GOLDEN DOOR AND WINDOW, PATAN MUSEUM

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

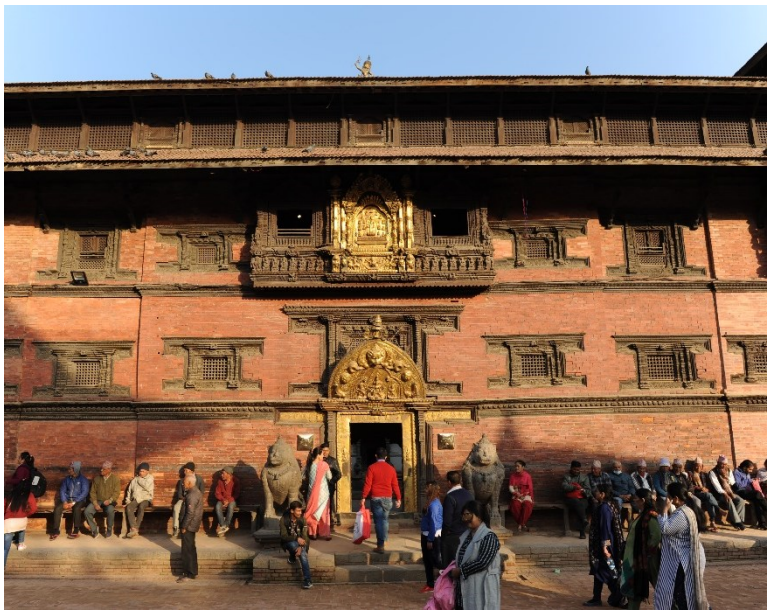

Fig. 1: Golden Door and Window

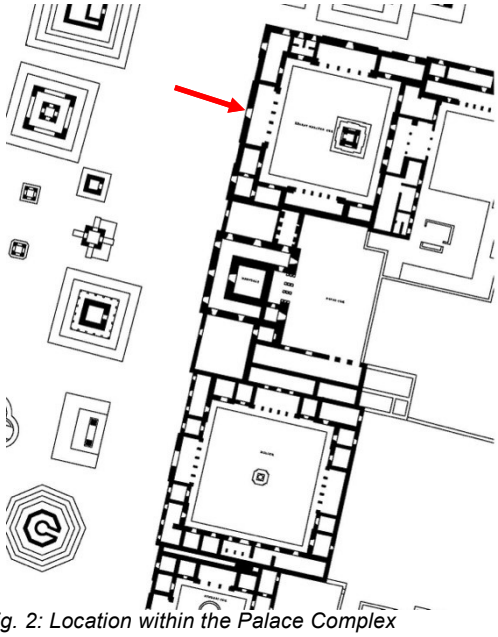

Fig. 2: Location within the Palace Complex

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Data Sheet

Description

The Golden Door acts not only as the entrance to Keshav Narayan Chowk of the Royal Palace but also to the Patan Museum located within the wings of this courtyard. In a typical Newar configuration, it consists of semi-attached pillars flanking the doorway and multiple rippling bands. A torana is placed above the door. The Golden Window consists of three openings and is placed above on the façade of the palace; it depicts a bodhisattva surrounded by an assembly of Hindu gods.
The Golden Portal was created in 1734. Its history follows the Nepalese architectural tradition in which each generation offers an additional layer as a votive offering: the gilded repoussé metalwork, which we see today, is a later addition from the middle of the 19th century (added under prime minister Jung Bahadur Rana in 1854). It was applied over the first carved wooden version. Similarly, also the central opening of the Window above was covered with gilded metal plates.
After being exposed to direct weathering over decades, the portal and the window were in a rather neglected condition and covered with layers of compacted dust and dirt, corrosion products and pigeon droppings. Thorough cleaning and conservation of the fire-gilded surfaces were thus carried out by a team of conservators of the Institute of Conservation on request of the Patan Museum. Besides, lost or stolen decorative elements were reconstructed by local craftsmen.

Names	Golden Portal	
Dated	Door 1734	
Measurements (H x W x D)		
Materials/Technology	Wooden core, fire gilded copper repoussé and chasing work	
Interventions (IoC)	Assessment	2018
	Conservation	2018-2019
Team (IoC)	Gabriela Krist, Marina Paric	
Academic Research (IoC)		

Survey: Materials and Technology

- Wooden base structure / wooden core
- Copper sheets in repoussé and chasing techniques, fire gilded
- Cast metal elements
- Door blades covered with 104 cast rosettes
- Torana made of wooden blade covered with 107 separate chased and fire gilded copper plates, on top of it is a repousse frame depicting Garuda, two nagas, floral motifs and makaras
- Torana secured by an iron chain

Fig. 3: Torana above the Door

Fig. 4: Cast rosettes on door blades

Fig. 5: Central opening of Window

Previous (Conservation) Interventions

-

Survey: Condition and Causes of Decay

- Thick soiling layers, particularly on the door jamb
- Worn gilding, especially the rosettes and door jamb due to people devotionally touching the surfaces
- Dents, holes and losses in some areas of the door and torana
- Corroded surfaces due to blood, water and pigeon droppings
- Missing knobs of rosettes

