

The Protection of Textile Materials in the Ethnographic Museum in the First Half of the 20th Century

The focus of this paper is on Jela Novak and Tereza Paulić, museum employees who made an exceptional contribution to the preservation of the textile collection of the Ethnographic Museum in Zagreb. As textile experts, they played a key role in the process of inventorying, professional processing and protection of ethnographic material in the first decades of the Museum's operation. By analyzing their professional activities in the field of textile protection, with special emphasis on the contribution of Tereza Paulić, my aim is to highlight the importance of their role in the preservation of the museum's holdings and the technical and methodological challenges they encountered in museum practice. It is important to emphasize that some of the methods and means used when implementing the textile protection measures were in accordance with the standards of the time, although they are considered unacceptable today.

Keywords: textile collections of the Ethnographic Museum, protection of museum holdings, women in the conservation and restoration profession

INTRODUCTION

Inspired by the exhibition *Hidden Historia*¹, which addresses the first women in the museum profession in the interwar period, I decided to investigate the work of textile experts at the Ethnographic Museum in Zagreb, with an emphasis on their contribution to the protection of the museum's holdings during the same period.

1 For more information about the exhibition *Hidden Historia – the First Female Employees of the Museums*, see the text by A. Solter and A. Vlatković in this issue of *Ethnological Research*.

The Ethnographic Museum was founded on October 22, 1919 as the Ethnographic Department of the Croatian National Museum in Zagreb. The initial holdings were created by merging the *Salamon Berger Collection* with the ethnographic collection of the Archaeological and Historical Department of the Croatian National Museum, the Trade and Crafts Chamber in Zagreb, the Croatian School Museum, which operated under the Pedagogical and Literary Association, and the Museum of Arts and Crafts of the Royal School of Crafts (cf. Etnografski muzej [s.a.]). The founding of the Museum marked the beginning of a systematic and professional processing of ethnographic material, the foundations of which were laid by its first curator, Vladimir Tkalčić.²

Simultaneously with these activities, the Ethnographic Museum also began to organize the collection of material through a network of museum trustees³, thereby supplementing existing collections or forming new ones (cf. Tkalčić 1930: 143). During the first decade of the Museum's operation, the holdings grew significantly, reaching approximately 30,000 items. The most representative unit within the holdings was the textile collection, which included objects made and ornamented using almost all weaving and embroidery techniques known at the time, providing insight into the multitude and diversity of traditional textile handicrafts. The objects mostly came from Zagreb, Posavina and Slavonia, but also from the area of present-day North Macedonia and Kosovo (cf. Tkalčić 1930: 141). In addition to textiles, there were also the collections of ornamented/carved wooden objects; distaffs and shepherd's cups, as well as collections of knitted objects, ceramics, jewelry, toys, religious objects, decorative Easter eggs, tools and various devices. A significant part of the holdings also consisted of models of village houses and tools, and collections of furniture, village interiors and ethnographic paintings were also formed. A special unit within the museum holdings was the Exotic Collection (cf. Tkalčić 1930: 141-142).

THE FIRST TEXTILE EXPERTS AT THE MUSEUM

Since a large part of the museum's holdings consisted of textile materials that needed to be professionally systematized and protected, immediately after the foundation of the Ethnographic Museum, the management requested the Committee for Education and Religion in Croatia and Slavonia to hire a reliable person, skilled in *women's handicrafts, who would, in addition to various necessary repairs to museum - especially textile - objects, also perform other museum tasks.*⁴

In the same 1919, Jela Novak was employed by the Ethnographic Museum as a manipulator. Born in 1873, after completing the Elementary School and graduating from the Girls' High School, in 1904 she enrolled in the women's department of the Royal School of Crafts in Zagreb. There she acquired knowledge in *plastic and ornamental drawing, painting, carving and intarsia*. In the Museum, in addition to administrative tasks, she performed a number of professional tasks, among which the processing of newly arrived material (cf. Brenko and Vlatković 2025: 78-110).

A few years later, in 1923, Tereza Paulić, born in 1887, was employed at the Museum. After

2 Vladimir Tkalčić was the first curator of the Museum (from 1919), and then the director from 1925 to 1934.

3 The service of museum trustees was established by the Order on Trustees of the Ethnographic Department of the Croatian National Museum in Zagreb adopted in 1921 by the Committee for Education and Religion (cf. Vlatković 2022: 59).

