

Additional file 1

The evolution of the materials used in the *yun* technique for the decoration of Burmese objects: lacquer, binding media and pigments

Diego Tamburini^{1*}, Verena Kotonski², Anna Lluveras-Tenorio³, Maria Perla Colombini³, Alexandra Green⁴

¹ Department of Scientific Research, The British Museum, Great Russell Street, London WC1B 3DG, UK

² Department of Conservation, The British Museum, Great Russell Street, London WC1B 3DG, UK

³ Department of Chemistry and Industrial Chemistry, University of Pisa, via Giuseppe Moruzzi 13, I-56124 Pisa, Italy

⁴ Department of Asia, The British Museum, Great Russell Street, London WC1B 3DG, UK

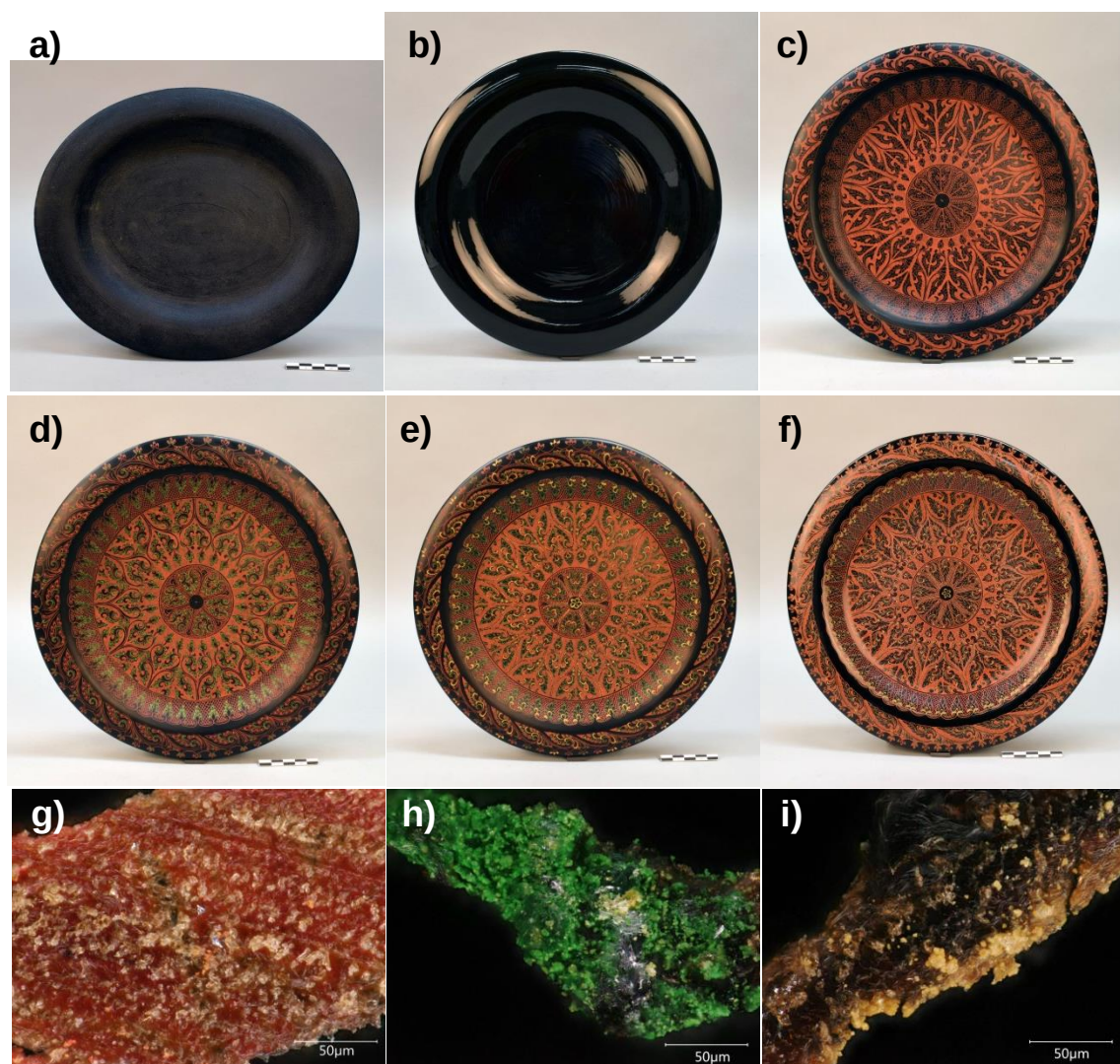


Figure S1. Series of plates illustrating the *yun* process. **a)** Application of raw lacquer (the plate is from the same workshop but not from the same production as the others); **b)** application of refined lacquer; **c)** carving and application of red lacquer; **d)** application of green lacquer; **e)** application of yellow lacquer; **f)** finished product. Images obtained by digital microscopy of samples **g)** 1c, **h)** 1d and **i)** 1e.