Fig. 6: Worn gilding

Fig. 7: Holes in the torana

Fig. 8: Holes and corrosion on metal elements of Window

Fig. 9: Soiling on wooden carvings of Window

Conservation (IoC)

Door (2018) and Window (2019)

- Dry cleaning with soft brushes to remove loose layers of dust
- Wet cleaning of metal parts with drinking water and surfactant (dish detergent) with sponges and brushes, rinsing off with drinking water and exposure to sun for drying
- Removing of copper corrosion with citric acid (complexing agent), areas with heavy corrosion were treated with cotton wool patches soaked with citric acid, application time for all methods 4 to 10 minutes, immediate subsequent cleaning with drinking water and brushes
- mechanical removal of thick layers of soiling and corrosion with scalpel

Fig. 10: Wet cleaning of Golden Window

Fig. 11: Application of citric acid poultices at window

Fig. 12: Application of citric acid poultices at door

Fig. 13: Mechanical removal of corrosion

Fig. 14:Torana during cleaning

Before and after Conservation

Fig. 15: Golden Door before conservation, 2018

Fig. 16: Golden Door after conservation, 2018

Fig. 17: Golden Door and Window after conservation, 2019

Photo Credits

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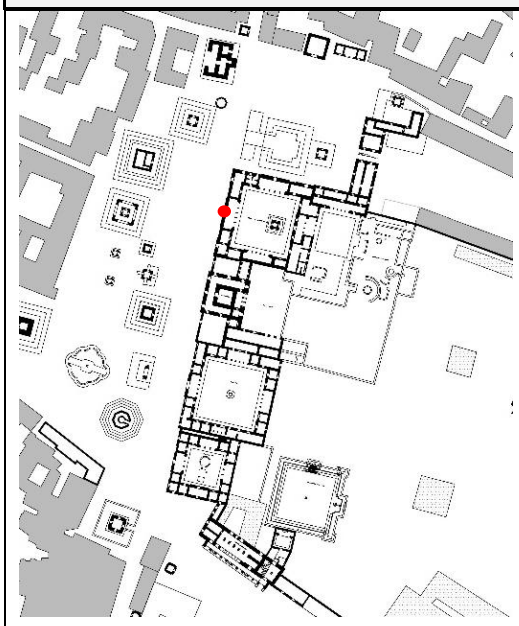
GENERAL INFORMATION		
Object / Monument Golden Door and Torana	**Orientation** West entrance of Keshav Narayan Chowk / Patan Museum	**Size (H x L x W)** -
Date of Production 1734, copper repoussé added in 1854	**Location** Patan Durbar Square	
Material and Technology - wooden support structure - copper sheet repoussé and cast metal elements, fire gilded, mounted with iron nails - Torana secured by an iron chain		
Date of the last Treatment Conservation 2018 (door) and 2019 (window): see short report	**Institutions of the last Treatment** IoC	



EVALUATION	
Date of Evaluation May 2024	**Evaluation done by** Meral Hietz, Katharina Mendl
Recent Damages:	
☐ Stability Problems	☐ Major ☐ Medium ☐ Minor
Comment:	

☐ Broken / - into several Pieces	☐ Many ☐ Some ☐ Few	
Comment:		
☒ Loose / Missing Parts	☐ Many ☐ Some ☒ Few	Door: - chased ornament on the middle part of the baffle plate, part of the inscription on the upper door wing - 1 missing knobscrew on the left doorwing and on the 1 right doorwing - 1 lose knobscrew - 4 missing nails on the left doorwing and 7 on the right doorwing, 2 missing nails on the *kulām* - 5 missing decoration-elements (*naag* mouths) Torana: - water spouts on left Makara, 1 umbrella tip and 6 nails are missing Window: - leaves from floral garland above the arc/torana on left side, 1 leave of the garland on the right side, left tusk of the right elephant and about 20 nails are missing
Comment:		
☒ Cracks / Holes	☐ Many ☐ Some ☒ Few	Door: - whole upper part of the doorframe, left to the *naag* heads - crack (c.) in the inscription on the upper area if the doorwings, 4 c. on the doorwings' upper part left nearby baffle plate and 1 below, baffle plate has 3 small c. on the upper part and 4 c. on the middle part, 2 c. on knobs of the left doorwing, 1 c. on the doorwing next to the doorframe, 1 hole (h.) on the left doorwing next to baffle plate, 5 h. on the right doorwing, 2 h. on the doorframe (missing nails), 5 c. on the r. doorwing, 1 c. on the right side of the *kulām* (deformed part) Torana: - 2 big h. on Shiva, 1 c. on the right snake tail, 1 c. right to left hand, 1 c. on lotus below mouth, 1 c. below central Shiva lotus base, 1 c. right to the right Makara, 1 c. below the right Makara, small c.

