# GOLDEN DOORWAY ENSEMBLE

## Report of the Institute of Conservation (IoC), University of Applied Arts Vienna

*Fig. 1: Overview of the Golden Doorway Ensemble*

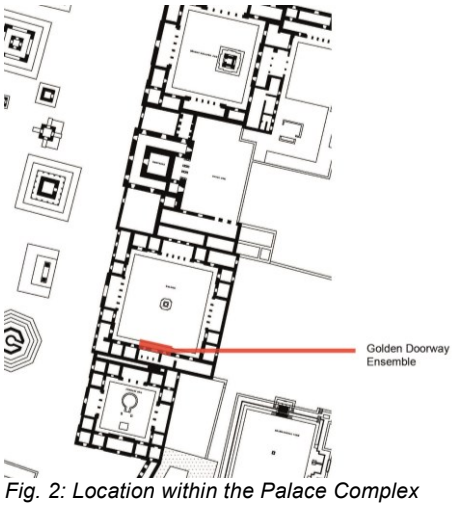


*Fig. 2: Location within the Palace Complex*



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## Data Sheet

### Description

The Golden Doorway marks the entryway to the Taleju shrine located inside the south wing of Mul Chowk. The ensemble is a jewel of Nepalese craftsmanship executed to the highest standards and consists of three fire-gilded repoussé components: the door with a torana (tympanum) and two sculptures of the river goddesses Yamuna (right, standing on a Kurma/turtle) and Ganga (left, standing on a Makara). The earliest parts date back to the 17th century. Traces of worship on all surfaces still emphasise its religious significance down to the present day.

The Golden Doorway is protected by a projecting roof and is therefore only slightly exposed to rain or direct sunlight. This has contributed to the relatively good preservation of the fire gilding. Nevertheless, the metal surfaces were covered with thick layers of dust, corrosion and organic remnants from animal sacrifices. Besides, strong deformations, dings and dents caused by mechanical forces were visible. Because of the loss and theft of important decorative parts and attributes, especially in the tympanum of the door, the ensemble impressed the observer as a fragment.

Metal conservators of the Institute of Conservation in collaboration with local coppersmiths were entrusted with the challenging conservation of this living cultural heritage.

| | | |
|---|---|---|
| **Names** | | |
| **Dated** | earliest parts from 1660, destroyed by a fire 1662, rebuilt in 1665/66, Taleju Temple 1671(?) | |
| **Measurements (H x W x D)** | Door with torana total (H x W): c. 280 x 195 cm | |
| | Door total (H x W): c. 195 x 195 cm | |
| | Doorframe (H x W): 175 x 120 cm | |
| | Door leaves (H x W): 165 x 85 cm | |
| | Ganga total: 208 x 85 x 43 cm (H without plinth: 187 cm) | |
| | Yamuna total: 204 x 95 x 39 cm (H without plinth: 185 cm) | |
| **Materials/Technology** | Wooden core, fire gilded copper repoussé and chasing work | |
| **Interventions (IoC)** | Assessment | 2011, 2012 |
| | Cleaning Trials | 2011 |
| | Mapping | 2012-2013 |
| | Sampling | 2012 |
| | Analyses | 2012-2013 |
| | Conservation | 2012 |
| | Maintenance | 2013, 2014, 2018, 2022 |
| **Team (IoC)** | Gabriela Krist, Manfred Trummer, Martina Griesser-Stermscheg, Kathrin Schmidt, Lisa Gräber, Katharina Fuchs, Marina Paric | |
| **Academic Research (IoC)** | Pre-Thesis by Teresa Wagner | 2013 |

## Survey: Materials and Technology

- Wooden base structure/wooden core, partly finely carved
- 0.7-1 mm thick copper sheets in repoussé and chasing techniques, fire gilded
- Plinths made of calcite schist [2]

Golden Door of Taleju Shrine:

- Two-winged door is secured with bronze padlock
- Wooden cores covered by fire gilded copper sheets at their front
- Wooden cores are partly carved (e.g. floral motifs)
- Fire gilded copper sheets are either unornamented or decorated by repoussé and chasing (various reliefs, floral motifs, deities)

Ganga and Yamuna:

- Multiple fire gilded copper sheet pieces ornamented by repoussé and chasing
- Arms, feet, ears, and jewellery applications are fire gilded cast bronze (lost wax casting) fixed with screws and bolts
- Wooden core of several pieces joined with iron nails, no wooden support at arms and feet
- Back panels made of wooden boards covered with fire gilded copper sheets (partly decorated)
- Bracelets adorned with blue glass stones; anklets with transparent glass stones
- Backside are fixed to the brick wall with iron poles, which can be loosened from inside the temple
- Statues are interconnected with their vehicles and the plinth through a hollow iron pole that reaches from contraposto (leg with weight) through square openings

Makara (vehicle Ganga):

- Two fire gilded copper repoussé pieces (head part and hind part in combination with front legs), joined with rivets
- Head and front side ornamented by repoussé and chasing, sides and top are plain
- Cooper pieces mounted on square wooden core, fixed with copper nails
- Head and trunk without wooden support

Kurma/turtle (vehicle Yamuna):

- Six fire gilded copper repoussé pieces (four legs, head, and body)
- Ornamented by repoussé and chasing, surfaces facing the wall are plain and not gilded
- Copper pieces mounted on a wooden core, which follows the shape of the turtle
- Legs and head without wooden support
- On the bottom of each leg copper spikes are soldered to fix the turtle on the stone plinth
-

Fig. 3, 4, 5*: Ganga, Golden Door and Yamuna (f.l.t.r.), 2012*

*Fig. 6: Detail of wooden core, 2012*

*Fig. 7: Detail of iron pole, 2012*

*Fig. 8: Detail of single elements of Ganga, 2012*

*Fig. 9: Detail of the connection of the single pieces, 2012*

*Fig. 10: Anchor to the wooden back, 2011*

*Fig. 11: Detail of plug system, 2011*

*Fig. 12: Wooden Core, 2012*

## Previous (Conservation) Interventions

| | |
|---|---|
| Unknown | Hair of both sculptures overpainted with black colour (probably oil-based) |
| 1970s | Photographical documentation of 12 fired gilded cast bronze statues at the tympanum, which have been missing afterwards (documented in a photograph in 1984 – see: Schick, Jürgen. 1998. *The Gods are Leaving the Country: Art Theft from Nepal*. Bangkok: Orchid Press Publishing Limited) |

## Survey: Condition and Causes of Decay (2011/2012)

- Missing parts already documented in 2006 by the KVPT
- Thick soiling layers incl. worshipping residues
- Deformations of metal parts due to mechanical impacts (probably anthropogenic origin) incl. cracks
- Worn gilding/abrasion (partly due to worshipping)
- Fragmented tympanum due to stolen/missing parts

