COCKATRICE

The Arts & Sciences Journal for the Kingdom of Lochac

Winter AS 55 (2020)

This is the Winter AS 55 (2020) edition of Cockatrice, a publication of the Kingdom of Lochac of the Society for Creative Anachronism, Inc. (SCA, Inc.). Cockatrice is not a corporate publication of SCA, Inc., and does not delineate SCA, Inc. policies.

We're looking for photos of completed or in progress works, as well as articles, documentation, or class notes!

Please send through anything you'd like to see featured in Cockatrice to editor@cockatrice.lochac.sca.org - **if you're excited about it, we're excited to help you share it!**

CONTACT US

Editor	Bjorn Sæmundarson
Email	editor@cockatrice.lochac.sca.org
Website	cockatrice.lochac.sca.org
Facebook	facebook.com/cockatriceoflochac

Contents

COCKATRICE CALENDAR 2020-2021

	Submission Deadline	Publication Date
Spring Edition	1st October 2020	1st November 2020
Summer Edition	1st January 2021	1st February 2021
Autumn Edition	1st April 2021	1st May 2021

From the Editor

Normally, in this space at the beginning of an issue, I'll mention whatever the current disaster is that's occurring in the mundane world, and make kind of a sad joke about it, and that will be the introduction. I've decided to not do that, this issue, and will instead just say that the way that the community has tried to evolve with the complicated situation of the mundane world has been truly inspiring.

As I'm sure you're aware, there has been just a tremendous amount of content being released online for free within the SCA community. From regular classes being taught through Zoom or Discord, to full tutorials being recorded and posted on YouTube, it truly is a wonderful time for the creation of material.

On the bardic entertainment front, the Tuesday evening Bardic Circles, held on the Lochac Discord servers at 7:30pm AEST, are earning a great reputation as mid-week entertainment, and, for content from farther abroad, the Known World Entertainment Guide on Facebook will help you keep on top of the highlights from around the world.

The Known World Heraldic Scribal Symposium, which was set to be hosted in Lochac this year, was held virtually, and to great acclaim. Much of the fantastic content from the event is available online.

Cockatrice itself has yielded another fantastic issue, full of great submissions, from both familiar faces and fresh ones.

This issue, we are proud to present:

- An introduction to Persian illumination from Symmone de la Croix, complete with worksheets and information on how the pigments themselves were made in period.
- A small collection of poems from Ingvarr Karlasson.
- Documentation and a how-to guide on an English Arrow Bag from Thomas Boardmakere.
- Documentation and process of recreating a braid from Hallstatt by Kaitrox Avernom.
- A guide on attaching tablet woven bands to garb from Dagny Sveinsdottir.

One of the most amazing things about the fantastic content being generated right now is that much of it will continue to exist well into the future. Videos are being made now that, for a long time to come, will still be helping people work their way through an issue or project.

If you're willing and able, keep creating. If you're stuck in a rut, check out some of the wonderful new articles, guides and videos that are available. Whatever it is that you need to do for yourself, do it. We'll all be together again soon.

Enjoy the issue, and be good to each other (from a safe distance).

Bjorn Sæmundarson

ᛒᛁᚿᚱᛏ

Upcoming: SCA Bardic Showcase

Bards! Poets! Troubadours! Thespians! Musicians!

Do you want to spread some joy and light in this time of separation? Are you aching to perform for your friends and perhaps share your talents with people around the known world?

Then do we have an event for you!

Being both a champion and supporter of bardic endeavors, Magister Arion the Wanderer OL OP, An Tir, and I, Honorable Lady Fina MacGrioghair, are sponsoring Great Performances: An SCA Bardic Showcase!

The Goal: To have a wide variety of Bards across the Knowne World entertain everyone with their best performance.

What: Pick what you feel is your very best performance and share it. No Judges, no stress, just beauty. The performances can be period pieces, filks, SCA Historical Tales, original works, or modern pieces that have an SCA feel to them. Entertaining is the key. The genre is up to you. Single performers as well as ensembles are encouraged to participate.

Each performer will receive a coin (see picture) struck by Magister Arion to commemorate their participation in the Showcase.

The Great Performances: An SCA Bardic Showcase will be hosted as an event on The SCA Virtual Classroom and Artisan Display Facebook page from August 16 to August 29th. Please post a video of your performance in the event page during this time period. The link to the event page is: https://tinyurl.com/yxf9omll

We are asking each performer will also be asked to fill out a brief sign up questionnaire so that we can mail your coin to you at the end of the Showcase. The link to the questionnaire is:
https://www.surveymonkey.com/r/26PS67S

If you have any questions regarding the Showcase, please don't hesitate to reach out, and we will respond as quickly as possible.

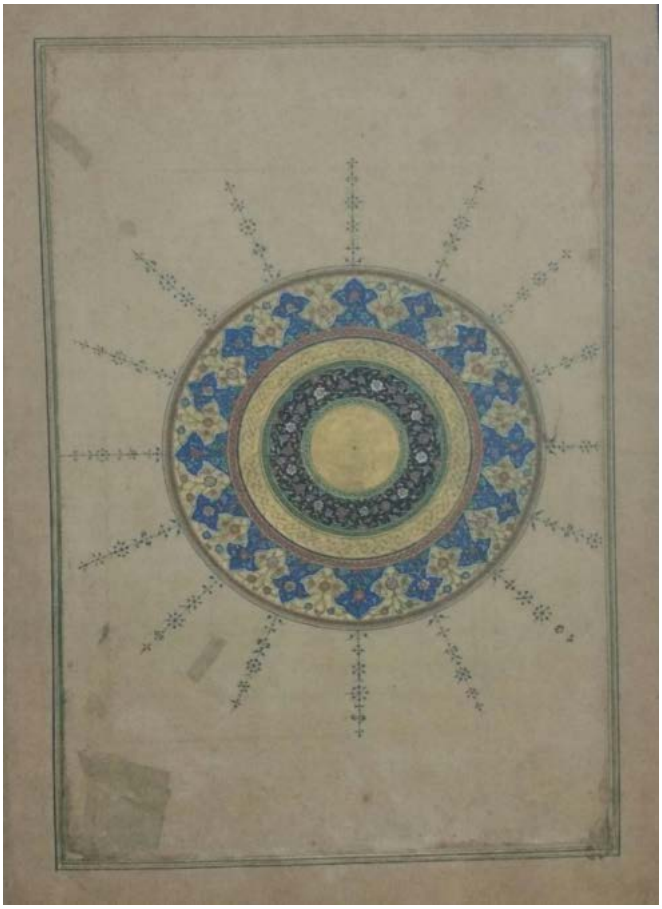
Tell your friends! Share this with others of the Bardic Community! We already have sign ups from 10 kingdoms, and we would love to see bards from every kingdom participate!

In Service,
Honorable Lady Fina MacGrioghair

Persian Illumination

BY LADY SYMONNE DE LA CROIX

My copy of the illuminated piece.



Manuscript: Khamsa of Amir Khusraw Dihlavi
(Walters ms. W.624, Date: 725 AH/1325 CE, Language: Persian)

This documentation is to go along with a step by step video about my Persian Illumination class that I would have been teaching at the Known World Heraldic & Scribal Symposium, that had to be cancelled due to the CoViD-19 pandemic, which will now be an online virtual event.

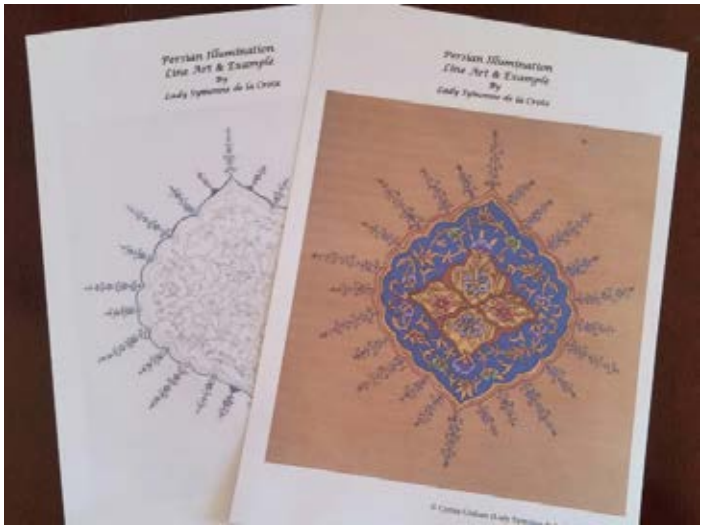
The video of the class is available here:
https://youtu.be/63TIyvzVcuI

I have written briefly on the differences between Persian and European Illumination, the two different genres Suratgari (figurative) and Naqqashi (non-figurative) painting. Note: This class is focused on the Naqqashi style.

I have added information on technique, paper, dyeing, sizing, burnishing, gold, ink, brushes and the Persian pigment palette.

This is followed by a step by step of my process with photos.

Included in this document is a link to a downloadable PDF of the line drawing of the Naqqashi Design with a copy of the completed piece that I did for use as a colour map.



I have also added a downloadable PDF worksheet for doing the Degrade Flower Technique with a mini visual step by step of the process.

I have also added a couple of links to my shell gold and ink making experiments.

At the end of this documentation there is a brief step by step with photos of each step.

My hope is that people will read this documentation, download the line drawing and worksheet, and follow along with the video provided.

