



**REPORT: INTERNATIONAL
2023 SUMMER SCHOOL
GRADIŠČE PRI DIVAČI (SLOVENIA)**

21st of August – 6th of September 2023

CHURCH OF ST. HELEN

CONSERVATION-RESTORATION OF WALL
PAINTINGS

**VOLUME 3
FINAL REPORT**

Organizers of the Summer School: Alberto Felici, Ajda Mladenović, Anita Kavčič Klančar, Marta Bensa, Minka Osojnik, Andrej Jazbec, Blaž Šeme, Katja Kavkler, Jonas Roters.

Professors and organizers: Alberto Felici, Neva Pološki, Suzana Damiani, Blaž Šeme, Jonas Roters.

Students: Elisa Lüthi, Viktorija Peternel, Carmen Hiltbrunner, Marco Tosi, Luzia Amrein, Lara Cizel, Alessia Grandoni, Karla Borenić, Michelle Vidovič.



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1. Introduction

The International Summer School is a three-year project running from 2021 to 2023. The aim is to develop and implement a conservation plan for the preservation of the medieval wall paintings in the Church of St. Helen in Gradišče pri Divači, Slovenia.

The workshop consists of theoretical online lessons and practical on site work, regarding the methodology and approach to the conservation and restoration of wall paintings. The church represents an ideal case study for the implementation of a rigorous methodological and interdisciplinary approach in the conservation process, useful both for students and professionals working in the field of decorated architectural surfaces.

SHORT SUMMARY OF THE 2022 SUMMER SCHOOL

The 2022 Summer School lasted for three weeks. In the first preparatory week, which took place online, all project partners were introduced. As in 2021, it was followed by a presentation of the site and history of the church, wall painting monuments of the Karst region and Slovenia as a whole and techniques and materials of Slovenian wall paintings. The second part of lectures addressed more technical and methodological aspects.

The practical work on the wall paintings in the church of St. Helen included:

- examining the state of conservation,
- mapping additional signs of deterioration phenomena,
- assessing the cohesion of different colours,
- cleaning with demineralised water,
- carrying out trials to check the possibility of removing unwanted materials, using active components with or without supporting agents (using chelating agents, applying different methodologies and using various thickening agents, performing tests with anionic exchange resins),
- carrying out further cleaning methods (laser treatment).

The previously carried out cleaning trials were evaluated, and the on site work was completed.

THE AIM OF 2023 SUMMER SCHOOL

The aim of the 2023 Summer School was to continue the activities of 2021 and 2022 by carrying out the presentation of the wall paintings in Gradišče. To work on aesthetic presentation of the paintings: finding an appropriate mortar for the infilling of losses in plaster, as well as finding a retouching technique and binder for the aesthetic integration of losses of the paint layer. Starting the intervention, that will be carried out in the future by the Institute for the Protection of the Cultural Heritage of Slovenia.

PROGRAM AND ORGANIZATION OF ON SITE WORK

This year's on site work consisted of one week, from the 25th of August till the 2nd of September. The students were divided into three groups, consisting of a professor/professional and three students. Each group was assigned a specific location on the south wall of the church's nave. First, we studied the original technique of the painting, as well as the deterioration phenomena based on direct observation and reports of the previous Summer Schools. The students carried out a cohesion assessment tests to assess the risk and state of different pigments, to validate the cohesion after the consolidation treatment that was carried out. A discussion about infilling and the use of different sands led to the first mortar trials. Dr. Andreja Padovnik from the University of Ljubljana, Faculty of Civil and Geodetic Engineering, made a lecture on sand, lime, mortars and their properties. A discussion was held about reintegration and terminology and binders used in retouching.

The students practiced *selezione cromatica* and *astrazione cromatica* with the different binders (Tylose, Ammonium Caseinate) for the pigments as well as watercolours on mock-ups. Technique of *abbassamento di tono* was demonstrated by Alberto Felici, which the students then carried out the next remaining days on their area of the south wall.

Besides the work on site and lectures students visited a worksite in Dolenja vas, the Škocjan caves, the church in Hrastovlje, the town of Piran and its churches (St Mary of Consolation and the church of St George), the churches in Famlje, Vremski Britof, Naklo and Sveto.

On the final day on site a presentation of the Summer School and its results was made for the local community, representatives of the Ministry of Culture of Slovenia, interested professionals and the public by Alberto Felici and two students.

After the return of the participants to their homes, three days followed with frequent online plenums and the preparation of the present documentation in small groups of students. Structure and content were created by the students and suggestions from the teachers were incorporated.

2. Daily Diary

The program of the Summer School was divided into three parts, three days online, ten days on site work and again three days online to wrap up the report.

21 – 23 AUGUST 2023

The first three days online started with an introduction of the partners and participants of the Summer School that included an introductory exercise with the students. Presentations about Cultural Heritage in Slovenia, the region, the church and the project followed. These first lectures were joined also by the Interpretation Summer School.¹ The late afternoon of the first

¹ In 2023, a parallel International Summer School on Conservation and Interpretation, shorter "Interpretation Summer School" (hereafter "ISS") programme about the interpretation of cultural heritage sites in the region. This new partnership between Summer Schools is the first step towards establishing the distributed Museum of Frescoes (involving the work of the ISS and CSS) that will feature three churches in the district of Gradišče and other sites in the region, presenting information about the history, importance, iconography, materials and techniques, and conservation of the wall paintings in the churches.

day online continued with lectures about the state of conservation and previous interventions, the methodological and interdisciplinary approach for the conservation of wall paintings as well as examples of techniques and materials of Slovene wall paintings.

On the second day online results of the previous two Summer Schools (2021 and 2022) as well as results of the diagnostic campaign were presented followed by inputs to the topic of this year's Summer School, the reintegration and retouching. A virtual "round table discussion" about some main questions on the topic of reintegration and a lecture about visual literacy in conservation followed in the afternoon. The first two groups of students presented their thoughts on the articles that were read in preparation for the Summer School to sum up the day.

The third day online focused on case studies in retouching from Croatia, Slovenia and Italy followed by an excursion to perception psychology. The day was completed with the other two group presentations from the students about the articles they read beforehand.

On Thursday all participants travelled to Slovenia and installed themselves in their accommodation near the church St. Helen in Gradišče.

25 AUGUST – 02 SEPTEMBER 2023



Fig. 1: Welcome meeting on site in the morning of 25.08.2023

The part on site started on Friday with an introduction of all participants and a presentation about the history of the church exterior and interior held by Minka Osojnik. A report of UV and portable Raman spectrometry trials with Katja Kavkler followed. Three groups of

students lead by with one or two teachers, lecturers and conservators from IPCHS as a head of the group were formed. Each group was assigned a part of the wall painting on the south wall and each this work area was divided into three parts. The students studied and mapped the original technique and deterioration phenomena, using previously made graphic representations of the areas of the wall painting and determined colours and symbols. The students started to study and to map on paper phenomena of the original technique that were used to create the wall paintings as well as deterioration phenomena with different colours and shades (Figures 1 & 2).

This work continued on Saturday morning. Each group did a cohesion assessment tests of different colours to validate the cohesion after the consolidation treatment that was carried out in early summer 2023 by conservators from IPCHS. A discussion about infilling and the use of different sands led to the first mortar trials. In the afternoon the church in Dolenja vas was visited where Andrej Jazbec showed the work that was done on the wall painting (Fig. 3). The day was completed with a visit to the Škocjan caves. Three teachers prepared the surfaces of the first mortar trials in the evening.

The program for Sunday included a visit to the church in Hrastovlje followed by a drive to Piran where the student visited the town wall, the church of St. Mary of Consolation and the church of St. George in the town centre. In the afternoon everyone enjoyed the sea and a boat tour (Figures 4 & 5).

