave a party with entertainment for the group every year at Hatfield to which she also invited a senior person from each of the societies from which the volunteers had been recruited and others who had helped the Group professionally during the year. These parties were to acknowledge the quality and importance of the work of the volunteers for the House and to show the gratitude of the Family.

Between 1977 and 2014 a total of one hundred and eighty eight volunteers worked in the Group, some retiring as their energy diminished, some as their section's work was completed and others as they left the area. Happily there were some very valuable replacements. The daily attendance numbers were from around fourteen to eighteen. As most of the projected work had been completed by 2003 when Lady Salisbury, now the Dowager Lady Salisbury, held her personal farewell gathering there were no more replacements. Those leaving after then became at the present Lord Salisbury's suggestion Country Members retaining all the privileges of the Group which then gradually diminished to sixteen members in 2014.

It was appropriate that in 2014 the Dowager Lady Salisbury cut from the frame the stitches holding the late sixteenth/early seventeenth-century Tudor Rose table carpet which was the final conserved item from the original list of textiles needing attention. At the closing of the project in December 2014 a formal luncheon was given by the present Lady Salisbury at which the Dowager Lady Salisbury and some members of her family were present with other long term friends of the Group and Lord and Lady Salisbury thanked each volunteer warmly for her devoted work (Figure 4).



Figure 4
The Dowager Lady Salisbury's Farewell Party at Hatfield House

When the volunteers were asked why they were willing to work in a private House their answers were that it was a privilege to have the opportunity to be able to handle and study in detail and to conserve correctly such interesting objects for the future enjoyment of others. It gave an extra meaning to their lives when they were able to immerse themselves for a whole day in doing something which they loved without reference to their responsibilities at home. Some of these volunteers spent very many hours doing boring and repetitive work which would have been a waste of the superior skills of qualified textile conservators and without their help only a fraction of Lady Salisbury's project could have been completed within the budget allocated.

The existence of the Group during 37 years would not have been possible without the guidance of Ksynia Marko, of the many individual members of the Victoria and Albert and other museums, to the technical knowledge and help of certain commercial firms and to ICON itself as a constant source of information and interest.

Posters

Working with new materials: Mount Making with Formetal®

By Zoë Lanceley and Roger Murray



The Project

A mount was required to display a 17th Century German Cavalry Officer's helmet (M.2710–1931) along with its separate quilted lining for permanent display in the newly refurbished Europe 1600 – 1800 Galleries at the Victoria and Albert Museum. This led to a collaborative project between lead mountmaker Roger Murray and conservator Zoë Lanceley. A mount was made that provided adequate support for the heavy steel helmet and articulated neck panels whilst allowing the lining to be clearly visible. In effect, the lining appears to 'float' inside the helmet.

The key to the success of this project was the use of a relatively new material to mount making: Formetal®, which was used in conjunction with Fosshape™ to create a lightweight rigid structure to which the lining could be stitched.



Working With Formetal®

Formetal® is a thin aluminium sheet which can be easily moulded by hand. The innovative geometric 'Y' punched design means that a flat sheet can be sculpted into any three dimensional shape.

Working with Formetal® did not require any specialist equipment. It was easily cut with a pair of tin snips, and shaped by hand or with the help of a bag of lead weights.

The cut edges were sharp so a strip of thick Reemay® was stitched over the rim to create a smooth edge. Three separate pieces of Formetal® were sculpted to the correct form: the peak, dome of the head and the neck covering. They were then tied together with cotton tape. A single sheet of Fosshape™ was then stitched to the form, particularly in the convex curves. The Fosshape™ was activated using hot steam. As it was activated, the Fosshape™ shrank slightly, resulting in the sections being held together tightly.



The Mount

To display the helmet, a cross-shaped armature was made from stainless steel. This was covered in sueded polyethylene to provide a cushioned surface for the helmet to sit on. A stand was made from rolled steel to support the armature. All metal work was spray painted according to the exhibition design.

The Formetal® structure was cushioned with polyester wadding and covered in black jersey cotton. Two ear flaps were added, made from cotton covered Reemay. The quilted lining was then stitched to this structure.

To assemble the whole support, the lining structure was tied to the armature with cotton tape. The helmet was then placed on top.



The Finished Product



The helmet will be on display in Autumn 2015.

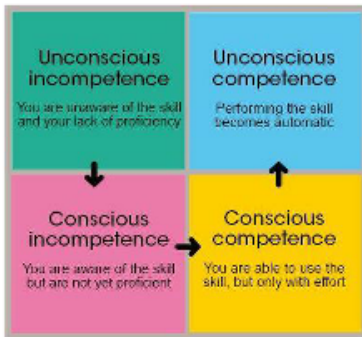
Formetal® is available from www.formetal.de

Address for communication: ZoeLanceley@hotmail.com or R.Murray@vam.ac.uk

FROM UNCONSCIOUS INCOMPETENCE TO UNCONSCIOUS COMPETENCE ... AND BACK AGAIN

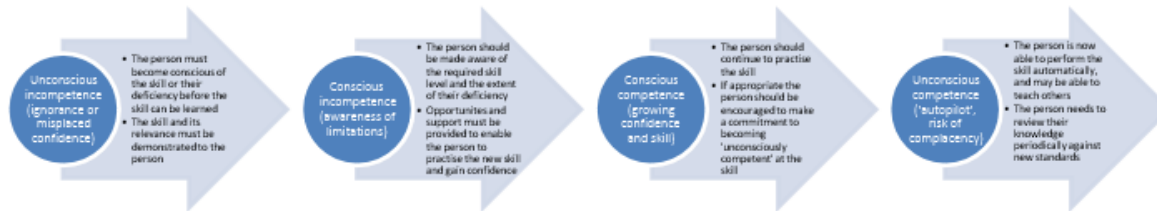
Alison Lister, Textile Conservation Limited, Bristol

The Conscious Competence model has been used in skills development since the 1970s. It explains, in simple terms, the process and stages of learning a new skill (or behaviour, ability, technique) through the four stage (or level) process shown below.



Learners tend to begin at stage 1 (unconscious incompetence), pass through stage 2 (conscious incompetence), then through stage 3 (conscious competence) and ideally end at stage 4 (unconscious competence). It is not possible to jump stages.

More detailed forms of the model (below) show the different types of opportunities and support that the learner needs at different stages in order to progress.



Critics argue that the model presents 'unconscious competence' as the final state for the skilled professional. In fact many professions, including conservation, see mature practice as a continually evolving process and require the demonstration of an additional level, often termed reflective or mindful practice, for accreditation.

Used as a basic stage-by-stage progression the model can help address common training obstacles. Trainers sometimes wrongly assume that a trainee is at a higher level of awareness and ability than they actually are, and make the mistake of focussing effort on moving the trainee to a stage they are not ready to reach. The model, with its focus on training in stages, requires both trainer and trainee to identify what stage the trainee is at and what they need to progress.

Different individuals experience different levels of challenge in their attitude to, awareness of and ability to learn. Some resist progression as they do not accept the relevance of the skill, or struggle to progress because the skill is not a natural strength or aptitude.