		on snout and and teeth of the r. Makara, 3 small c. on central Shiva flame garland Window: - 4 c. on left flank of right lion, 1 c. on right mane of left lion (male) - 1 h. on right side of left middle pillar - 1 large c. on the *kulām* of the left outer pillar, 1 c. on the arc on left side under Ganesh
Comment:		
☒ Deformation / Dents	☐ Major ☒ Medium ☐ Minor	Door: - 6 deformations (d.) on the right doorwing (3 knobs and some on the frame of the quadrate) - 2 knobs on the left doorwing, 1 on the left ringknob, - a few deformed areas on the baffle plate - 2 small dents on the doorframe (*naga*), 2 slight on the *kulām* and 1 on the right side of the *kulām* Torana: - below central Shiva lotus base and both Makaras, slight d. because of iron nails Window: - snout of right elephant, *kulām* above the right outer pillar and goddess on left elephant mounted at an angle
Comment:		
☒ Abrasion / Worn out Gilding	☐ Major ☒ Medium ☐ Minor	Door: - slightly on the whole surface especially on the lower doorknobs and *kulām* and doorframe edges - the ringknob is strongly abraded Torana: - slightly on the whole surface, especially on Ganesh, left Makara and umbrella element Window: - especially the two elephants at the base and the background of the left god riding a lion, and the background ornament of the left elephant, left side of the central back plate - the rest of the gold is quite well preserved, but partly w.o.g. over the whole surface
Comment:		

☒ Corrosion	☐ Major ☒ Medium ☐ Minor		Door: - darkening see Worn out Gilding - some green corrosion on the lower doorknobs and lower area of the doorwings, slightly on doorframe areas with worn out gilding, few spots and stains on *kulām* Torana: - darkening s. Worn out Gilding - very slight green corrosion on edges and intendations of ornament (due to residues of citric acid cleaning?) Window: - darkening s. Worn out Gilding and leaves in the mouths of Naga - green corrosion mostly on the elephants, some spots on central back plate, *kulām* and umbrella, - Corrosion on iron nails
Comment:			
☒ Soiling	☒ Dust	☐ Heavy ☐ Medium ☒ Light	Door: - slightly general dust, less dirt mostly on the doorframe - ritual substance on the middle god on the *kulām* Torana: - especially on upper parts of bases and top sides Window: - slightly general dust
	☒ Dirt	☐ Heavy ☐ Medium ☒ Light	Door: - Torana: - especially on umbrella and Makara head bird droppings and stains Window: - a few bird droppings, dust mostly on top sides
	☒ Blood	☐ Heavy ☐ Medium ☒ Light	Door: - Torana: - Window: maybe a few dark stains are blood

Comment:

Evaluation of the Condition

☒ good

☐ satisfactory

☐ unsatisfactory

Conclusion

In general, the condition of the Golden Door, Torana and Window was judged to be good. Due to inaccessibility, details of conservation work on the Torana and Window could only be assessed using binoculars.
The IoC did not implement any technical measures (e.g. closing cracks) in 2018-2019. The surface treatments that were carried out have proved to be stable over time. The gilded surface shows darkening, but the overall appearance blends in well with the surroundings. The areas within reach are the most worn, as they are regularly touched by visitors and prayers. The window appears to have been covered with some blood.
The Torana, in particular, shows very slight green corrosion on the edges and in the ornamental intendations, probably due to residues of citric acid that haven't been completely removed.
Deposits (soiling, some 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 gilded metalwork. 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

