

XV Congreso Internacional AIPMA

ANTIQUA PICTURA

Técnicas y procesos de ejecución, conservación y puesta en valor

Cartagena, Campus Mare Nostrum, 12-16 de septiembre 2022

Digital restoration as a tool for Research: re-creating Roman wall paintings from Ostia antica.

Paolo Tomassini (UCLouvain - CeSPRO)

XVth AIPMA Congress – ANTIQVA PICTVRA



XVth AIPMA Congress – ANTIQVA PICTVRA



Insula delle Ierodule (III, IX, 6), room 5



Insula di Giove e Ganimede (I, IV, 2), room 5

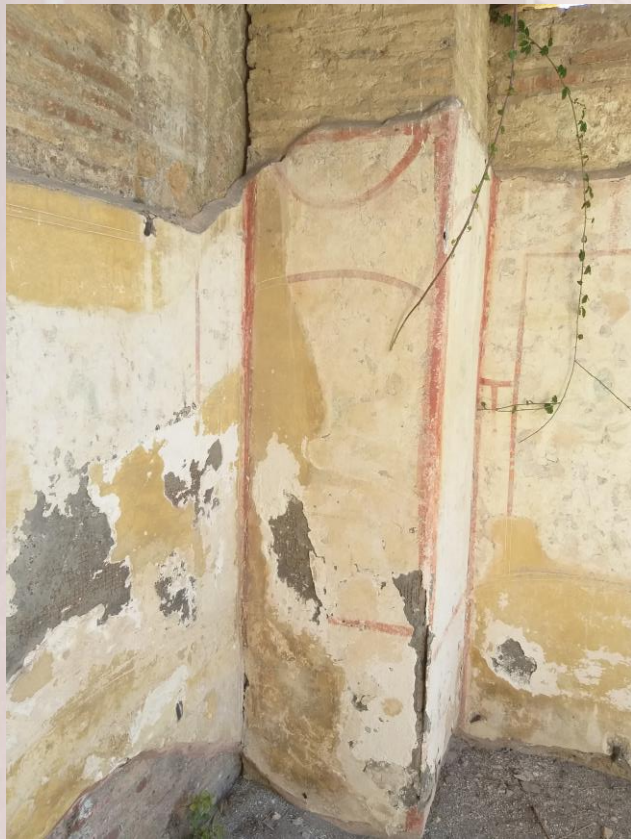


Caseggiato degli Aurighi (III, X, 1), room 9

CAUSES OF DEGRADATION OF THE PAINTINGS AFFECTING THEIR LEGIBILITY

Bad restorations

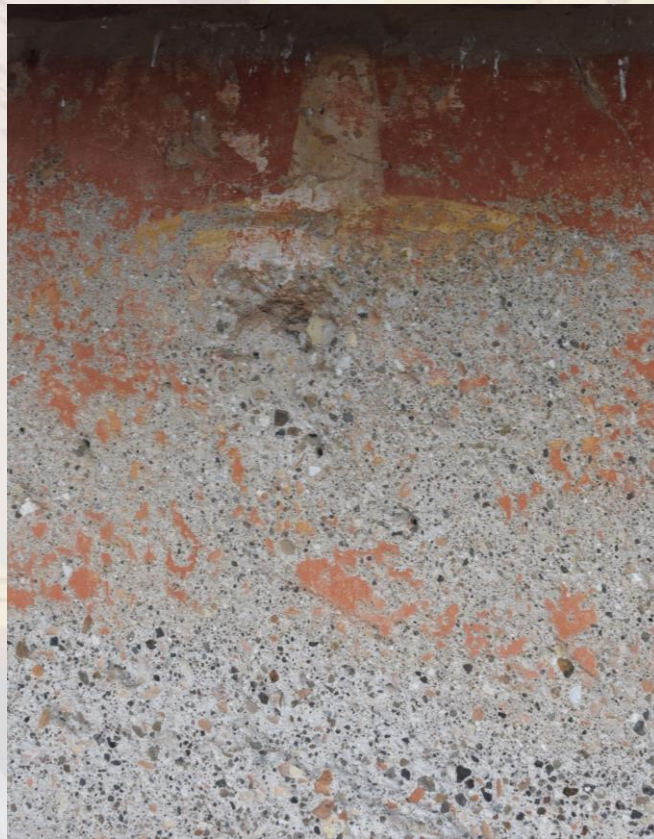
(wrong materials used in the past, as cement and Paraloid)



Caseggiato dell'Ercole
(IV, II, 2-4)

Weather conditions

(sun light, acidity of rain, rising salt from groundwater...)



Terme dei Sette Sapienti
(III, X, 2)

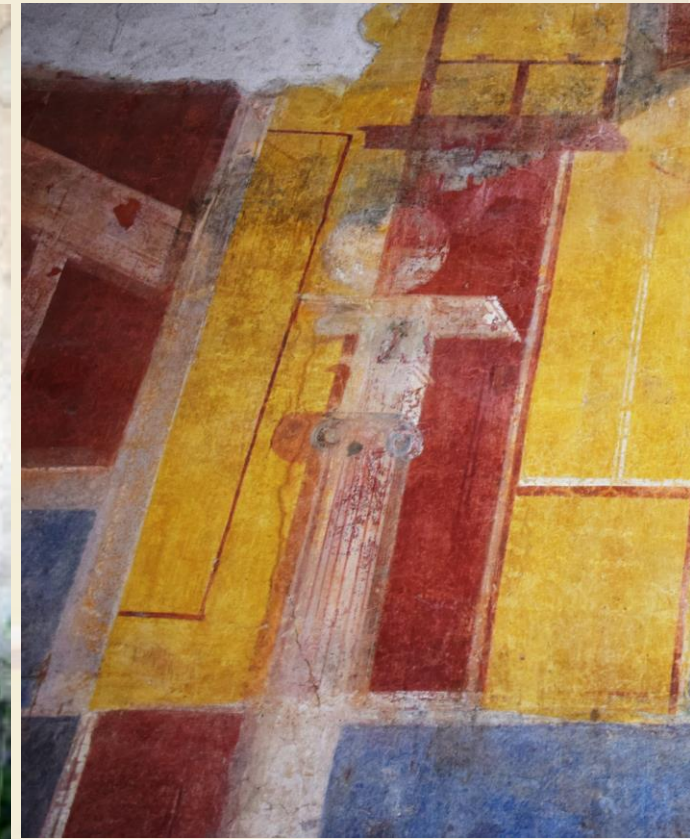
Infesting vegetation



Caseggiato del Temistocle
(V, XI, 2)

Technique

(large use of a secco motifs/thinner preparations in later periods)



Insula del Soffitto Dipinto
(II, VI, 5-6)