*Fig. 13:Thick layer of soiling, 2011*

*Fig. 14: Deformations and soiled surface, 2011*

*Fig. 15: Heavily soiled and missing parts, 2011*

*Fig. 16: Greasy remnants of worshipping, 2012*

*Fig. 17: Deformations and broken parts, 2012*

## Conservation (IoC)

2012 - Dry cleaning with soft brushes to remove loose layers of dust
- Dismantling of sculptures (opening of iron nails), wooden cores were removed and repaired if required
- Wet cleaning of metal parts with drinking water and soft brushes, second wet cleaning with drinking water and surfactant (dish detergent), rinsing off with drinking water and immediate dry cleaning with cotton cloths, additionally drying under sun exposure
- Mechanical removing of corrosion products and strongly adhering dirt (excrements and clay) with scalpel, knifes and bone cleanser
- Removing of further corrosion products/dirt with citric acid (complexing agent) in combination with brushes and poultices, immediate subsequent cleaning with drinking water and brushes
- Reshaping of deformations by hammering with rubber or skin-hammer/wooden ones (done by local artisans)
- Cracks either underlaid with copper strips and fixed with copper rivets (Ganga's left leg, Makara's head) or closed with brass solder (crook of Yamuna's arm, Makara's head)
- Supporting re-formed parts (Makara) with inlays of copper sheets from inside
- Reassembling
- Cleaning the surface with Acetone for removing residues of fat (preparation for gilding)
- Wooden back panels of the sculptures were repaired covered with three new plain copper sheets; regilding with gold leaves (Dukaten-Doppelgold) using Mixtion
- Partial regilding of worn-off parts/surfaces without gilding on the sculptures (arms of Yamuna, turtle, head of Makara) with gold leaves (Dukaten-Doppelgold) using Mixtion;
- Newly gilded surfaces were reworked with Acetone and corrosive sheets to simulate an aged appearance
- Doorframe coated with acrylic resin (Paraloid B72 in Acetone 10%)
- Missing pieces of the torana reconstructed in repoussé, chasing and lost wax casting techniques (done by craftsmen) and oil-gilded
- Brick wall surrounding ensemble was reinforced and statues equipped with iron fixtures on their back

Conservation Materials* and Recipes used:
- Dukaten-Doppelgold 23 Kar. 80 x 80 mm (Erich Dungl Blattgoldschlägerei GmbH)
- Kölner Classic Ölmixtion (boesner)
- Paraloid B72, in Acetone 10%

* Product / technical data sheets can be found in the supplement [A]

2013 - Surface cleaning with soft brushes and soft rags

2014 - Supplements and newly gilded surfaces were reworked with Acetone (cotton buds) and abrasive fabric

2022 - Surface cleaning

*Fig. 18: Mechanical Cleaning, 2012*

*Fig. 19: Cleaned (left) and untreated (right) surface, 2012*

*Fig. 20: Reducing the deformations, 2012*

*Fig. 21: Reconstruction of missing parts (by KVPT), 2012*

*Fig. 22: Supporting inlay cooper sheets, 2012*

*Fig. 23: Fixing reconstructed parts, 2012*

*Fig. 24: Regilding with gold leaves, 2012*

*Fig. 25: Removing Dust, Maintenance 2013*

## Before and after Conservation

*Fig. 26: Ganga before conservation, 2011*

*Fig. 27: Yamuna before conservation, 2011*

*Fig. 28: Ganga after conservation, 2012*

*Fig. 29: Yamuna after conservation, 2012*

*Fig. 30: Ganga after conservation, 2014*

*Fig. 31: Yamuna after conservation, 2014*

*Fig. 32: Ganga, 2022*

*Fig. 33: Yamuna, 2022*

*Fig. 34: Golden Doorway Ensemble before conservation, 2012*

*Fig. 35: Golden Doorway Ensemble after conservation, 2012*

## List of Publications / Reports (IoC)

Wagner, Theresa. 2013. “The golden Doorway Ensemble. Patan Royal Palace Complex, Nepal. Between the Austrian Conservation Approach and Nepali Craftstradition.” Unpublished Pre-Thesis, University of Applied Arts Vienna.

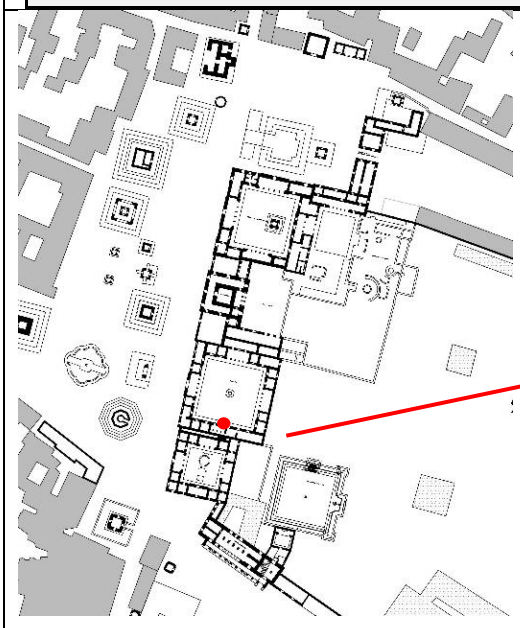
## Supplements

[A] All product / technical data sheets can be found in this additional document.

[2] Detailed material characterisation - calcitic schist

## Photo Credits

| GENERAL INFORMATION | | |
|---|---|---|
| **Object / Monument**<br>Golden doorway ensemble | **Orientation**<br>Entrance to South Taleju temple /<br>Doorway to Taleju Shrine | **Size (H x L x W)**<br>Door with torana total (H x W): c. 280 x 195 cm<br>Door total (H x W): c. 195 x 195 cm<br>Ganga total: (H x W x D) 208 x 85 x 43 cm (H without plinth: 188 cm)<br>Yamuna total: (H x W x D) 204 x 95 x 39 cm (H without plinth: 185 cm) |
| **Date of Production**<br>earliest parts from 1660, destroyed by a fire 1662, rebuilt in 1665/66, Taleju Temple 1671(?) | **Location**<br>Royal Palace, Mulchowk | |
| **Material and Technology**<br>- wooden support structure<br>- copper sheet repoussé and cast metal elements, fire gilded, mounted with iron nails<br>- Torana secured by an iron chain | | |
| **Date of the last Treatment**<br>Conservation 2012 and 2014: see short report | **Institutions of the last Treatment**<br>IoC | |



| EVALUATION | |
|---|---|
| **Date of Evaluation**<br>May 2024 | **Evaluation done by**<br>Meral Hietz, Katharina Mendl |

| | | |
|---|---|---|
| All directions are from the viewer's perspective. | | |
| **Recent Damages:** | | |
| ☐ Stability Problems | ☐ Major<br>☐ Medium<br>☐ Minor | |
| Comment: | | |
| ☐ Broken / - into several Pieces | ☐ Many<br>☐ Some<br>☐ Few | |
| Comment: | | |
| ☒ Loose / Missing Parts | ☐ Many<br>☐ Some<br>☒ Few | Door:<br>- Missing parts on the two of the three small flame frames<br>- one missing nail on left doorframe and seven missing nails on the left door wing<br>Ganga: -<br>Yamuna: - |
| Comment: | | |
| ☒ Cracks / Holes | ☐ Many<br>☒ Some<br>☐ Few | Door:<br>- 8 cracks (c.) on the lower area of the door frame (with figure of Durga)<br>- 6 c. upper part of the right column (roof elements), 10 c. on the left pillar<br>- one large c. on the right door wing and 7 c. + 5 small c. in the lower area, 1 c. on the right door blade, 1 c. on the baffle plate of the door<br>- 2. c. on the roof element of the door<br>Torana:<br>- 2 holes, 8 c.<br>Ganga:<br>- Probably no new cracks<br>Yamuna:<br>- Probably only old cracks (on the left hind leg of the turtle, left front leg of turtle, right upper side of the necklace with “pearls”, small c. on the upper frame and lower right leg) |
| Comment: | | |
| | | Door: |