PERSIAN vs EUROPEAN ILLUMINATION

While Illumination was an important art in Europe as well as Persia, there were some significant differences between the two schools. These include:

1. The preferred use of paper and its preparation which was often dyed, marbled and/or gold sprinkled. The paper was very commonly burnished to a high degree so that it was very smooth and shiny.[1,2,5,7,11,17,18]
2. Persian treatise refer to gold being used as paint; gold particles dispersed in a medium, known in the west as shell gold.[1, 2, 3, 6, 10, 15] They also mixed other metals to change the colour hue of the gold. Silver-rich gold looked cooler and had the appearance of what we would call today, champagne gold, and when the gold was mixed with copper it gave a warmer hue similar to a rose-gold colour. [1, 2, 3, 5, 6, 9, 10, 15]
3. The burnishing of coloured pigments and using (and not using) burnishing on different areas of the painted gold areas for different visual effects.
   Persian painters aimed to produce slightly glossy opaque layers of paint.[1, 2, 3, 7, 8, 11, 12, 13, 17, 18]
4. The Persian artists mixed their pigments to achieve various colours, unlike the use of mainly pure pigment that the European illuminators preferred. [1, 5, 6, 8, 10, 15, 24]

GENRES OF PERSIAN PAINTING

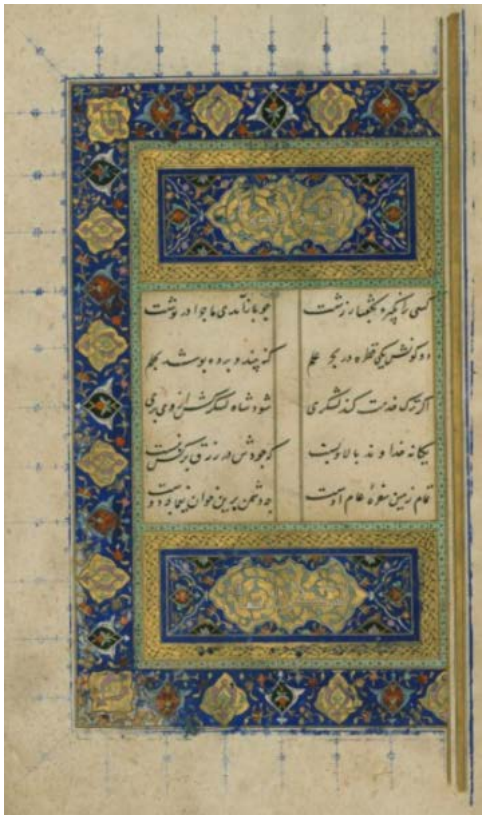
There were two genres of Persian illumination paintings.

SURATGARI (figurative/figural art) and **NAQQASHI** (non-figurative/decoral art). [1, 2, 6, 8, 10, 20]

SURATGARI (FIGURAL/FIGURATIVE) art is classed as animate subjects such as humans and animals.

Manuscript: The Bustan
(Walters ms. W.620, Date: 9th C AH/AD 15th C, Safavid)

NAQQASHI (DECORAL/NON-FIGURATIVE) painting was limited to inanimate subjects, floral and vegetal designs. Closely copied after set patterns and designs.



Manuscript: The Bustan
(Walters ms. W.620.3A, Date: 9th C AH/AD 15th C, Safavid)

In the Persian treatise "The Canons of Painting by Sadiqi Bek" he states that there are seven bases (asl) [basic patterns or design motifs] for NAQQASHI (non-figurative/decoral) painting.

Firstly '*islimi*' (the ivy and floral pattern) and '*Khata*' (the Chinese floral pattern). The third and fourth, '*abr*' (cloud-like, or marbled "veins of foliage") and '*vaq*' (head bearing tree). Fifth and sixth are '*nilufar*' (the lotus) and '*farangi*' (the Frankish pattern). The seventh is '*band- rumi*' (the Anatolian knit pattern) [2]

The painter of the NAQQASHI genre was called 'NAQQASH' (decoral painter) in contrast to 'MUSAV-VIR' (figural painter). Though an individual artist may well have practised both. [2]

PERSIAN TREATISES

There are at least 24 Persian treatises belonging to the Timurid (8th-9th century Hijra/14th-15th century CE), Safavid 10th-12th century Hijra/16th-18th century CE), Qajar periods (1193-1344 Hijra) [18] though only two of the treatise have been translated into English.[1,10]

One is Qanun us-Suvar (Canons of Painting) by Sadiqi Bek, a royal painter in the 16th century Safavid Iran.[2]

The second was an appendix to a text, Gulistan-i Hunan (Rose Garden of Art), written by Qadi Ahmad, son of Mir-Munshi, circa 1608, translated from Persian by V. Minorsky.[3] Both were written in what is now Iran.[6]

TECHNIQUE

The techniques described here are those used during the golden age of Persian painting that began early in the 15th century.

The Persian method of painting can be described as a watercolour technique since an aqueous gum solution most frequently served as the pigment binder. Western terms such as 'wash' (where the colour of the paper shine through translucent layers of paint) or 'gouache' (in which opaque,textured and chalky layers of paint include their own highlights through the addition of white pigments) are not applicable to Persian technique.

Persian painters aimed to produce slightly glossy, smooth opaque layers of paint. Unlike European artists,they did not concern themselves with the illusions of three dimensional space or a natural light source. The beauty of Persian technique was derived from harmony of colours and the interplay of line and pattern with solid colours.[1]

The paint required proper dilution. The consistency was enough to flow easily but not as much as a western watercolour wash. For lines and details the paint was somewhat less diluted.[1, 2, 3]

BURNISHING

Burnishing tools (Mohre)

Paint was built up in layers with each layer allowed to dry completely and burnished frequently until a slight gloss,opacity and desired intensity of hue were achieved.

Not all colours were burnished. Sadiq Bek warned about ultramarine blue. He said the colour was to be "laid directly with the medium" and not polished to a sheen. He said instead to apply a medium over the ultramarine (with perhaps a rabbit's foot) and smooth it with the hand. Gold was burnished directly to create a glossy finish or through thin paper for a more raw appearance. In some cases it was left unburnished in different sections.

Burnishing tools (mohre) were made from different materials including agate stone (*aqiq*), jade (*yasm*), ivory (*aj*), glass (*zejaj*), crystal (*bolur*) and shell (*jis*).[1, 2, 3, 8, 11, 12, 13, 17, 18]

PAPER - KAGHID

Paper was first produced in Khorasan by Chinese captives in the second Century Hijra (around 750CE) and as time went on, Persia developed into an important paper making centre [18]. Handmade paper is usually made in some type of mold. While European papermakers used techniques that left chain lines in the paper, the Persian use of horsehair thread to stitch the mold together did not leave an impression in the paper (Snyder 1988)

Another difference between Persian and European paper making techniques was that Persian papermakers did not use watermarks as part of the paper production (Bosch et al 1981) unlike their European counterparts. [1,13]

Materials used to make the paper were well beaten fibres of mostly linen, hemp or a combination. Silk was also mentioned as a material for making paper.[1, 8] Further treatment of the paper often included dyeing, marbling, gold sprinkling, sizing and burnishing.[1, 11,12]

There were different types of paper such as, single sheet, two layered paper (*kagad-e puste*), three layered paper (*kagad-e se puste*), paperboard (*muqawwa*) and albums (*muraqqa*).[1, 4, 18, 24]

DYEING

Historical evidence from the Timurid and Safavid eras showed that paper in those years were generally dyed. According to them, white paper had a 'harmful effect on the eyes' [18]

The most recommended dye for colouring paper was henna which was often mixed with saffron, sometimes with drops of black ink.

Henna dye in the in the concentration of 1:10 ratio that the Persian masters recommended had the added benefit of preventing fungus growth, specifically aspergillus flavus [18]

SIZING

A large amount of sizing material was used according to historical treatise from Tamurid (15thC) and Safavid (16thC).[12]

These included wheat starch (*neshasteh-e gandom*), rice starch (*haliat al-letab*), mucilage of rice (*loab berenji*), fleawort seed (*ispaghol*), mucilage of marshmallow (*loabi khatmi*), grape syrup (*shireh-e angoor*), juice of sweet melon (*kharboozeh*), cucumber seeds (t*okhmi khiar*), fish glue (*sirishi mahi*), gum arabic (*samqi arabi*), serish (*a well known vegetable glue traditionally used for book binding in Iran*), gum tragananth and proteinaceous materials such as animal glue, egg yolk and egg whites. With cucumber seed mucilage and vegetable based starches being the most common. Interestingly cucumber seed mucilage, which was very commonly used, is the easiest to burnish and it is less prone to attack by microorganisms.

In the treatise "Favayedal Khotoot" he states that sizing is used to make fragile paper strong, to reduce fluffiness as well as to make it smooth for writing.[1, 5, 11, 12, 13, 17, 18]

TRACING AND UNDERDRAWING

The design was drawn using a charred twig (*tamarind*), or ink with a pen/brush.

Tracing was also utilised. A thin piece of paper (or translucent gazelle skin) was used to trace over a master drawing or painting. Then a pointed awl (*minfad*) was used to pierce around the tracing lines. (Pierced tracings could be used multiple times). Charcoal powder in a thin fabric (pounce) bag was then pounced through the pierced holes onto prepared paper

INK – AHBAR

A variety of different coloured inks were used with carbon-based (midad) black ink being the most common found via Raman Spectroscopy.