PHOTOGRAMMETRY WITH HD PICTURES



*Caseggiato di Annio
(III, XIV, 4), room 1*

LOW-ANGLED LIGHT



Insula dell'Aquila (IV, V, 8), room D

MULTISPECTRAL IMAGING



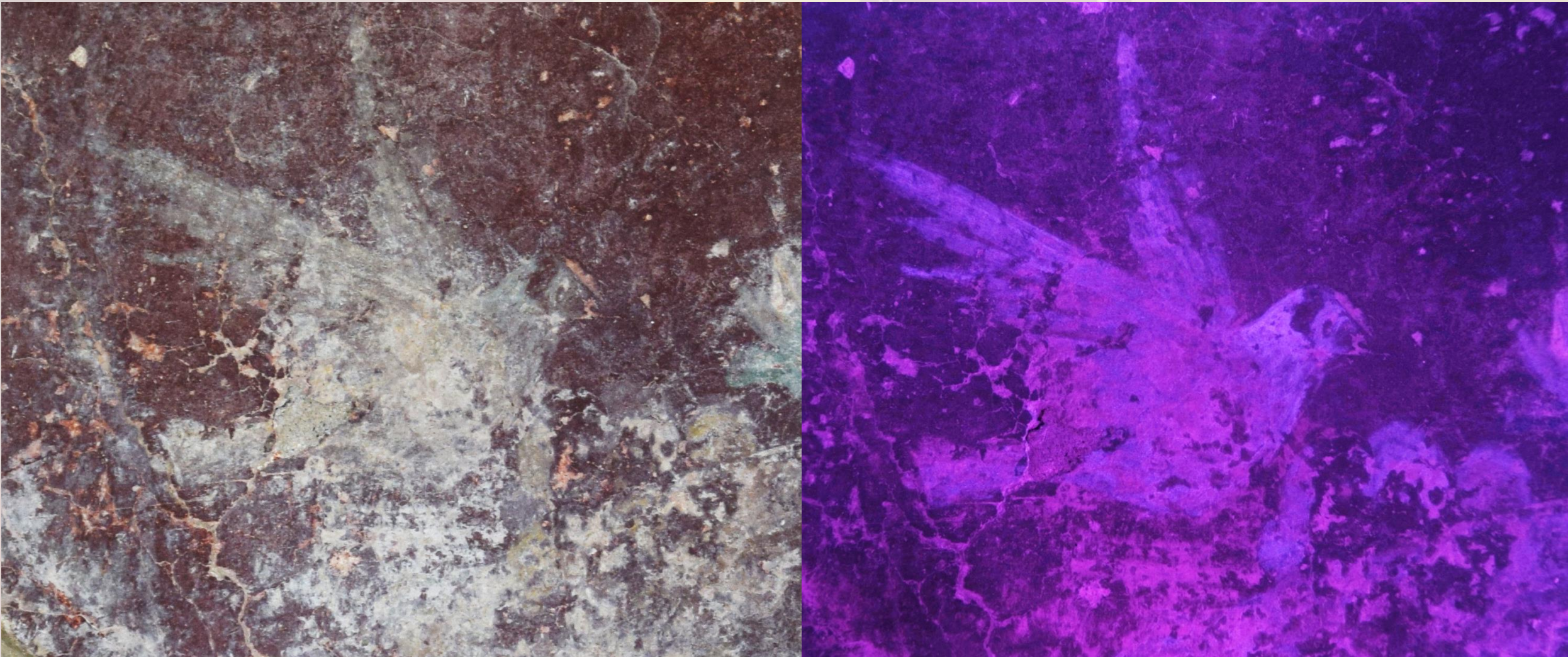
Insula di Giove e Ganimede (I, IV, 2), room 5 - VIS (left) and UV (right) picture showing the brush traces on the blue background

MULTISPECTRAL IMAGING



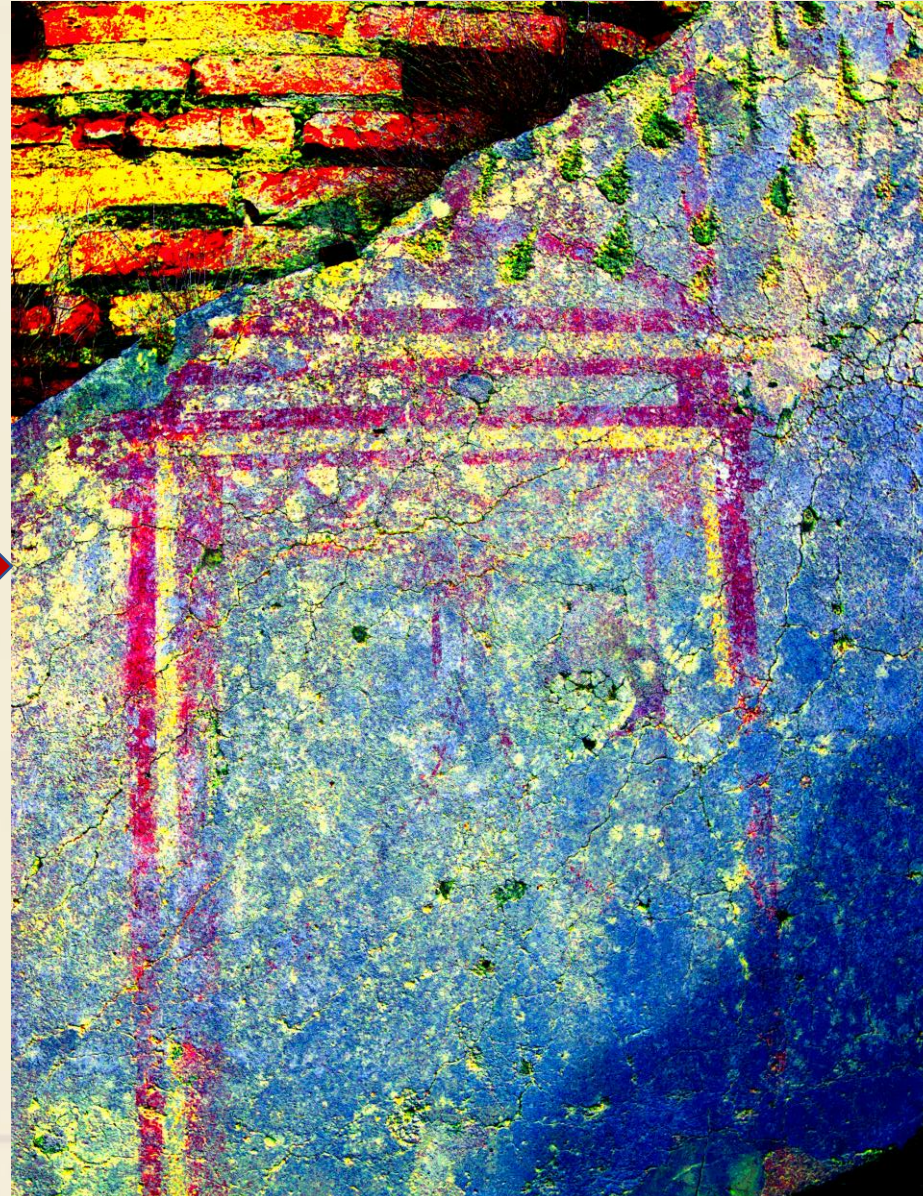
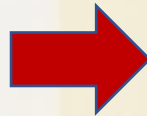
Caseggiato degli Aurighi (III, X, 1), room 9 - VIS (left) and IR (right) picture showing the detailed off a bird depicted with Egyptian blue