| | | |
|---|---|---|
| ☒ Deformation / Dents | ☐ Major<br>☒ Medium<br>☐ Minor | - Right pillar (3 deformations on roof elements, 1 d. on capital - column head, 4 d. on lotus 2nd from top, one on 3rd lotus frame from top, 4 d. on bottom roof parts, one on bottom part sheet),<br>- Left pillar (6 d. on head area, 2 d. on bottom area),<br>- Left door wing (4 dents to lower left door wing and left door frame),<br>- Right door wing (10-12 dents on the frame, frame trim completely deformed),<br>- Baffle plate (dents and deformed parts overall)<br>- Roof top parts (4 dents)<br>Torana:<br>- d. on water spout of left Makara, iron lock and copper sheet on the bottom area<br>Ganga:<br>- Probably only old ones (on the leg below the knee, on the right side of the hip and right upper leg)<br>Yamuna:<br>- Scarf to the right of the left thigh |
| Comment: | | |
| ☒ Abrasion / Worn out Gilding | ☐ Major<br>☐ Medium<br>☒ Minor | Door:<br>- Mostly in the bottom area and sides of the doorframe<br>Ganga:<br>- Old ones only<br>Yamuna:<br>- Not really |
| Comment: | | |
| ☒ Corrosion | ☐ Major<br>☐ Medium<br>☒ Minor | Door:<br>- Corrosion on all iron elements (nails, chain on the left pillar)<br>- Copper sheet (upper area of door frame, bottom roof part of left pillar, small dots on upper area of left pillar, baffle plate in the lower area)<br>Ganga:<br>- A few areas with green corrosion (lotus flower on the lower part, single dots on the mirror, single dots on the stalk and a few less on the scarf, very little on the face and more on the Makara, also few on legs and hands, more on lower areas)<br>- Darkening (red and brown) of areas with only thin |

| | | | |
|---|---|---|---|
| | | | gold layer or no gold left on the copper surface<br>Yamuna:<br>- Green corrosion (partially on the whole surface, on the face more than on the Ganga and left wrist, but mainly on the leaf gilded areas: particularly pronounced on the underside of the forearm, flower, and to a lesser extent on the scarf, top, insignia<br>- strong green corrosion on the connection to the wall and on the outer edge)<br>- General darkening of areas with thin gold layer |
| Comment: | | | |
| ☒ Soiling | ☒ Dust | ☐ Heavy<br>☒ Medium<br>☐ Light | Door:<br>- Whole surface covered with a thin layer of dust, more at the bottom, areas with spider webs<br>Ganga:<br>- Thin layer of dust on the whole surface, thicker on the backside<br>Yamuna:<br>- Dust all over, spider webs on neck, chest and back of hips |
| | ☒ Dirt | ☐ Heavy<br>☒ Medium<br>☐ Light | Torana:<br>- Some bird droppings, ritual substances and pigments on door frame head and central deity Durga on roof element<br>Ganga:<br>- Few bird droppings<br>Yamuna:<br>- Few bird droppings,<br>- Tika pigment paste on forehead |
| | ☒ Blood | ☐ Heavy<br>☒ Medium<br>☐ Light | Door:<br>- Particularly on the lower sides of the door frame and the lower area of the column<br>Ganga: -<br>Yamuna: - |
| Comment: | | | |

**Evaluation of the Condition**

☐ good

☒ satisfactory

☐ unsatisfactory

**Conclusion**

In general, the condition of the Golden Doorway Ensemble in the Mulchowk was judged to be satisfactory.
The implement technical measures (e.g. reshaping of deformations, replication of missing parts, replacement of loose elements, riveting of copper sheet patches to close cracks) were carried out by the local coppersmiths and have proved to be stable so far. Most of the cracks and deformations are thought to be of older origin. The surface treatments that were carried out by the IoC in 2012 and 2014 have proved to be stable over time. There is some darkening of the gilded surface, particularly in areas of worn gilding, but the overall appearance blends well with the surroundings. Minor green corrosion has been noted over the entire surface, sometimes more pronounced, but particularly at the junction with the wall and at the outer edge of the Yamuna sculpture. All iron parts are affected by corrosion.
Deposits (soiling, bird droppings, ritual substances) can be found on the surface and are a major cause of corrosive reactions. In this respect, maintenance is the key to the long-term preservation of the Golden Doorway Ensemble. Regular cleaning and removal of bird droppings must be considered by the local community as the most important factor in long-term conservation. Where citric acid is used to chemically reduce corrosion, it is essential that the surface is thoroughly rinsed after cleaning, as acidic residues accelerate corrosive reactions.

## PHOTO DOCUMENTATION

Fig. 1: Golden doorway ensemble after conservation, 2014

Fig. 2: Golden doorway ensemble after conservation in May 2024

Fig. 3: Golden door and torana within the Mulchowk after conservation 2014, before final assembly