In Qazi Ahmad's treatise he mentions 4 recipes to prepare black ink, two of them used lamp black. (Gallnuts were also used as an additive.)

Charcoal and Gallnuts.

This type of carbon-based black pigment is also often mentioned in published literature on Iranian painting techniques.[1, 2, 3, 10, 11, 12, 13, 15, 17, 18]

PERSIAN PIGMENT PALETTE

A 16thC paintbox from Bekhradi Collection, Isfahan, Iran.

The pigments of Medieval Persian manuscript painting divide into two chemical groups,
inorganic and organic.

The artists relied more on the inorganic. Some scholars insist that 'only' inorganic pigments were employed in Persian painting (Behzad 1939) but scientific analysis and mention of organic pigments in treatises disprove that theory.

The Persian palette remained consistent, as found via raman spectroscopy, microscopic analysis, micro-chemical analysis FTIR and XRD methods, Persian treatises and paint boxes from museums and private collections.[1, 2, 3, 5, 6, 9, 10, 15, 18]

The palette range was relatively small (red, yellow, blue, green, white and black).

Gold was used pure or mixed with other metals. The artists mixed the metals to obtain different ranges of colours, which is in agreement with published analyses of Persian pigments.[1, 3, 6, 15]

The colours were said to reflect "joy and cheer" (Al-Basha,1988).[8]

WARNING Using some period pigments can lead to significant health issues and/or possible death. Please read the relevant Materials Safety Data Sheets and follow the recommended precautions.

GOLD, SILVER AND COPPER - DHAHAB, FIDDA AND NUHAS

Shell Gold

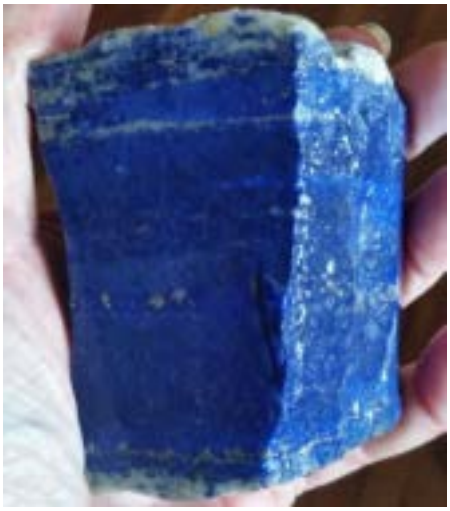
Metallic powders crowned the Persian palette. Gold 'paint' was used on most of the Persian paintings. Treatises give details of making gold 'paint' (shell gold) Gold was crushed to particles with honey or glue, sometimes with the addition of salt. Gum arabic is also mentioned. It was then repeatedly rinsed to remove the additives. After that is mixed with a binding medium to be applied with a brush (qalam). It was then cooked (burnished) to a bright glossy gold. Interestingly, some manuscripts show both burnished and unburnished gold beside each other for a visual effect. [1, 2, 6]

Gold does not give off a first order raman spectrum signal so it is not detectable by raman spectroscopy. Raman spectroscopy is based on the inelastic light scattering in a substance where the incident light transfers energy to molecular vibrations. The scattered light can be detected by a Raman spectrometer and represents a "chemical fingerprint" of the substance. Which enables various pigments and other substances to be identified.[25]

Raman spectroscopy shows silver-rich gold. This was because the artists mixed the silver with the gold to make it a cooler colour [Behzad 1939, St.Laurent-Lockwood 1981), something like the modern hue of Champaign Gold. Silver was often used in water images. Unfortunately the silver now looks black because it has tarnished over time. Gold was mixed with copper to give a warmer looking gold.[1, 15]

I have experimented with making shell gold, here is a link to my efforts: https://tinyurl.com/yxwf9k4x

BLUE - AZRAQ



Lapis Lazuli

Most scholars of Persian painting acknowledge natural ultramarine, Lapis Lazuli (*lajevard*), as the most important blue pigment and its use was documented in both Sadiqi and Qadi's treatises.[1, 2, 6, 15]

The Herat school favoured darker and richer shades whereas other centres such as Tabruz, Shiraz and Esfahan favoured a brighter cornflower blue.[7]

Indigo which was introduced into Iran in mid 6th century was also used but more commonly as a mix with orpiment or saffon to make a different green shade.[6]

YELLOW - ASFAR

Orpiment

Orpiment (*zarnikh asfar*) was the most frequently found yellow via raman spectroscopy and mention of it in Qadi provides evidence of its importance in the Persian palette.

Orpiment posed its own problems with its incompatibility with certain other pigments. For example, orpiment turns white lead gray even when not mixed together, it has this effect even if it is only adjacent to it in the painting.

Other yellows were also used. Indian yellow, reportabely made from the urine of cows fed exclusively on mango leaves, Saffron, Safflower, Yellow Ochre, Tumeric root and a pigment made from Persian Berries were also available for use.[1, 5, 6,15, 24]

RED - AHMAR

Vermillion was the most common red found via raman spectroscopy - both Qadi and Sadiqi give two ways of obtaining vermillion, from cinnabar (*zanjafr*) and from mercury/sulfur reaction.[2, 3, 6, 15, 24]

Red lead (*salqun*) also known as minium. This comes in a natural form but is more commonly made artificially white lead.[2, 6, 15, 24]

Organic reds were identified, particularly kermes/carmine,as well as madder and brazilwood/sappanwood (*baqqam kahhal*) Sadiqi gives a recipe for making a ruby-red lake using stick lac (*lukk*).[3, 5, 15, 24]

Realgar was mentioned often in treatise but was seldom found via Raman Spectroscopy. This could possibly be due to degradation.

Realgar often occurs with orpiment and was sometimes referred to as Red Orpiment.[2, 5, 6]

BLACK - ASWAD

Carbon based black. Bone black, lamp black and iron-gall were all found on manuscripts via raman spectroscopy.

Charcoal was also found in small amounts but is not mentioned in literature except for underdrawings or used as a pounce.[1, 6, 15, 24]

WHITE - ISFIDAJ

The predominant white was lead white though chalk and calcite were occasionally found, though chalk could have been used as paper preparation in the form of a pounce more so than as a pigment colour.[15]

GREEN - AKHDAR

Verdigris

According to treatises, the preferred green pigment of Persian artists was verdigris.[1, 2, 6]

Historically, verdigris is a general term for green corrosion products that form on copper, brass and bronze.[1]

Sadiq gives instructions for making verdigris.[1, 2]

Link to my verdigris experiment: https://tinyurl.com/y2t53kyk

Verdigris (zinjar) was known for its instability and destructive nature. Cennini[21] mentioned that verdigris 'is beautiful to the eyes, but does not last' and Theophilus warned against using 'green salt' for book illumination as 'it is not good for books'.

This was also known to Persian artists. In Resaleh dar Bayan-e Kagad 'Morakkab va Hall-e Alvan' he cautioned against the use of verdigris '...zangar (verdigris) is not stable and will char the paper'.

Saffron

However, many Persian recipes say to add saffron (*za'faran*), threads of Crocus Sativus, to verdigris to counter it's destructive effect.

Mir 'Ali Heravi in Medad al-Kotut: "The verdigris that is made out of yoghurt, chars paper. The answer is to add a small amount of saffron (*za'faran*) so [it] becomes stable".[18]

Saffron acts as a buffering agent which acts as an inhibitor that prevents charring by maintaining a constant pH.[5, 15, 18]

Malactite

Malachite, vergaut and brochatite were also found and the most common green mix was saffron and indigo. [1,2,6,15,18]

PIGMENT BINDING

There are different views on what was used as the binder for pigments. In T. Behzads discussion on binder medium (Behzad p1921-1922), he states that albumen (glair) was the medium "in the earliest period" but due

to difficulties on keeping it fresh, glue was then substituted with gum arabic sometimes used instead.

Gum arabic (*samgh al-qaraz*) was the main binder for pigments mentioned in Qadi Ahmad's treatise for pigments, he also mentions glue and vinegar for certain pigments.[1, 2, 3, 24]

BRUSH AND HANDLING

According to the Persian treatise be Sadiqi Bek, brushes (*qalam*) were made from a squirrel's tail which is vigorously combed and sorted in even lengths. Then it is tied with 3 separate knots. [There is some literature about brushes being made from hairs from the throat of a Persian kitten (Behzad 1939)]

Sadiqi also comments on the handling of the brush, not to use a clenched fist....'the main hold for the brush is with two fingers (thumb and forefinger); the other three must provide the support if your brush strokes (*tahrir-i qalam*) are to swerve freely about (*pichideh ayad*). For your work wants a certain dash (*daliri*), and the brush is to be taken easily in hand'.

In Sadequi Beg treatise, he also gave specific instructions on how to hold the qalam.."do not grasp your brush (at the place of the knots) in your fist, with two fingers make a holding place for your brush; Three others will support those two,do that drawing of your brush becomes considered. At this time of working you must be courageous; you must not hold your brush too tightly..." (Afshar, circa 1530) [1, 2, 3, 7]

MEDIEVAL WHITE OUT

In Qadi Ahmad's treatise there is advice for correcting mistakes.