MULTISPECTRAL IMAGING



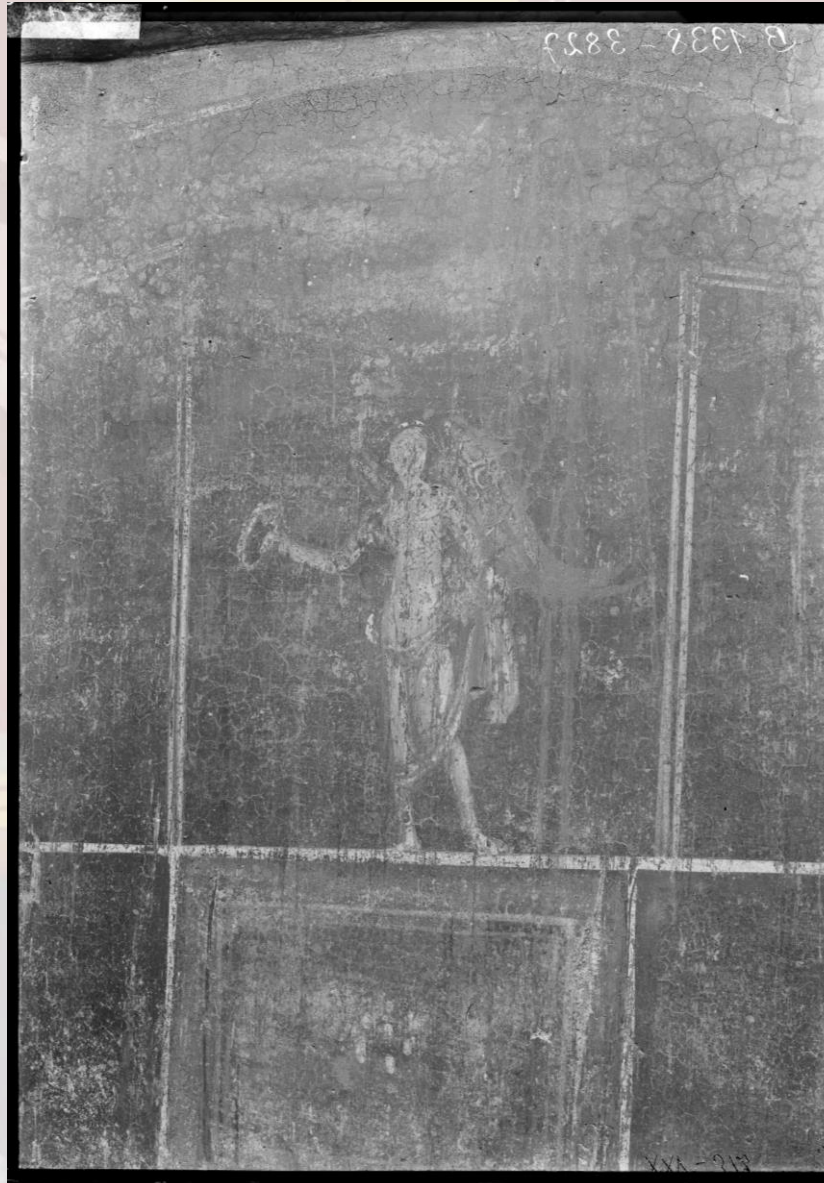
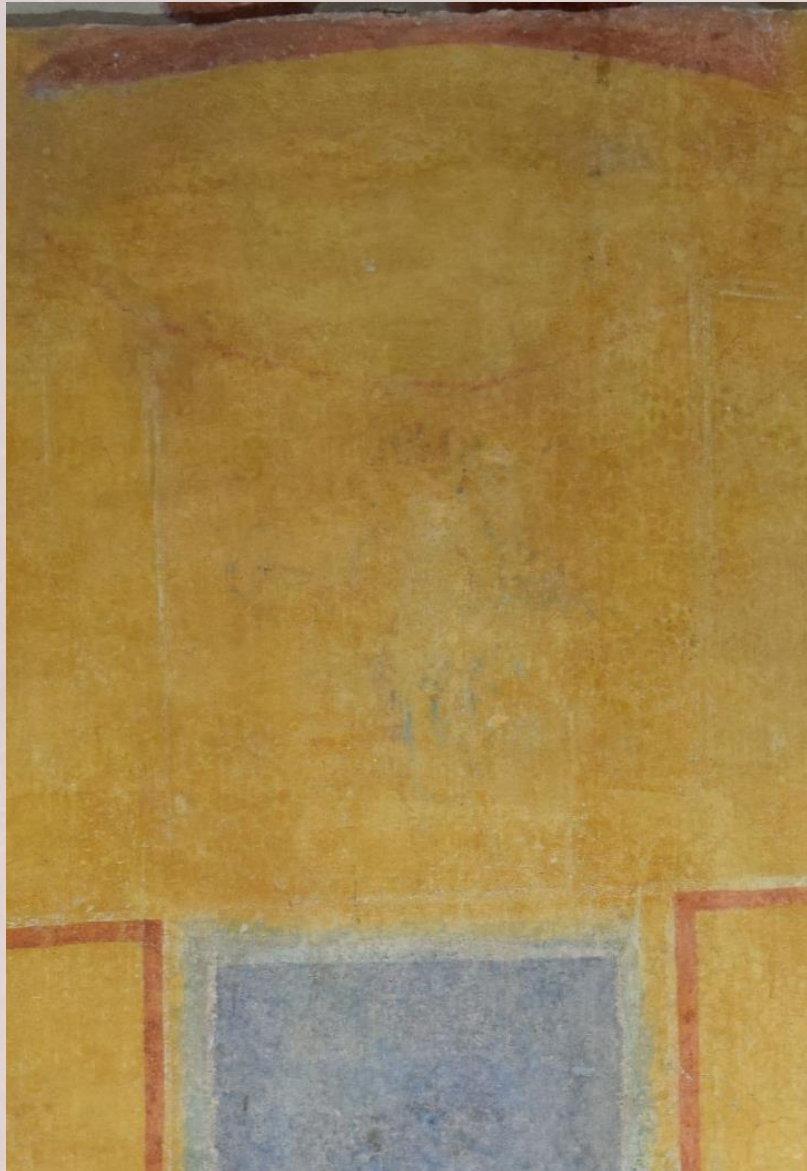
Domus dell'Aquila (IV, V, 8), room E - VIS (left) and VIL (right) picture showing the detailed off a bird depicted with Egyptian blue

POST-PROCESSING IMAGE ENHANCEMENT



*Terme del
bagnino
Buticosus
(I, XIV, 8),
room 10 -
image
enhancement
with Dstretch*

ARCHIVAL RECORD



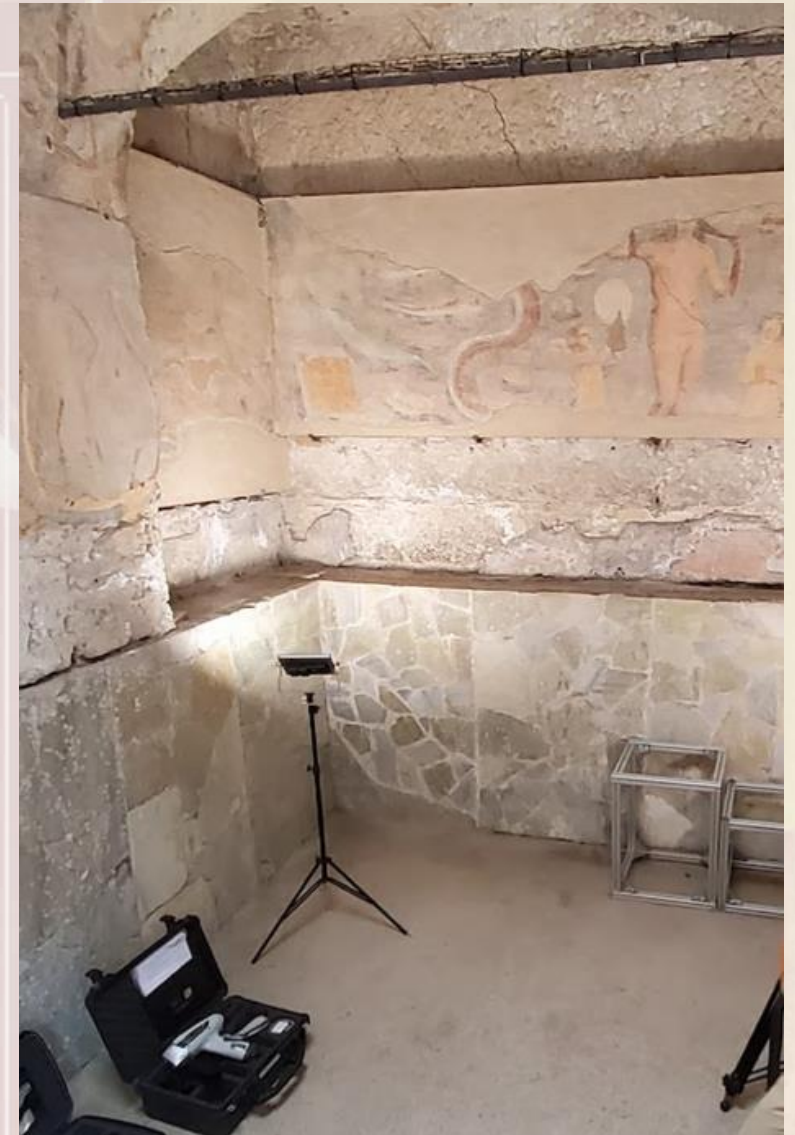
Insula del Soffitto Dipinto
(II, VI, 5-6), room 1 - detail
of the west wall upper zone
in 2022 (left) and 1938
(right; credits: PA-OANT
Archivio Fotografico B1338)