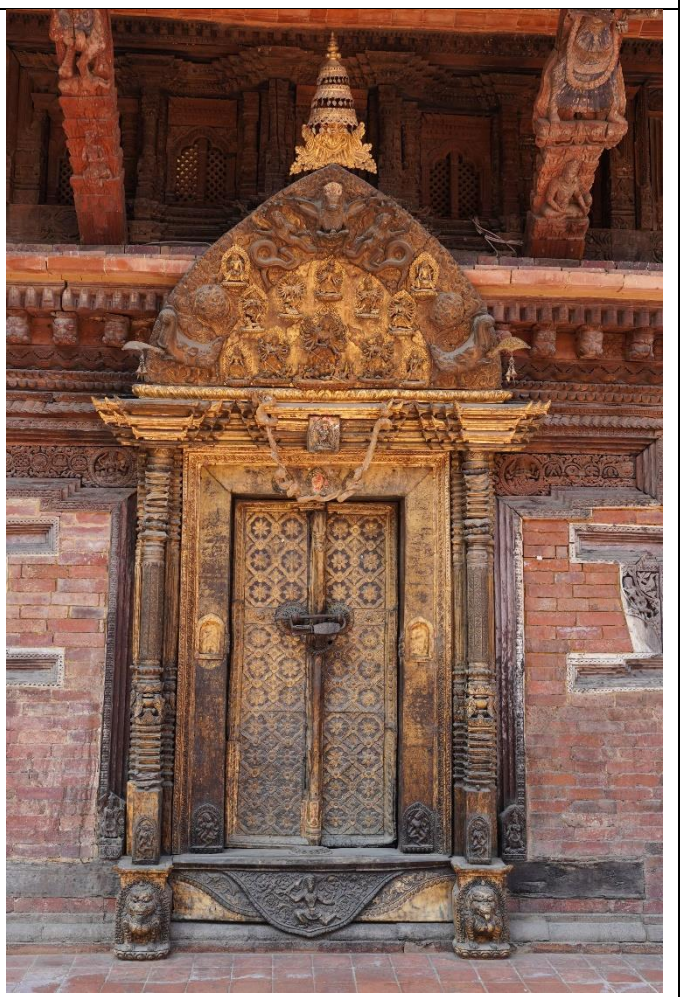


Fig. 4: Golden door and torana within the Mulchowk in May 2024

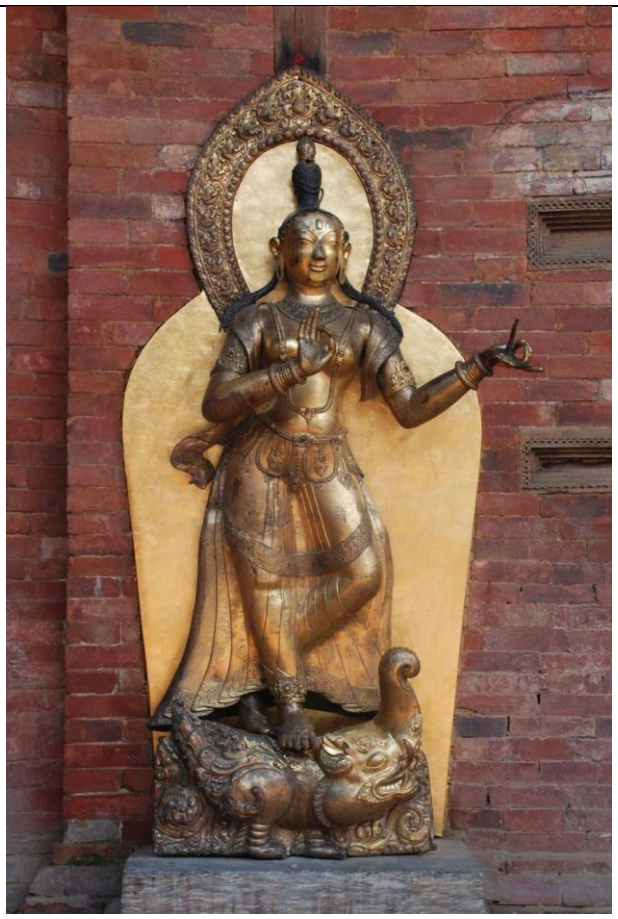


Fig. 5: Godess Ganga standing on a Makara, after conservation 2014

Fig. 6: Godess Ganga standing on a Makara in May 2024

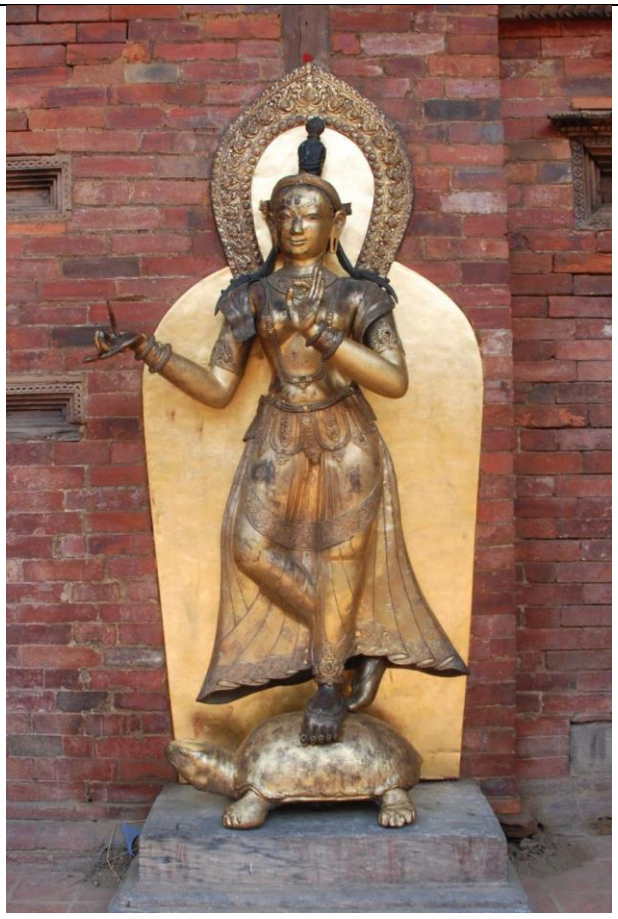


Fig. 7: Godess Yamuna standing on a turtle, after conservation 2014

Fig. 8: Godess Yamuna standing on a turtle in May 2024

Fig. 9: Doorway ensemble, 2017

Fig. 10: Doorway ensemble in May 2024

Fig. 11: Torana with umbrella on top, in May 2024

Fig. 12: Iron lock of the Golden Door, in May 2024

Fig. 13: Missing nail above the Makara

Fig. 14: Cracks close tot he Durga figure

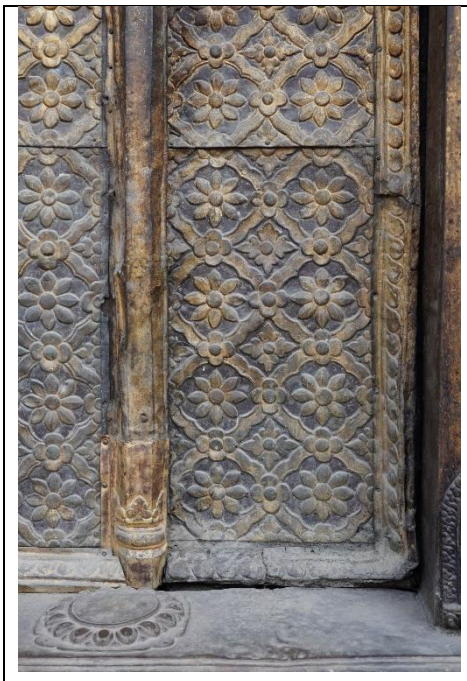


Fig. 15: Cracks and deformations on the right lower door wing and baffle plate

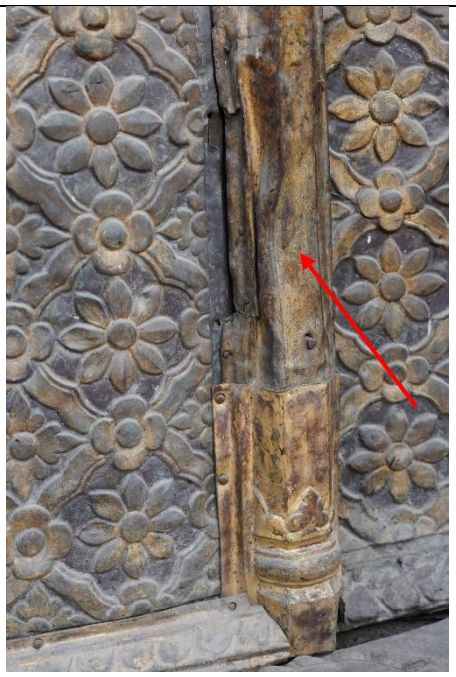


Fig. 16: Cracks and deformations on the baffle plate

Fig. 17: deformations on the left pillar

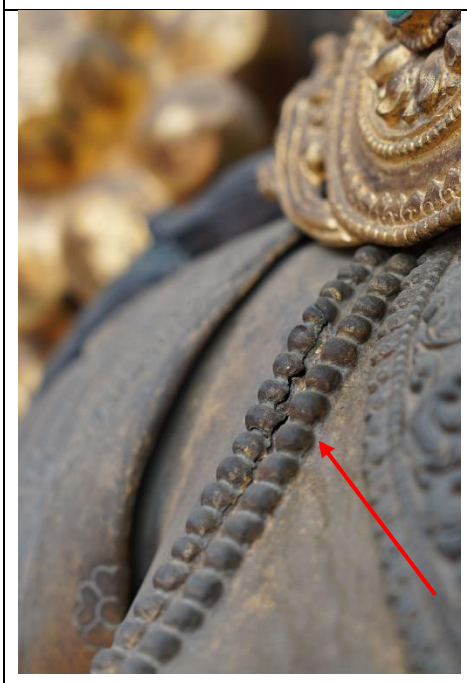


Fig. 18: Cracks on the necklace of Ganga

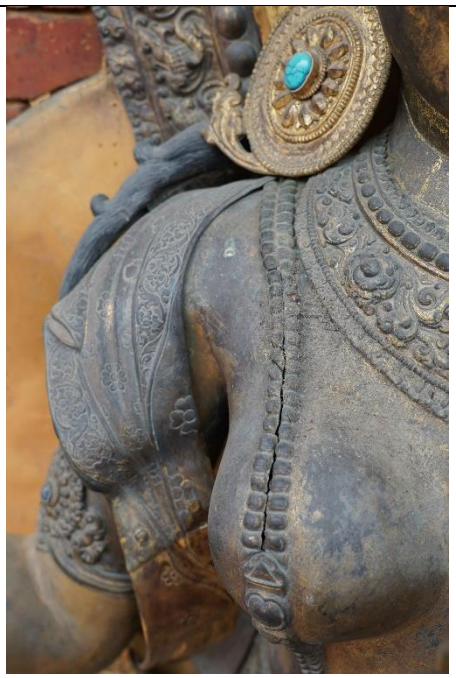


Fig. 19: Cracks on the necklace of Yamuna

Fig. 20: 5 Cracks and deformations on the right leg of Ganga

Fig. 21: Darkening of areas with thin gold layer on the Torana