On Monday the results of the first mortar trials were discussed and a short revision of the mapping and cohesion assessment of the three groups was presented. As the Interpretation Summer School visited the church St. Helen in the afternoon, the students prepared a short presentation about the church and its history as well as the research and treatments carried out during the Summer Schools since their beginning in 2021. A joined visit of churches in Famlje, Vremski Britof and Naklo followed. The day was completed with a group dinner in Kozina (Figures 6 to 9).

Tuesday began with a lecture on sand, lime, mortars and their properties by Andreja Padovnik. On site a discussion about reintegration and terminology and binders used in retouching followed. Two different binders, Tylose and Ammonium Caseinate were prepared. A demonstration of the technique of *abbassamento di tono* was demonstrated by Alberto Felici.



Fig. 2: Portable Raman spectrometry essay with Katja Kavkler; 25.08.2023.



Fig. 3: Visiting the church in Dolenja vas with Andrej Jazbec; 26.08.2023.



Fig. 4: Visiting the church in Hrastovlje; 27.08.2023.



Fig. 5: Visiting the church of St. George in Piran; 27.08.2023.



Fig. 6: Presentation at St. Helen for Interpretation Summer School participants, 28.08.2023.



Fig. 7: Visiting the church in Famlje, 28.08.2023.



Fig. 8: Visiting the church in Vremski Britof, 28.08.2023.



Fig. 9: Visiting the church in Naklo, 28.08.2023.

The preparation of the two binders was completed on Wednesday as they were used for the exercises of the retouching techniques on mock-ups. After a demonstration from Alberto Felici, the students practiced *astrazione cromatica* and *selezione cromatica* with the different binders. In the afternoon retouching using the *abbassamento di tono* method on the south wall began. Each student got an area for doing the retouching (Figures 10 & 11).



Fig. 10: Practicing *astrazione cromatica* and *selezione cromatica* on mockups, 29.08.2023.

The discussion about terminology in retouching, with a focus on the *abbassamento di tono* method, continued on Thursday. The students continued retouching on the south wall. In the evening the church of St. Tilen in the hometown of Andrej Jazbec was visited followed by dinner at his home.



Fig. 11: Retouching on the south wall, 29.08.2023.

The practical work on site continued on Friday with the retouching on the south wall and a second part of mortar trials was carried out.

The last day on site included a presentation and discussion of the second mortar trials, cleaning the church and preparing for the presentation in the afternoon. The presentation of the Summer School and its results was made

for the local community, representatives of the Ministry of Culture of Slovenia, interested

professionals and the public by Alberto Felici and the two students Michelle Vidovič and Viktorija Peternel (Figure 12). As the International Summer School for the Conservation-Restoration of Wall Paintings came to an end, the key of the church of St. Helen was symbolically handed over to the organisers of the new International Summer School for Conservation and Interpretation, which took place for the first time in the summer of 2023.



Fig. 12: Presentation of the Summer School and its results for the local community, representatives of the Ministry of Culture of Slovenia and other stakeholders, 02.09.2023.

4 - 6 SEPTEMBER 2023

After the return home, the Summer School was completed with three more days online where the final report was written and all the photos of the time on site were collected, sorted, and named properly. Because there was not enough time for the content review and final editing, work on the present document continued in the following days after 6th of September.

A discussion about the 2023 Summer School and short presentation of students' work, followed by a common conclusion for all partners and participants summed up the Summer School.

3. Paint layers cohesion assessment after the conversion of the surface Calcium sulfate crust to Barium carbonate on the south wall

The cohesion assessment was carried out to determine the stability of the paint layer after consolidation. After physical cleaning, the conversion of gypsum was carried out with ammonium carbonate (and ammonium bicarbonate) and barium hydroxide.² The work steps to transform the surface calcium sulfate crust (gypsum from transformed calcium carbonate under the influence of sulfurous acids over the centuries) and subsequent re-fixation of the already before and after the gypsum transformation cohesion-weakened painting layers were already carried out on the north wall before the start of 2023 Summer School. The cohesion assessment was carried out to determine the stability of the paint layer ca. 4 weeks after finalization of consolidation.

The test was performed using cotton swabs dipped in distilled water. Slightly wetted swabs were rolled over the surface of the specific colours three times. The cohesion of each colour was tested on two previously determined small areas. Each colour was tested with three swabs rolled over the same area to determine its stability under mechanical action or repeated wetting. If the swabs were coloured, it would indicate a lack of cohesion.

Pigment remains were visible only on one cotton swab. However, the test area of this one swab was intentionally not consolidated (reference area).

As a general conclusion, we could say that consolidation treatment worked very well. The paintings seem massively stabilized. The wider assessment of the consolidation is not part of this documentation as it was not done by the authors. Nonetheless, our first impression is: The depth profile of the consolidation seems to be established in a good way. White veils have formed in some places, the origin of which remains to be investigated and their further

² After the Florence flood of 1966, Enzo Ferroni and Dino Dini tried to avoid the removal of damaged murals, which had been common until then, and began to save damaged murals in situ using the barium method patented in the United States that same year. The work steps according to Enzo Ferroni and Dino Dini or the patent in the United States are (Source: Fritz, Ekkehard: Gipsumwandlungs- und Reinigungsverfahren an Wandmalereien - Möglichkeiten und Gefahren beim Einsatz von Ammoniumcarbonat; in: Zeitschrift für Kunsttechnologie und Konservierung, No. 2, Vol. 9/1995.; transl. by authors.):

A) conversion of the gypsum with ammonium carbonate or ammonium bicarbonate to an easily soluble salt (ammonium sulfate). Simplified formula: $(\text{NH}_4)_2\text{CO}_3 + \text{CaSO}_4 \rightarrow (\text{NH}_4)_2\text{SO}_4 + \text{CaCO}_3$ (ammonium carbonate + gypsum \rightarrow ammonium sulfate + lime). Lime is again incorporated into the structure as a strengthening substance. The ammonium sulfate, which belongs to the group of easily soluble group of easily soluble salts, has the negative property of crystallizing or re-crystallizing under fluctuations in temperature or humidity.

B) In order to avoid consequential damage due to repeated crystallization processes, a second working step with a barium hydroxide solution is required. This step is to be carried out after three to four weeks to ensure complete volatilization of the remaining of the remaining ammonium components is ensured.

Simplified reaction formula: $\text{Ba}(\text{OH})_2 + (\text{NH}_4)_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{NH}_4\text{OH} \rightarrow 2\text{NH}_3 + 2\text{H}_2\text{O}$ (barium hydroxide + ammonium sulfate \rightarrow barium sulfate + ammonium hydroxide). In the further course of the reaction, excess barium hydroxide that has not been consumed is carbonated, analogous to the formation of calcium hydroxide, to form barium carbonate, which is also sparingly soluble. Simplified reaction formula: $\text{Ba}(\text{OH})_2 + \text{CO}_2 \rightarrow \text{BaCO}_3 + \text{H}_2\text{O}$ (barium hydroxide + atmosphere \rightarrow barium carbonate). Changes due to salt formation Reaction processes can change due to interactions between the materials present on the object and those introduced by the materials/salts introduced by the method. Impairments due to salt formations can occur if the less alkaline ammonium hydrogen carbonate is used instead of ammonium carbonate. In addition to the easily soluble ammonium sulfate, this is also able to form the easily soluble calcium hydrogen carbonate. As a result, further calcium carbonate is dissolved from the structure and, on contact with the atmosphere (evaporation), accumulates again in calcium carbonate (lime sinter) on the surface.