"How to remove writing from paper.- Take some liquid ceruse (*safid-ab-i arziz*), triturate it with liquid gum arabic and apply to the writing. When it is dry,use the polisher and the writing will disappear" [3,15]

Stighs- rays? [4,7]

STEP BY STEP

Clockwise from top left: handmade walnut ink, handmade iron gall ink, handmade brazilwood ink, brush cleaner, palette, Winsor & Newton series 7 paintbrush, crow quill, Winsor & Newton artists quality gouache (Ultramarine Blue, Permanent Green Middle, Permanent Alizarin Crimson, Brilliant Purple, Cadmium Red {which I did not end up using} & Permanent White) and Finetec gold from which I used the Arabic Gold hue.

Note: It is not necessary to use all of the above supplies. Project can be completed with a selection of paint (including gold), a paint brush and a fine liner.

1 Design is transferred (*desen silkeme*) to 'laid paper' (*muraqqa*)- a special paperboard of 3-4 "engrained" (dyed) handmade paper layers that have been glued together in a specific technique[4], then sized (surface treated) and burnished.

I created my own muraqqa paper for this piece by dyeing commercial watercolour paper. When dried I 'sized' it with egg white then burnished it heavily until it was shiny and smooth.

Alternatively, any good quality smooth Hot Pressed Watercolour paper can be used. It is not necessary to dye, size and burnish your paper to paint this design unless you choose to.

To transfer the design I used tracing paper and commercial graphite paper. You can make your own graphite paper by rubbing heavily with graphite. Any of the darker B range works well and is easier to erase.

Link to printable line drawing of the line drawing of design and coloured version: https://tinyurl.com/y6nq3jkf

2 Design is inked so as not to be lost whilst painting.~ I used handmade walnut ink and a crow quill. An artist's quality micron liner can be used.

I have experimented in making walnut ink and the details can be found here: https://tinyurl.com/y2lmua7k

3 Gold is used to paint vine and leaves etc which is then burnished. Traditionally shell gold was used. I used Finetec Arabic Gold but any artist's quality gold gouache will work just as well.

4 Paint base colours for flowers.

Note: The consistency used on Persian Illumination is quite fluid.

For gouache I find the consistency of very runny melted ice cream (but not watery) works best. The colours should be opaque, not like a watercolour wash. Finishing details can be slightly thicker.

When using period pigments the consistency can be a little thicker but still fluid depending on the pigment.

I painted the central red colour of the design with Winsor & Newton Alizarin Crimson.

5 'Ornamental' lines are inked in black around gold work and base flowers to separate it from the background.

This is for visual appeal and to separate the pigments which was something that medieval artists had to be very conscious of due to the different reactions between pigments.

Orpiment in particular has to be well thought out when placing colours due to its reactive nature to certain other pigments. For example when placed even just beside lead white it will turn it gray.

I used handmade iron gall ink and a crow quill. A small paintbrush and fluid black paint or ink can be used or a modern micron liner pen.

Here is a link to my effort of making iron gall ink: https://tinyurl.com/y4ttevs9

6 Flowers are then toned in a 'degrade' style.

DEGRADE TECHNIQUE:

Multiple tones obtained from each colour painted, from lightest to darkest (or darkest to lightest) by decreasing the shape of the flower with each paint line.

For this piece I made 3 tones of each colour by adding white and finished with the pure colour of each.

I painted the base layers, which I let dry, then added the next colour tone following the pattern of the flower with about 1mm space between each different tone, finishing with the pure colour.

Mini visual step by step of the degrade flower technique

Downloadable PDF link to blank printable worksheet of degrade flower technique with the coloured version: https://tinyurl.com/y6abh8tv

7 Paint the background colour around the design. In most extant pieces that I have seen, the dominant colour used was Lapis Lazuli in its pure form or as refined ultramarine. Again the consistency is very fluid.

I used Winsor & Newton ultramarine gouache.

Though this would seem to be an unnecessarily tedious way of working as it would appear more logical to paint elements on top of the background colour there are good reasons for this, driven by the properties of the pigments themselves, particularly Lapis Lazuli.

There are difficulties in applying colours on top of a field of Lapis, especially noticeable when using gold, which sinks right into the Lapis and can't be burnished. Thus the illuminator must rely on their skill to work it cleanly around the fine lines of the intricate design.[1, 5, 7, 10]

8 Paint a thin line around the outline of the design following the basic shape.

I used a small brush and Winsor & Newton Alizarin Crimson. I chose this colour as it appealed to me and to give a more uniform look to the piece as I had used it in the middle section as a base colour.

Green and blue were commonly used for the outlining.

9 Needlepoint designs (*tighs*) are added to the outer edge.

These are fine sharp decorative lines extending outwards from the main part of the design to complete the artwork.[4, 7]

I used a small paintbrush, fluid Winsor & Newton ultramarine gouache, a crow quill and handmade brazilwood ink.

Coloured artists quality micron liners could be used.

I would love to see your completed works and can be contacted via facebook: https://www.facebook.com/corinaamy.graham or email: corinasart@outlook.com

BIBLIOGRAPHY

1. Purinton, Nancy and Watters, Mark. 'A Study of the Materials Used by Medieval Persian Painters'. Journal of the American Institute for Conservation. JAIC 1991, volume 30, number 2, Article 2. 125-144

2. Dickson, M.B., and Welch S.C. 1981. Appendix 1: The Canons of Painting by Sadiqi Bek. The Houghton Shahnameh, vol. 1. Cambridge, Mass: Harvard University Press 259-69

3. Minorsky, V, trans. 1959. 'Calligraphers and Painters: A treatise by Qadi Ahmad, Son of Mir Munshi (circa A.H 1015/A.D. 1606) Washington, D.C.: Smithsonian Institute, Freer Gallery of Art, Occasional Papers 3 (2): 174-201

4. Onat, Sema. 'Islamic Art of Illumination' Blue Dome Press. New Jersey. USA. 2017. Book

5. Knipe, Penelope et al. Materials and Techniques of Islamic Manuscripts. https://springer.com/article/10.1186/s40494-018-0217-y

6. Muralha. Vania et al. Raman Spectroscopy Analysis of Pigments on 16th-17th c. Persian Manuscripts. Spectrochimica Acta Part A 92 (2012) 21-28

7. Chowdery, Anita. A Visual Analysis of the Illuminated Opening pages of a 16th Century Iranian Manuscript, and a Reconstruction with Reference to Contemporary Treatise and Empirical Practical Experimentation. Abstract for proposed paper for the 8th Islamic Manuscript Conference at Queen's College, University of Cambridge, 9-11 July for The Science of Manuscripts

8. Al-Yahyai, Fakhriya et al. Islamic Manuscripts Art in Arabic and Persian Schools: The Artistic and Aesthetic Values. Scientific Research. An Academic Publisher. ADR> Vol 7, No2,May 2019

9. Bruni, Silvia et al. Micro-Raman Identification of the Palette of a Precious XVI Century Illuminated Persian Codex. Journal of Cultural Heritage 4 (2001) 291-296

10. Burgio, Lucia et al. Pigment Analysis by Raman Microscopy of the Non-Figurative Illumination in 16th-18th century Islamic Manuscripts. Journal of Raman Spectroscopy 2008 www.interscience.wiley.com

11. Heilbrunn. The Arts of the Book in the Islamic World, 1609-1800. Timeline of Art History. The Metropolitan Museum of Art

12. Barkeshli, Mandana. Historical and Scientific Analysis on Sizing Materials Used in Iranian Manuscripts and Miniature Paintings. Presented at the Book & Paper Group Session, AIC 31st Annual Meeting. Arlington, Virginia. 2003

13. Rafi, Ali Mashhadi and Afshari, Tooba. Material Analysis of Safavid Isfahani Papers. Hamburg 2013

14. Persian Empire. https://en.wikipedia.org/wiki/Persian_Empire

15. Wyth, Elena HL. CSM, CIM. Middle Eastern Palette: A Survey of Pigments Found in Middle Eastern Countries from the 10th-17rh Centuries elenawyth@gmail.com

16. Peri, Benedek. Persian Manuscripts from the Ottoman Empire in the Collection of the Library of the Hungarian Academy of Sciences. 2nd International Archive Congress on Ottoman Lands.

17. Mahgoub, Hend et al. Material Properties of Islamic Paper. Institute for Sustainable Heritage, University College London UK 2016 hend.mahgoub.13@uclac.uk

18. Barkeshli, Mandana. Material Technology and Science in Manuscripts of Persian Mystical Literature. Manuscript Cultures 2002

19. Hunter, David. Papermaking, the History and Technique of an Ancient Craft. Dover Publications Inc. New York 1943. 1947.1978. Book

20. Rice,David Talbot. Islamic Art. Library of Congress catalogue card number 65-10179. Thames & Hudson Ltd. London 1965, 1975. Book

21. Thompson, Daniel V. "Il Libro dell'Arte" Yale University Press 1933,1960

22. Rive, Megan ni Laine de Belle. "A Palette of Period Pigments" The Compleat Anachronistic #43. The Society of Creative Anachronism 1989,1999,2004,2017 booklet

23. Artists Pigments: A Handbook of their History and Characteristics, vols 1-3. Washington: National Gallery of Art, 2012

24. Medlej, Joumana. Inks & Paints of the Middle East. A handbook of Abbasid Art Technology. Majnouna, London 2020.

25. https://wiki.anton-paar.com/au-en

A Collection of Poems

BY LORD INGVARR KARLASSON

2020

This chaos is so hard on the head
Wouldn't you rather
Ignore this palaver
And relax with a cold beer instead?

Hobby

In this time of great stress
It is a lot to take in
Spending so much on tins
But to indulge in ones passion
In such elegant fashion
What honest man could do less?