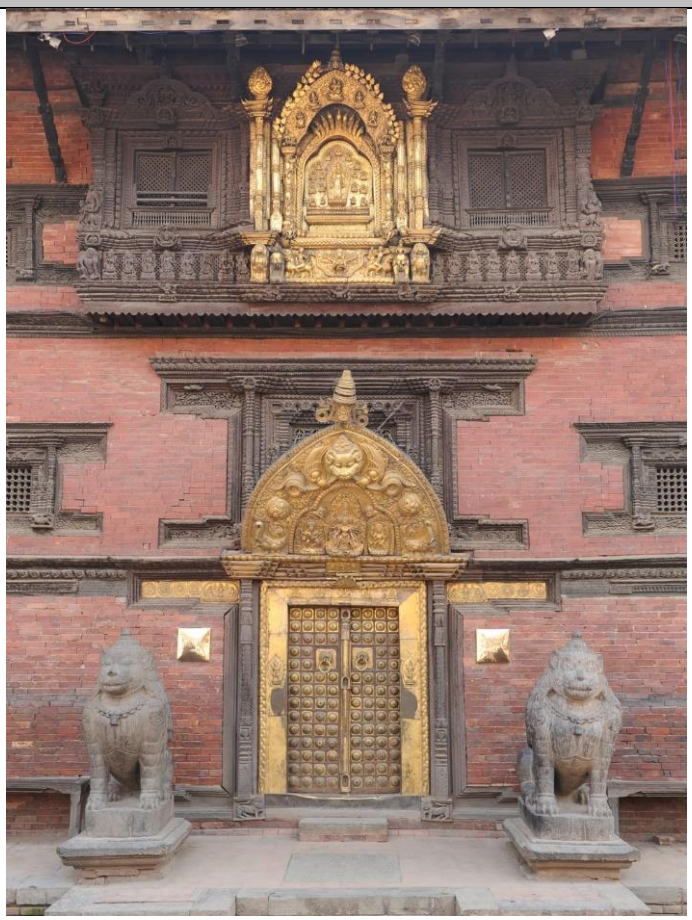


Fig. 1: Golden Door, Torana and Window after conservation, 2019

Fig. 2: Golden Door,Torana and Window in May 2024

Fig. 3: Golden Door and Torana after conservation, 2018

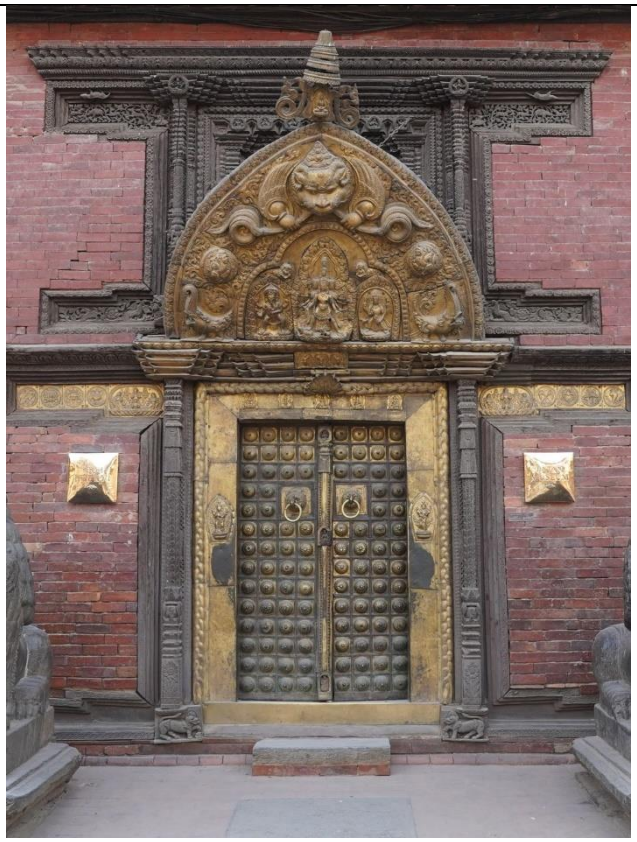


Fig. 4: Golden Door and Torana in May 2024

Fig. 5: Door leaves with cast rosettes after conservation, 2018

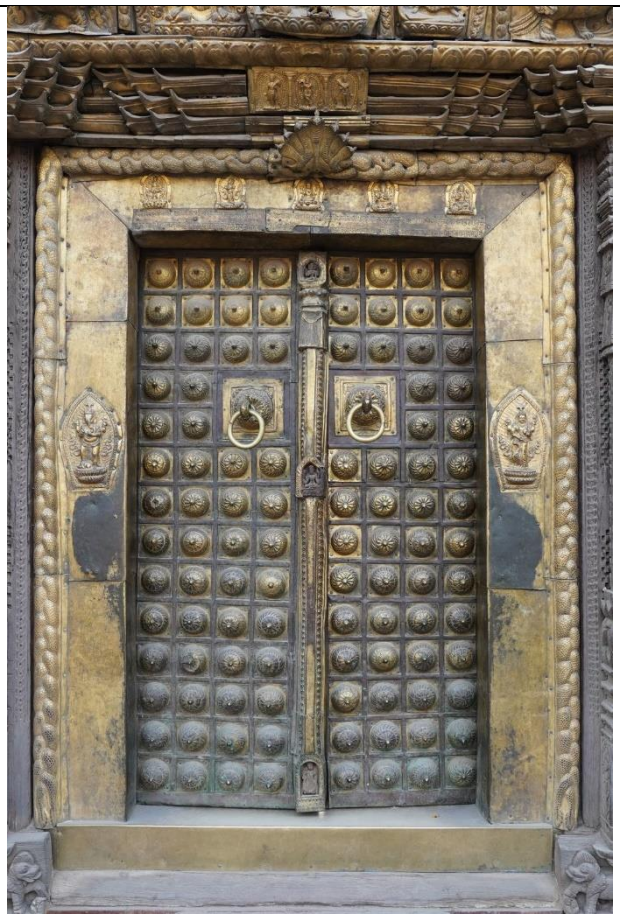


Fig. 6: Door leaves with cast rosettes in May 2024

Fig. 7: Torana after conservation, 2018

Fig. 8: Torana in May 2024

Fig. 9: Window after conservation treatment, 2019