XVth AIPMA Congress – ANTIQVA PICTVRA

NEUTRAL LIGHT WITH HIGH COLOR RENDERING INDEX

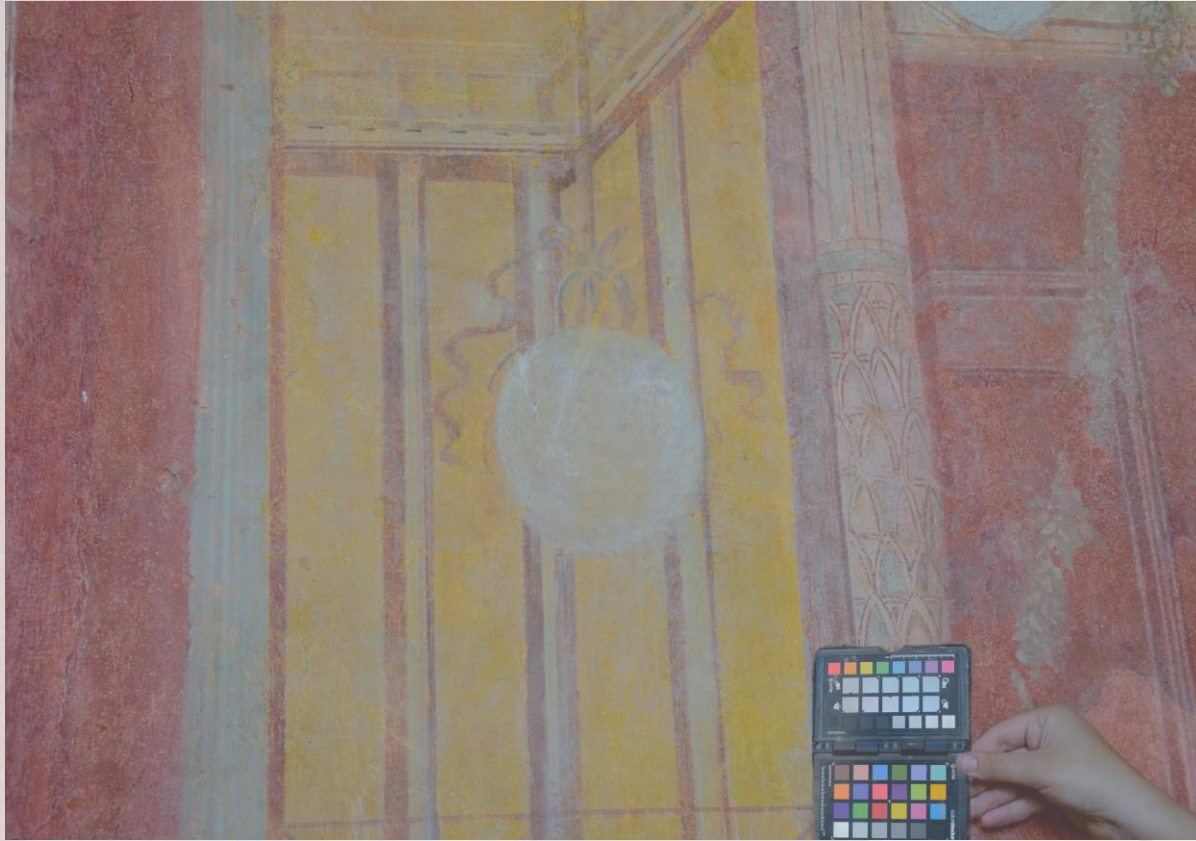


Lamps used:
Neewer Dimmable LED light, 480
LED Beads, 3200-5600K, CRI 95+

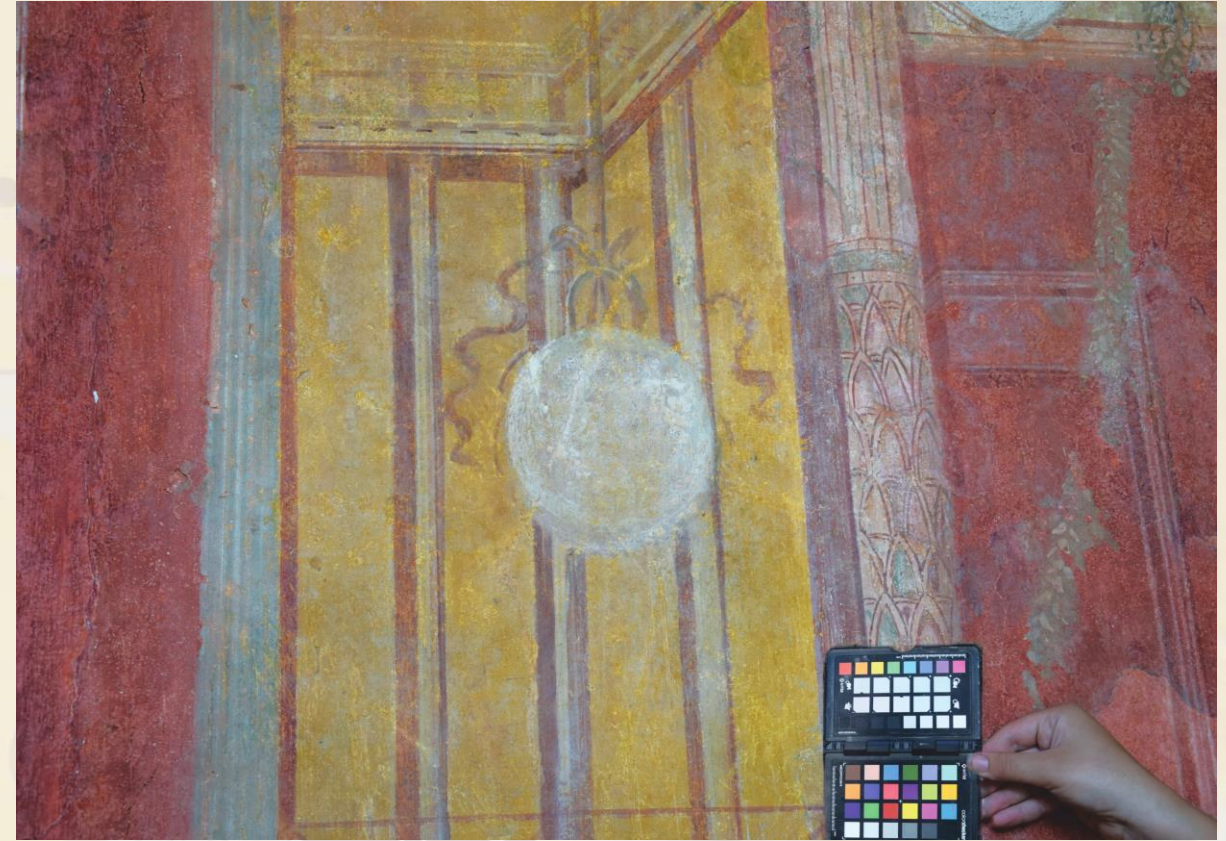


Terme dei Sette Sapienti (III, X, 2), frigidarium

COLOUR CALIBRATION OF PICTURES



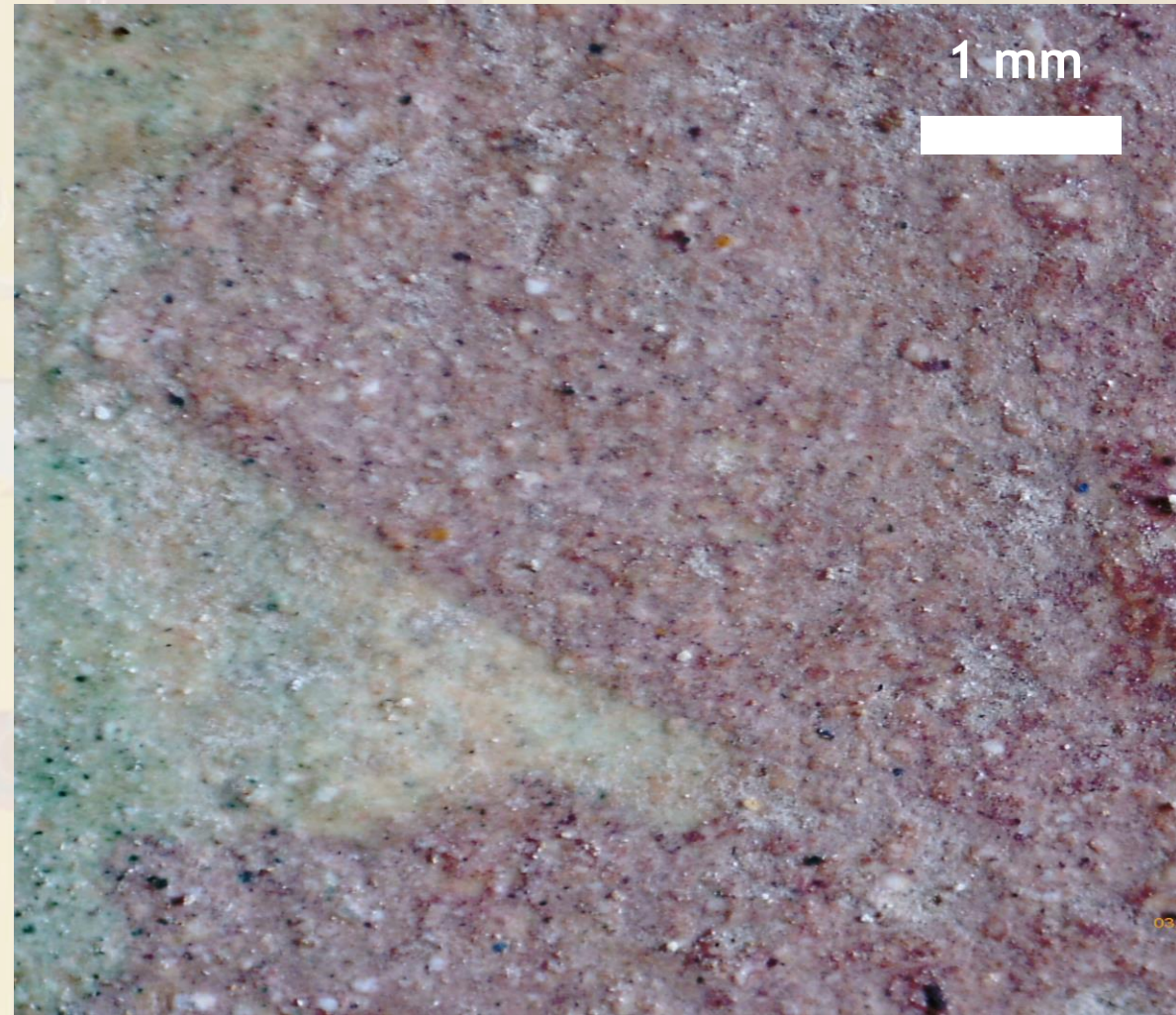
Before calibration



After calibration

Insula di Giove e Ganimede (I, IV, 2), room 5 - colour calibration with an X-rite color checker chart