Figure S2. A rectangular wooden tray (object 2) produced in the 1920s using the *yun* technique (length 56 cm; width 37 cm) and sampling areas of **a)** yellow, **b)** red, **c)** green and **d)** pink colours (scale bar 1 mm). Images obtained by digital microscopy of the corresponding samples **a')** 2d, **b')** 2b **c')** 2c and **d')** 2e.

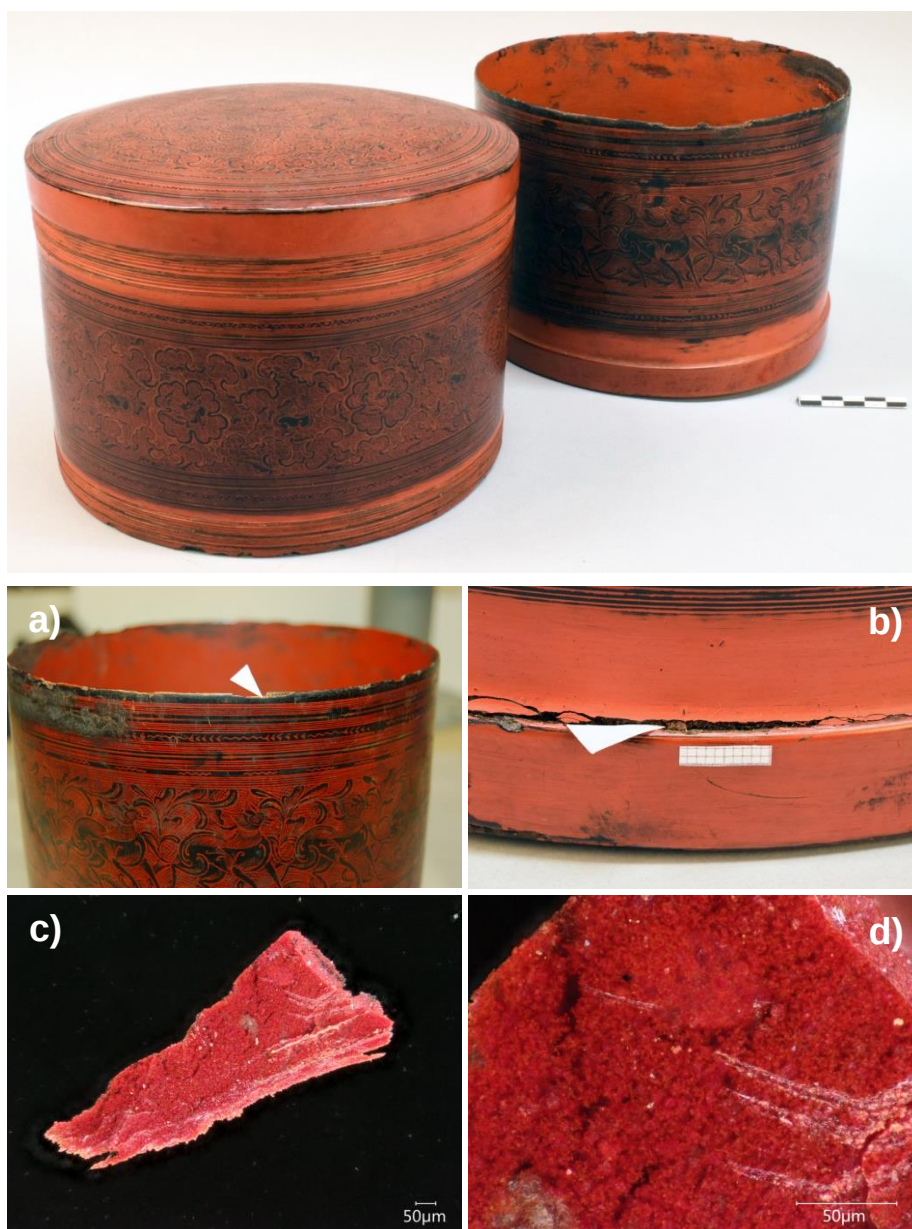


Figure S3. A betel box (object 3) produced in the early 20th century using the *yun* technique (height 15 cm; diameter 19.2 cm) and sampling areas of a) black and b) red colours (scale bar in 1 mm). Images obtained at different magnifications by digital microscopy of sample 3b (c and d).