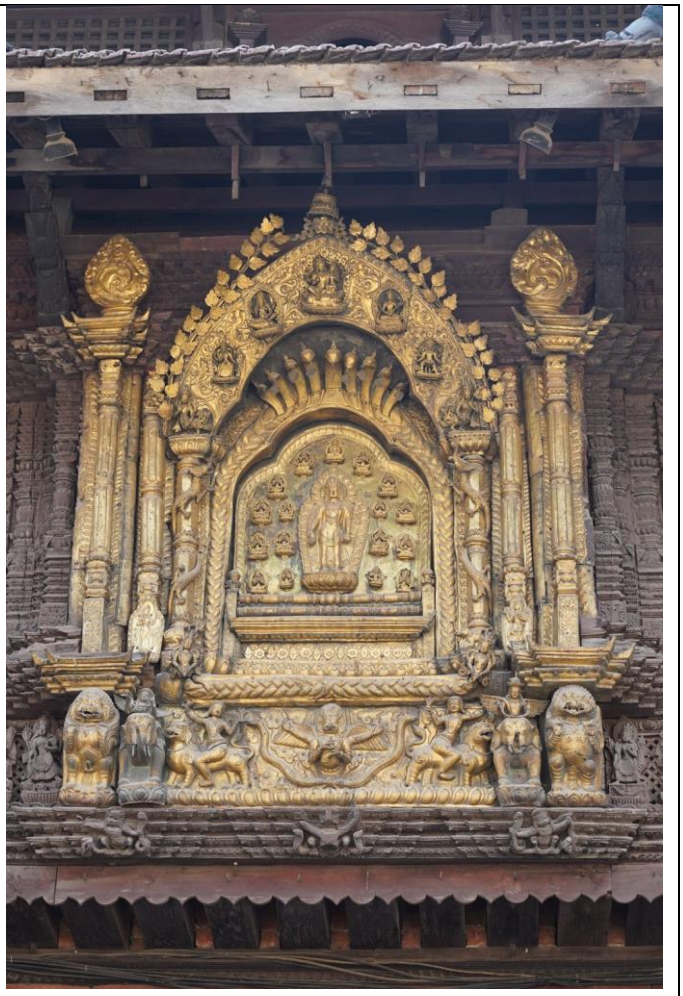


Fig. 10: Window in May 2024

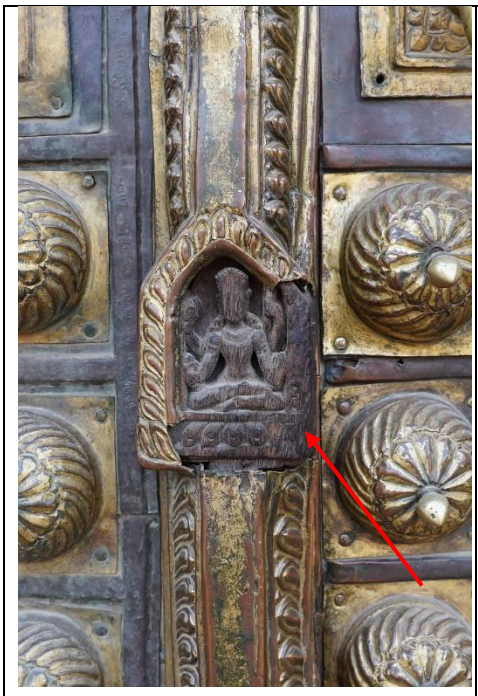


Fig. 11: Missing chased ornament (red arrow) on the middle part of the baffle plate

Fig. 12: Missing knobscrew (red arrow) and green corrosion on the right door wing

Fig. 13: Missing water spout (red arrow) on left Makara on Torana

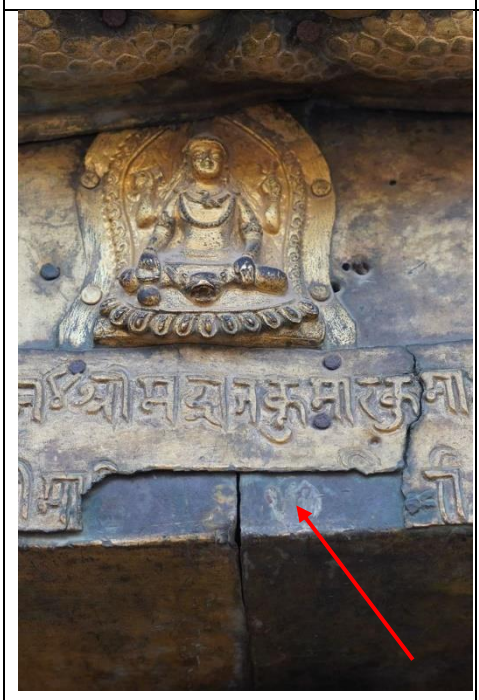


Fig. 14: Missing inscription (red arrow) and nails as well as cracks on the upper door wing

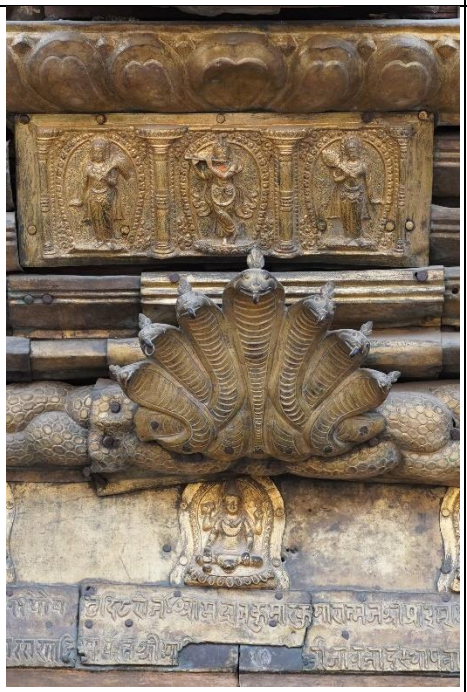


Fig. 15: Missing decoration-elements (*naga* mouths)