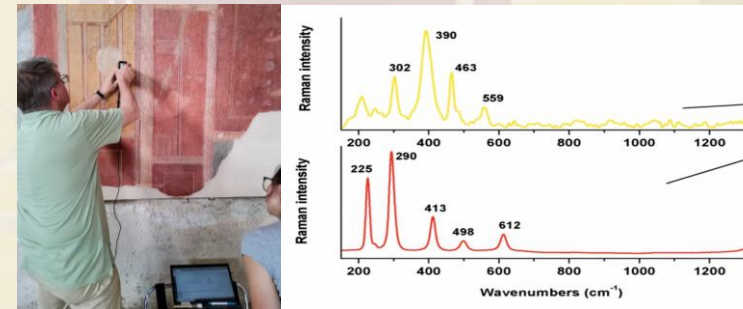
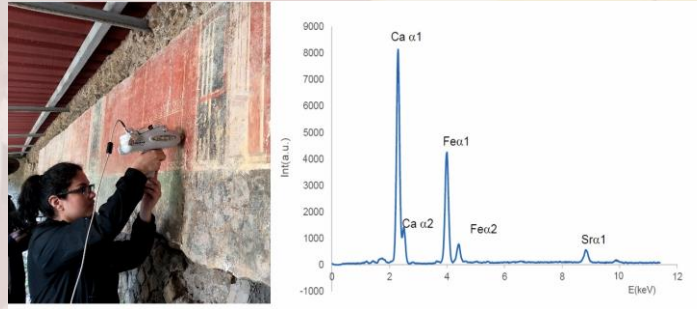
MICROSCOPIC PICTURES



Caseggiato degli Aurighi (III, X, 1), room 9 - picture (left) and enlargement of the purple dot with an electronic microscope (300 x).

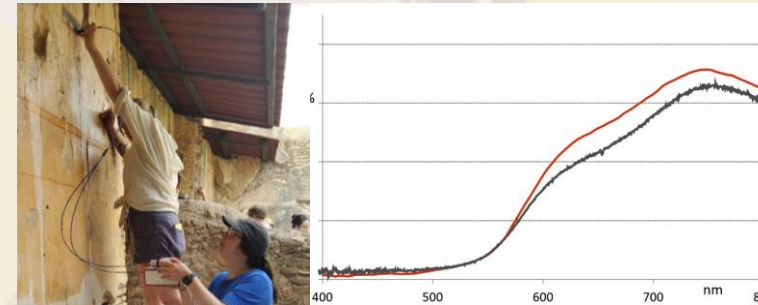
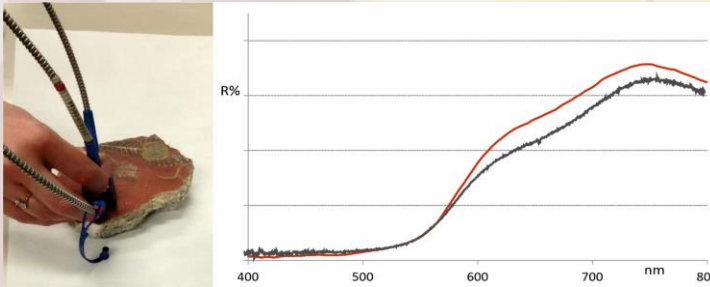
PHYSICO-CHEMICAL ANALYSES

X-ray Fluorescence (XRF)
Detects the atomic composition of pigments



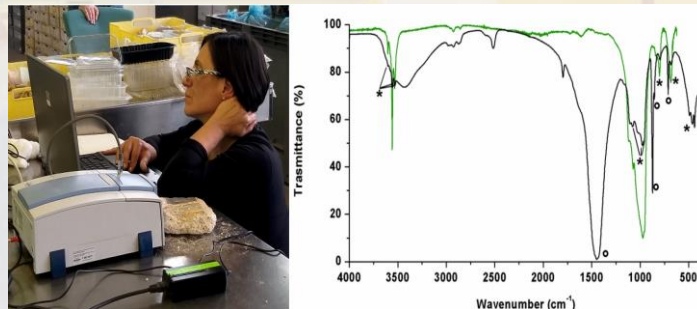
Raman Spectroscopy
Detects the atomic and molecular composition of components

Fiber-optic Reflectance Spectroscopy (FORS)
Identifies specific pigments with reference curves



Near-Infrared Spectroscopy (NIS)
Identifies specific pigments with reference curves

Fourier-transformed Infra-Red Spectroscopy (FTIR)
Identifies the presence of organic binders



Credits: E. Del Federico, Pratt Institute ; S. Bracci, Emma Cantisani, ISPC; J. Zölföldi, J. Frick, Stuttgart Universität

PHYSICO-CHEMICAL ANALYSES



Insula di Lucrezio Menandro (I, III, 5), room 11 - XRF, Raman and FT-IR reveal that the background was black