Fig. 22: Soiling and abraded, darkened surface in the lower door area

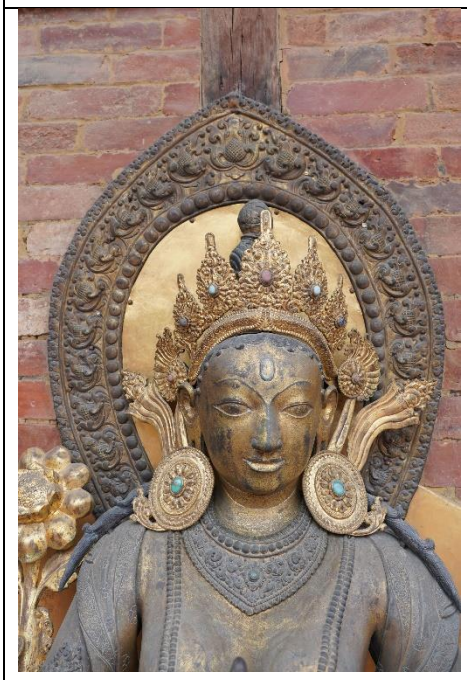


Fig. 23: Abraded and darkened areas on Ganga

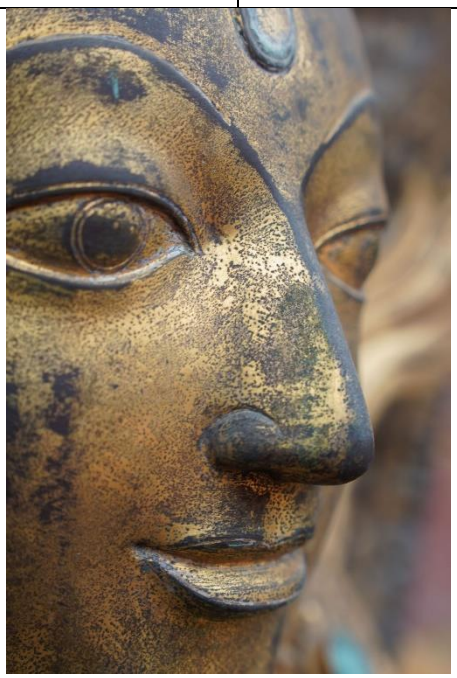


Fig. 24: Worn of gilding and dots of green corrosion on Gangas face

Fig. 25: Strong green corrosion on the edges of the back plate of Yamuna

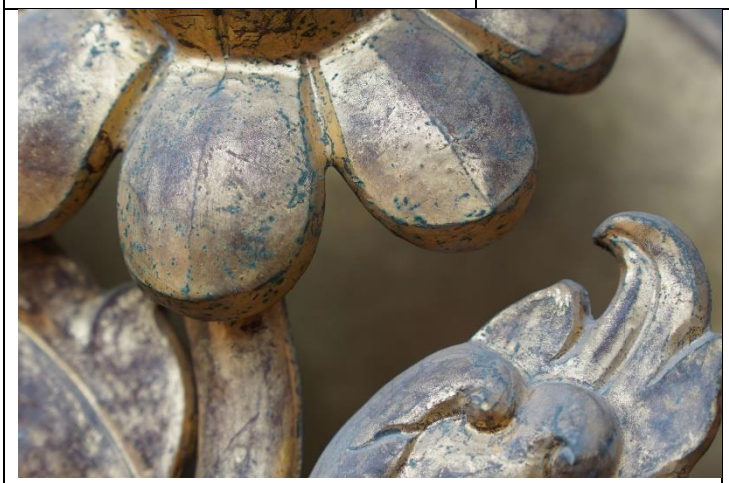


Fig. 26: Green corrosion dots on the Yamuna ornaments

Fig. 27: Partial green corrosion on the Makara of Ganga

Fig. 28: Worn of gilding and ritual substances on the upper door frame

Fig. 29: Deformations and dust accumulations on the left pillar

Fig. 30: Blood stains on the door frame

Fig. 31: Soiling on the baffle plate

Fig. 32: Spider webs and dust on the pillar

Fig. 33: Dust accumulations and blood stains on the lower door area

Fig. 34: Bird droppings on the Yamuna statue

## [A] Product Data Sheets – Links[1] to Suppliers/Manufacturers

AEROSIL® 200
https://products.evonik.com/assets/or/ld/AEROSIL_200_TDS_DE_DE_TDS_PV_52043839_de_DE_WORLD.pdf

Aviva Silikat Grundierung
https://www.adler-lacke.com/Canto/tmb/aviva-silikat-grundierung_tmb_4079_de.pdfA
Alkylbenzyldimethylammonium chloride
https://www.sigmaaldrich.com/AT/en/sds/mm/8.14858?userType=anonymous