If nitrate values are present in a concentration of more than 10% are present in the microstructure, the reaction process of the barium hydroxide application can be restricted. Formation of e.g. barium nitrate (white haze).

treatment discussed. Nevertheless, the paintings will withstand future antropogenic mechanical stresses. And only one small fragment, that wasn't consolidated showed remains of colour on the cotton swab (Figures 13 to 16).

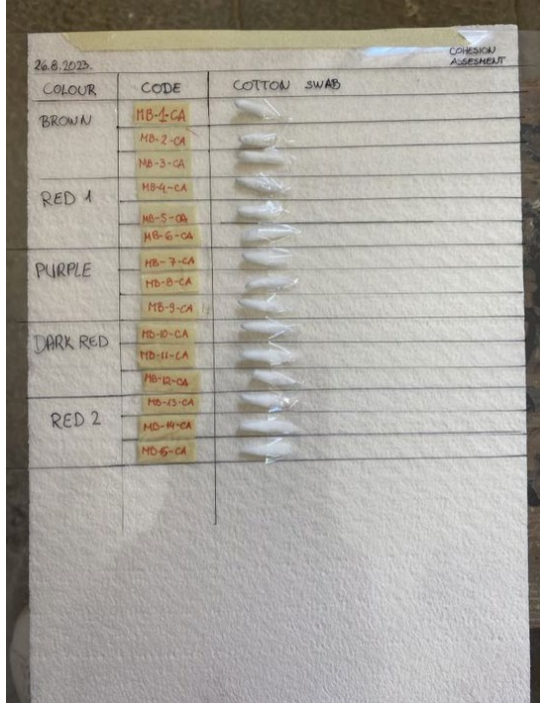


Fig. 13: Photographic documentation of cotton swabs after testing cohesion – no deposits; 26.08.2023.

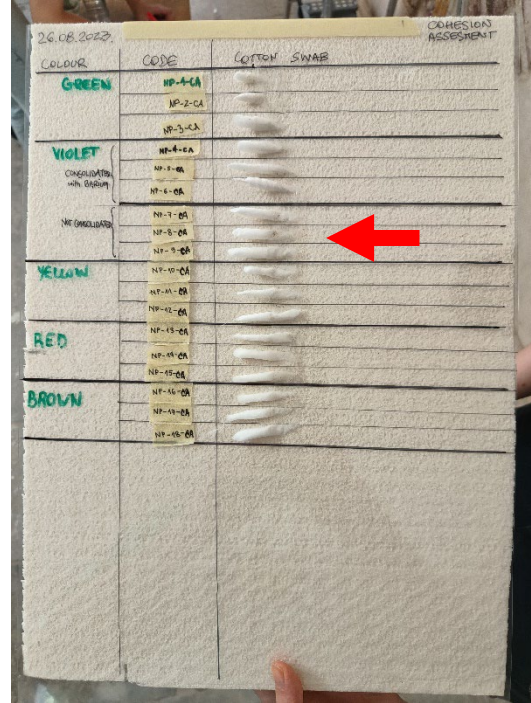


Fig. 14: Photographic documentation of cotton swabs after testing cohesion – violet deposits on three tests of not consolidated area; 26.08.2023.

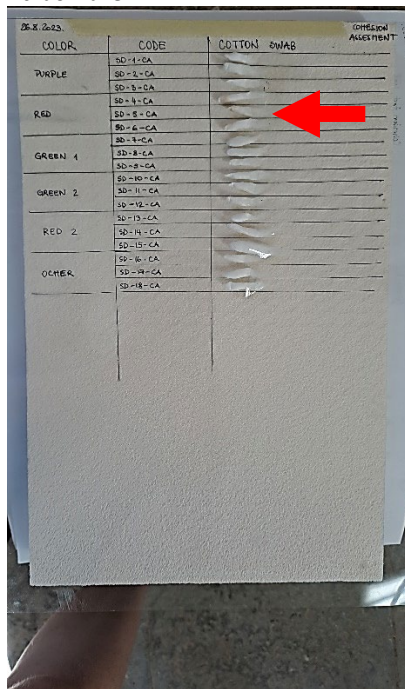


Fig. 16: Area not yet consolidated (little fragment of upper frieze), 28.08.2023.

Fig. 15: Photographic documentation of cotton swabs after testing cohesion – red deposits on three tests of not consolidated area; 26.08.2023.

4. Trials on the preparation of infilling mortars

OBJECTIVE

The objective of the trial is to prepare mortar mock-ups to find a suitable infilling mortar for smaller lacunas (of up to 1 cm in depth and approximately 250 cm² in size) in the *intonaco* within the wall paintings on the south wall in the Church of St. Helen in Gradišče pri Divači. Infills play an important role for both the appearance and conservation of wall paintings. They follow the aim to not only reduce the disturbance of losses but also to secure marginal areas and prevent further losses. The selection of materials and the development of a methodology are carried out on the basis of a requirement profile.

REQUIREMENT PROFILE

Infilling mortars must fulfill certain requirements:

- **Reversibility:** The applied mortar must be removable without damaging the original substance. To ensure the possibility of later removal, it should be less strong than the original mortar.
- **Retreatability:** The infill shouldn't preclude future interventions. For the retouching of the infillings the texture can't be too rough, while the structure can't be too porous.
- **Compatibility:** The components of the mortar must be chemically inert with the substrate and compatible with the original material in their chemical and physical properties. The porosity should be similar to the original mortar because a lower porosity of the infilling mortar could lead to salt crystallization around the edges of the infill.
- **Preservation:** To preserve the original substance, the infilling mortar must have sufficient adhesion to the substrate, cohesion, strength and mechanical resistance, but it shouldn't put the surrounding area under physical stress or be a cause for new damage. For a good adhesion the water retention capacity should be above 70%.
- **Durability:** Infills shouldn't be a source of deterioration.
- **Appearance:** Losses should be less disturbing after infilling. The color, texture and structure should therefore be similar to the original mortar.
- **Distinguishability:** Color, texture and structure should be distinguishable from the original substance.
- **Workability:** For the application the mortar needs to have malleability.
- **Healthfulness:** The material used shouldn't be harmful to health.

Summing up, the factors that influence the above-mentioned requirement criteria are the strength, color, texture, structure, consistency, porosity, cohesion and adhesion of the mortar. These factors can be influenced by the components (type of binder, color/ size/ shape/ granulometry of the aggregate, amount of water, use of additives), their ratio, the application (pressure, thickness), the surface treatment, the support and the environment.

SELECTION OF MATERIALS

A sample taken from the north wall of the church showed the use of lime as a binder and silicate sand as an aggregate.³ As the church is surrounded only by calcite rocks, the question arises whether the mortar sample could have been taken from a later intervention.

- **Binder:** For reasons of compatibility, preservation, durability, appearance, workability and healthfulness slaked lime was chosen as a binder for the infilling mortar. Lime has high water retention capacity, good ageing properties, is well workable and not hazardous to health. Since it's the same system, lime is compatible with the original mortar and has similar properties and appearance.
- **Aggregates:** As the aggregate of the original mortar could not yet be determined definitely, both silica and calcite sands were tested with the aim of achieving a similar visual appearance and properties to the original mortar. If possible, local sands should be used. One industrial silicate sand was included in the trials because of chemical quality and its yellowish color. Due to limited accessibility and time only four different aggregates could be evaluated.
- **Additives:** For the already existing infills at big lacunas red earth (clay) was used as an additive to tone the infills. As red earth is found in the local context of the church, it could also be used for the small infills to achieve a similar color appearance.