PHYSICO-CHEMICAL ANALYSES

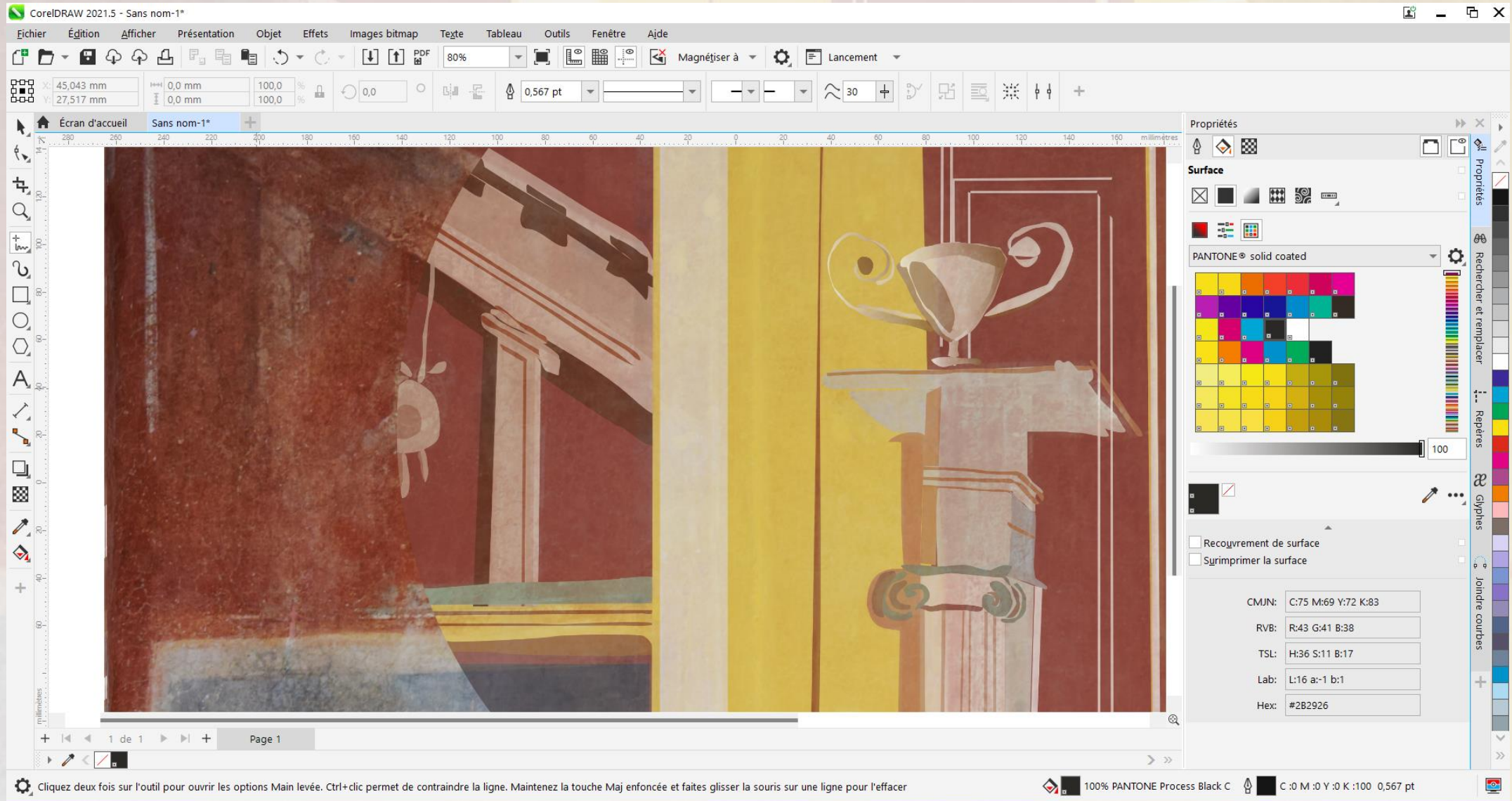


*Insula del Soffitto
Dipinto (II, VI, 5-
6), room 1*

XRF, Raman and
NIR reveal that
what appears
today as dark
blue bands are in
fact carbon black
bands

XVth AIPMA Congress – ANTIQVA PICTVRA

THE RESULT OF THE ANALYSIS: A DIGITAL RESTORATION (OR REMAKE) OF THE PAINTING



XVth AIPMA Congress – ANTIQVA PICTVRA



1 m
11/11/11
F. Tomassini



1 m



1 m



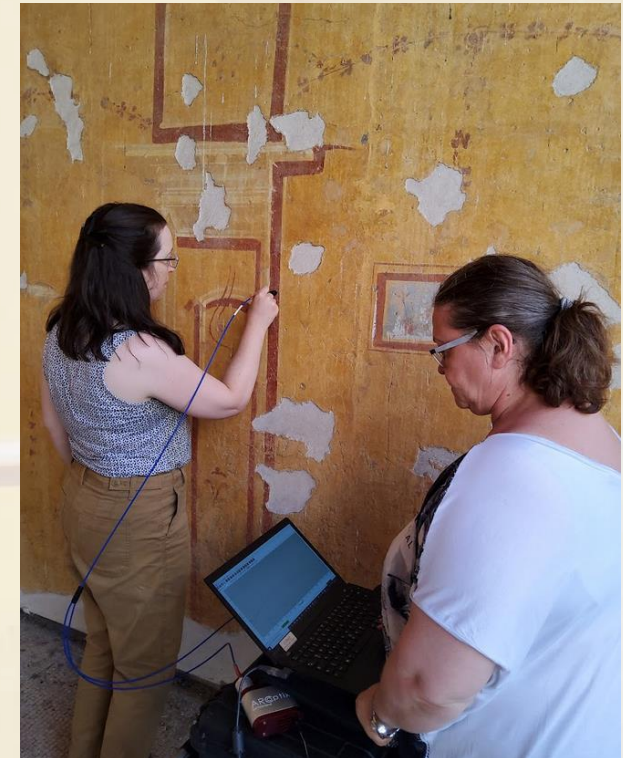
Insula del Soffitto Dipinto (II, VI, 5-6), room 1

XVth AIPMA Congress – ANTIQVA PICTVRA



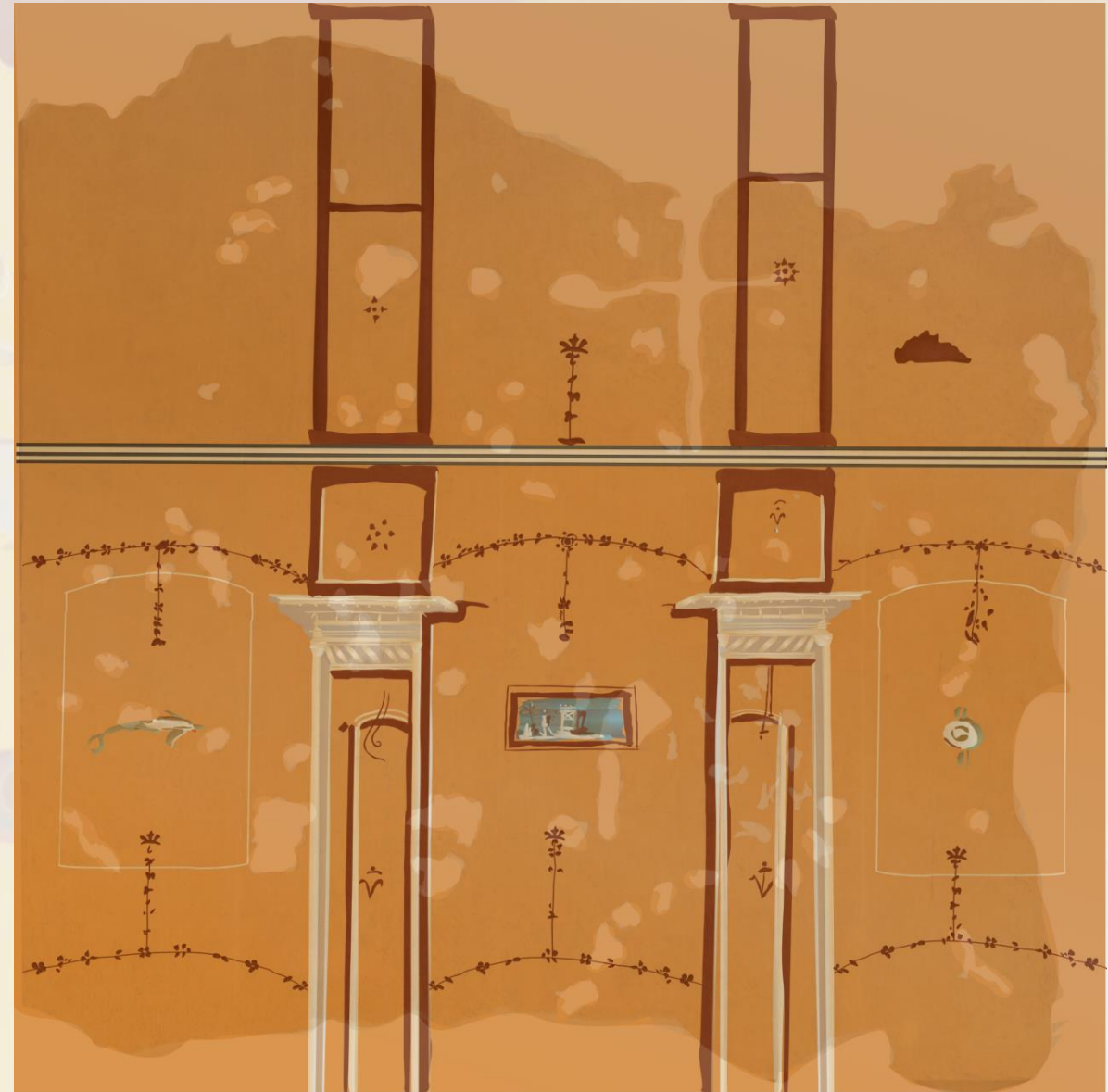
Insula del Soffitto Dipinto (II, VI, 5-6), room 1