Achieving stage 4 is not the end of the learning process: people can regress to previous stages, particularly from 4 to 3, if they fail to practise and exercise their new skill. A person regressing from 4, back through 3, to 2, will need to develop again through 3 to achieve stage 4.

For certain skills in certain roles stage 3 (conscious competence) is perfectly adequate.



Figure 1.2 The cycle of professional practice

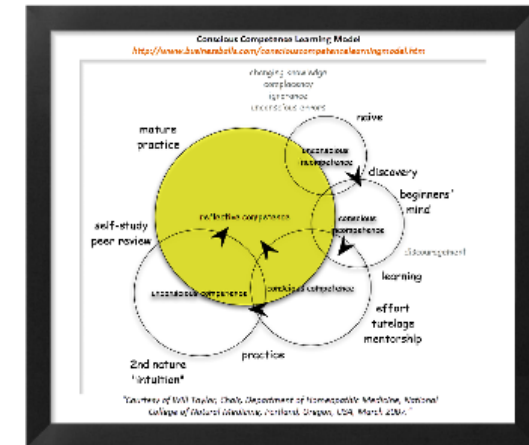
In recent years the model has been developed and adapted to include the fifth stage referred to above that attempts to explain what highly competent people actually do.

"Professional activity is an extraordinary amalgam of mind and body, of thought and action, of knowing and doing"
Barnett, R. 1992. *Improving Higher Education*. Buckingham: SRHE & Open University Press, p.190.

The debate about what that fifth stage should encompass provides many interesting reflections on the nature of mastery. The reworked model by Taylor (as a spiral rather than a hierarchy, see left) is widely thought to be the most relevant and useful. He explains the model in the following way:

"Reflective competence - a step beyond unconscious competence. Conscious of my own unconscious competence, yes ... but additionally looking at [it] from the outside, digging to find and understand the theories, models and beliefs that clearly ... now inform what I do and how I do it. These won't be the exact same theories, models and beliefs that I learned consciously and then became unconscious of. They'll include new ones, the ones that comprise my particular expertise. And when I've surfaced them, I can talk about them and test them."

(Contribution to www.businessballs.com by David Baume, 2004)



"We revisit conscious incompetence, making discoveries in the holes in our knowledge and skills, becoming discouraged, which fuels incentive to proceed (when it does not defeat). We perpetually learn, inviting ongoing tutelage, mentoring and self-study (ongoing conscious competence). We continually challenge our 'unconscious competence' in the face of complacency, areas of ignorance, unconscious errors, and the changing world and knowledge base: We challenge our unconscious competence when we recognize that a return to unconscious incompetence would be inevitable. We do this in part by self-study and use of peer review - such that mature practice encompasses the entire 'conscious competence' model, rather than supercedes it as the hierarchical model might suggest."

Other definitions for stage 5 include:

- **Re-conscious competence:** practitioner operates with fluency on an instinctive level and articulates what they are doing for themselves and others
- **Enlightened competence:** individual performs consistently at Level 4, and can de-construct their experience for themselves and others so each may learn to apply the skill consistently
- **Optimizing unconscious competence:** the unconscious operation of a task alongside the unconscious measurement and improvement of the task delivery process
- **Enhancement and enrichment stage:** individual is capable of enhancing the same skill or (if required) to retrace their learning in order to develop a new set of skills for the same function; there is an acceptance of personal limitations and a receptiveness to learn
- **Complacency:** practitioner is 'set in their ways', continues to use out-dated methods and sees no need to change

and even

- **Confident Incompetence (!)**

In April 2014 a team of three textile conservators from the UK, one from Bosnia Herzegovina and a museum interpretation specialist also from the UK led a 10 day training school in Gjirokastra, Albania for Heritage without Borders.

Heritage Without Borders (HwB) is a unique charity working in developing countries to build capacity in heritage skills, support heritage projects in situations of poverty and following conflict and disaster and provide valuable work experience for students and professionals in the heritage sector. (www.heritagewithoutborders.org)

The partner organisation was Cultural Heritage without Borders (CHwB), an independent Swedish organisation with a presence in Albania, formed with the aim of rescuing and preserving tangible and intangible cultural heritage touched by conflict, neglect or human and natural disasters. (www.chwb.org)

The UNESCO World Heritage city of Gjirokastra in the South of Albania was selected as the location for a training course for museum professionals from throughout counties in South East Europe.



Gjirokastra: View of the Ottoman Castle



Gjirokastra: the old city



The 'costume gallery' on a landing area in the museum



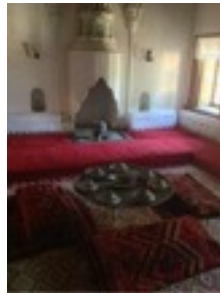
Museum store room with textiles in trunks, no shelving or floorspace and broken

The primary aims of the project were to:

- draw on and enhance traditional regional textile skills
- build regional skills in preventative textile conservation and display
- engage local craftswomen
- explore possible ways of displaying and interpreting historic costume and textiles
- identify the main risks and approaches for improving storage and display of costume and textiles in the Ethnographic Museum



The museum building entrance



Interior of the museum showing room setting style of a traditional Gjirokastra home

The Team

The teaching team were all volunteers and a period of intense planning and preparation was undertaken in the 3 months before the school. There was a limited budget for materials and equipment and team members were resourceful in finding supplies at an economical price and also benefitted from donations from their workplaces.

The three UK team members, Melangell Penrhys, Lyndsey Mackay and Rebecca Schultz had only met a week before the training and Azra Becevic from Bosnia was only introduced in person two days before the project started. Luba Dovgan Nurse also contributed to the planning and course material but was unable to travel to Albania. The project was overseen by Dominica D'Archangelo, Director of HwB.

Melangell Penrhys, as the team coordinator, travelled to Gjirokastra in February 2014 and met the CHwB Project Assistant, Nedi Petri and was able to see the Museum and understand some of the challenges that would lie ahead for the project.

The Ethnographic Museum in Gjirokastra

One of the main challenges to the preservation of the collection is the poor condition of the fabric of the museum building. The storage and display environments are poor, with no environmental monitoring, broken windows, pest problems and water coming into the building as the traditional style stone roof needs repair. The size of the collection has been reduced to a fraction of its size during the Communist era as a result of political unrest, conflict, financial pressures and lack of understanding of the cultural significance of the collection.

Staffing at the museum is minimal and consists of a manager and a cleaner. The manager is not trained in care of the collection.

The only interpretation of the collection and the building itself other than the style of display is delivered verbally by the museum manager. There are differing interpretations that can be presented about the building' as it used to be a museum celebrating the life of Enver Hoxja, the former communist Dictator of Albania, but is now presented concurrently as a traditional Gjirokastra home in some rooms and a gallery of local costume and textiles.

Outcomes

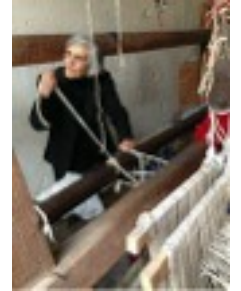
Guest lecturers and visits were organised for the participants, increasing the breadth and depth of information, particularly on the textile traditions and skills in the area.