Figure S4. A bowl (object 4) produced in the mid-late 19th century using the *yun* technique (height 18.8 cm; diameter 23.8 cm) and sampling areas of a) green, b) yellow and c) red colours (scale bar in 1 mm). Images obtained by digital microscopy of the corresponding samples **a')** 4c, **b')** 4d and **c')** 4b.

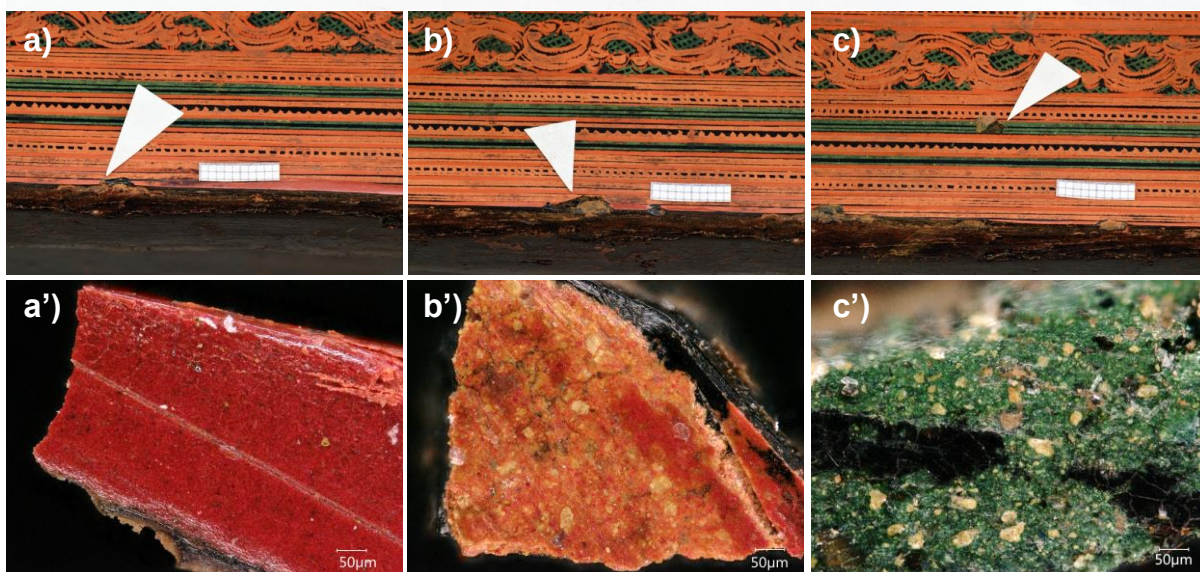


Figure S5. A coffer (object 5) produced in the early 19th century using the *yun* technique (height 16.5 cm; width 22 cm; length 39 cm) and sampling areas of a) red, b) yellow and c) green colours (scale bar in 1 mm). Images obtained by digital microscopy of the corresponding samples **a')** 5b, **b')** 5d and **c')** 5c.