XVth AIPMA Congress – ANTIQVA PICTVRA



Insula del Soffitto Dipinto (II, VI, 5-6), room 2

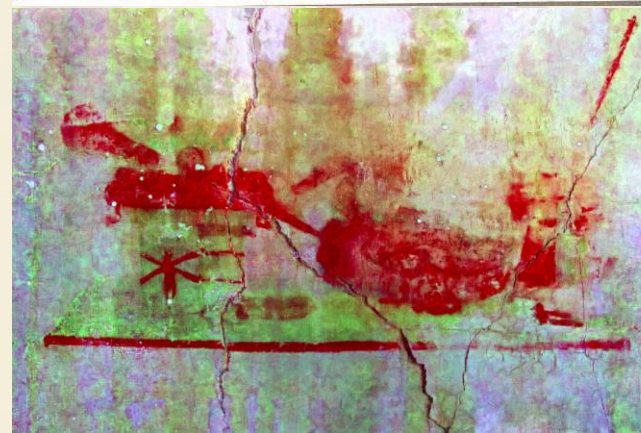
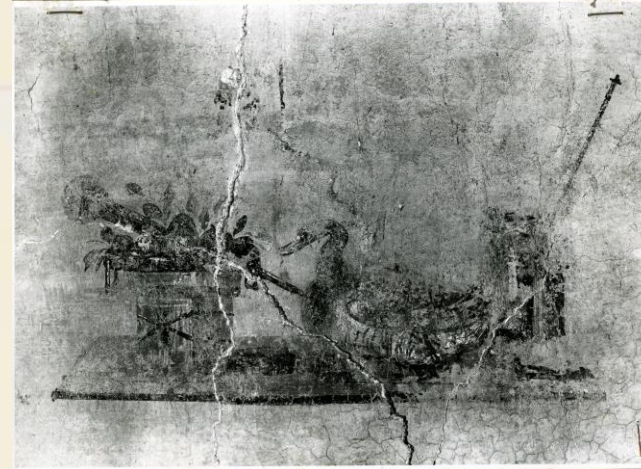
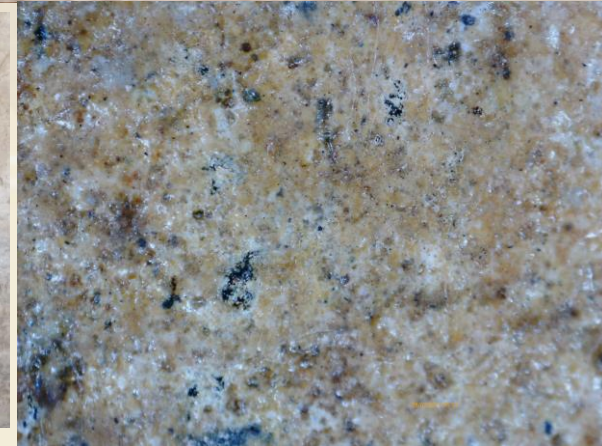
XVth AIPMA Congress – ANTIQVA PICTVRA



Insula del Soffitto Dipinto (II, VI, 5-6), room 2



Insula di Lucrezio Menandro (I, III, 5), room 11

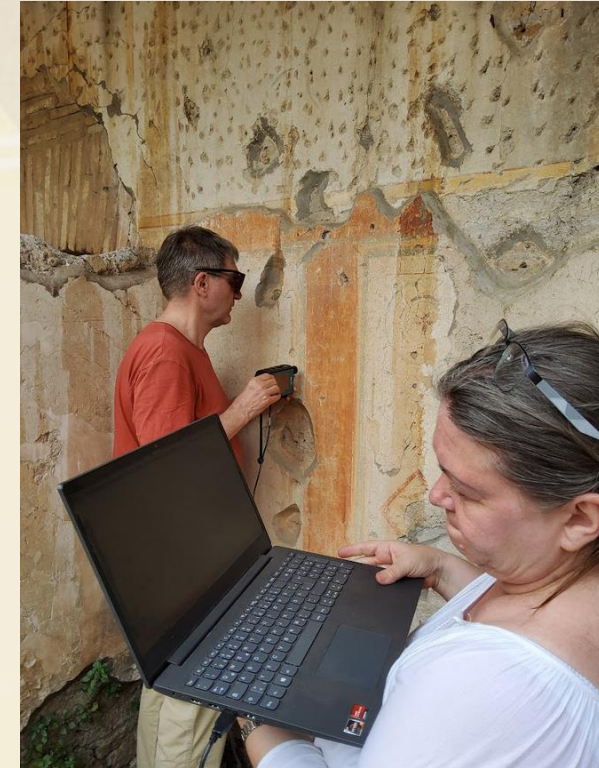
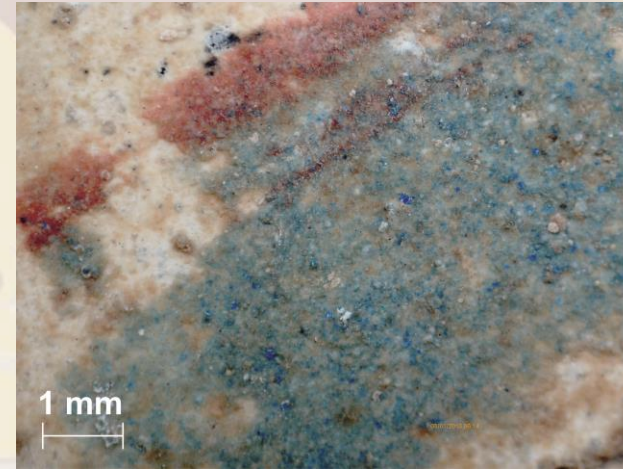




Insula di Lucrezio Menandro (I, III, 5), room 11



1 m
P. Tomassini



© Alix Barbet, 1969

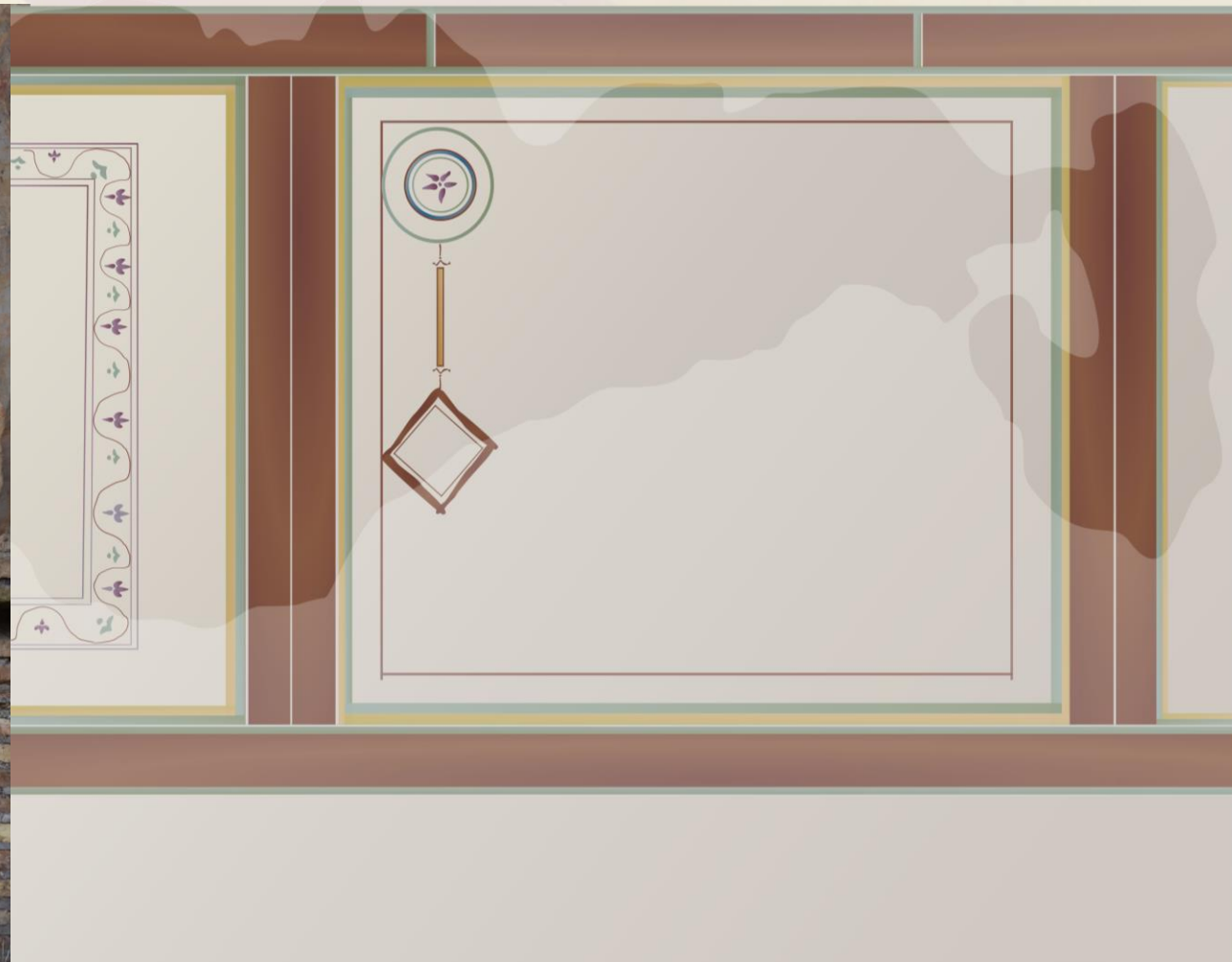
Caseggiato degli Aurighi (III, X, 1), room 9, West wall