METHODOLOGY

The variables selected to influence the properties of the mortar are aggregate, additive, ratio and surface treatment. The binder and the support were maintained throughout the trial. Similarly, the application and the environmental conditions weren't tested for their influence and were kept as constant as possible. Yet slight changes in the pressure and thickness of application as well as temperature and relative humidity are to be expected. All components were measured as accurately as possible with the given resources. The amount of water added to the mortar (if necessary) and the suspension of red earth were determined empirically.

³ cf. Report International Summer School Gradišče pri Divači (Slovenia), 2nd to 27th of August 2021, Church of St. Helen, Conservation-Restoration of Wall Paintings, Volume 1, p. 35.

EXECUTION



Fig. 17: Up left = Slaked calcitic air lime $\text{Ca}(\text{OH})_2$; up right = red earth collected near the construction site; down from left to right = Kema Construction Sand, Črnotiče Sand, Štanjel Sand sieved $<1,2\text{mm}$.

List of used materials (Figure 17)			
Material	Specifications	Manufacturer	Source of supply
Kema Construction Sand	Naturally moist quartz sand, granulometry 0.063-1 mm	Kema Puconci D.O.O. Puconci 109 9201 Puconci	https://www.merkur.si/mivka-kema-gradbena-0-063-1-mm-vlazna-25-kg/
Štanjel Sand	Calcite sand, granulometry ca. 0-1 mm (sieved)	Kamnlom Štanjel, Melišče D.O.O. Štanjel 73 6222 Štanjel https://zemljevid.najdi.si/podjetje/5223877000/kamnlom-stanjel-dusan-zerjal-sp	
Črnotiče Sand	Calcite sand, granulometry ca. 0-1 mm (sieved)	Salonit Anhovo Kamnolomi, D.O.O. Črnotiče quarry https://zemljevid.najdi.si/podjetje/5074967-003/kamnlom-crnotice	
Reka Sand	Unwashed	Collected beside the river Reka	
Red Earth	Diluted in water and sieved	Collected near the construction site to the east of the church	
Slaked Lime	Slaked calcitic air lime $\text{Ca}(\text{OH})_2$	Dopolnilna Dejavnost Na Kmetiji Anton Ravnak Kovaška cesta 8 3205 Vitanje 03 5775222, 031 539 652	

The slaked lime was pressed through a fine-meshed sieve. Štanjel and Črnotiče sand were sieved with a sieve with a mesh size of about 1 mm (Figure 18). The red earth was diluted with water until it had a thick consistency and then sieved before being added to some of the mortars.



Fig. 18: Preparation of the ingredients for the mortar mock-ups, 26.08.2023.

In total 17 mortar mock-ups were prepared. The procedure was as follows:

- 1-6: For the first six mock-ups two of the local sands and the industrial sand were each prepared in two different ratios to the binder. The surface of each mock-up was treated in three (in one case four) different ways.
- 7: After the visual evaluation of the color of the first six mock-ups, for the seventh mortar the two local aggregates were mixed, again in two different ratios to the binder and three different surface treatments.
- 8: For the eighth trial, the local sand of the Reka river was tested in one ratio to the binder and four different surface treatments.
- 9-13: For the mock-ups nine to seventeen the mixture of two local sands established in the seventh trial was used as a basis. For mortars nine to thirteen, the ratio of binder to aggregate was kept constant, while the amount of red earth added was increased with each trial. The surfaces were treated in four different ways.
- 14-17: For the mock-ups fourteen to seventeen the established system of increasing the amount of red earth with each trial and treating the surface in four different ways was adapted to a different ratio of binder to aggregate.

Aggregate, binder and additive were mixed according to the recipes listed in the table below. In most cases, no water was added to the mixture. Only some mortars with a ratio of 1:4 had distilled water added for better workability. In order not to distort the color result of the mortar, the amount of additional water was kept as low as possible.

Recipes						
No.	Composition			Ratio [volume part]		
	Binder	Aggregate	Additive	Binder	Aggregate	Additive
1	Slaked lime	Kema Silica Sand	-	1	2	-
2	Slaked lime	Kema Silica Sand	-	1	4	-
3	Slaked lime	Štanjel Sand	-	1	2	-
4	Slaked lime	Štanjel Sand	-	1	4	-
5	Slaked lime	Črnotiče Sand	-	1	2	-
6	Slaked lime	Črnotiče Sand	-	1	4	-
7	Slaked lime	Štanjel Sand, Črnotiče Sand	-	1	2 (1 Štanjel + 1 Črnotiče)	-
8	Slaked lime	Reka Sand	-	1	2	-
9	Slaked lime	Štanjel Sand, Črnotiče Sand	Red earth suspension	1	2 (1 Štanjel + 1 Črnotiče)	0.03
10	Slaked lime	Štanjel Sand, Črnotiče Sand	Red earth suspension	1	2 (1 Štanjel + 1 Črnotiče)	0.06
11	Slaked lime	Štanjel Sand, Črnotiče Sand	Red earth suspension	1	2 (1 Štanjel + 1 Črnotiče)	0.09
12	Slaked lime	Štanjel Sand, Črnotiče Sand	Red earth suspension	1	2 (1 Štanjel + 1 Črnotiče)	0.15
13	Slaked lime	Štanjel Sand, Črnotiče Sand	Red earth suspension	1	2 (1 Štanjel + 1 Črnotiče)	0.3
14	Slaked lime	Štanjel Sand, Črnotiče Sand	Red earth suspension	1	4 (2 Štanjel + 2 Črnotiče)	0.05
15	Slaked lime	Štanjel Sand, Črnotiče Sand	Red earth suspension	1	4 (2 Štanjel + 2 Črnotiče)	0.1
16	Slaked lime	Štanjel Sand, Črnotiče Sand	Red earth suspension	1	4 (2 Štanjel + 2 Črnotiče)	0.15
17	Slaked lime	Štanjel Sand, Črnotiče Sand	Red earth suspension	1	4 (2 Štanjel + 2 Črnotiče)	0.25



Fig. 19: Applying test mortars on flat limestones; 26.08.2023.

The mortars were applied with a trowel on dense, flat limestones with an uneven surface. The thickness of the applied mortar layers is between 1-1.5 cm. After application the entire surface of each mock-up was smoothed with a spatula to create an even surface texture (Figure 19).

Between three and four hours after application, when the mortar was not yet completely dry, the surface was treated.



Fig. 20: Treating of mock-ups mortar surfaces; 26.08.2023.

- The upper part was roughened with a spatula to improve permeability by opening the calcite layer and to change the optical appearance by creating a more prominent surface relief.
- The middle part was washed with a Blitzfix sponge (light to very light dabbing with the flat side of the sponge) to reduce the calcite layer and to expose the aggregate grains.
- After surface treatment, the mock-ups were wetted with an aerosol to ensure complete carbonatization.

When the mortar was dry, the upper right part of the mock-ups 3 and 8 to 17 was abraded with the blue side of a Wishab sponge to further reduce the calcite layer formed and make the color appearance of aggregates more visible (Figure 20).

EVALUATION OF RESULTS

All the mock-ups achieved good results regarding the criterion of preservation. Adhesion to the substrate, cohesion, strength and mechanical resistance were satisfactory. No cracks occurred during the drying process. The mock-ups were evaluated for workability, appearance, distinguishability and retreatability.

The mortars with a ratio of 1:2 had a better workability than the mortars with a ratio of 1:4, since the latter had a lower malleability due to the higher ratio of aggregates. The 8th mortar with Reka sand as an aggregate was difficult to apply as it was also not very malleable.

The color of the mock-ups 1 to 7 appeared too cold compared to the existing larger infills (Figure 21). Mock-up 8 as well seems too cold and greyish. The mortars with an addition of red earth come closer to the desired color, although the effect was less visible in the mortars with a ratio of 1:2 than in the mortars with a ratio of 1:4. Mock-up 13 shows the warmest and most suitable color (Figure 22).