A Haiku about the College of St. Ursula

Look, a dancing bear!
Did not know bears like carrots?
Ah! Man in bear suit!

English Arrow Bag

BY LORD THOMAS BOARDMAKERE

An English bowmen without arrows is just a guy holding a bent stick. The ability to rapidly shoot arrows is what turns that bent stick into a weapon however the archer is faced with the challenge of how to carry those arrows onto the field.

The average English bowmen was a working class solider. They needed affordable and robust kit that can be carried on campaigns, mostly conducted on foot. During this time they would be living in camping conditions and could expect inclement weather; arrows needed to be kept in good condition to be effective against an enemy.

One solution used by the English bowmen through the 15th to 16th century was the cloth arrow bag.

The battle of Maupertuis (BNF Fr. 2643, fol. 207r), c. 1470-1475

In the following build I will attempt to recreate one with these arrow bags from historical sources. Any material or construction choices that aren't made clear in the sources will be made using the historical context and design criteria to keep the build on track.

The design criteria is analogous to that of a magazine for a modern rifle in that it needs to:

1. Reliably and safely hold the ammunition during the violence of combat;
2. Dispense ammunition rapidly;
3. Be wearable/lightweight;
4. Be somewhat weather proof;
5. Hold a decent amount of ammunition;
6. Be sturdy and puncture resistant;
7. Be made from affordable materials.

LEATHER SPACER

The first component of the arrow bag is the leather disc spacer based off finds from the 15th century and the Mary rose. The spacer plays several roles, first of which is keeping the arrows from falling out and preventing the feathers being crushedbut allowing the arrows to be smoothly draw from the quiver. The added organisation it gives also make it easier to grip the top of an arrow blindly. Most spaces found holds a standard 2 dozen arrows which is a reasonable amount of shots before refilling and allows for quickly telling how many are left at a glance. (a dozen being a standard metric at the time.

Leather arrow spacer at the Museum of London, 15th century

Tools needed

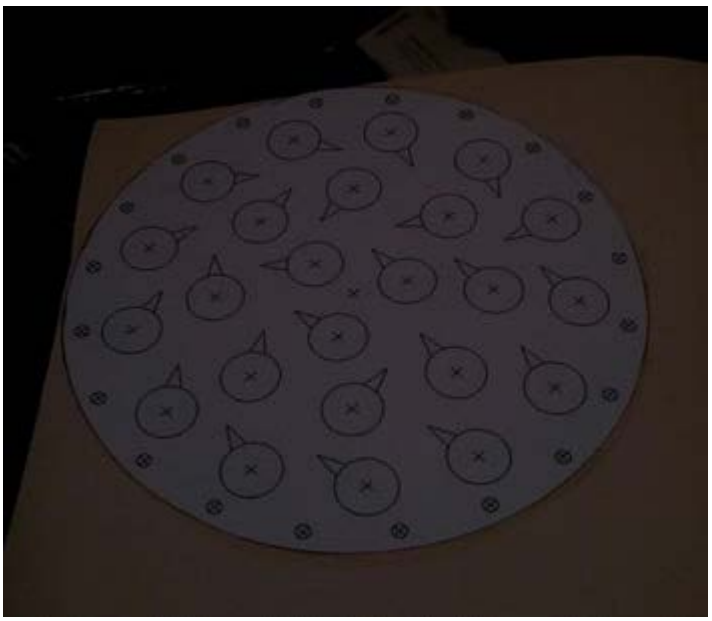
Hole punchs 4mm and 17mm, razor blade, scribe, saucepan and water dish

Materials

3.5mm leather, paper, water, leather conditoner

Step 1

Using existing template created by Nick Birmingham the pattern for the spacer was layed out on a piece of 3.5mm veg tan leather and cut with a razor blade. The pattern was cut over-sized to allow for shrinkage during the hardening process. The outer diameter is 175mm and the internal diamter of each hole is 17mm.



Note: The small cut out Vs appear on the c15th find but not on the Mary Rose finds. I decided to include them because they prevent the spacers from binding on the arrow as much when it's drawn from the quiver.

Step 2

A groove was added to allow stitching to the fabric as seen in the Mary Rose find.

Arrow-spacers from the Mary Rose, 1545

Note: The twenty-two 4mm stitch holes I punched in the outer ring of my disc are somewhat more generous in size than the stitch line that can only just be made out in the magnified photo below. They appear to have just been done with an awl.

Step 3

At this stage the spacer was quite floppy from having so much material removed and needed to be water hardened.

The spacer was placed in room tempure water for 10 minutes then submerged in 81 degree water for about 60 seconds at which point it had shrunk the desired amount and just before it began to deform.

Once removed from the hot water it was immediately placed between two heavy surfaces to allow it to cool flat. After cooling it was dried on a rack.

After drying it was treated with a mixer of bees wax, oil and tallow (dubbin) as water proofing and to prevent cracking through over dryness.

After shrinkage the external diameter at 155mm and the average diameter at 14mm which neatly holds a standard 12.5mm (1/2inch) war arrow.

CLOTH BAG

Now that the leather spacer if finished the next step is to decide on the material outer covering.

During my research I could not find an example of an original arrow bag from the time period so I relied on educated guess work using period art, material culture of 15th/16th century England and the design criteria to create a functional approximatioEn

For the aesthetic appearance of the bag I used the following depiction of an English archer found in the Froissart's Chronicles written by Jean Froissart in the 14thC chronicling the hundred year's war.

Using the illumination as a visual starting point I turned to the choice of construction material. Fabric of the time period was far more limited in selection and had a much higher production cost than is commonly experienced today. The fabric options available to the 15th/16th century bowman would have been Linen, Wool, Silk, Hemp, Cotton, Leather, and fur/pelt.

I have chosen Wool as I believe it best fits the criteria as most affordable, being water resistant, and light while still being sturdy enough to prevent the arrows punching the bag.

Materials needed

Woollen fabric, linen thread.

Tools needed

Scissors, tape measure, tailors chalk, large gauge needle.

Step 1

Measuring and cutting material

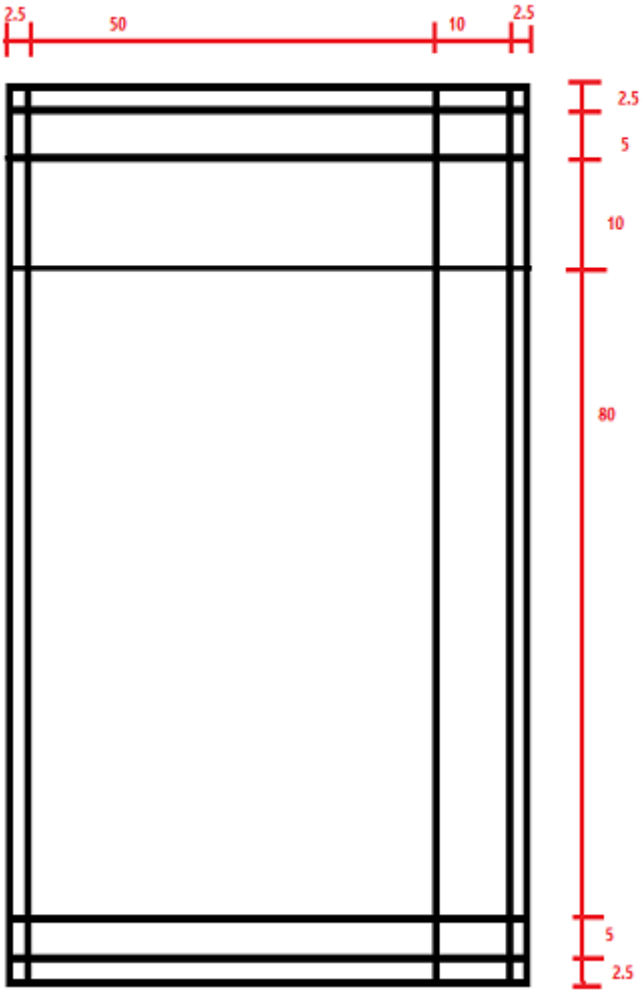
The circumference of the spacer disc will determine the width of material needed.

The diameter of this particular disc turned out to be 50cm but this will vary depending on the amount of shrinking that happens during hardening.

50cm + 2x2.5 cm for seams + 10cm overlap = 65 cm

A 32inch (80cm) arrow will determine the length of the bag.

80cm arrow + 2x2.5cm for seams + 15cm of expansions in top for fletching + 2x5cm for draw string channel =110cm total length.



With a sharp pair of scissors the wool was cut to a size (L110xW65)

Step 2

The fabric was folded twice widthways and a long running stitch was sewn toward the end and continued in the reverse to create something similar to a saddle stitch, leaving a loop of fabric in the end to run the drawstring through.

Step 3

A similar stitch was then sewn into the hem on one of the long edges.

Step 4

The spacer disk was then placed on the fabric to determine its placement in the quiver and a line drawn in tailor's chalk to mark that place.

Step 5

A stitch was sewn up the length of the other long edge, doubling over the stitching above the line, leaving below the line room to sew the overlap.

Step 6

The fabric was then stitched to the spacer as pictured below.

Step 7

The remaining side seam was then sewn together.

Step 8

A tab was added on the bag outside the spacer to attach the suspension cord.

Step 9

A loop was then made along the top edge of the bag, sewn together to create another loop for a drawstring.