Klucel™ EF
https://www.kremer-pigmente.com/elements/resources/products/files/63701-63713.pdf

Aviva Tirokat-Color, Adler
https://www.adler-lacke.com/Canto/tmb/aviva-tirokat-color_tmb_4087_de.pdf

Mixtion Le Franc, Kremer
https://shop.kremerpigments.com/elements/resources/products/files/98000e.pdf

Waxes, Deffner und Johann
https://deffner-johann.de/media/datasheets/4186000/EN/Zusatzinformation_Wachse_DE_DJ.PDF

Injection mortar HFX
https://productdata.hilti.com/APQ_HC_RAW/ASSET_DOC_7567931.pdf

Kölner Classic Ölmixtion 3h; 12h; 24h
https://www.kolner-vergolderprodukte.de/produkte/koelner-oelmixtion/

KSE 500 E
https://media.remmers.com/celum/export/documents/Remmers_0715_KSE-500-E-_Technisches-Merkblatt_de_DE_26355.pdf

Lascaux 498 20 X acrylic adhesive
https://deffner-johann.de/media/datasheets/2051100/DE/2051100_Technisches%20Datenblatt_Lascaux%20Acrylkleber%20498%2020%20X_DE_DJ.pdf

Marble dust
https://www.kremer-pigmente.com/elements/resources/products/files/58500-58580_59001-59690.pdf

Natural hydraulic lime
https://www.preservationworks.us/wp-content/uploads/2019/10/NHL-Datasheet-Lafarge-23.5.pdf

Plextol B-500 (acrylic dispersion)
https://deffner-johann.de/media/datasheets/2556500/DE/2556500_Technical%20Data%20Sheet_Acrylic%20Dispersion%20B%20500_EN_DJ.pdf

Primal® SF 016
https://deffner-johann.de/media/datasheets/2543001/DE/2543001_Technical_Data_Sheet_Primal_SF_016_DJ_EN.pdf

AKEPOX® 2010
https://data.akemi.de/fileadmin/user_upload/products/productdocuments/TMB/Akepox_2010_TMB_D.pdf

[1] All links were last accessed on 13 May 2025.

EPO-TEK® 301-1
https://www.epotek.com/docs/en/Datasheet/301-1.pdf

Titebond Wood Glue
http://sds.franklini.com/msds/1411.042k0nmo0020.pdf

Paraloid™ B-72, Kremer
https://www.kremer-pigmente.com/elements/resources/products/files/67400-67409.pdf

Keim Granital®
https://www.keim.com/documents/de-AT/723/TM_Granital_DE-AT.pdf

| [2]“Calcitic schist” | |
|---|---|
| **Description of visual characteristics** | - light grey to almost black colour<br>- occasional white inclusions with reddish center<br>- characteristic schist surface with homogeneous foliation and inclusions |
| **Samples taken (sample name and origin)** | - **KAT1** (Leiner 2010), Bhandarkhal Tank Pavilion Base (upper covering) (Fig. 3, 4)<br>- **P06, P07** (Kaipf 2017), Yoganarendra Pillar (Fig. 5–16)<br>- **NEP_ST_1** (Haselberger/Fuchs 2023), loose material around Royal Garden workshop (Fig. 17–22)<br><br>Cross and thin sections of the samples were prepared and examined with light microscopy and SEM.<br><br>**Sources**:<br>Leiner, Susanne. 2010. “Der Pavillon am Bhandarkhal-Tank. Palastkomplex Patan, Nepal.” Pre-thesis, University of Applied Arts Vienna.<br>Kaipf, Luis. 2017. “The Pillar of Yoganarendra Malla. Condition Survey, Conservation Treatment and Re-erection.” Pre-thesis, University of Applied Arts Vienna.<br>Johannes Weber, Katharina Fuchs, Martina Haselberger. 2023. Scientific investigation of the stone sample NEP_ST_1 from Patan Royal Garden Workshop. Unpublished report, Institute of Conservation, University of Applied Arts Vienna. |
| **Petrographic/geological characterization** | - weakly metamorphic schist, predominantly calcareous<br>- high concentration of silicates arranged in foliations, surrounded by a very fine-grained siliceous marble<br>- homogenous matrix and slight banding<br>- average grain size of major calcite crystals between 0.03–0.05 mm; 0.05–0.25mm for silicate crystals<br>- minor components of Phlogopite mica (grain size 0.1–0.2mm)<br>- grain borders linear or curved<br>- analyzed sample displays shear zone of ore minerals or graphite |
| **Pyhsical properties** | - relatively dense and heavy material<br>- almost no water absorption |
| **Damage patterns** | - (hair) cracks and loss of material due to mechanical stress – probably stone intrinsic due to metamorphosis<br>- almost no water related damage |
| | Scientifically confirmed:<br>- Pillar Yoganarendra Malla<br>- Bhandarkhal Tank Pavilion Base (upper covering) |

| | |
|---|---|
| **Use at Patan Darbar Square:** | By visual inspection only:<br>- Lion Pillar<br>- Garuda Pillar<br>- Harishankara Temple Base (cornerstones with lion protomes, inner threshold)<br>- Kings Throne<br>- Stone Gates (inner profile)<br>- Tusha Hiti<br>- Visveshvara Temple Base (cornerstones with lion protomes, inner threshold) |
| **Probable origin of material:** | - Probably mined in the Kathmandu Valley – the alluvium filled Kathmandu Valley is bordered by a sequence of unmetamorphosed to slightly metamorphosed sedimentary rock in the east, south and west<br>- Most probably from the southern part of the Kathmandu Valley, according to the geological map (Himalayan Maphouse [Ed.] Comprehensive Geological Map, GL701), possibly associated with the Chandragiri Formation.<br>- According to the map, the stone from the Chandragiri Formation is defined as following: *"light fine grained crystalline limestones partly siliceaus thick to massively bedded white quartzites in upper parts. Wavy limestones contain late ordovician schinoderms."* |

Fig. 1: Upper stone covering of Bhandarkhal Tank Pavilion Base, © IoC, 2010.

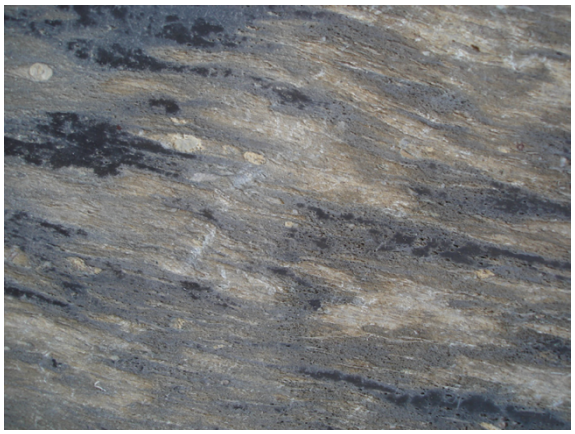


Fig. 2: Visual inspection of stone from Yoganarendra Malla Pillar, © IoC, Kaipf, 2017.