Of all the textures, the smoothed area in the lower part of the mock-ups appeared the lightest, while the roughened, washed and abraded surfaces had a darker appearance. Which area seemed darkest varies from mock-up to mock-up. The roughened surface in the upper part of the mock-ups is too rough for later retouching (Figure 23), while the smoothed surface could be mistaken for original surface, therefore both are inappropriate. The surface treatment with a Blitzfix sponge on mock-up 13 proved to be the most suitable in terms of appearance, distinguishability and retreatability (Figure 24).



Fig. 21: Mock-ups 1 to 7 after surface treating and ca. 2 day drying; 28.08.2023.



Fig. 22: Mock-ups 8 to 17 after surface treating and ca. 3 day drying; 03.09.2023.



Fig. 23: Mock-ups 9 and 10 after surface treating and ca. 3 day drying; 28.08.2023.



Fig. 24: Mock-ups 13 and 17 after surface treating and ca. 3 day drying; 03.09.2023.

In summary, the best result was obtained with mock-up 13 when the surface was washed with a Blitzfix sponge, even though the ratio of 1:4 means a slight disadvantage in terms of workability. This decision must be tested and evaluated on the wall, since the porosity of the support and the environment may differ from the conditions of the trial. If the color isn't satisfactory, the infill can either be darkened with silicate chinks or the color of the mortar must be changed using different aggregates and/or additives.

It is still to be determined whether the infills will be carried out at the same or below the level of the *intonaco* and whether they will be retouched or not.

5. Retouching – Execution on the south wall

OBJECTIVE

The aim of retouching carried out during the 2023 Summer school was to propose to the conservators (from IPCHS) the techniques and materials which could be used in the future to reduce the visual impact of the damage. Some of it, mostly the abrasions (wear of the pigment layer) were reintegrated to the original aesthetic elements to increase artistic and iconographic legibility. To proceed with the process of retouching, we had to assess the values of the object; the historical and artistic, sentimental and the value of use and function.

To enhance the aesthetic qualities of paintings by retouching, we considered important because of several factors. First, the local community is very engaged in the protection of the church and wall paintings. The Church of St. Helen is very valuable to them most of all because of the aesthetic component of the wall paintings which are also estimated to be one of the most precious medieval wall painting cycles in Slovenia. Furthermore, the future function of the object also had to be considered; initially exclusively sacred object is going to get yet another function – the museum. Even if the improvement of the comprehensibility of the content in museum contexts is sometimes achieved differently today (indirect information) - the aesthetic component should be respected regarding the immediate experience of the paintings as a religious momentum.

Considering the historical values of wall paintings, we had to take into account all the interventions carried out in the past such as new window openings, ceiling elevation and various plaster infills implemented through time. As our qualitative and technical approaches were not conceived in isolation from the past, we also had to consider the most recent treatments done in 2022 and 2023, such as cleaning, desulfatization and consolidation. The effect of consolidation with the change in porosity allowed certain technical solutions regarding the retouching. Abrasions of the paint layer with uniform absorbency were easier to retouch because the behaviour of the substrate while applying retouching medium was consistent. Significant increase in colour depth, intensity and contrasts as a result of barium treatment, as well as the use of ammonium carbonate and anionic resins during cleaning gave the new sense of direction for the desired aesthetic appearance.

We consider that aesthetic completion facilitates the legibility of paintings which is important for the communication with a public who can then relate to the paintings. This, in turns, enables the appreciation of paintings which consequently leads to the awareness of the importance of their future preservation.

The focus of our work was the south wall where the surface was cleaned and consolidated as opposed to the north and west wall where these treatments were not yet conducted. The problems we faced required different approaches. They included old infills, within and surrounding the scenes varying in composition, colour, texture and size. However, we mostly dealt with abrasions (which also include traces of uncovering) and small areas where even the surface of *intonaco* was damaged.

REQUIREMENTS

While choosing the binder and the method for retouching, the following guidelines should be observed:

- Limiting retouching to the damage: The retouching should be strictly limited to the area of the damage, either when retouching abrasions or when working on a plaster infill.
- While retouching, the full comprehension of the original form is necessary.
- Preserving the distinction between the original and the retouching. To achieve this goal, a fitting distinctive retouching method should be applied.
- The retouching should be removable and shouldn't prevent future treatments.
- Retouching should follow the idea of minimal intervention. The chosen materials and methods should impose minimal changes to the original, at the same time restoring its aesthetic qualities.
- Compatibility of binder with the original substrate: It is crucial that the chemical and physical properties of the binder are taken into account so as to avoid changes in the porosity of the original structure and to ensure easy removal of retouching with solvents harmless to the original.
- Use of compatible and stable pigments: the pigments should be easy to mix with the binder and shouldn't alter during time.
- Simple preparation and use of the binder: The binder should be simple to prepare, it should mix well with the pigments and be easy to apply while retouching.
- Stability of materials: The binder should have the ability to retain its chemical and physical structure – over time it shouldn't become more fragile or weaker, it shouldn't be subjected to the volume changes due to the hygrothermal fluctuations and it shouldn't show changes considering matt or glossy appearance. It shouldn't change its colour and initial transparency. It should retain its initial solubility characteristics so as to avoid the use of solvents which could harm the original substrate.
- Safety: The materials used should not present a hazard to health and environment.

MATERIAL SELECTION

As we started with retouching practicing on the mock-ups and later on we did the retouching on the south wall, in these two cases we used different binders.

For practice on the mock-ups, we decided to use watercolours and organic water-soluble materials that included Tylose MH 300 and Ammonium caseinate for the simplicity of their use and removal, their adhesive strength and their compatibility with the substrate.

For two methods applied on the mock-ups; *selezione cromatica* and *selezione d'oro*, we used the following dry pigments: yellow ochre, siena burnt and natural, black manganese, cobalt blue and chrome green, with Tylose and ammonium caseinate.

Tylose² is a commercial name of series of products composed of Methyl hydroxyethyl cellulose (MHEC), a semi-synthetic material – cellulose derivate (cellulose ether), soluble in water. For retouching purposes, it is usually made in 0,5% - 1% concentration. When dry, the retouching done with this product has a matt and transparent appearance, it is resistible to accumulation of dirt, biological and chemical degradation and is thermally stable.

Casein is a protein based organic binder prepared by processing milk. Today we mostly use powdered casein. Casein is not soluble in water and it needs an alkaline medium like ammonium hydroxide or calcium hydroxide to solubilize. Therefore, the first step is to add dry powdered casein in water to swell, which will enable alkaline medium to make the solution.

Binder preparation and recipes:

0,5% Tylose MH 300

We added 0,5 g of Tylose MH 300 into a jar with 100 mL of distilled water and stirred the mixture. When the powder dissolved, we got a 0,5% Tylose binder of low viscosity.

- 100 mL of distilled water
- 0,5 g of Tylose MH 300

3% Ammonium caseinate

We added 3 g of casein to 100 mL of distilled water and let it swell for about 24 hours. Then we added 10 mL of 10% ammonium hydroxide and stirred to get a solution.

- 100 mL of distilled water
- 3 g of caseinate
- 10 mL of 10% ammonium hydroxide



Fig. 25: Schminke HORADAM® AQUARELL Watercolours in tubes: yellow ochre, English Venetian red, cobalt blue light and ivory black.