Step 10

Drawstrings were installed. See later section for details on construction of drawstrings. The bottom drawstring required some reinforced holes.

MAKING THE DRAWSTRINGS

The cords used for the drawstrings are made with linen thread using the "Flemish Twist" technique. This is a reverse-twisted string with a loop spliced into the end, which is a very common traditional method of making bowstrings in Europe.

Step 1

The linen thread was cut into lengths twice the length of the final cord with an additional allowance for the length lost in twisting. In this example the pieces were cut to 16 feet, for a cord of approx. 7 feet in length. The lengths were then twisted by hand as per the Flemish twist technique.

Step 2

The frayed end was then looped through the tap, and spliced back into the cord to form a permanent loop.

Step 3

The frayed end was thinned out towards the end of the splice.

Step 4

The cord was then waxed using a mixture of beeswax softened with animal fat.

Note: Two other smaller cords were fabricated in the same manner to create the drawstrings. The ends of the drawstrings weren't spliced, but rather tied with an overhand loop.

FINISHED PROJECT

CONCLUSION

Things I would have done differently

I would reduce the size of the overlap as it wastes a significant amount of fabric on the internal of the bag.

I would not have scribed the stitch line connecting the holes around the edge of the spacer because, due to the thickness of the wool, the stitching doesn't lay in the groove.

I would have whip-stitched the spacer into the fabric tube to allow more freedom for it to fold back.

Concluding Notes

The illumination from Froissart's Chronicles depicts a quiver where the arrows stick out of the end of the bag, whereas the other depictions I have used do not. My quiver has the capacity to act in either way. A possible reason for the arrows protruding from the base of the quiver is to allow for arrows with broad heads to be drawn from the base of the quiver, with the fletching passing through the spacer.

I do not believe there is any way that this could have been made more authentically barring constructing the raw materials the quiver is constructed from.

A Braid from Hallstatt

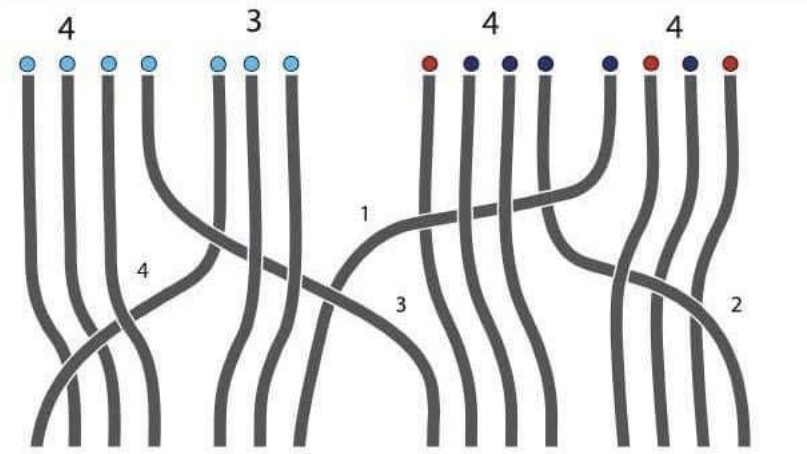
BY KAITORIX ARVERNOM

I've recreated a braid found in the Hallstatt mines in Austria, dated between 800-400BCE. It's 15 strands, and about 2cm wide. The original was probably made by two people fingerlooping, but since I only have two hands, I used a free end method which can be done by one person. I found the pattern much easier to follow when flipped upside down, but I'm almost certain the end result is the same.

I used hessian twine because I had some in the house, but I'd like to reattempt this with some different coloured yarns at some point. I chose to work in short-ish lengths and twist in more twine as I went, to keep it more manageable. I also wasn't sure how much I'd need.

The length is about 130cm, and I plan to use it as a belt. It works fine as a belt when tied, but when I can poke around op shops again, I'll be keeping an eye out for a suitable buckle to insert.

Hallstatt textile finds. The bottom braid is the one I recreated.



The free end braiding pattern.

My braiding setup. I redrew the pattern upside down, and used some cardboard as a thread guide.

One side of the braid.

Other side of the braid.

Full braid.

A statue found in France, dated 1st-2nd century BCE. I will use the shape of the buckle as a reference when I'm able to look for one.

BIBLIOGRAPHY

Iron-Age Finger-Loop Braiding. Finds from the Hallstatt Salt Mine. In: Archaeological Textiles Review 57, 2015, 33-40
https://www.academia.edu/24657273/Iron-Age_Finger-Loop_Braiding._Finds_from_the_Hallstatt_Salt_Mine._In_Archaeological_Textiles_Review_57_2015_33-40

Gallic Warrior God
http://mudo.oise.fr/collections/details/dieu-guerrier-gaulois/

Applications of Tablet Weaving

BY LADY DAGNÝ SVEINSDÓTTIR

Tablet weaving is a prehistoric technique used to create narrow bands, straps and ribbons without the aid of a loom. This method of narrow weaving has been practiced in many cultures since the Bronze Age, predominantly in areas of Europe and West Asia. Tablets, also known as boards or cards, are used to twist colourful yarns into beautiful and durable belts, straps, girdles, fillets, head bands, seal tags, ankle bindings, and garters. For the historical costumer, medieval reenactor, or experimental archaeologist, these kinds of applications are very straightforward: weave to the desired length, cut the tablets loose, and the band is ready to wear!

Already have a tablet woven belt? Want to add some decorative and historically accurate trim to your finest garment? Not sure where to cut or how to sew it to your garb? Here are some ideas for you!

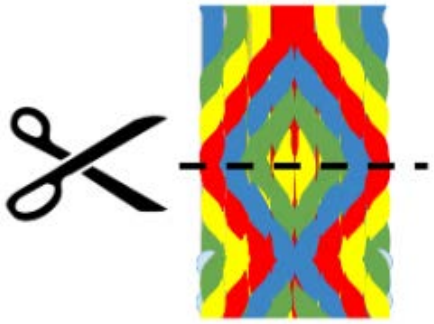
Preparing tablet woven trim

Many historical costumers are under the impression that tablet weaving will immediately unravel if the ends are not woven or sewn into place. This is not the case. Apart from the obvious differences in appearance, tablet woven ribbons behave very similar to other woven textiles. You don't need to finish the ends of tablet woven trim, but it is good practice to increase the longevity and reduce maintenance of your garb.

Wet finishing

If your band is woven with wool or linen thread, wet finishing in warm water will allow the fibres to settle into the band and prevent the ends from unraveling. Depending on the type of yarn used, you may also like to gently scour the band at this stage with a dash of simple soap. Fill your sink with warm water from the tap, slowly submerge the woven band, and leave to soak for a couple of hours. Do not scrub or agitate the band unless you hope to felt the fibres or nap the fabric. After soaking, flatten or stretch under tension in the shade.

Cutting into sections

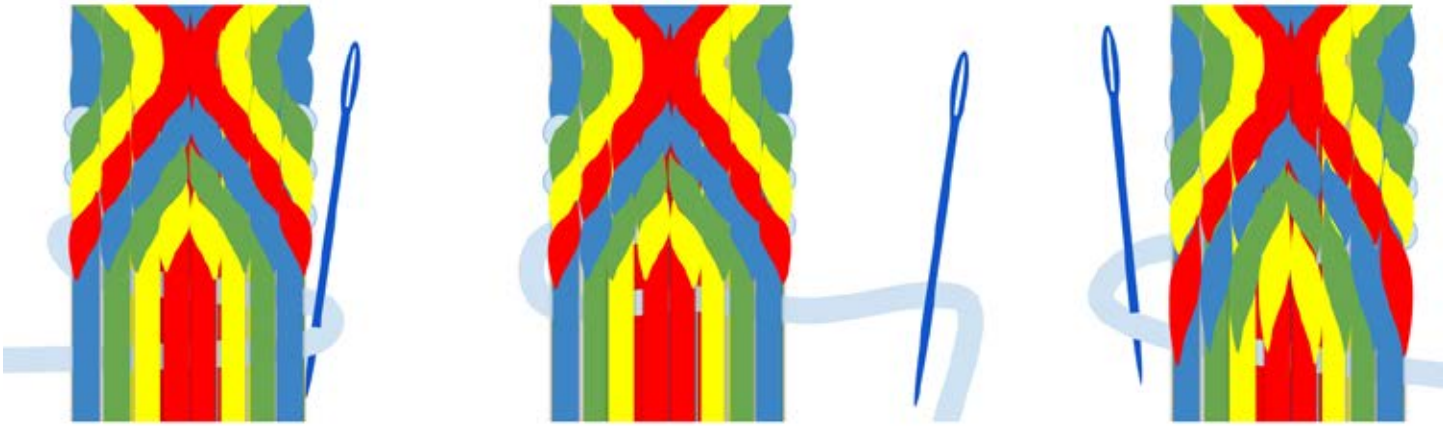


Once you have summoned the courage to snip, make sure you have accurately measured the lengths you will need. Sometimes it is best to pad this measurement a little bit to afford yourself some room for error and planned unraveling. Measure twice, cut once, and always cut parallel to the weft.