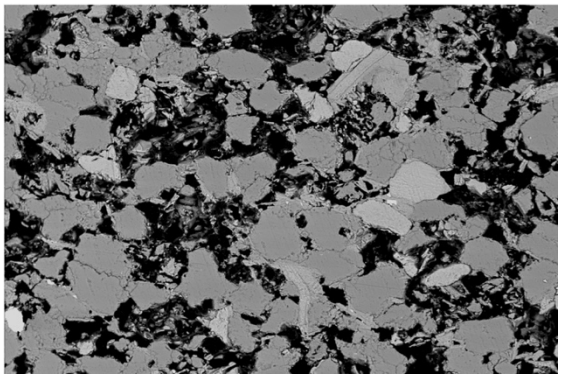


Fig. 3: Sample KAT1BS1, thin Section, SEM BSE.

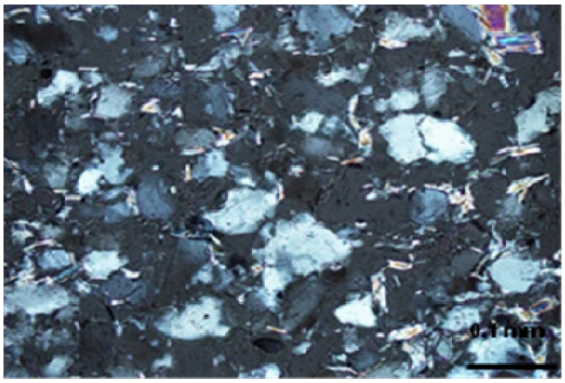


Fig. 4: Sample KAT1, thin section, optical microscopy, x200.

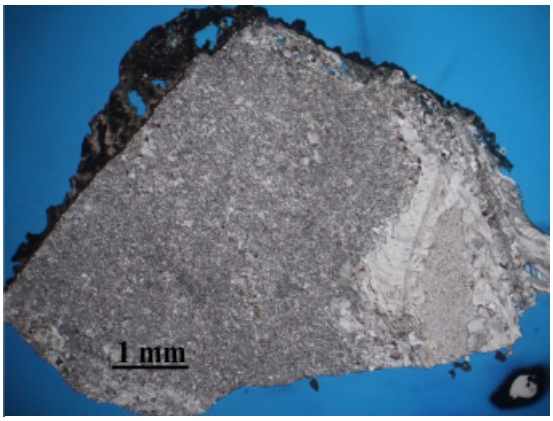



Fig. 5: Sample P06, thin section, optical microscopy, x24.

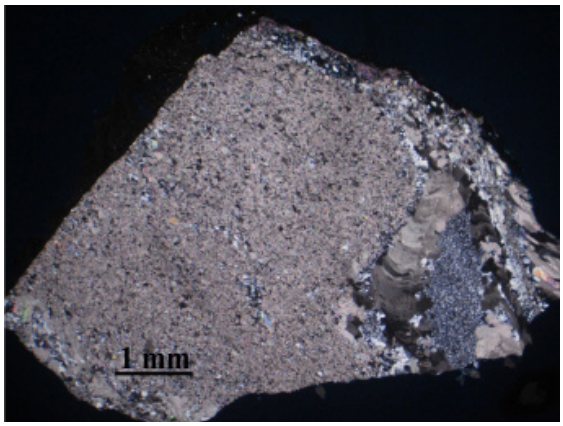



Fig. 6: Sample P06, thin section, optical microscopy, x24.

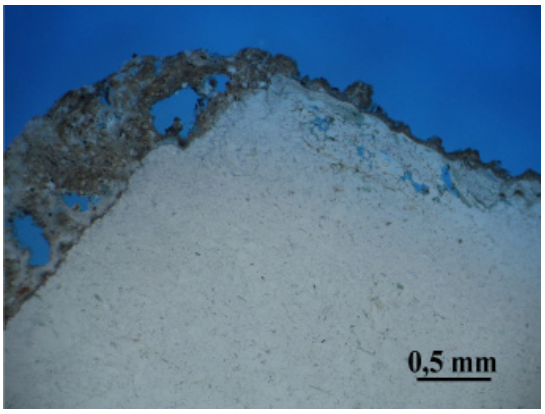



Fig. 7: Sample P06, thin section, optical microscopy, x48.

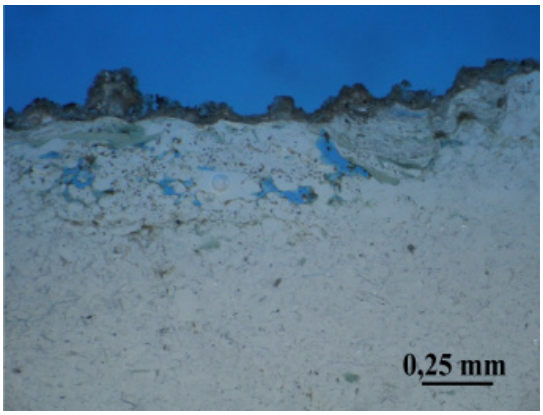



Fig. 8: Sample P06, thin section, optical microscopy, x48.


Fig. 9: Sample P07 taken in 2016, Lotus ring, Pillar of Yoganarendra Malla, Kaipf 2017.

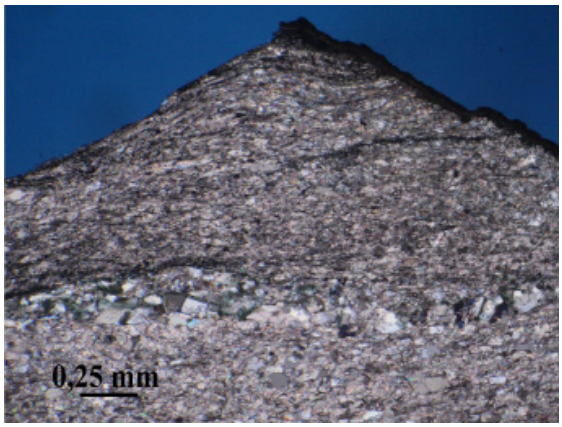



Fig. 10: Sample P07, thin section, x72. Fabric with relatively homogenous matrix and slightly developed banding.

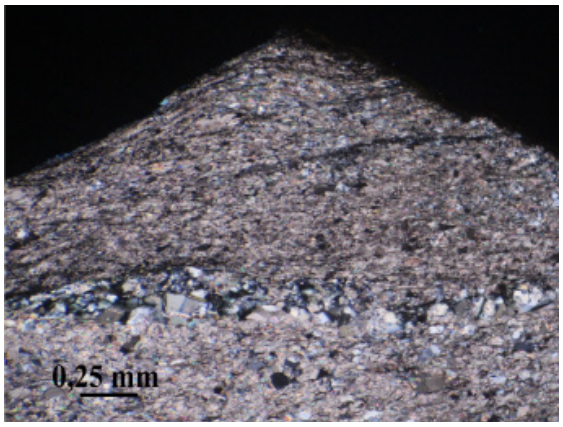



Fig. 11: Sample P07, thin section, x72.