For retouching on the wall, we used watercolours while performing the method *abbassamento di tono*. The watercolours were chosen because they are ready to use medium, easy to handle and apply. Watercolours are a type of painting medium based on Arabic gum mixed with fine-particled pigments and to use them they should be diluted with water. Commercial watercolours usually contain glycerol which provides elasticity and facilitates dissolution with water. We used following Schminke HORADAM® AQUARELL Watercolours in tubes: yellow ochre, English Venetian red, cobalt blue light and ivory black (Figure 25).

METHODOLOGY

Students worked in pairs and practised retouching on mock-ups by performing the method *selezione cromatica*. (Figure 26) The purpose of this exercise was, on one hand, to try working with three different binders, to experience their working properties; how the pigments mix with those binders and ease of their application on the surface. Another reason was to get familiar with a retouching method which might be used in the future on the plaster infills, to restore the continuity of form discontinued by lacunae.



Fig. 26: Exercising retouching *selezione cromatica* on mock-ups; 29.08.2023.

The mock-ups contained a paint layer in four vertical, different coloured streaks (yellow, red, blue and green) and the fifth gilded one. The loss of the paint layer was simulated in the form of two horizontal lines of unpainted plaster. Binders mentioned above were used interchangeably for the inpainting of each part. (Figure 27)



Fig. 27: Exercising retouching *selezione cromatica* and *Selezione d'oro* (right) on mock-ups; 29.08.2023.

When mixing powdered pigments with Tylose and ammonium caseinate, it is important first to wet the pigments with distilled water, each pigment separately. The pure colour is then put on a palette and only a droplet of a prepared binder is added. This is then the medium ready to apply. It is advisable not to mix the pigments, but to use them in a pure form, so the desired colour is achieved by interlacing of different coloured lines.

Selezione cromatica is a distinctive retouching method. It could be compared to *tratteggio*, as it is composed of fine brushstrokes which reconstruct the missing part formally and chromatically. It differs from *tratteggio* above all in the orientation of the lines which aren't vertical, but follow the direction suggested by the form. The use of *selezione cromatica* is intended for plaster infills where the continuity of the form and colour can be reconstructed without presumptions and modulated by layering different colours from lighter to darker/warmer to colder.

Selezione d'oro is a type of *selezione cromatica* method used for reintegration of gilded parts of paintings (sculptures, frames for easel paintings etc.). The method is executed by applying pure colours in the following order: yellow, red and green, blue or black. It's important that by layering the colours the previous lines aren't completely covered.

EXECUTION



Fig. 28: Retouching in the method *abbassamento di tono* (tone reduction) using watercolours; 29.08.2023.

When it came time to work on the wall, each student was assigned a part to retouch in the method *abbassamento di tono* (tone reduction) using watercolours. This method is intended for abrasions - damaged parts of the painting where the paint layer is partially or completely missing and the surface of *intonaco* is completely or almost completely preserved. We started off by optically analysing our designated areas and treating the parts visually most disturbing (Figure 28). Certain abrasions didn't need retouching and posed instead as a reference tone we gradually built in other places, attempting to match. Comparing our work with others' and observing it from afar helped us embed it into the wider field. The goal was to make the losses less visible, pushing them optically "into the background" by glazing over them evenly with a transparent greyish layer of watercolour. Next step included adding a touch of a certain pigment to the grey mixture depending on the colour of the paint layer surrounding the abrasion.

In particular, the comparison with the simultaneous progress of colleagues in other scenes and the influence of one's own work on already retouched areas in the immediate spatial context required a highly iterative process. In addition, maximum sharing of experience and communication of the team is crucial for a successful overall result (Figures 29 – 34).



Fig. 29: Before retouch in the method *abbassamento di tono* (tone reduction) using watercolours.



Fig. 30: After retouch in the method *abbassamento di tono* (tone reduction) using watercolours.



Fig. 31: Before retouch in the method *abbassamento di tono* (tone reduction) using watercolours.



Fig. 32: After retouch in the method *abbassamento di tono* (tone reduction) using watercolours.



Fig. 33: Before retouch in the method *abbassamento di tono* (tone reduction) using watercolours.



Fig. 34: After retouch in the method *abbassamento di tono* (tone reduction) using watercolours.

Big infills from the previous conservation campaigns, that were imposing because of their lightness, were toned down using a brownish transparent mixture that was adapted to the predominant tone of the paintings. A convenient name for this may be “*velatura*”. Pigments and distilled water were mixed in a container to get the aforementioned shade. Using big brushes, the transparent mixture was applied onto two bigger infills within the scenes in a “patting motion”. It serves as a possible solution for treatment of big infills. (Figure 35)



Fig. 35: Big infills were toned down using a brownish transparent “*velatura*”, 02.09.2023.

CONCLUSION

The goal of retouching done during the 2023 Summer school was to get acquainted with different binding media and retouching methods, but also to suggest possible solutions for future interventions. After practising on mock-ups in *selezione cromatica* to better understand/feel working characteristics of the materials and to “train our hand”, we proceeded with the retouching on the south wall. Using watercolours while performing the *abbassamento di tono* method, we started off by treating the most visually disturbing areas. We worked in layers, adding a little bit of pigment where needed to achieve the wanted result. Big infills were toned down using *velatura*.

Some retouched parts function to a degree, but further work is needed to reach aesthetic completion. The reason for that is that the students worked on their predetermined smaller areas of painting that disabled the overall view and constant assessment of the retouched and untreated areas as well as the impact of the intervention on the original.

6. Conclusion and Outlook

The main goal of this year's Summer school was to propose to the conservators (from IPCHS) the techniques and materials which could be used in the future to reduce the visual impact of damage.

It is important to understand the original as best as we can, to implement the most appropriate work and materials, and respect the original and its state. Therefore, we first investigated its history, technique, deterioration phenomena, and previous conservation procedures in order to proceed with the process of retouching. The future function of the object also had to be considered; an initially exclusively sacral object is hopefully going to get yet another function: a museum.

Aesthetic reintegration

The selection of a suitable infilling mortar for small lacuna in the wall paintings of the south wall was based on mortar trials. Different aggregates, ratios of binder to aggregate and surface treatments were tested and evaluated. Infills follow the aim to reduce the disturbance of losses, secure marginal areas and prevent further losses. The requirement criteria most focused on during trials were appearance and performance. The mortar that best fulfilled the requirement profile is composed of slaked lime as a binder, two local calcite sands as aggregates and red earth as an additive.

With retouching the damage on the pictorial layer, original aesthetic elements are reintegrated to increase artistic and iconographic legibility. Our main focus was on the south wall where the surface had been cleaned and consolidated. Because the aesthetic intervention was carried out directly on the surface of the original, it was important to carefully choose the binder for retouching. We did not want to hide the damages that accumulated through the years, we only wanted to “push them down” and lessen their visual disturbance.

Each student was assigned a part of the south wall to retouch with tone reduction (*abbassamento di tono*) in watercolours. The method is used on the abrasions (parts where the paint layer is missing and *intonaco* is preserved). The goal was to make the losses less visible, visually pushing them into the background by glazing over them evenly with a transparent greyish layer of watercolour made by mixing colours. We started off by treating the parts visually most disturbing to the eye. Certain abrasions didn't need retouching and posed instead as a reference tone we gradually built in other places, attempting to match. The consolidation of the paint layers and the retouching will be continued on the north wall by professionals.

Outlook

This three year long project of Gradišče Summer School had an important human dimension: after a week of shared information and knowledge between the students and the professionals of four different countries, we experienced the importance of having a terminology and visual examples (glossary), as we all carry a personal cultural heritage intrinsically linked to our profession.

What does the future behold for the Church of St Helen in Gradišče and its wall paintings?