Fig. 16: 5 Missing tip on umbrella above Torana, darkening and corrosion due to soiling and bird droppings

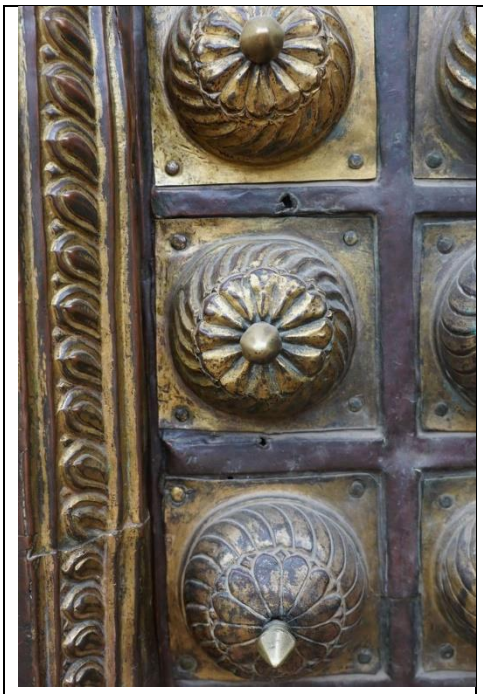


Fig. 17: Missing nails on the left doorwing

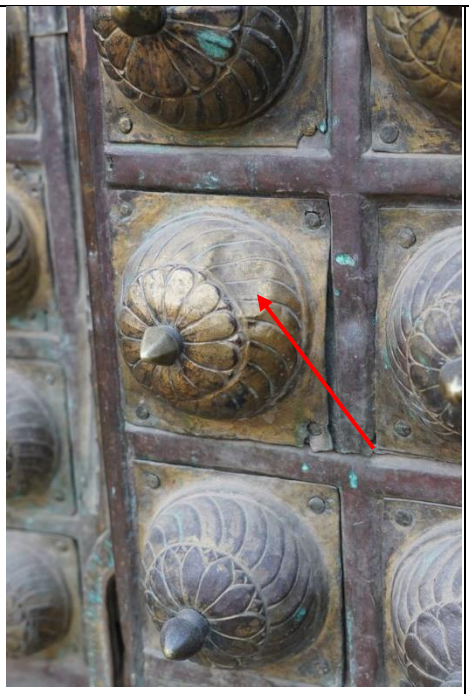


Fig. 18: Deformation (red arrow) on a knob on the right doorwing

Fig. 19: Deformation and cracks on a knob

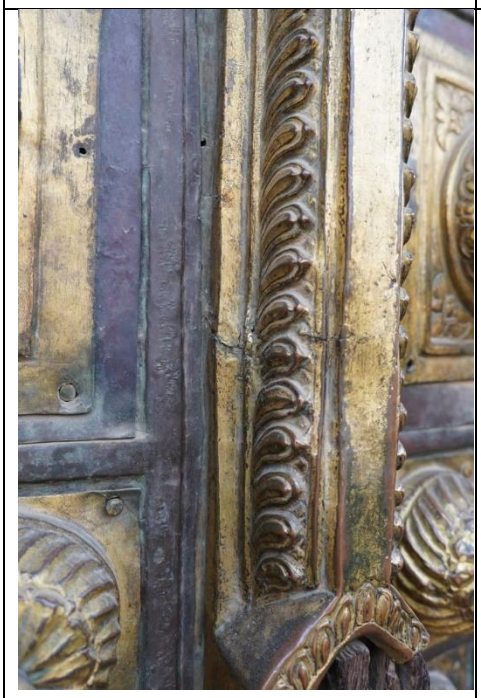


Fig. 20: Deformations and cracks on upper part of the baffle plate

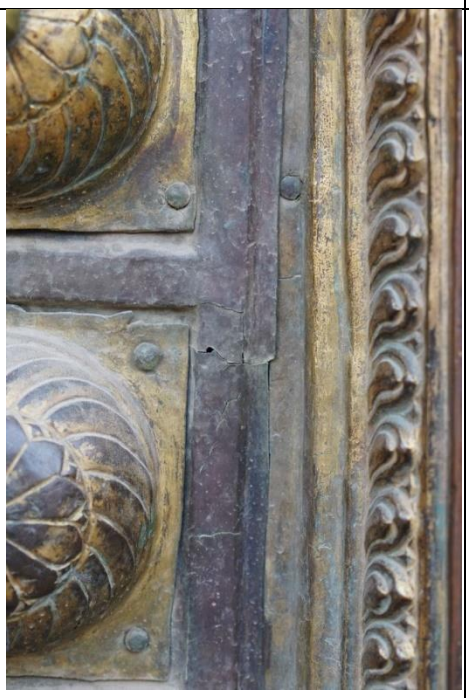


Fig. 21: Cracks on the right doorwing

Fig. 22: Deformation and missing nails

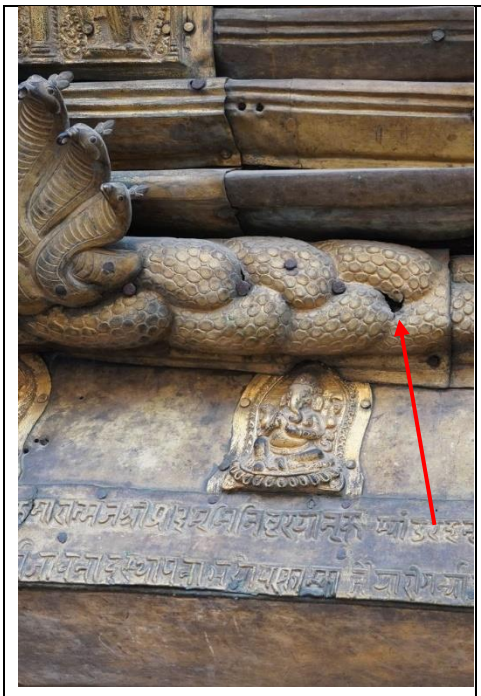