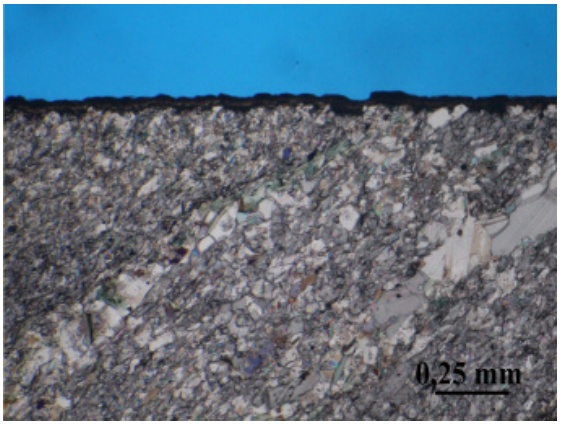



Fig. 12: Sample P07, thin section, x90.

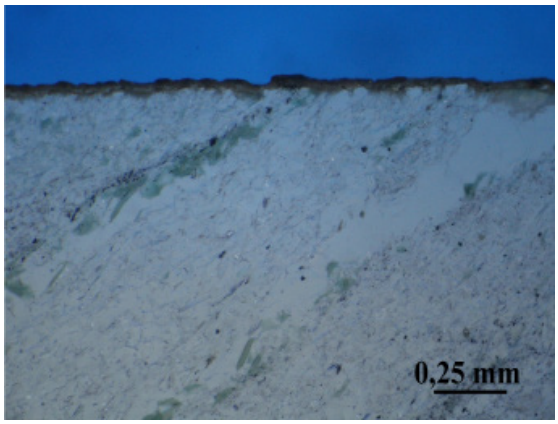



Fig. 13: Sample P07. thin section, x90.

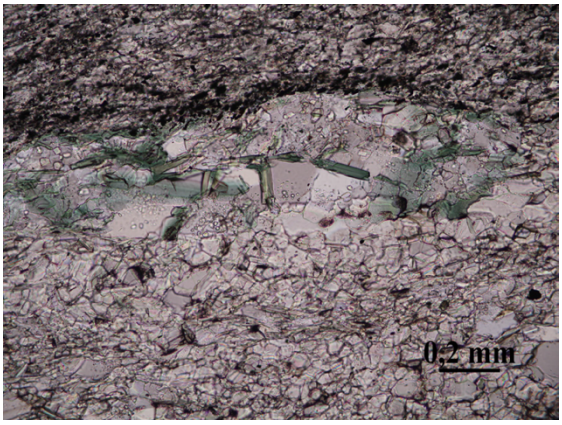



Fig. 14: Sample P07, thin section, x100; Phlogopite.

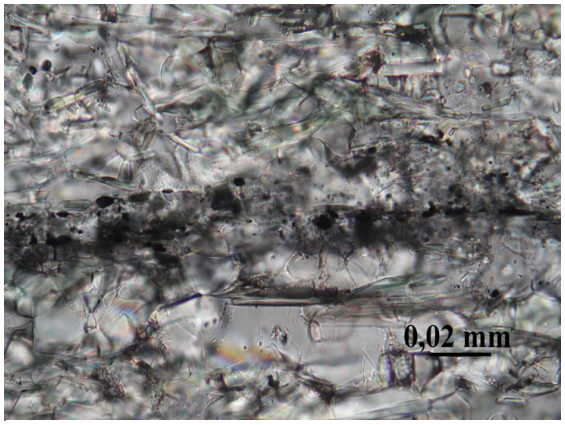



Fig. 15: Sample P07, thin section, x1000; Shear zone.

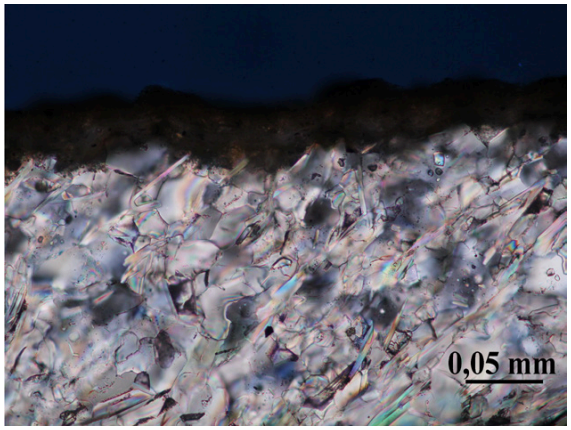



Fig. 16: Sample P07, thin section, x500. Equigranular grain aggregate with mainly polygonal grain forms.


Fig. 17: Sample NEP_ST_1.


Fig. 18: Sample NEP_ST_1.


Fig. 19: Sample NEP_ST_1, Nikon SMZ 500, transmitted light, crossed polarizers. Overview of the rock matrix with coarser and finer layers.

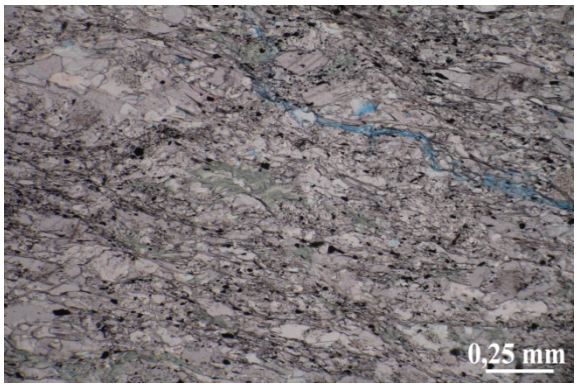



Fig. 20: Sample NEP_ST_1, Nikon SMZ 500, transmitted light, parallel polarizers. Detailed view of the matrix.

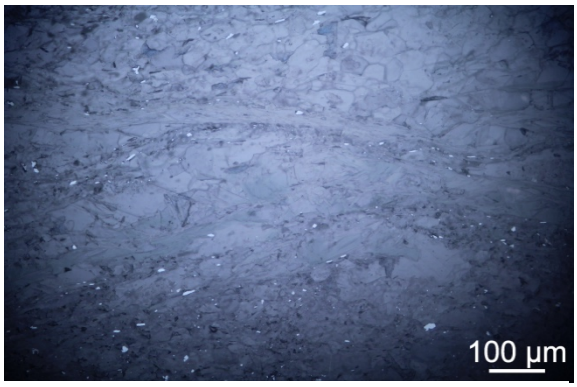



Fig. 21: Sample NEP_ST_1, Olympus BX40, incident light, bright field. Overview of mica inclusions (whitish spots).

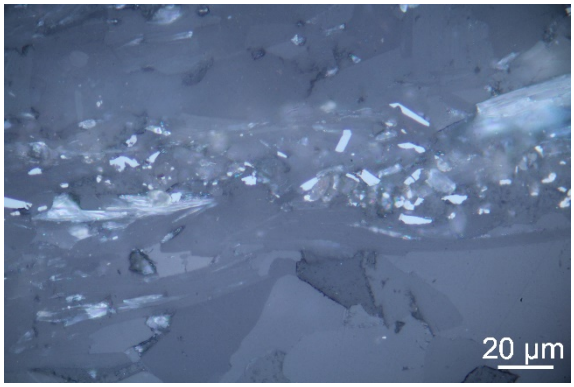



Fig. 22: Sample NEP_ST_1, Olympus BX40, incident light, bright field. Detail of a fine layer with mica flakes.