Local craftspeople were involved in the programme guest lecturers. The several tours and guest lectures offered a greater understanding of how to display and interpret traditional textiles and promoted community collaboration and communication.



Left: Local artist and traditional dress expert Stavri Cati lecturing with interpretation from CHwB project assistant, Nedi Petri.

Ruhije Bineri, a weaver who managed a large factory during Communist times gave us a tour of her premises, now rarely used as she cannot afford to pay staff.



The traditional textiles in the Ethnographic Museum were used for treatment and interpretation sessions, furthering understanding of traditional techniques and styles. Two of the participants were local to Gjirokastra and were involved in local craft production projects and were keen to help care for the collection in the future.

Throughout the school methods and approaches to conservation and interpretation were investigated and the participants were able to gain experience through practical sessions resulting in re-display of textiles in the Ethnographic Museum and a greater awareness of how they could be interpreted for visitors.

The School

There were 12 participants from Albania, Kosovo, Serbia and Macedonia. The level of conservation and museum interpretation knowledge and experience as well as levels of English speaking and comprehension was varied. One of the aims of the team was to foster understanding through exchange of information and experience and a supportive environment.

The textile conservation strand was intended to give the participants a basic grounding in caring for historic textiles in museums and to be able to handle and pack a variety of types of textiles, know how to approach documentation, including condition reporting and treatment proposals.

The participants were taught about preventative conservation specific to textiles. Some interventive techniques were also introduced, using objects from the museum.



Left: Participants completing stitching exercises in the lecture room

Right: local participant reporting to the group on the condition and of costume pieces interpreted as an ensemble through display.



Conclusion

The 'Gjirokastra Textile Conservation School' met the primary aims and produced visible outcomes at the Ethnographic Museum. The mix of lectures and practical work helped the participants to understand how to apply things in their own institutions.

The team worked positively and supportively. The working dynamic was extremely good and everyone was patient with each other at times when tiredness could make situations feel overwhelming. For the volunteers, participation in the project was extremely rewarding and new professional networks and friendships were formed.

For the UK volunteers this project gave an invaluable insight into the challenges and rewards of working in the conservation and interpretation of cultural heritage in the region.

The Future

Helped by the success of this pilot project HwB has secured further funding to work in the Ethnographic Museum in 2015 and 2016.

Team members and participants enjoying some time out on a day trip.



Fosshape Behind the Scenes

Maggie Dobbie ACR

Costume mounting for an exhibition of 19thc costume at Glasgow Museums 'A Century of Style' September 2015 to February 2016.

This poster presents work in progress using Fosshape as a support material and as a quick method for making corsets.



An 1880s dress with an original internal bustle of starched linen fabric with metal boning.



The original bustle was misshapen and is too weak to support the heavy train during display.



Fosshape was moulded to form an internal support to maintain the original shape of the bustle.



An 1884 beaded and velvet bodice and skirt mounted with a Fosshape corset and bustle



The mannequin is padded to fit the shape and size of the bodice with polyester wadding. A corset shape is then cut, fitted and stitched using Fosshape 300 gms. The corset is steamed and moulded on the padded mannequin using a heat steamer. After steaming the Fosshape hardens and the corset retains its shape. It can then be removed with the underlying padding and covered with silk jersey fabric.



An 1860s ball gown with wide neckline



The mannequin shoulders were not wide enough to give complete support to the bodice and sleeves. The Fosshape mould was designed to extend the shoulders and give the required support to the costume during display. A corset was made to fit the shape of the bodice and hips. The shoulders were covered with Fosshape roughly cut to shape and pinned to follow the line of the mannequin extending to the desired width before stitching and trimming. The Fosshape was moulded and steamed to the shape of the padded mannequin. The finished mount sits on top of the existing mannequin and gives full support to the shoulders and sleeves of the costume.

THE USE OF AGAROSE GEL IN TEXTILE CLEANING

Danielle Connolly

The use of gelling materials as a poultice for localised cleaning of textiles is an emerging treatment method in textile conservation, with few published reports and examples of its use in this discipline. The use of Agarose gel, an extract from seaweed, was recently trialled at the National Museums Scotland, with assistance from tutors and students at the Centre for Textile Conservation, University of Glasgow. This poster illustrates the process used when testing the gelling material and the results gained through this testing, as well as the unsuccessful results when tested on the objects. It reflects on some of the possible reasons why this method worked during testing and not on the intended object, and the lessons learned and questions raised that can be applied to gel cleaning treatments in the future.

Agarose is an unbranched polysaccharide with a beta galactose polymer which is soluble in water at 80°C but cools to form a rigid gel. It has a well-defined pore structure when cooled and the pore size is dependent on the concentration i.e. the pore size decreases as the concentration increases.

Gels made from Agarose can be useful in cleaning in a similar way to a poultice, making use of capillary action. At a concentration of 4%, the Agarose gel is likely to be in equilibrium with a textile, meaning that there will be some osmotic exchange between the gel and the textile but not enough that the textile will become completely wetted out (1).



Image 1. Court mantua before conservation.



Image 2. Detail of dye bleed and staining of proper right underarm of bodice before conservation.

The gel potentially provided the solution to the reduction of unsightly and damaging underarm dye bleed and staining of an 18th century court mantua bodice (Image 2). The court mantua is of cream silk brocaded in gold thread and coloured silk threads in a floral pattern intended for display in our Fashion & Style Gallery. The bodice is open fronted with elbow length sleeves and is lined in white linen (Image 1). The use of Agarose gel enabled us to consider spot cleaning that would not have been considered before due to the close proximity of the soiling to the coloured silk thread embroidery.

Once set, the gel can be cut and shaped in any way required, mirroring the shape and size of the staining, and fitting around dyed embroidery and metal threads.

Testing:

3% and 4% Agarose gel blocks were made for initial testing. The 3% block required 1.5g of the Agarose powder added to 50mls of de-ionised water. The 4% was 2g of Agarose powder in 50mls of de-ionised water, made up in glass beakers. The beakers were placed in a bain-marie and the temperature gradually raised to 80 degrees Celsius. The temperature increase must be gradual as the Agarose can become scorched, ruining the solution. The solution must be stirred enough not to create air bubbles in the gel (Image 3). If the gel block is full of air it will not work as effectively.



Image 3. Gently stirring the Agarose on the hotplate.

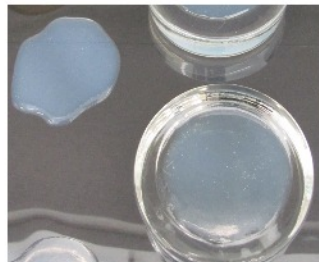


Image 4. Gel blocks poured directly into Melinex and into glass moulds to set.

Once the solution reached the desired temperature and had turned visibly clear it was taken off the heat, poured onto Melinex and into moulds and left to set for about 1 hour (Image 4). During this trial, basic gel blocks (2) were set then added to a beaker of either chelating agent EDTA (Ethylenediamine tetra acetic acid) or Sodium Citrate, for approximately 1 hour to allow the gel to take up the chelating solution before being placed on the textile. The pH of the EDTA needed to be as close to 8.5 as possible and the Sodium Citrate 6.5. Adjustments were made successfully with Acetic Acid (Sodium Citrate) and Sodium Hydroxide (EDTA).