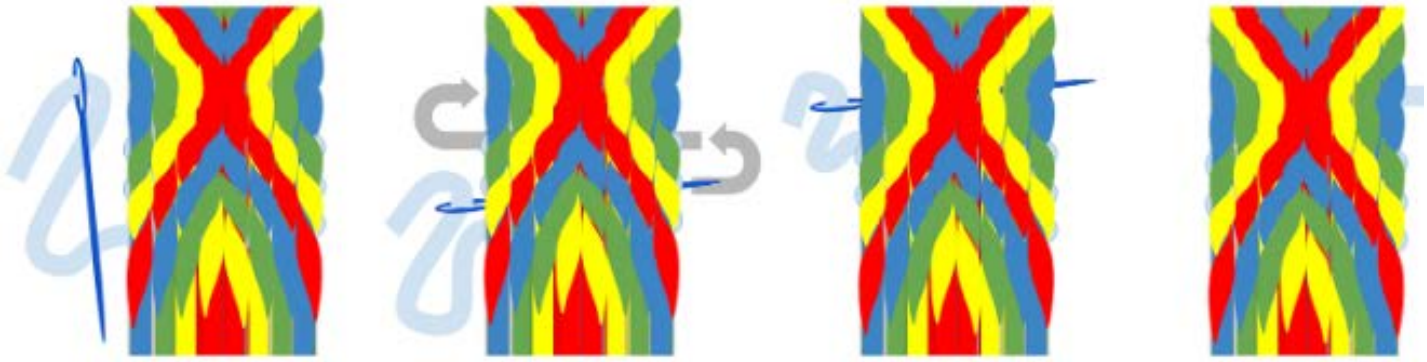
Unraveling

Unraveling small sections of your tablet weaving is not necessary for every project. You may choose to unravel the raw edge of your tablet woven section if you wish to gather a tassel, add pom poms or other adornments, square braid the warp threads, or sew the individual warp threads into a seam of your garment (tedious, but does result in a pleasing finish).

Before cutting your band into sections, you will need to allow for unraveling with a 2 cm allowance at each end. Starting at the very end of your tablet woven band, use a darning needle to slowly unpick the weft from the twisted warp threads.



Once you have released a sufficient amount of weft (within the 3 cm allowance of woven band), you can choose to sew the weft thread back into the band to secure the end.

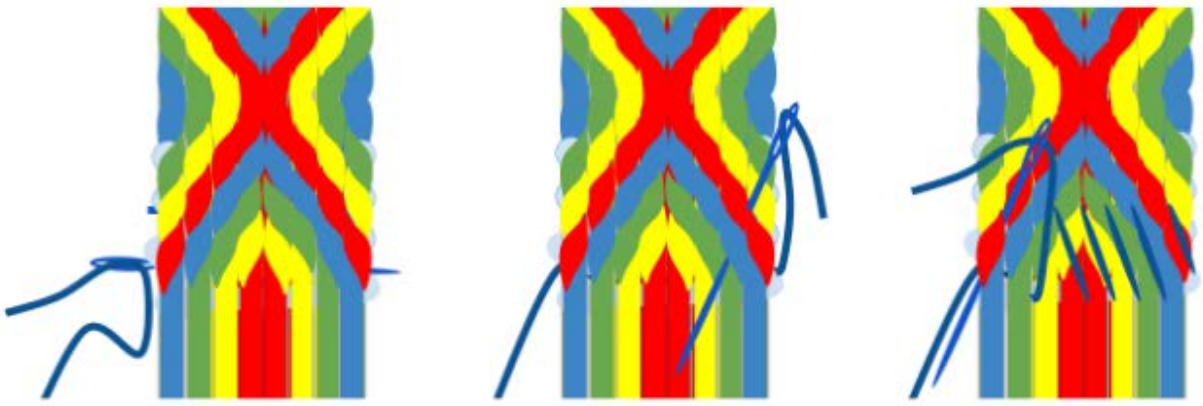


Or, you might choose to wrap the unravelled weft around the warp and tie the end into a tassel for use as a belt or headband.

Basic whip stitched hem

Don't want to unravel a single centimeter of your tablet weaving? No problem!

Use fine yarn of a similar colour and quality of the tablet woven band to whip stitch the raw end. Insert your needle into the side of your band, parallel to the passage of the weft thread, approximately 3 picks (horizontal passes of the weft thread) from the end of your band. Whip stitch from one edge to the other edge.



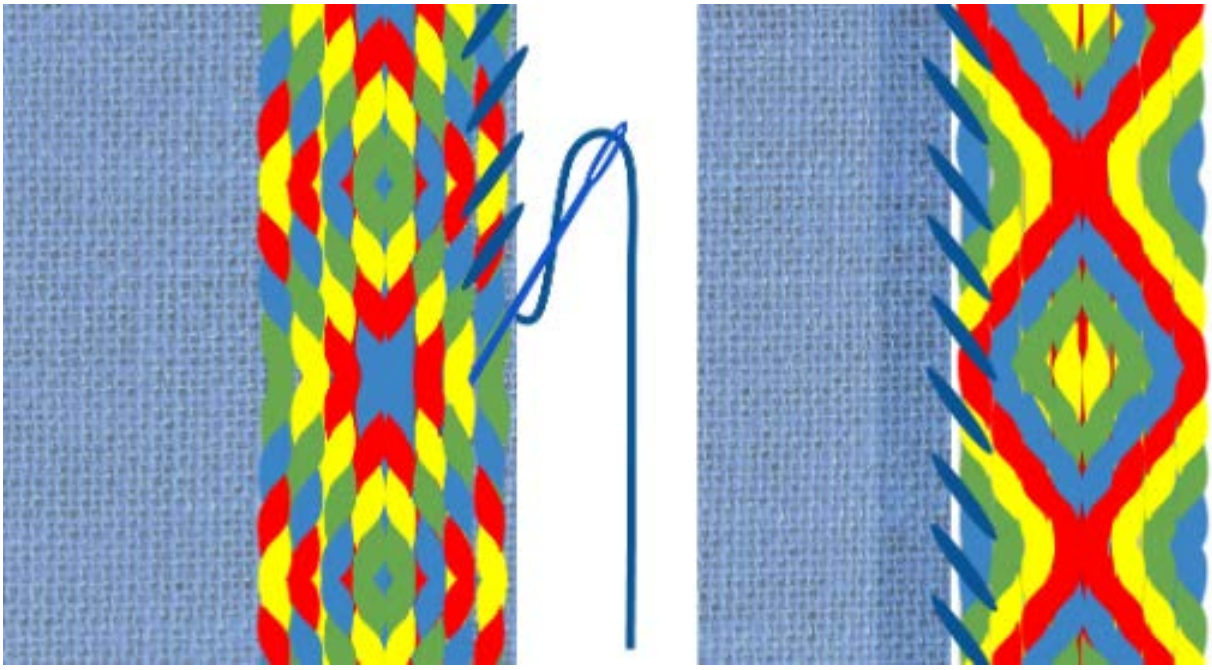
Pay careful attention to your stitch length and position. Try not to split the warp threads with your stitches. Your stitch should be long enough to secure the last few passes of your weft thread into the band with your whip

stitch. Once complete, sew the end of the thread back into the woven portion of the band and snip off the excess thread.

Sewing with tablet woven trim

Edge to edge

A surprising number of historical examples feature tablet woven ribbons sewn onto the edge of a garment, rather than sewn flat or woven into the fabric. There are many reasons that this treatment was so prevalent. Beyond decoration, the addition of braid to the edge of a garment may have provided reinforcement and rigidity to cuffs, necklines, or cloak borders.



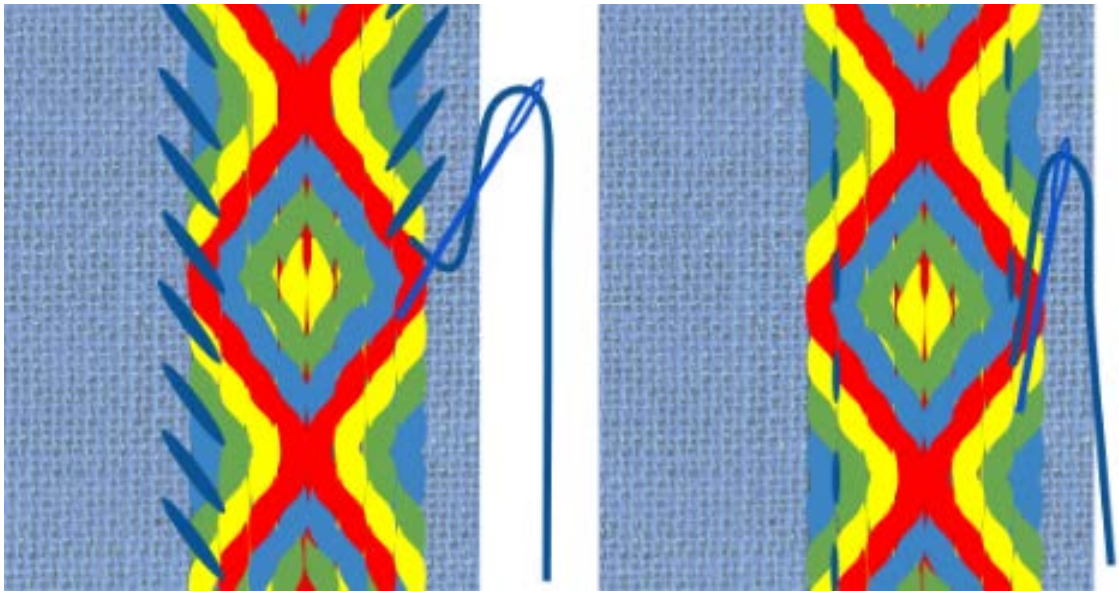
With this method, the tablet woven trim is typically overcast stitched (whip) to the hemmed edge of the garment or selvedge of the cloth. Once you have hemmed the garment and finished the raw edges of the tablet woven trim, place the trim face down on the outer side of the fabric. Use a sturdy yarn to overcast stitch the border of your tablet woven trim to the edge of the fabric. Stitches should be diagonal and evenly spaced. This type of stitch is reversible, having the same appearance on either side, and will flatten to close the gap between the trim and cloth once sewn.