Fig. 23: Hole (red arrow) on the snake ornament, missing nail holes and secondary iron nails

Fig. 24: Dent on a snake ornament between the doorframe and the *kulām*

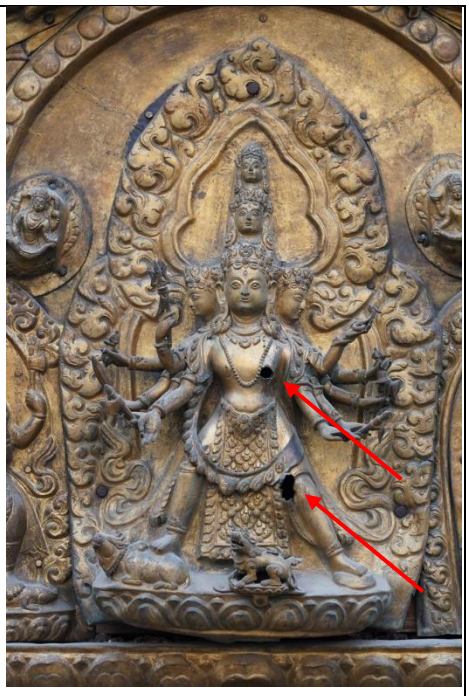


Fig. 25: Two big holes (red arrows) on the central Shiva

Fig. 26: Soiling and corrosion in the lower area of the doors

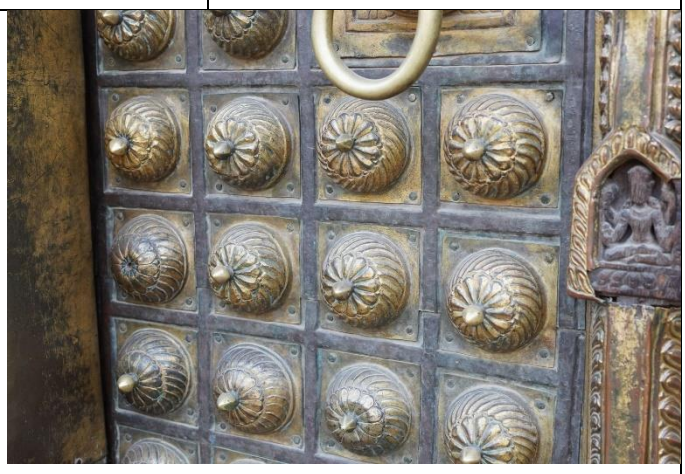


Fig. 27: Less soiling and corrosion in the middle area of the doors

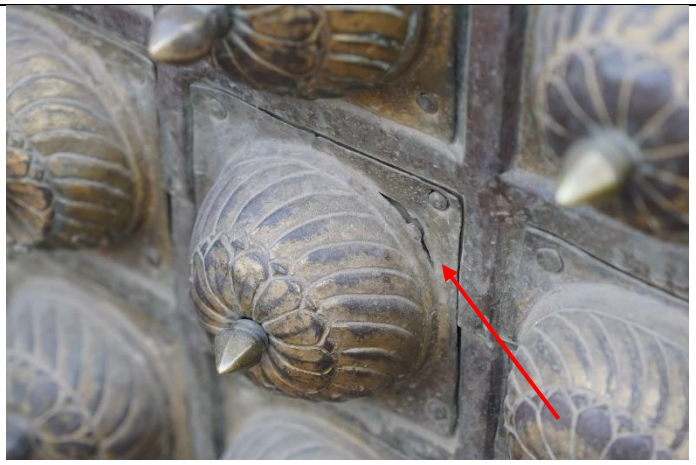


Fig. 28: Large crack (red arrow) on a doorknob

Fig. 29: Green corrosion on lower area of the right doorwing

Fig. 30: Darkening and slight green corrosion on the *kulām* and iron corrosion on secondary nails