4 EMZ archive, personal file of Jela Novak, 33/1919.

completing primary school, she attended the Girls' High School in Zagreb, and from 1902 to 1915 she participated in practical courses at the Royal Women's Vocational School, where she passed the final exams in *sewing, artistic works and tailoring*. From 1916 to 1920, she attended the painting department of the Royal Academy of Arts and Crafts, and as a scholarship holder she studied at the Art and Crafts School in Prague (1920/1921). She continued her education at the Women's School of Weaving, Tapestry and Carpets in Valašské Meziříčí (1921), and at the *Kunstgewerbeschule and Kunstwerkschule "Manus Wien"* in Vienna (1922). While working at the Museum, she passed the exam for female vocational school teachers (1925) and the exam for museum clerks (1928). In addition to administrative tasks, she actively participated in the collection, documentation and professional processing of museum materials. She oversaw inventorying the Salamon Berger Collection, occasionally processing items from the Handicrafts Collection, and after the retirement of Jela Novak in 1932, she also took over tasks related to the processing of newly arrived materials (cf. Brenko and Vlatković 2025: 78-110).

The wide range of tasks performed by Novak and Paulić included documenting and scientific processing of the material, painting and photographing museum objects, communicating with users through permanent exhibitions and thematic exhibitions, guiding, lecturing, and participating in the preparation of various publications. Their extensive knowledge of traditional techniques for making and ornamenting textiles was particularly evident, which was crucial in the processing of museum material. Their work established a classification of the material sorted by production techniques, and into individual objects and sets, which, along with some other parameters, has been preserved in the Museum's storage rooms to this day (cf. Brenko and Vlatković 2025: 78-110). In addition, both actively participated in the implementation of measures to protect the museum holdings, which is also the topic of this paper.

PROTECTION OF TEXTILE OBJECTS

The protection of textile objects in the Ethnographic Museum has been carried out since its foundation. *Report on the activities of the Ethnographic Museum from 1919 to February 25, 1935*, regarding the protection of the museum holdings, describes the methods by which objects were conserved:

“(...) good methods of preserving objects against various pests using a mixture of fine petroleum and turpentine, exposing them to carboneum-sulphuratum vapors in a large cabinet specially designed for this purpose, soaking in hot varnish – for wooden objects, then sprinkling them with naphthalene and other chemicals, and especially constant cleaning, shaking and exposure to air and sun as well as – if permissible – washing objects; furthermore, constant dusting and cleaning of museum spaces (...)”⁵

It was also emphasized that the Museum was known *in our country and abroad thanks to its exemplary order and cleanliness*.⁶

The Ethnographic Museum Documentation contains a text by T. Paulić from the late 1940s, which is assumed to have been created for the purposes of a professional presentation on the

5 EMZ documentation, *Report on the activities of the Ethnographic Museum from 1919 to February 25, 1935*; 14. 12. 1936.

6 EMZ documentation, *Report on the activities of the Ethnographic Museum from 1919 to February 25, 1935*; 14. 12. 1936.

topic of the protection of textile objects.⁷ In the text, T. Paulić describes in detail the protection procedures applied to textile objects; from storage conditions and methods of preventive protection, to cleaning and preparation, conservation and restoration procedures. She emphasizes the importance of proper conservation and effective protection against pests as the basis for preserving collections.⁸ It is particularly stressed the importance of using hermetically sealed display cases, cabinets, crates and storage spaces, as well as the need for accessible and educated professional staff trained to carry out disinfection, cleaning and conservation. Furthermore, she emphasizes the necessity of determining the material from which each object is made and accurately assessing its condition when processing it. She also highlights that each object requires an individual approach and the application of adapted processing methods, depending on the degree of damage. She also recommends photographing objects before and after the cleaning process and conservation interventions, thus ensuring high-quality and complete professional documentation. From the content of the text, it is evident that T. Paulić was familiar with the practices of that time in foreign museums⁹, which she cites as examples of successful solutions.

CAUSES OF TEXTILE DETERIORATION AND METHODS OF PROTECTION

In her text, Paulić points out long-term exposure of objects to light, increased relative humidity, and physical damage caused by moths and other pests as the main causes of textile deterioration. She mentions various chemical agents used in the fight against moths, such as *naphthalene*, *camphor*, *globol* (*paradichlorobenzene*), and volatile chlorine derivatives such as *pantakan* and *DDT*, while the use of *carboneum sulphuratum* proved to be particularly effective.

Camphor and naphthalene repelled adult moths, but did not destroy eggs and larvae. As they evaporate quickly, *Globol*, *DDT* and *pantakan* were effective only in hermetically sealed cabinets and chests, while liquid *pantakan* was not to be applied directly to objects due to its white residue. Liquid *carboneum sulphuratum* was considered a very effective agent in the fight against moths. It was applied by placing an open container in a hermetically sealed cabinet or chest with objects, where it would evaporate and destroy the pests.

In the case of the use of toxic gases such as carbon disulfide, hydrogen cyanide or *zyklon-B*, the treatment had to be carried out by professional personnel or specialized companies for cycloneization and preparation. Museum objects were also treated with a mixture of turpentine and petroleum, however, it was observed that such treatment causes darkening of textil items.