This year's Summer school was linked for the first time to another new project executed by the International Summer School on Conservation and Interpretation. This connected the work done in Church St. Helen to a more general system of “Museums on site”. This is the end of a three-year project, but the beginning of another one that goes on with the final aim of the conservation of cultural heritage: to be seen and shared with all the community. The new International Summer

School for Conservation and Interpretation, which took place for the first time in the summer of 2023 focuses on the conservation and interpretation of the heritage of late medieval paintings in the Vreme Valley. It therefore focuses on heritage conservation in the broadest sense, not only its physical preservation, but also its wider integration through public presentations (interpretation) and the creation of new heritage-related activities. It was conceived under the auspices of the UNESCO Chair in Interpretation and Education for Promoting Integrated Approaches to Heritage, led by the Faculty of Humanities of the University of Primorska and the Škocjan Caves Park. The aim of the new school dedicated to heritage interpretation is to lay the foundations for a dispersed museum of late medieval wall painting within a few years, linking the church in Gradišče with other late medieval churches in the immediate region (Naklo and Famlje), but also with the wider built and natural environment.

7. Bibliography

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- Report International Summer School Gradišče pri Divači (Slovenia), 2nd to 27th of August 2021, Church of St. Helen, Conservation-Restoration of Wall Paintings, Volume 1, p. 35.

8. List of Figures

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Slovenski inštitut za varstvo kulturne dediščine
Slovenian Institute for the Protection of Cultural Heritage

SUPSI



University of Ljubljana
Academy of Fine Arts
and Design



Sveučilište u Zagrebu
Akademija likovnih
umjetnosti

REPORT: SUMMER SCHOOL GRADIŠČE PRI DIVAČI (SLOVENIA)

21st of August – 6th of September 2023

CHURCH OF ST. HELEN
CONSERVATION-RESTORATION OF
WALL PAINTINGS

VOLUME 3

ANNEX n. 1
Program of the 2023 Summer School

Mentors: Alberto Felici, Neva Pološki, Suzana Damiani,
Blaž Šeme.



Programme of the Gradišče 2023 Summer School

Activities and general programme for Conservation Summer School (CSS)¹

The Conservation Summer School will offer online lectures and workshops, and on site activities:

- discussions and workshops relating to the concepts of presentation and interpretation;
- lectures on the methodological and interdisciplinary approach for the conservation of wall paintings and on presentation;
- direct experience and work on site;
- on site visits to see other wall paintings in the area that are comparable in age and character to the wall paintings in the church of St. Helen and, if possible, other conservation-restoration projects;
- presentation of the work carried out to the local population in order to share the historic, material, and artistic significance of the site and the steps to be taken to guarantee its preservation.

The Gradišče 2023 Summer School will be held over three weeks:

First week: 3 days, 21. 8. 2023 – 23. 8. 2023, online lectures.

Second week: 8 days, 25. 8. 2023 – 2. 9. 2023, on site work, reintegration/presentation.

ISS 5 days, 28. 8. 2023 – 2. 9. 2023, on site work.

Third week: 3 days, 4. 9. 2023 – 6. 9. 2023 online, working on summaries and the final report.

Aim of the Gradišče 2023 Summer School

The main objective of 2023 Summer School is to assess the cleaning and consolidation already done, to plan and carry out retouching interventions and write a report on the activities carried out during fieldwork.

The CSS programme includes a meeting in June to introduce the topics that will be addressed during the SS and students will be given some texts to facilitate their task. The activities of the three days online are aimed not only at illustrating what has been done in the previous SS, but also at stimulating discussion on the themes of perception, interpretation and presentation of the painting cycle of St Helen's Church in its historical and geographical context. The on site work will take place with the practical realisation of the pictorial retouching alternating with views and lectures on the historical and artistic heritage of the region in collaboration with ISS participants who will produce a brochure on the mural painting museum. The CSS activities

¹ The Conservation Summer School was established in 2023 as a cover name for the simultaneous execution of two summer schools: the International Summer School for the Conservation-Restoration of Wall Paintings – Gradišče Summer School and the Interpretation Summer School.

will conclude with three days online during which the students, supervised by the teachers, will collect documentation of the work carried out by writing a report summarising the intervention.

- First week online 21st of August – 23rd of August 2023

- General presentation of the partners, participants and organisation;
- Discussions and workshops about interpretation and presentation;
- Introduction to the region, the relevant cultural heritage sites and the history of the church;
- Introduction to Slovenian wall paintings and wall painting monuments of the Karst region, including techniques and materials;

For the CSS:

- Lectures on the methodological and interdisciplinary approach for the conservation of wall paintings;
- Case studies and ethical and practical issues relating to retouching;
- Scientific investigations carried out in Gradišče;
- Illustration of the work already carried out on the church's wall paintings;
- Results of 2021 and 2022 Summer School: Students' work in 2021, Katarina Bartolj (MA student, UL ALUO) and Students' work in 2022, Lorenz Amann (student, SUPSI).

For the ISS:

- Basic concepts – Heritage, Values, Interpretation and Presentation.

2. Work on site: 25th of August 2023 – 1st of September 2023

CSS Activities:

- Discussion about previous analytical investigations;
- Observation of the technical aspects and materials, former interventions, and decay phenomena of the wall paintings;
- Defining aim, criteria and intervention methods (make the students suggest proposals);
- Practical work on site;
- Writing the draft of a final assessment report for the conservation-restoration of the wall paintings. The final report will be concluded the week after the end of the work on site.

- Presentation of the work carried out during the Summer School to the officers of the Ministry of Culture of Slovenia.

3. Follow-up week 4th of September 2023 – 6th of September 2023 (online)

- Discussion of interventions carried out and the documentation, planning further steps to be taken;
- Writing up the final report and complete documentation of the activities carried out.

DAILY PLAN

June 2023	
Day 0 CSS	Professors meet with selected students in June 2023, to: <ul style="list-style-type: none"> - divide students into 4 groups, - give them necessary information about sources of documentation (MS Teams, ...), - give reading material, articles, - explain preparation students have to do before the start of SS, - introduce Interpretation Summer School

21. 8. – 23. 8. 2023

WEEK 1 online: ZOOM

DAY 1

21. 8. 2023 Monday

9:00–17:30

13.00–14.00 Lunch Break

CSS+ISS

9:00–9:50

- **Introduction:** *Presentation of the International Summer School idea (Conservation and Interpretation Summer School)* (Minka Osojnik, IPCHS, Alberto Felici, SUPSI, Neza Čebtron Lipovec (UNI Primorska)) (20 min)

Presentations: Introduction of the partners and participants - (short PPT, 3 min per each = 18 min):

Martina Lesar Kikelj (IPCHS); Giacinta Jean (SUPSI); Blaž Šeme (ALUO); Jonas Roters (HKB); Suzana Damiani (ALU); Neza Čebtron Lipovec (UNI Primorska)

9:50–10:20

Introductory exercise with the students (“cup of coffee”), (Elisabeth Manship (SUPSI))

10:20–10:30 Short break

10:30–12:00

- **Lecture:** *Basic concepts – Heritage, Values, Interpretation* (Darko Babić (UNI Zagreb)) (45 min)

5 min break

Lecture: *Basic concepts - Presentation and interpretation in conservation-restoration* (Elisabeth Manship (SUPSI))

13:00–14:00 Lunch break

14.00–15.00

- **Lecture:** *Presentation and introduction about the region* (Borut Peric, Škocjan Caves) (30 min)

5 min break

- **Lecture:** *Presentation and introduction about the site and history of the church & Iconography of the medieval churches with examples* (Minka Osojnik, Andrej Jazbec, IPCHS) (30 min)

15:00 – ISS LEAVES, only GSS stays!