Initial testing was carried out on a historic silk textile sample that closely resembled the fibre and weave of the court mantua to try and assess how the mantua's silk might react to the gel poultice. The date and dyeing methods of the silk textile sample are unknown.

The set gel was cut to size and placed on the textile (Image 5), being careful not to press down on the gel as this could squeeze out the liquid. In discussion with CTC graduate Emma Schmitt, it is felt that contact between the gel and the textile is important, as the better the contact, the better the gel will work. The gel blocks were left for several hours and continually monitored. There was no wetting out or water ringing of the textile, and once the gel blocks were removed they visibly showed signs that the gel had taken up dye (Image 6). This was particularly encouraging and allowed us to see the gel in action.



Image 5. Six small gel blocks cut to size and placed on the sample textile.



Image 6. The six gel blocks after testing with visible signs that the gel had taken up dye.

The same tests were also carried out on an early 19th century de-accessioned sampler with particularly severe dye bleed. Like the testing on the historic silk textile sample, the gel blocks did not create ringing or wetting out of the sampler, but unlike the initial testing they did not visibly lift any soiling or dye bleed.

A small test was carried out on the court mantua in a discreet area under each arm that showed dye bleed or sweat staining was chosen (Image 7). A small 4% gel block with Sodium Citrate was placed under the proper left arm, and a small 4% gel block with EDTA was placed under the proper right arm. Both gel blocks were continually monitored and left for 4 hours in total. Almost immediately both areas under the gel blocks wetted out slightly and caused ringing (Image 8).

This was surprising as during testing with the historic silk textile sample and the sampler, there was no indication that at 3% or 4% this would happen at all and quite so dramatically. However it appeared that the wetting out and ringing did not get any worse the longer the gel block was left, so we can assume the gel and textile had reached equilibrium. The areas that were tested required "rinsing" to ensure no chelating agent was left within the textile fibres. Rinsing was done by placing a gel block with only water added to the tested area to draw out anything residues.

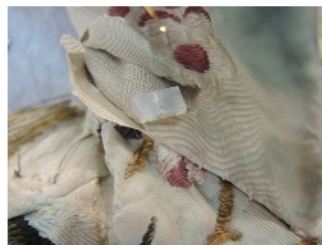


Image 7. Gel block with EDTA placed under proper right arm showing signs of wetting out and ringing.



Image 8. Gel block removed from textile showing visible ringing.

Lessons Learned & Further Questions:

Testing to determine what will lift the sweat staining and dye bleeding before using the gel should be the starting point. We focused our testing to the chelating agents that had tried and tested by the CTC, due to our unfamiliarity with the process of preparing and using Agarose gel. If we knew what would move the dye bleed and staining first we might have gained better results.

Contact between the gel block and textile is an important factor and may have been the cause of the wetting out of the test areas of the court mantua. In discussion with CTC graduate Emma Schmitt, it was found that current knowledge is based primarily on testing carried out on flat objects, where contact between the textile and gel block is uninterrupted. An object with 3 dimension has the potential to inhibit contact.

The depth of the gel block may also affect the efficiency of the spot cleaning. A thinner gel would give more flexibility when placed on to a 3 dimensional object, resulting in better contact with the textile surface. It would also have reduced the quantity of water in the block, reducing the volume of water flowing out and into the textile. However, it was noted that the thinner gels dried out quicker and a warm workroom also dried the gel blocks out.

Factors such as cleaning additive, size and depth of gel block, and what type of textile all need to be considered for testing. The unsuccessful results from testing on the court mantua have not deterred us from further experimentation with Agarose gel as a possible cleaning method for the future.

With special thanks to Sarah Foskett, CTC Tutor and Emma Schmitt, CTC Graduate for their information and advice regarding the use of Agarose gel.

1. At 1% the pore size of the gel will be bigger holding in liquid and at 6% the pore size will be smaller giving a drier gel block.
2. Agarose is not affected by enzymes, surfactants or chelating agents and they can be added to the gel during or after being made. The addition of enzymes, surfactants or chelating agents can assist with cleaning.
All images copyright of National Museums Scotland.

DELAMINATING ACOUSTICS - AN INTERNS INVOLVEMENT IN AN EMERGING CONSERVATOR PROJECT AT THE PALACE OF WESTMINSTER

Mira Karttila, Icon/HLF Intern, Zenzie Tinker Conservation Ltd.



Since 2013 professional conservators have led a team of four emerging conservators who are employed during the August recess to conserve textiles from the Parliamentary Art Collection displayed in Portcullis House.

Up until now the work has focused on cleaning and re-mounting modern tapestries in the collection. In 2015 a set of six complex acoustic panels by artist Helen Yardley will present new challenges for the conservation team. The panels were commissioned by the architects of Portcullis House as acoustic art works and have been on display in the committee meeting rooms since the building opened in 2001 (Fig. 1)

The preparatory research for the project has provided a great learning experience for post-graduate intern Mira Karttila current Icon/HLF funded intern at Zenzie Tinker Conservation where one panel has been investigated and treated in advance of the emerging conservator project.

ACOUSTIC PANELS DESIGNED BY HELEN YARDLEY

- The acoustic panels are multi-layered textiles consisting of three layers of felt and polyester backing that are adhered together.
- To better understand the textile and its condition the materials were analysed using IR spectroscopy by Mark Kearney, Icon intern from the Victoria & Albert Museum Science Section.
- Analysis showed that the adhesive consists of mastic (triterpenoid resin and a kaolinite filler). The differently coloured felts are made of wool and viscose of various thicknesses.
- All acoustic panels are mounted onto wooden stretcher frames using staples (Fig. 2).

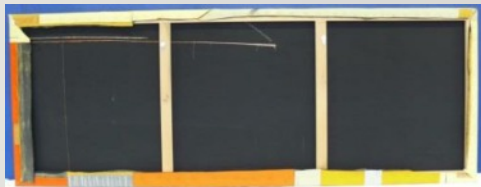


Fig. 2. The reverse of an acoustic panel.

CONDITION SURVEY What is going on with the acoustics?

Serious delamination of the layers is a feature common to all six panels (Fig. 3). Other issues include dust, fading, staining and the widening of structural gaps.

DELAMINATION: The uneven failure of the adhesive bond has caused clearly visible, wavy lines between each layer. The adhesive bond is weak and the layers can be separated easily from each other.

GAPS: The structural gaps between differently coloured areas are a design feature. However where the thick textile is wrapped around the stretcher under tension, the aged adhesive is now unable to withstand the stress and the gaps have widened.

ENVIRONMENT: It was also essential to evaluate the ambient environmental conditions and consider their effect on the panels.



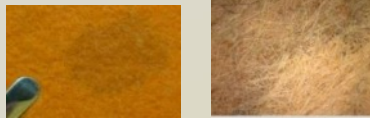
Fig. 1. An acoustic panel in one of the committee meeting rooms of Portcullis House.