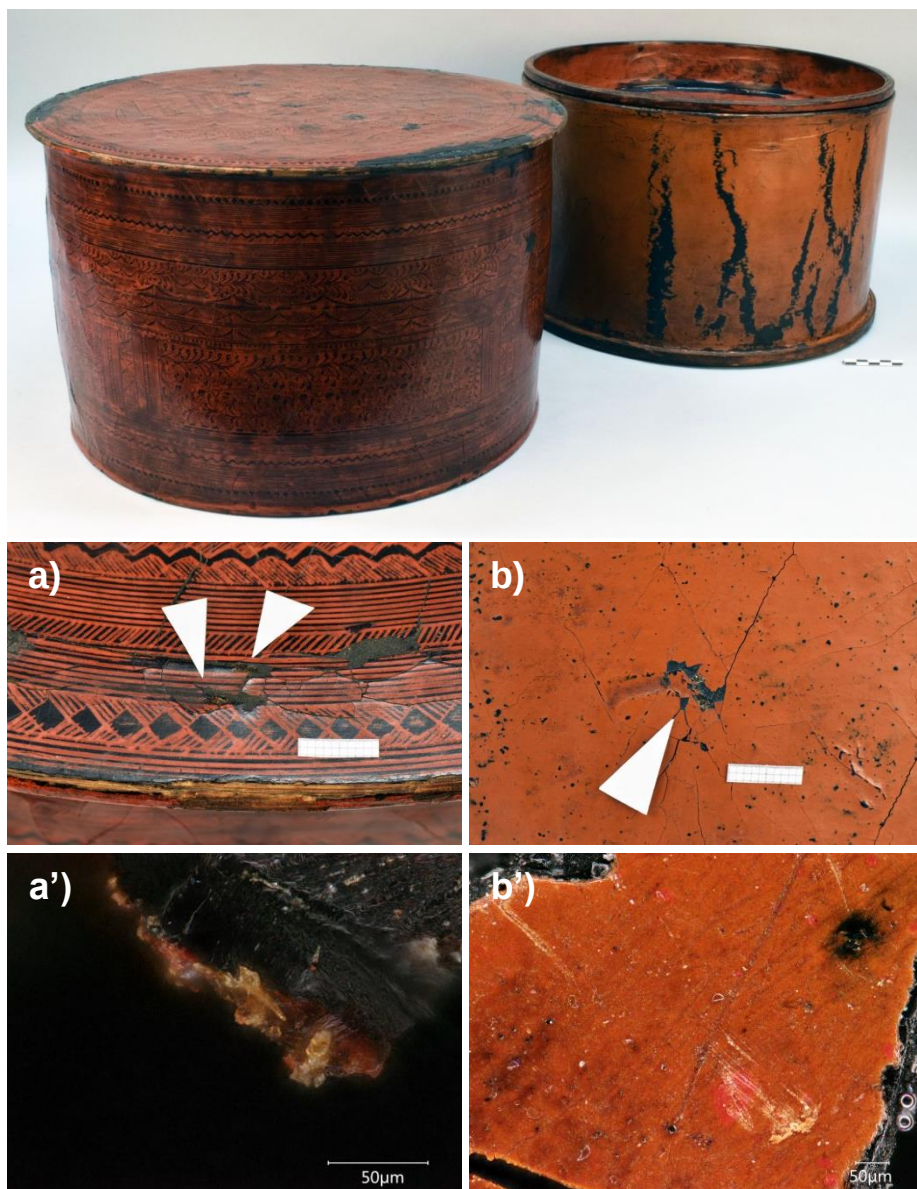


Figure S6. A box (object 6) produced in the early 19th century using the *yun* technique (height 24 cm; diameter 37 cm) and sampling areas of a) red and b) orange colours (scale bar in 1 mm). Images obtained by digital microscopy of the corresponding samples a') 3b and b') 3c.