The effectiveness of all the above means for protecting textile materials depended largely on the

7 The text "Conservation, preparation and restoration of textiles in museums" describes the protection procedures that were also the topic of lectures she was giving in other museum institutions. According to the EMZ travel order number 497-1948, Paulić was sent to conduct field research on ethnographic textiles in Sinj and Vrlika after giving a lecture at a museum conservation course in Split.

8 The work report from 1937 and 1938 stated that in order to suppress pests more efficiently, the Museum's management contacted larger related museums asking them to share information about the means and methods they used for disinfection, as well as the results achieved by these procedures. All museums responded to the request and provided the information (cf. Paulić 1938: 232-234).

9 In the text, she cites examples of the protection and conservation of archaeological textiles, the restoration of tapestries in Copenhagen at the Rosenborg Palace, as well as the type of equipment used in storage rooms such as cabinets with shelves in the Ethnographic Museum in Copenhagen. She also mentions the use of long mechanical rollers for the storage of large carpets in museums built in recent times.

method of their application, i.e. on whether the objects were stored in hermetically sealed cabinets, chests, or other impermeable spaces. Sometimes, when treating objects with chemicals, the objects were placed in paper bags which were then tightly closed, thus creating a limited space for the effects of the chemicals. This method was also applied in the Ethnographic Museum. When it was not possible to ensure hermetic conditions, it was necessary to regularly repeat the treatments, which is important to emphasize because all of the aforementioned agents are harmful to human health.

In the same text, T. Paulić states that in the fight against pests, treatments were also carried out at temperatures¹⁰ of 55°C, 60°C and 72°C, which proved very effective in destroying moths in all phases of their development cycle, which is why some museums developed the practice of using specially adapted chambers or boilers for carrying out such procedures. The objects were also exposed to direct sunlight, which also destroyed pests, but at the same time resulted in color degradation and damage to the material.

Items made of leather, such as fur coats, were treated with preparations containing turpentine, petroleum and benzene, which proved ineffective because after the treatment the hair fell off, causing permanent damage to the item. On the other hand, treating dry leather with pure vaseline oil proved to be an effective method of preservation as the leather retained its elasticity and there were no unwanted changes to the material.

CLEANING AND STAIN REMOVAL

The cleaning process for textile items, as the key to their long-term preservation and prevention of damage, depended on the material the item was made of, while the process itself was carried out using appropriate methods and means to avoid additional damage. Items made of linen, hemp or cotton were cleaned, when possible, by a wet or chemical process, while items made of thin fabrics and lace were cleaned by a wet process in a bath of warm, soft water, with the addition of neutral soap or a small amount of borax¹¹. During cleaning, the item was gently moved (vibrated) in the water, which allowed for the gentle removal of impurities. Rinsing was carried out in the same way, in clean, soft water.

The Museum also conducted experiments with wet cleaning using natural, homemade products¹², such as peeled horse chestnuts used for items made of light fabrics, and ivy leaves for items made of dark fabrics. However, the results were not always satisfactory as it often caused color bleeding and changes to the fabrics. Woolen items were not cleaned by wet cleaning, and dry cleaning often did not give satisfactory results due to the sensitivity of the material and the risk of damage. Therefore, regular airing and disinfection were considered extremely important for the preservation of woolen items. Regardless of the cleaning method, it was recommended to

10 Paulić also mentions that on the island of Krk, the island women preserved woolen objects by steaming them and then drying them in a warm bread oven. Blankets made of home-made cloth were washed in the sea, dried in the sun, and sprinkled with pyrethrum before being stored in a chest, while clothes made of home-made cloth were stored with the addition of aromatic plants such as laurel, rosemary, lavender, tobacco, walnut leaves and others, thus trying to repel pests using natural means.

11 Borax is a natural mineral chemically known as sodium tetraborate, widely used in the household and industry as a cleaning agent and disinfectant, insecticide and stain and odor remover.

12 Horse chestnut fruit and ivy leaves contain saponins, plant glycosides that create a soap-like foam in aqueous solution (cf. Hrvatska enciklopedija 2013.-2025. s.v. "Glikozidi").

store the items in optimal microclimatic conditions in order to reduce the need to repeat the procedure.

Stains were removed using various agents, depending on the type of stain and the material the item was made of. Grease stains on woolen items were removed using gasoline, ethylene, or diluted ammonia. Fruit stains were removed using sulfuric vapor, sulfuric acid, lactic acid, chlorine water, or oxalic acid, while ink stains were removed using diluted acetone which was then rinsed with clean water. Corrosion¹³ was treated with several types of acids: 10% citric acid solution, 3% hydrochloric acid solution, or hot oxalic acid.