HAVING A CLOSER LOOK - stain survey using a digital microscope

A portable Dino-Lite digital microscope was used to identify the types of staining. The microscope made it possible to determine whether stains sat on the surface or had come from beneath.

STAINS:

- Surface stains appeared to have been caused by external action such as food and drink spills.



- Adhesive had come through from the lower layer of felt creating stains that became more visible as the adhesive yellowed and crumbled on ageing.



TREATMENT

What was possible to achieve in terms of conservation?

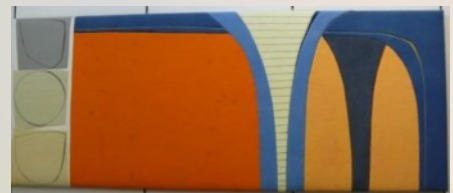
- Thorough surface cleaning using vacuum suction and a smoke sponge (vulcanized natural rubber) much improved the appearance of the panel.
- Reduction of surface stains may also be possible using micro-emulsion gels. Further testing will be undertaken before the summer project.
- It was possible to reduce the widening gaps on the edges of the panel using a stitching technique.
- Research indicated that re-adhering the delaminating areas was impractical due to limited access and the structure of the panel. Successful re-lamination would require the removal of the panel from the stretcher which was considered too intrusive.
- It was also accepted that mastic adhesives continue to degrade due to their intrinsic properties and that the ageing process is not reversible.



Fig. 3. Serious delamination issue of all the layers of a panel, obverse and reverse of a panel.

CONCLUSIONS

- The materials used in the production of these art works such as mastic and felt have a limited life span and environmental conditions can catalyse and accelerate their degradation.
- Dino-Lite microscopy proved to be a useful addition to the on-site conservation tool kit.
- The project offers collaboration between two Icon interns, one from Zenzie Tinker Conservation and the other from The Victoria & Albert Museum as well as staff from the Curator's Office at the Palace of Westminster and the artist Helen Yardley. It will also involve emerging conservators from two training institutions - Glasgow and Lincoln Universities. Together we will gain a better understanding of the issues surrounding the conservation of these complex modern works of art.



Developing Techniques for the Conservation of the Archaeological Textiles Collection held by Antofagasta Museum

Introduction

Textiles in archaeology are often the most difficult to find among archaeological sites due to their fast deterioration. Organic materials, generally, decay most rapidly in burial environments, and towards the Central and Southern regions of Chile they are practically non-existent because of increased moisture and humidity. In contrast, the North possesses an exceptionally dry climate which, combined with appropriate soil composition, allows the long-term preservation of organic material.

Thanks to the qualities of the Chilean desert and the efforts of several people (anthropologists, historians and archaeologists among other professionals), the textile collection at Antofagasta Museum had its beginnings during the 1960s and was officially assigned to the Museum in 1984.

This project was conceived almost as a rescue plan for these textiles as they were infested with insects in 2013. A plan of action was submitted to Cultural Funds 2014¹ (Fondos de Cultura), a governmental body that provides funding to artistic and scientific projects. The aim was not only to improve the condition of the textiles, but also shed light on the Chilean heritage sector and bring awareness to a subject that is often unknown for most of Chilean society: conservation, and why it is important to preserve our cultural, artistic and historical heritage.

Archaeological textiles at Antofagasta Museum

The textile collection is, for the most part, shrouded in mystery. When the project began, documentation was scarce, reduced to small labels attached to the textiles and some small descriptions. These gave an idea of where the textiles came from: the geographical areas from which they might have been excavated (figure 1). An inspection of the Museum's documented sources was carried out which provided, to an extent, a complementary record to establish the provenance of some of the textiles (this information remains unclear due to the several relocations the collection has been subject to before its arrival at the Antofagasta Museum). Each textile was documented and all information available was compiled for a preliminary registry of the whole collection, resulting in a cadastre of 315 textiles. However, only 1.27% of the collection presented inventory numbers associated with the Unified System of Registry and Documentation² (Sistema Unificado de Registro y Documentación - SURDOC), the administration system of heritage collections created by the Heritage Assets Documentation Centre (Centro de Documentación de Bienes Patrimoniales).

This could mean that the vast majority of these objects have not been investigated at all since they were found. Sadly, to include them all in the Unified System of Registry was too ambitious for the budget and time constraints of this project, so it is hoped a new project will be created solely for this purpose.

The Project

For cultural schemes such as this, the institution appointed to provide funding is the National Council of Culture and Arts³ (Consejo Nacional de la Cultura y las Artes - CNCA). The project was presented to their Cultural Funds 2014 scheme, and funding was confirmed in December 2014.

The project was divided into six stages: I Collection Diagnosis, II Collection Contextualisation, III Conservation and Intervention, IV Documentation and Registry, V Storeroom Improvement and VI Promotion. Beginning in February 2014, the authors were surprised to find that the collection, initially expected to contain around 100-150 textile objects, was actually over 300 objects. This meant that the project, originally intended and planned for around half that amount, would need to be adjusted and re-planned, in a way to fulfil the main objective: to conserve and properly store the collection, ensuring its long-term preservation by means of preventive conservation measures.

a. Interventive and Preventive Conservation

The most fragile textiles were prioritised for cleaning and storage, as the authors knew they wouldn't have enough time to conserve the entire collection. Cleaning was carried out with a low-power vacuum aided with soft brushes and tweezers, being careful not to cause any further damage to the objects. Some of them were not intervened with at all due to their fragility.

All residue was kept and recorded alongside each textile, for future analysis. Soiling in this type of object is considered evidential, and could prove of vital importance to finding out where these textiles came from.

To ensure the long-term preservation of the collection within the storeroom, preventive conservation measures were implemented, such as Integrated Pest Management and RH and temperature data-loggers were set in place in order to monitor the environment and further allow the necessary evidence to request better storage facilities and/or the installation of dehumidifiers or other types of climate control equipment.

b. Storage

The collection was originally stored in two metallic flat-file cabinets (figure 2). Materials used included paper and cardboard (not acid-free), Polyethylene plastic, Tyvek®, Ethafoam® sheets and vellum paper.

The collection had to go back into the same drawers, so a new folder based storage system was planned, inspired by archival conservation.

The system included acid-free card folders, boxes and envelopes (figures 3 and 4). Each textile was assessed individually as to what type of container would be appropriate considering its condition, three-dimensionality and other characteristics. Most of them lay flat enough to be placed within folders, secured to the card using Melinex® strips (figure 5). Each folder, box and envelope was bespoke to each individual textile or group of textiles. It was attempted to create a standardised system, but considering the fragility and variety of the textiles present in the collection, this was not an option.

For larger textiles that did not fit properly (nor safely) in the cabinet drawers, new boxes were made. As acid-free corrugated card is too expensive to import into Chile, regular corrugated card was used, lined with acid-free paper. These were designed as a temporary storage and will need replacement in the future (figure 6).

c. Promotion

This project's promotion was very important as it allowed the public to know about a discipline that is not very well known in Chile: conservation. We need the community to see and learn about the work behind the beautiful exhibitions they visit in Museums and how each object must be taken care of before anyone can simply have a look at it.