Some historical examples of this technique include:

- HallTex 123 (Hallstatt 2) attached along a single edge with an overcast stitch to twill cloth (Austria, Early Iron Age, 800 - 400 BC)
- Both bands from the Orkney Hood were sewn by their edge. The narrow band was sewn by one edge onto the skirt of the hood, and the wide band was sewn by the edge to the remaining edge of the narrow band (Orkney, AD 250 - 615).
- Rectangular cloak and wool tunic with tablet woven trim with animals sewn onto the edge from Evebø-Eide, Gloppen (Norway, Migration Period, 5th Century)
- Sewn at the edge to the selvedge of a twill fragment with an overcast stitch (whip stitch) from Kaupang, Norway (Viking Age, 840-940 CE)
- Elaborate bands woven in wool and sewn with linen along the finished selvedge of a rectangular mantle as found in Grave XXXVIII (38), Siksälä (Estonia, 14 - 15th Century)

Cloth to cloth

Ornate and elaborate designs created with tablets required a specialised set of skills. Treasured as heirlooms and recycled from generation to generation, many tablet woven bands outlived their original vestments and found new life with new garments. Brocaded silk bands, with patterns produced gold and silver supplemental wefts, were stitched onto garments as a sign of wealth and status.



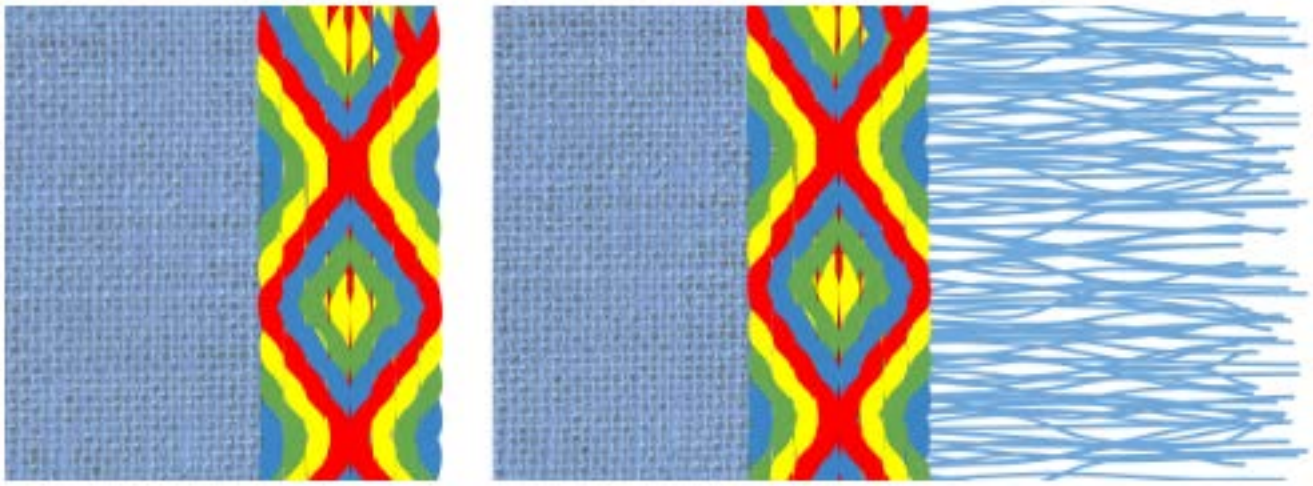
Two different historically appropriate methods of sewing tablet woven trim onto cloth; overcast stitch (left) and running stitch (right). To attach your trim with an overcast stitch, be sure to select a yarn that will harmoniously blend with the tablet woven ribbon. Stitches should be diagonal and evenly spaced. The running stitch method is discreet, effective and will result in a pleasing finish. Be sure to select a fine sewing yarn (silk) and use the outermost warp threads as a guide for your stitches. Ideally, your running stitches should be placed to secure the weft (horizontal) within the woven band.

Some historical examples of this technique include:

- Brocaded tablet woven band sectioned and sewn flat onto a silk garment found at Birka (Sweden, Viking Age)
- Brocaded tablet bands sewn onto the cuffs of tunic from Mammen (Denmark, 10th Century)
- A woollen tablet woven band sewn onto twill fabric, presumed to be the neckline of an outer garment found at Reykjasel (Iceland, Viking Age, 800 - 1000 AD)
- Gaigovo-1 (Object No. I / 4.2) sewn with an overcast stitch onto a piece of herringbone twill cloth, perpendicular to the edge, with green woollen thread (Staraya Ladoga, Russia, 11th Century)
- Red tunic with tablet woven cuffs secured with silver gilt metal clasps sewn onto cloth from Evebø-Eide, Gloppen (Norway, Migration Period, 5th Century)
- Brocaded tablet woven band sectioned and sewn flat onto a damask chasuble found in Ösmo church, Stockholm (Sweden, 14 - 15th Century).

Woven in

A tablet woven header band creates a rigid, organised and well spaced starting point for weaving on a vertical, warp weighted loom. The header band, or starting border, is woven first and used to secure the warp threads on the cloth beam at the top of the loom. In this way, the weft thread of the header band is also the warp thread for the cloth.



This method is complicated. Unlike the “edge to edge” or “cloth to cloth” technique, a woven in trim will require some planning, preparation and skill to tablet weave a border into the cloth. Although this treatment is historically useful with a warp weighted loom, it can be reproduced using handwoven cloth or unfinished commercial fabric (cut and unravel the selvedge). A header band can be woven using the weft of the tablet woven band is the warp of the cloth (left). This can be achieved prior to weaving on a modern table loom. Or, a band can be woven using the unravelled or unwoven warp threads of the cloth resulting in trim with a weft fringe (right).

Some historical examples of this technique include:

- Tablet woven border woven into the edge of semi-circular mantle from an Etruscan grave (M1) in Verucchio (Italy, 725 - 650 BC)
- Wide blue and white tablet woven border woven along the selvedges of a checkered, wool cloak from Thorsberg (Northern Germany, Iron Age)
- The wide Orkney band features a long fringe created with the extension of the weft, similar to the technique used in a header band (Orkney, AD 250 - 615).
- An intact header band with warp recovered from Tegle, (Norway, Migration Period, AD 400 - 575)
- The ‘Lady in Blue’ wore a basic band woven into the top of her smokkr (Iceland, Late Viking Age, 10th Century).
- Simple woollen bands used as header bands for the construction of elaborate mantles from Siksälä (Estonia, 13-14th Century)

References

Collingwood, P. (2015). The Techniques of Tablet Weaving (2nd ed.). Brattleboro, Vermont: Echo Point Books & Media.

Dedkam, H. (1925). To tekstilfund fra folkevandringstiden: Evebø og Snartemo. Bergens Museums Aarbok: ArKeloish Musum I Stravanger Biblioteket. Retrieved from https://www.nb.no/items/URN:NBN:no-nb_digibok_2015101306009

Guckelsberger, M., & Mader, M. (2017). The Woman Dressed in Blue: a Textile Find from the 10th C. Icelandic grave and its reconstruction. Retrieved from https://northernwomen.org/2017/02/22/the-woman-dressed-in-blue-a-textile-find-from-the-10th-c-icelandic-grave-and-its-reconstruction-by-marianne-guckelsberger-and-marled-mader/

Historiska Museet (SHM). (n.d.) Mässhake av textil. Retrieved from https://historiska.se/upptack-historien/object/95622-masshake-av-textil/

Ingstad, A. S. (1979). To kvinnegraver med tekstiler fra Kaupang. Universitetets Oldsaksamling 150 år, Jubileumsårbok. Særtrykk, Oslo

Kochkurkina, S. I., & Orfinskaya, O. V. (2014). ПРИЛАДОЖСКАЯ КУРГАННАЯ КУЛЬТУРА:ТЕХНОЛОГИЧЕСКОЕ ИССЛЕДОВАНИЕ ТЕКСТИЛЯ [Ladoga Kurgan culture: Technological research of textiles]. Retrieved from https://www.academia.edu/9669661/

Ræder Knudsen, L. (n.d.). Tacit Knowledge and the Interpretation of Archaeological Tablet-Woven Textiles. Retrieved from http://tabletweaving.dk/wordpress/wp-content/uploads/2018/10/LBJ-festschrift-3.pdf

Sveinsdottir, D. & Saemundarson, B. (2020). A Simplified Guide to Historical Tablet Weaving. Sydney, Australia: Knarr Traders.

Wilberg Halvorsen, S. (2009). Dates and Dyes - New test results for the finds from Tegle and Helgeland, Norway. Archaeological Textiles Newsletter, 54. Retrieved from http://atnfriends.com/download/ATN49color.pdf

Vergberg, R. (2007). You too can warp and weave on a Warp-weighted Loom. Retrieved from https://www.academia.edu/33710255/You_too_can_warp_and_weave_on_a_Warp-Weighted_Loom