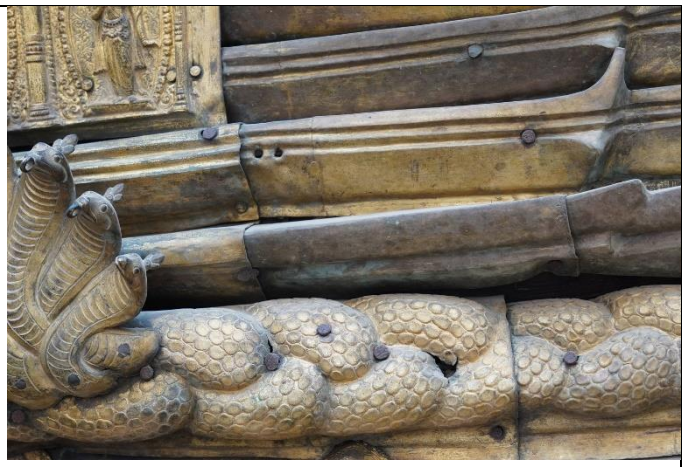


Fig. 31: Corroding iron nails on snake ornament and *kulām*

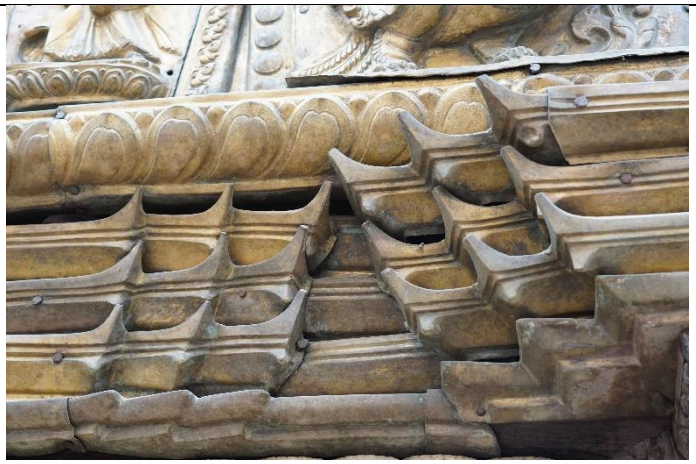


Fig. 32: Slight green corrosion on the *kulām*

Fig. 33: Soiling and darkening on the upper area of the Torana

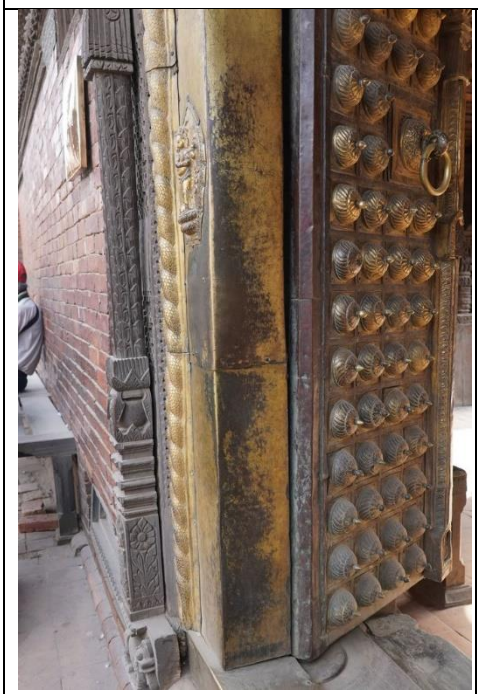


Fig. 34: Abrasion/Worn out Gilding on the left door frame

Fig. 35: Abrasion/Worn out Gilding on the right door frame

Fig. 36: Abrasion/Worn out Gilding on the left door frame

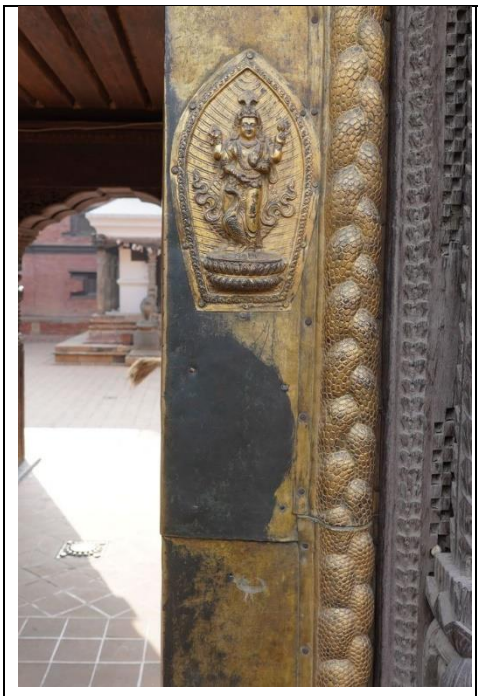


Fig. 37: Abrasion/Worn out Gilding on the right door frame

Fig. 38: Green corrosion on the lower area of the baffle plate

Fig. 39: Soiling, abrasion, darkening and green corrosion on the lower area of the left door

[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
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Paraloid™ B-72, Kremer
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