The authors were lucky that the press showed great interest in the project. Several news articles were published and even a short TV appearance was coordinated with one of the major national TV channels. All of this is also available online, giving further reach to the project.

A more direct publicity strategy was the organization of "workshops". Where high-school students were able to visit the workroom within the Museum and see the work that was being done on the collection. The students were very enthusiastic to learn about this rather unknown discipline, participating and actively asking questions regarding the collection and its future (figure 7).

Some final thoughts

This project was a true challenge. Not only was the estimated number of textiles within the collection far larger in reality, there were also several different issues along the way that required both creative problem-solving skills as well as tranquillity in accepting situations out of the reach of the project. The team is delighted to report that a total of 245 textile objects were conserved and stored properly in 9 months of work.

The storage system serves its purpose, storing each textile in optimal conditions considering the storeroom's physical and environmental characteristics. The authors are hoping to receive further funding to continue their work and learn more about these wonderful objects.

Norte Grande

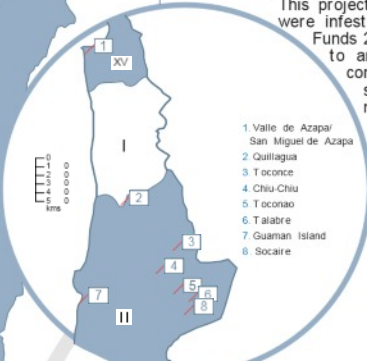


Figure 1. Map of Chile's "Norte Grande" area, including Antofagasta Region, showing the possible archaeological sites where some of the textiles within the collection might have been excavated from. According to labels found on some of the textiles, these can be traced, so far, to the XV Region of Arica and Parinacota and the II Region of Antofagasta.



Figure 2



Figure 3



Figure 4

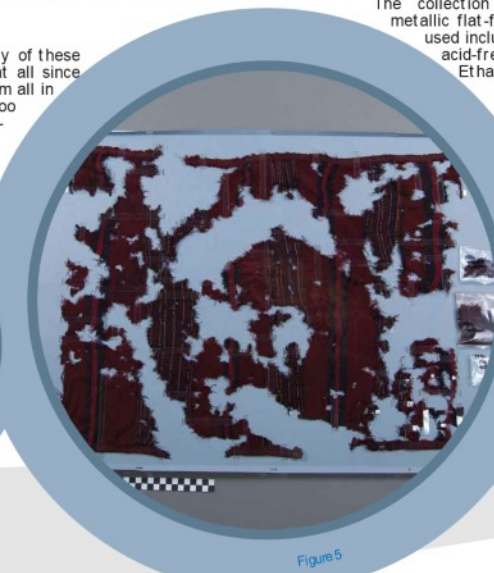


Figure 5



Figure 6



Figure 7

Working with volunteers in an open studio

The Doddington Hall tapestries revealed

Author: Louise Joynson



Doddington Hall is an Elizabethan house located just outside of Lincoln whose exterior has barely changed since it was completed in 1600. The interior was redecorated in a simple and elegant Georgian style by Sir John Delaval in 1760. As part of his unusual decorating scheme John had Flemish tapestries dating from the 1620s nailed to the walls of all three state bedrooms, the tapestries were already 140 years old when they were ruthlessly chopped up to fit around the fireplaces and doors of their new home. The Holly and Yellow bedrooms depict scenes from rural life and the Trojan wars.

The Holly bedroom tapestries were removed from the walls in 2010. It was a further four years before funding was secured to begin full conservation. Elaine Owers a freelance conservator and specialist in tapestry conservation was appointed as consultant and project manager. Three conservators were appointed to carry out the work – Louise Joynson, Sophie Minnis and Alice Brown, all emerging professionals with a background in textile conservation.

Professional career development

Throughout the project we have had skilled conservators assist the tapestry team.

In particular, WHConservation (Leah Warriner- Wood and Terri Dewhurst) have carried out all the documentation records of the yellow bedroom tapestries and have volunteered during installations and take downs of the tapestries to gain experience for their business portfolio. Each has brought different experiences and knowledge to the project, helping to develop a well-informed team and help the tapestry team achieve their tight deadlines.



Open day volunteers

The role of volunteers on the studio open days (which take place the second Saturday of the month) is to talk with visitors about the project enabling the conservators to continue working. Visitors can actually see the work taking place and chat to a volunteer or conservator at the same time. The volunteer training includes an introductory talk by a volunteer tapestry weaver, Liz Rance, who spent time with the project manager and the tapestry team to enable her to convey the tapestries history, conservation work and how the tapestries were made. Volunteers are also given an information pack when they first start. It contains all the facts and stories about the tapestries from Doddington Hall to enable them to pass this knowledge on to the public.

The volunteer coordinator at Lincoln castle and the conservators manage the volunteers on the open days. The volunteers are people that have a specific interest in the tapestry project and are sourced from both Lincoln castle and Doddington Hall. Some of the volunteers work at both locations, which gives them a well-informed view of the project. Open days are planned in advance to ensure enough volunteers to cover the requirements. They are briefed on recent developments and provided with useful facts. Managing volunteers is a great experience for the conservators. It expands their skills base and is a valuable asset to take forward in their careers.

We regularly work with the media to promote the project and our progress can be followed through our blog at: <http://www.lincolnshire.gov.uk/visit/historic-buildings/lincoln-castle/heritage-skills-centre/doddington-hall-tapestries-blog/>

Conservation students

In June 2014, the Doddington Hall tapestry project was fortunate to secure the help of five International heritage students at summer school with Bishop Grosseteste University in Lincoln. The students came from as far as Australia, United States of America and Canada. All five of them were in the process of completing either a BA or MA in the field of conservation or heritage studies.

They volunteered with the tapestry team for seven days assisting with the takedown of the Yellow bedroom tapestries. The students were given a briefing by the project manager, Elaine Owers, and by the owner of Doddington Hall, Claire Birch, who both gave an introduction to the tapestry project and outlined a work plan for the seven days at Doddington Hall. They were lead in small teams by the conservators who gave them instructions and demonstrations of how to carry out each task.



The students whilst on-site helped remove and count 750 tacks and nails from the tapestry edges and main field. They vacuum surface cleaned the reverse and obverse faces of eight pieces of tapestry and the original strap linings, which took approximately 86 person hours. Lastly, they helped pack the tapestries for transportation to De Wit, Mechelen in Belgium. Without the help of the students we wouldn't have been able to achieve all the work within such a short space of time. All the students brought heritage knowledge and enthusiasm to the project. This work experience has helped the project save on budget, time and hopefully has given them useful knowledge to help them develop their professional careers in the heritage and conservation field.





Title banner in the exhibition



The route of tartan banner



Tartan in India banner

What is it?

Tartan: Its Journey through the African Diaspora is a three project devised by independent Curator Teleica Kirkland, Director of the Costume Institute of the African Diaspora (CIAD)

It tells the story of fabric migration and transformation through cultural diffusion. The story has several threads which outline how Tartan travelled to India and was developed into Madras which was then shipped throughout the Americas; how traditional Maasai shukas came to have tartan patterns, and why members of the Shembe church in South Africa wear kilts. The Journey focuses on Scotland, Maasailand, South Africa and a few countries in the Caribbean touching on India and contemporary fashion.