15:00–15:10 Short break

15:10–16:30

- **Lecture:** *Available documentation about the church and State of conservation and previous interventions* (Marta Bensa, IPCHS NG) (20 min)

- **Lecture:** *The methodological and interdisciplinary approach for the conservation of wall paintings* (Alberto Felici, SUPSI) (25 min)

5 min break

- **Lecture:** *Techniques and materials of Slovene wall paintings* (Anita Klančar Kavčič, Martina Lesar Kikelj, IPCHS) (30 min)

16:30–16:40 Short break

16:40–17:30

Workshop: Individual work (reading material)

<p>DAY 2 22. 8. 2023 Tuesday 9:00–16:40 CSS</p> <p>12.00–13.00 Lunch Break</p>	<p>Wrap-up: General discussion, questions</p> <p>9:00–10:00</p> <ul style="list-style-type: none"> - Lecture: <i>Results of the 2021 and 2022 Summer School</i>, Summary of the Report (Alberto Felici (SUPSI), Katarina Bartolj (mag. kons.-rest.), Lorenz Amann (SUPSI student) (20 min) 5 min break - Lecture: <i>Techniques and materials of Gradišče wall paintings</i> (Alberto Felici, SUPSI) <p>10:00–10:15 Short break</p> <p>10:15–12.00</p> <ul style="list-style-type: none"> - Lecture: <i>Previous diagnostic campaign</i> (Katja Kavkler, IPCHS) 5 min break - Lecture: <i>Retouching an overview. Ethical and material issues in retouching wall paintings</i> (Alberto Felici, SUPSI) 5 min break - Lecture: <i>Overlooked aspects of wall painting evaluation and treatment</i> (Mateja Neža Sitar, IPCHS) <p>12:00–13:00 Lunch break</p> <p>13:30–14.30</p> <ul style="list-style-type: none"> - Lecture/Round table/Discussion: Jonas Roters (HKB); collects the questionnaires from students and starts discussion about terminology <p>14:45–15:15</p> <ul style="list-style-type: none"> - Lecture: <i>Visual literacy in conservation</i> (Blaž Šeme, ALUO) 5 min break <p>15:20–16:20</p> <p>Workshop: Group work (reading material, discussion, presentation)</p> <p>16:20–16:40</p> <ul style="list-style-type: none"> - Discussion, questions
<p>DAY 3 23. 8. 2023 Wednesday 9:00–17.00 CSS</p> <p>12.10–13.10 Lunch Break</p>	<p>9:00–11:00</p> <ul style="list-style-type: none"> - Lecture: <i>Retouching: Croatian Case studies</i> (Neva Pološki, ALU) 5 min break - Lecture: <i>Retouching: Slovenian Case studies</i> (Ajda Mladenović, Anita Klančar Kavčič, IPCHS) - Lecture: <i>Retouching: Italian Case studies</i> (Alberto Felici, SUPSI) - Discussion <p>11:00–11:15 Short break</p> <p>11:15–12:00</p> <ul style="list-style-type: none"> - Lecture: <i>Excursion to perception psychology</i> (Jonas Roters, HKB) <p>12:10–13:10 Lunch break</p> <p>13:10–17:00</p> <ul style="list-style-type: none"> - Students' work - Presentations and final discussion

Thursday 24. 8. 2023	Travel and arrival
25.8. – 1. 9. 2023 WEEK 2 on site	
DAY 4 25. 8. 2023 Friday 8:00–17:00 12.30–13.30 Lunch Break	On site: <i>Short presentation of all partners – introduction of participants;</i> Practical work on site: - Individual observation of the church exterior and of the wall paintings inside; - Presentations on site (<i>Minka Osojnik, Marta Bensa, Andrej Jazbec present their preliminary work on site</i>); - Feedback on individual observations, group forming; - Looking over documentation; - Observation, description and mapping of working areas; - Feedback – groups exchange information; - Investigation (<i>Katja Kavkler</i>). <i>Forming 3 groups, start of mapping the state of conservation etc.</i>
DAY 5 26. 8. 2023 Saturday 8:00–12:00 12.30–13.30 Lunch Break	Practical work on site: Work on the presentation of the paintings: Work on the presentation of the paintings: infilling, retouching. (the participants will formulate an approach, choose materials, and carry out the retouching) Afternoon trip to the nearby church: Dolenja vas.
DAY 6 27. 8. 2023 Sunday 9:00–20:00	Excursion: <ul style="list-style-type: none"> - church in Hrastovlje, - Piran and the coast.
DAY 7 28. 8. 2023 Monday 8:00–17:00 12.30–13.30 Lunch Break CSS + ISS	Practical work on site: Infilling, retouching. Afternoon visit of ISS in Gradišče, meeting of participants (@13:30) - Exercise with students TBD & Discussion <i>What kind of sources do we have? What do we know and what do we want to know? Following Elisabeth's questionnaire, using a "fictive" case = 20 min for students group discussion (mixed from GSS and ISS); 4 chambers, 5 people per group; in Zoom chambers, then followed by a whole group discussion (25 min)</i> Afternoon joint visit of CSS and ISS to nearby churches: Famlje, Naklo, Vremski Britof (by bus provided by ISS) CSS + ISS Dinner at Kozina
DAY 8 29. 8. 2023 Tuesday 8:00–17:00	Practical work on site: Infilling, retouching.

12.30 -13.30 Lunch Break	Lecture by Andreja Padovnik (Univeristy of Ljubljana, Faculty of Civil and Geodetic Engineering) on sand, lime, mortars and their properties...
DAY 9 30. 8. 2023 Wednesday 8:00–17:00 12.30–13.30 Lunch Break CSS + ISS	Practical work on site: Infilling, retouching ... AFTERNOON (by bus provided by ISS) (@14:30): Excursion to the Mythical park in Rodik - CSS + ISS ; walk to the upper route (Lintver's route); Visitors' Center, meeting (eventually) with local managers
DAY 10 31. 8. 2023 Thursday 8:00–17:00 12.30–13.30 Lunch Break	Practical work on site: Infilling, retouching ...
DAY 11 1. 9. 2023 Friday 8:00–17:00 12.30–13.30 Lunch Break CSS + ISS	Practical work on site: Infilling, retouching ... AFTERNOON BRIEF MEET-UP with ISS before the presentation on Saturday, CSS + ISS
DAY 12 Saturday 2. 9. 2023 CSS + ISS	MORNING: ISS Public presentation of the upgraded route/itinerary and brochure; guided tour AFTERNOON CSS + ISS: Church of St. Helen (In case of bad weather in Matavun Conference room) Presentation of the Summer school and its results by the students to the local community, representatives of the Ministry of Culture of Slovenia and interested professionals and public 13:00-13:30 - Welcome speeches (representative of the Ministry of Culture of Slovenia, representative of IPCHS, Mayor of Municipality of Divača) 13.30-14.00 Presentation of the Summer school and its results 14.30-15.00 Discussion, questions... Refreshment

4. 9. – 6. 9.

WEEK 3 online: ZOOM

<p>DAY 13 4. 9. 2023 Monday 8:00–17:00 12.30–13.30 Lunch Break CSS</p>	<p>Discussion of results, writing up the final report Retouching and complete documentation of the activities carried out. AF, NP, SD, BŠ, JR.</p>
<p>DAY 14 5. 9. 2023 Tuesday 8:00–17:00 12.30–13.30 Lunch Break</p>	<p>Writing up the final report Retouching and complete documentation of the activities carried out.</p>
<p>DAY 15 6. 9. 2023 Wednesday 8:00–17:00 12.30–13.30 Lunch Break</p>	<p>Writing up the final report Retouching and complete documentation of the activities carried out. Discussion about the 2023 Summer School. Short Presentation of students' work, common conclusion for all partners and participants.</p>