XVth AIPMA Congress – ANTIQVA PICTVRA



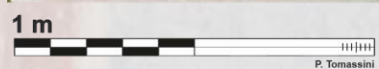
1 m

P. Tomassini



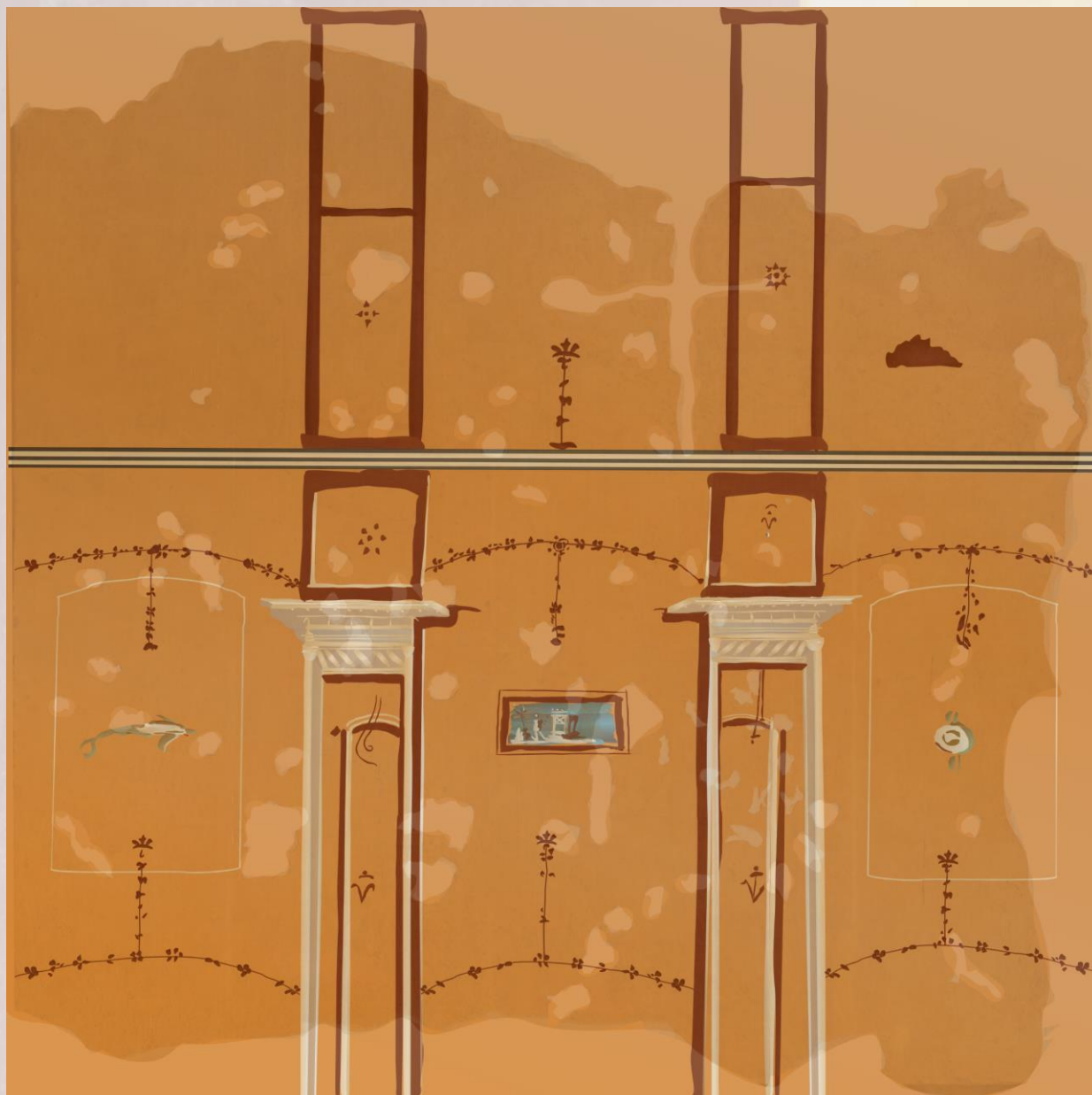
Caseggiate degli Aurighi (III, X, 1), room 9, West wall

XVth AIPMA Congress – ANTIQVA PICTVRA

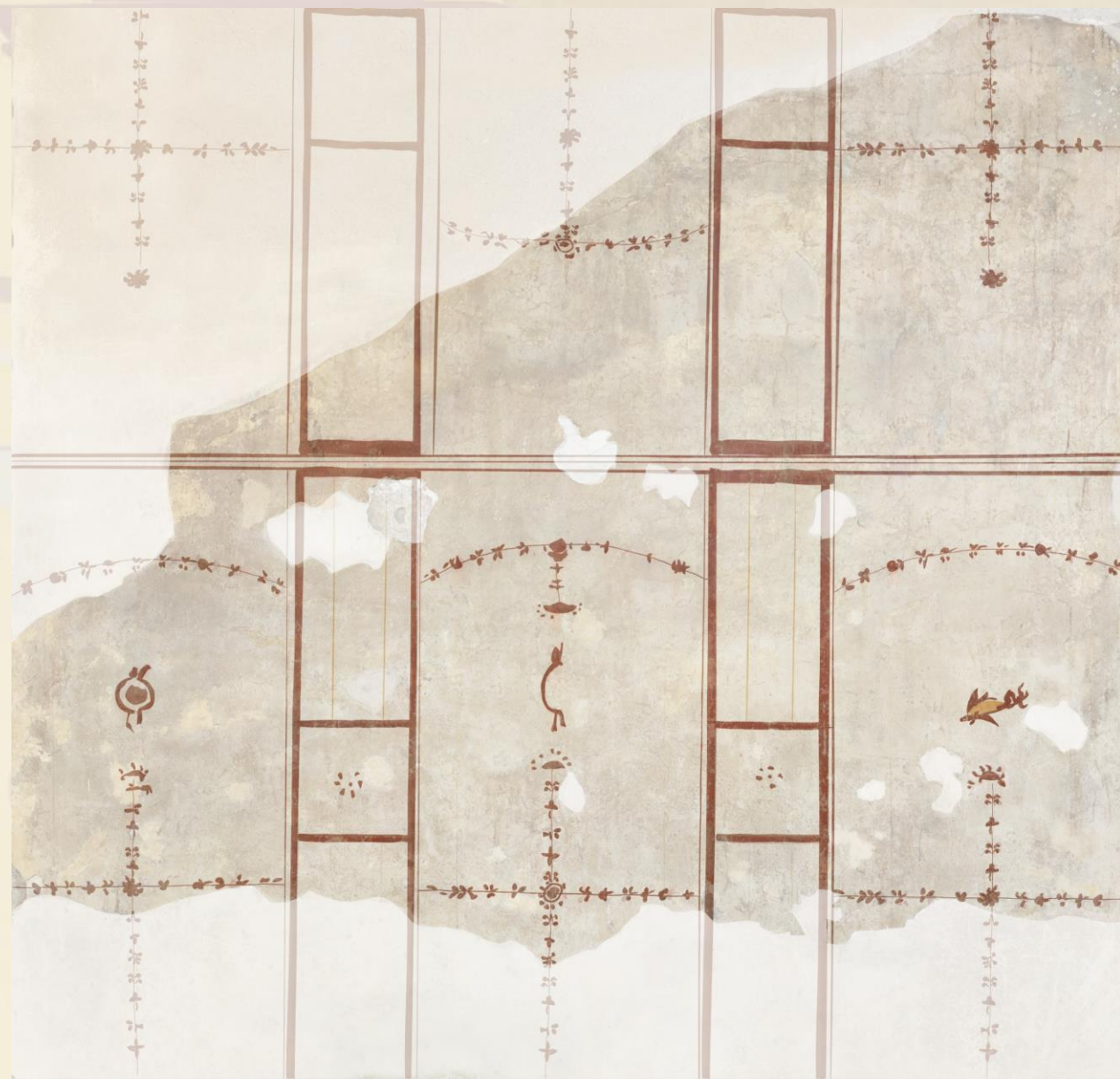


Caseggiato del Sole (V, VI, 1)

XVth AIPMA Congress – ANTIQVA PICTVRA



Insula del Soffitto Dipinto (Il, VI, 5-6), room 2



Caseggiato del Sole (V, VI, 1)