Tartan's Journey represents material culture in motion on a grand and global scale. This journey may not have been apparent to many but it encompasses a richness of influences with a foundation in cultural heritage.

Why a collaboration?

Part three of this project consisted on a month-long exhibition at a commercial Gallery in London. CIAD in collaboration with the Victoria and Albert Museum (V&A), ran a series of practical costume mounting workshops for undergraduates selected through a rigorous application process.



In the Gallery: the Caribbean and Maasai costumes, the Shembe Church costume. Workshop participant and exhibit designer Laura.



Gesa and Kate during the workshop



The Black Watch uniform loan from Perth 2014

TARTAN: Its Journey through the African Diaspora: a collaboration

Susana Fajardo from the V&A textile conservation dept. and Gesa Werner, independent costume mounting specialist ran a six weekend-long workshops to prepare the ten costume object list. Eight of the costumes were replicas, manufactured in the UK with fabrics brought over from Africa and the Caribbean. Two important and very significant loans from Black Watch Castle Museum in Perth, Scotland, and from Vivienne Westwood's 2014 spring collection completed the narrative of the curatorial brief perfectly.

All mannequins and the full size display case used for the Black Watch uniform loan were provided by the V&A. All other workshop materials, as well as equipment, storage and studio space and transportation were facilitated by CIAD's incredibly efficient fundraising team.



Vivienne Westwood loan Spring

Day one began with an overview of costume mounting presented by Gesa, accompanied by a useful hand-out. We also had copies of Lara Flecker's book 'A practical Guide to Costume Mounting' available for reference. The exhibition included a 'competition piece': a costume designed by a fashion student incorporating tartan, and a 'visitor's activity area' featuring contemporary tartan.

What's next?

Part of the exhibition will be shown in Cambridge University's Anthropology Museum during March 2015. Discussions are under way to show the material further afield.

The significance of this collaboration is multifaceted, and as it has succeeded in increasing the accessibility of information about this topic to a wide audience. Through its International Strategy initiative, the V&A has created a new platform for creativity. Fundamentally, this project aimed to share expertise and practical knowledge in a range of areas. The V&A was able to carry out this project using similar logistics to those involved in its own projects, though on a smaller scale. Well-researched and innovative curatorial briefs can lead to exciting partnership and collaboration opportunities with research institutions, which can in turn be of benefit to both participants and the public.

Authors:

Susana Fajardo (V&A)
and
Teleica Kirkland (CIAD)



Workshop participants with Teleica Susana and Gesa



Danielle during the workshop



Susana condition checking the Perth Museum Loan with Teleica and Gesa



Susana and Gesa mounting the Perth Museum loan



BREAKING THE MOULD

Investigation into the use of the biocide STERI-7, for the remediation of mould from cultural heritage artefacts and historic building interiors.

Abstract

Fungi play a considerable role in the deterioration of cultural material. Climate change predictions suggest that the future of the environment will exhibit a range of new conditions from increasing temperatures and relative humidity (RH) to rising sea levels. Resultant changes to indoor environments will put organic collections at increased risk of biodeterioration by fungi.

Environmental control is the preferred and often the most appropriate response in the prevention of biodeterioration of cultural materials. For immovable heritage or objects housed under conditions where temperature and humidity favour the process of biodecay and where environmental control is impossible or compromised such as unheated historic buildings, small regional museums and areas of extreme climate, however, chemical-based biocide treatments are often assessed as the best conservation treatment option available. Unfortunately, the potential for treatment damage, and the significant adverse environmental and personal health implications of using chemical biocides are a major consideration in their use. Therefore investigation into, and development of, less invasive and less toxic treatment methodologies are sought.

Initial tests; Australia

In researching alternative methods of bio-deterioration remediation, preliminary investigations into the suitability of the biocide STERI-7 as a treatment to remove and control fungal growth from a range of heritage artefacts were undertaken.

Materials

STERI-7 is a water-dispersed, high level, broad-spectrum biocide, with neutral Ph, made for use as a surface sterilizer and is highly effective against bacteria, viruses, spores, fungi and mould, and kills many of the most dangerous microorganisms including superbugs and pathogens such as Norovirus, Sars, E.Coli, Salmonella, Listeria, Legionella and other fungal, bacterial and viral diseases, whilst being harmless to other organisms plus, due to its patented 'Residual Barrier Technology', provides further protection against subsequent contamination and re-colonisation.

Chemical composition

STERI-7 is comprised of active ingredient; Benzyl ammonium chloride and QMIT MIT as a preservative.

Reactive Barrier Technology

STERI-7's Reactive Barrier Technology is a specialised micro emulsion which provides a 'sustained release system' for fungi to reproduce, they must contain moisture. When STERI-7 is left to dry on the surface after cleaning, a barrier is created which reduces the presence of even microscopic amount of moisture. This barrier has been shown to remain viable for up to 18 months.

Methods

STERI-7 is available in a variety of formats from a ready to use spray (RTU Spray), an impregnated cotton wipe (RTU Wipe) and a mister, to a concentrate. Experiments were undertaken on study collection pieces, in order to develop a series of techniques, using the biocide to remediate mould from a range of materials. The technique and concentration adopted depended on the condition, and the materials of which the object was made. Techniques varied from simply swabbing or wiping with the RTU spray or wiping with the RTU impregnated wipes to full immersion in a STERI-7 solution.

A variety of objects were chosen, comprising a wide selection of materials. Each was treated with STERI-7 in a different method.

- RTU Wipe
- RTU Spray with microfibre cloth
- Full emersion in 20%concentrate dispersed in water

The results showed that the mould remediation trials were successful. All the materials that were treated with STERI-7 via a variety of methods were, 6 months later, still showing no signs of re-growth, when in some cases the existence of mould on the control pieces and the surrounding areas was extensive. It could therefore be concluded that STERI-7 was effective against the specific types of mould found in these instances.

Although these objects were housed in varied environmental conditions, all the scenarios tested were of elevated temperature and RH.

In order to achieve a wider selection of results, it was important to test the efficacy of STERI-7 under different environmental conditions and in 'real scenarios' rather than on objects in storage.

Case studies; UK

Two historic buildings open to the public were chosen as case studies to reflect different indoor environments; the Historic House, Knole near Sevenoakes in Kent (The National Trust) as a representative of a typical unheated interior, with substantial mould issues on the wall interiors and highly significant paintings on canvas. The Secret War Tunnels at Dover, UK (English Heritage) are a network of chalk-cut tunnels deep beneath the castle, close to the south east coast of Britain, and contain a social history collection including costume, maps, books, furniture and the Underground Hospital. This site was chosen, as the extent of mould growth requires a current, exhaustive and unsustainable cleaning protocol.

Knole House

A particularly badly affected area of wall in the servant's corridor off the Leicester Gallery was chosen as the test site. The aim of the project was to monitor the biocide's effectiveness, how quickly the mould returned and the affects on the painted wall surface. Mould samples were collected and cultured for use in identifying the fungal species present. These were found to be *Aspergillus* sp. and *Penicillium* sp.