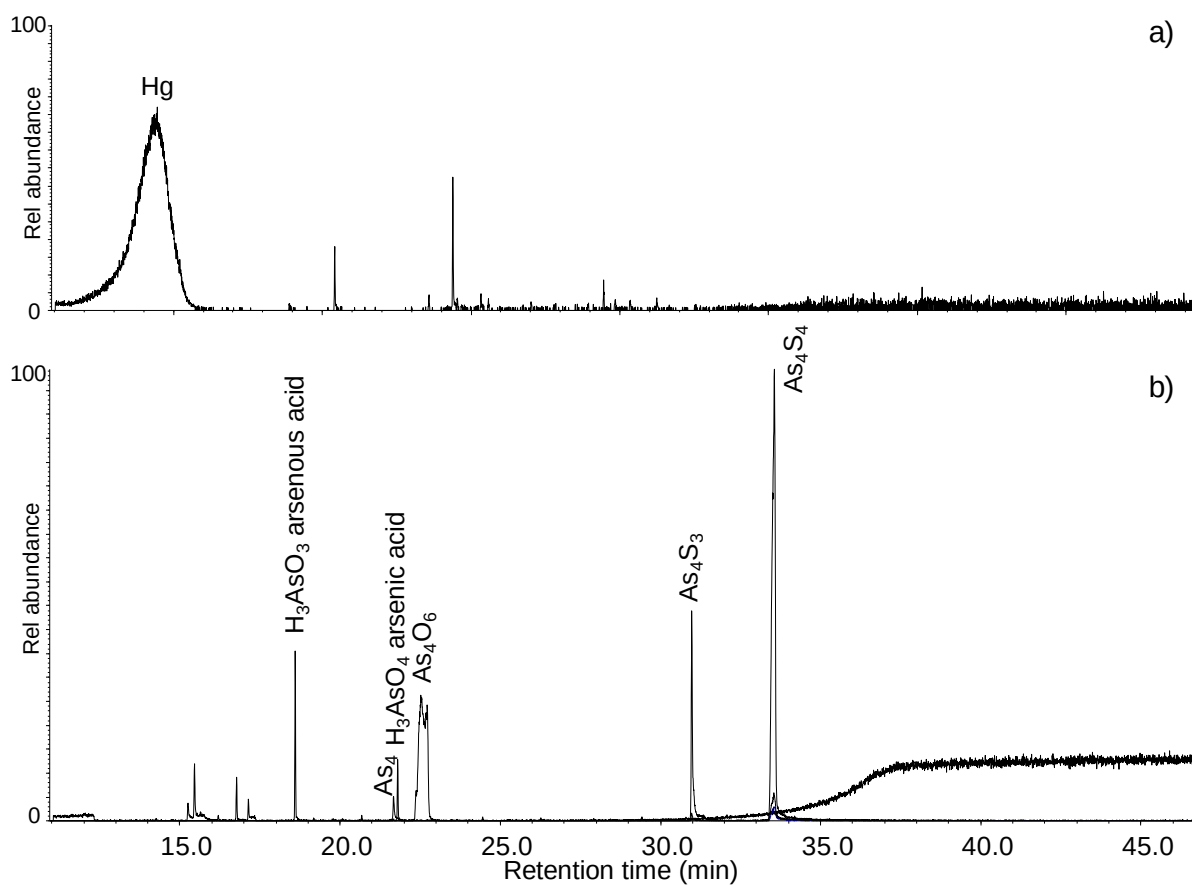


Figure S7. Chromatographic profiles obtained by Py(HMDS)-GC-MS of **a)** sample 1_red (extract ion chromatogram of the ion with m/z 202 for mercury) and **b)** sample 2_green (extract ion chromatogram of the ion with m/z 207 for arsenic and sulphur compounds).

Table S1. Typical values obtained from the relative fatty acid percentage content of the samples and total amount of lipid material quantified ($\mu\text{g tot}$). A/P: azelaic/palmitic; P/S: palmitic/stearic; O/S: oleic/stearic; ΣD (%): sum of dicarboxylic acids

Sample	A/P	P/S	O/S	ΣD (%)	$\mu\text{g tot}$
2_red	0.4	1.7	0.0	20.8	1.6
2_green	0.2	2.8	0.0	14.3	1.0
4_red	0.7	1.8	0.1	28.6	1.0
4_green	0.2	1.8	0.0	12	0.6
4_yellow	0.1	1.6	0.0	6.3	0.5
5_green	0.3	3.7	0.0	23.4	0.8
5_yellow	0.1	3.6	0.0	7.1	1.1
6_red	0.3	1.4	0.0	17.2	1.0
6_orange	0.1	1.4	0.0	7.8	1.1

Table S2. Relative amino acid percentage content of the samples and total amount of proteinaceous material quantified ($\mu\text{g tot}$). Ala: alanine; Gly: glycine; Val: valine; Leu: leucine; Ile: isoleucine; Ser: serine; Pro: proline; Phe: phenylalanine; Asp: aspartic acid; Glu: glutamic acid; Hyp: hydroxyproline.

Sample	Ala	Gly	Val	Leu	Ile	Ser	Pro	Phe	Asp	Glu	Hyp	$\mu\text{g tot}$
1_yellow	10.2	14.2	9.1	12.9	7.5	2.8	21.7	2.8	8.8	9.3	0.7	0.4
2_pink	9.3	14.9	10.3	19.6	10.3	2.6	5.8	5.8	7.2	14.1	0.0	0.3
6_orange	12.3	21.6	9.9	16.1	9.8	5.2	5.8	4.3	6.5	4.5	3.9	0.3