Trial grid before and after cleaning; Leicester Gallery, Knole House.

A frame was placed against the wall, separated into 6 sections. Each square was first surface cleaned with brush/vacuum and then further treated by a different method using either 70%ethanol or STERI-7.

1. Surface cleaned only	2. Cleaned with 70%	3. Cleaned with STERI-7 RTU Surface Spray
4. Cleaned with STERI-7 Concentrate and cotton swab	5. Cleaned with ethanol solution STERI-7 Wipe	6. Cleaned with STERI-7 RTU Surface Spray and microfibre cloth

Acknowledgements: I would like to thank David Thickett and Wendy Richards (English Heritage), Dr Jane Nicklin (University College London), Stobhorn Barratt (National Trust), Sarah-Jane Brazil (Office of Rail Heritage), David Masel (Australian Stockman's Hall of Fame), Nonda Cambell (Historic Houses Trust) and James Fraser (STERI-7) for their collaboration and on going support with this research.



Carriage dining chair during cleaning with STERI-7 RTU Wipe, Office of Rail Heritage, Sydney



Cleaning of leather gater in progress using STERI-7 RTU Wipe ASHCF



Gun stock before and after cleaning with STERI-7 RTU spray, Justice and Police Museum, Sydney



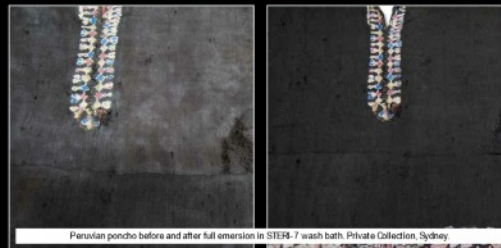
Shirt before and after full emersion in STERI-7 wash bath ASHCF, Geelong



Beaded apron from Papua New Guinea before and after full emersion in STERI-7 wash bath, Private Collection, Sydney



Oil on canvas painting before and after cleaning with STERI-7 concentrate on cotton bud, Museum of Tamworth



Peruvian poncho before and after full emersion in STERI-7 wash bath, Private Collection, Sydney

Dover Castle

Within the famous white cliffs of Dover, deep beneath the castle and safe from bombardment, lies a network of chalk-cut tunnels. First excavated over 200 years ago, when Britain faced the threat of French invasion, to provide barracks for the troops quartered there.

Now cared for by English Heritage, the site is presented in its most significant history as the Secret Wartime Tunnels and contains a social history collection, the Military Hospital and Operations Centre.

A small selection of objects on permanent display were chosen that were continually being affected by extensive mould growth: the underside of the operations table, a set of bent wood office chairs and a pair of newspaper stands. Samples of the growth were isolated and identified as *Aspergillus* sp.

A simple, non-toxic, easy clean-up solution was sought by the conservation staff that could be continued to be used post trials, if successful. Therefore, STERI-7 RTU Wipes were used on all the objects.



Underside of operations table War Tunnels, Dover



Bent wood chair War tunnels, Dover

Results

These two trial sites were observed for twelve months and the evidence of mould re-growth evaluated.

At Knole house there was evidence of some mould recurrence after six months, and significant growth after 12 months, in areas 1, and 2, which were not treated with STERI-7, however there has been no mould growth in any of the areas cleaned with STERI-7, regardless of the method used. The environmental conditions were monitored throughout the period and no significant changes to the normal fluctuations were seen, suggesting that it is STERI-7's Reactive Barrier that has controlled the reappearance of mould in the test area.

At Dover, there has been a slight overall reduction in the occurrence of mould on objects on display in the tunnels, with those treated with STERI-7 showing significantly less growth than the objects cleaned with brush/vacuum. With the extreme environmental conditions within the tunnels, it may be impossible to permanently prevent mould from reappearing on the objects, but the STERI-7 treatment has so far dramatically increased the time between outbreaks and hence the cleaning schedule has been extended from weekly to monthly.

Discussion

From the trials undertaken so far, it is evident that STERI-7 does eradicate the fungal growths identified, from the surface of the heritage objects tested.

The projects at Knole House and the War Tunnels at Dover are on-going now using STERI-7 XTRA, a new improved formulation, and I am continuing to monitor the fungal growth in the two case studies. In addition, accelerated aging tests are being carried out and it is hoped that they will provide further information on the long-term effects of STERI-7 XTRA on cultural collections.

"STERI-7 XTRA is a combination of existing and well known ingredients combined together in a new way which makes them more effective. This means it's based on materials which are tried, trusted and have already received regulatory approval"

Prof. John E. Moore
School of Biomedical Sciences, University of Ulster

Conclusion

Mould is ubiquitous. Fungi and the enzymes they produce play a tremendous role in the deterioration of cultural material. This is true for museum objects and monuments as well as historic interiors in all climate zones of the earth.

Allowing fungal growth therefore can have an extremely deleterious effect upon the condition and ultimately the longevity of our cultural heritage.

Once an object is in a collection every effort should be made to ensure its survival. It is widely understood that an environment is critical for the preservation of historic collections and interiors; if the environment is unsuitable it can create an increased risk of damage. Typically, the indoor environment is thought to be more stable than the outdoor environment but often the most significant, sensitive and valuable collections are displayed indoors. Historic houses and small regional museums, with collections on open display, often have room environments with less control than air-conditioned museums. Thus such collections are vulnerable to change in the outdoor environment. The future outdoor environment is projected to change thereby increasing the prevalence of mould and risk of damage.

Traditional, non-hazardous methods of mould removal may well be unable to cope with this increase in fungal activity and both historic and current fungal remediation strategies are either potentially hazardous to the objects themselves or to the individuals handling them.

The research carried out for this paper has investigated the potential of STERI-7, a commercial biocide, for use as an inexpensive and easy to apply solution to this growing problem.

The results to date are very positive however further research is needed into the 'Reactive Barrier Technology' and whether it is this that is reducing the reappearance of the fungi, how long the barrier can remain active, thereby preventing mould growth and what is the long-term effect of the product on the treated surfaces and materials. Although it is evident from the trials and case studies that the product efficiently kills *Aspergillus* sp. and *Penicillium* sp., moulds prevalent in the British, temperate climate and the Australian temperate and sub-tropical climates, further investigations are required into whether it would be as successful at killing other species that are present in different, more extreme climates, such as the tropics or Antarctica.

Tess Evans ACR

Tess completed a Post Graduate Diploma in Textile Conservation and a three-year apprenticeship in Tapestry Conservation at the Textile Conservation Centre, London (1984) and went on to become Deputy Head of the Textile Conservation Centre Tapestry Department for three years, before moving in Australia in 1987.

Since that time she has worked primarily in private practice in Australia and Internationally, establishing Heights Heritage Conservation in 2005 where she is the Principal and Senior Conservator and became accredited with ACOM in 2012.

In 2011 Tess began a two-year sabbatical in UK pursuing her research interest in biodeterioration of cultural materials and received an MSc with Merit in Museum Studies from Leicester University in 2014. During this time, she completed her ICON Accreditation and Lectured for the BA course in conservation at the Camberwell College of Art, University of London.