The items were ironed on a soft surface while they were still damp. More delicate materials such as lace, embroidery, silk and wool were ironed from the back, also covered with a cloth, to prevent damage. Since cabinets and display cases in museums were generally not hermetically sealed, items had to be dusted regularly with a vacuum cleaner, and sensitive fabrics were vacuumed over a layer of thin fabric to avoid mechanical damage.

TEXTILE CONSERVATION BY SEWING

In the case of interventions on historical and ethnographic textiles, conservation was preferred over restoration. Interventions were minimal, with an emphasis on stabilizing the item and preventing its further deterioration, while striving to preserve the original appearance and material. Conservation procedures were adapted to the type and thickness of the material, as well as the type and extent of damage.

Items made of linen, hemp and cotton were conserved by lining the inside with fabric of the same or similar thickness. The lining was attached by hand sewing or using the *darning*¹⁴ technique, which stabilized the damaged parts and prevented their further deterioration. In the case of woolen fabrics, material of the same thickness and similar color was used for the lining, and the damage was hemmed to prevent its spread. Damage to cloth fabrics was repaired by darning with threads of the same or very similar color to make the repair as unnoticeable as possible. In case of major damage, the entire carpet or rug was lined with mesh fabric, and the item was reinforced by sewing grid with 20 cm intervals. Minor damage was repaired by inserting a new warp and weft, while in case of major damage, jute was used as a lining, and the edges were additionally reinforced by sewing. Thin and delicate fabrics were conserved by lining them with tulle or medical gauze, thus ensuring the stability of the item without impairing its breathability, and they were stored between two glasses to preserve their shape and prevent further damage.

During conservation procedures, it was advisable to make a precise cut of each item with exact measurements and all construction details. It was also important to record the types of stitches used in sewing and making ornaments, as well as to make a graphic representation of the fabric structure, which allowed for a better understanding of the original manufacturing technique and the identification of potential problems in the material.

13 Paulić states that corrosion was removed using lemon juice and by ironing the treated fabric which was first covered with a cloth.

14 Darning is the process of sewing fabric to repair holes or tears.

EQUIPMENT AND STORAGE CONDITIONS IN *MAGAZINES*

In the text, Paulić provides general recommendations for storage rooms, which are an important factor in the preservation of museum holdings. She emphasizes the need to use dry and well-ventilated rooms, equipped with hermetically sealed cabinets and chests to prevent the evaporation of gases with which items were previously treated against pests. If storage rooms have well-sealed doors and windows, it is necessary to enter them only wearing protective masks, especially if the space is not equipped with a mechanical ventilation system. The ideal temperature for storing materials in such spaces is around 10°C, which additionally slows down the biological and chemical deterioration of the material.

Using the example of the Ethnographic Museum, it is stated that within the museum's storage¹⁵, textiles were stored according to regions, and then additionally according to the type of material and shape of the item. Items made of wool were separated from the rest of the materials to facilitate inspections and enable timely detection of the possible presence of pests. In the storage rooms, the materials were stored in cabinets, on shelves or on hangers, most often in the same way as they were stored in the field.

At the end of the text, she provides specific guidelines, with the aim of slowing down the process of deterioration and preserving textile heritage for future generations, which I quote below:

“(...) Now I will repeat a few warnings:

- Textiles need to be conserved, not restored.
- Handle items carefully and individually when cleaning to avoid damaging them.
- When treating textiles with the help of a textile chemist, treat the items individually to preserve it as best as possible.
- In addition to using all the above agents to destroy moths, inspect woolen items frequently.
- Hermetically sealed cabinets, chests and display cases, and good magazines.
- Protect textiles from moisture and excessive light.
- If you follow the above warnings, you will protect textiles from deteriorating too quickly! (...)”

CONCLUSION

An analysis of the professional activities of Jela Novak and Tereza Paulić indicates their continuous, systematic and dedicated work on the protection of museum holdings since the very beginning of the Ethnographic Museum. Their expert knowledge, extensive experience and high level of professional dedication were of key importance for the preservation, processing and presentation of the rich textile collection during the first half of the 20th century.

Tereza Paulić's contribution in the field of protection is particularly noteworthy, which was confirmed in the explanation of her retirement in 1948, written by the then director Marijana Gušić. In this document, Paulić is qualified as a curator of the restoration profession, and among her most important merits is stated that she “(...) *conscientiously supervised and carried out the conservation and storage of precious museum textiles, so that there is no damage to this material due to incorrect storage or cleaning*”.¹⁶

15 For more information on the storage rooms and workspace in the Museum, see: Grčević 2019: 85-94.

16 EMZ archive, personal file of Tereza Paulić, 26/1948.

The work of Jela Novak and Tereza Paulić laid the foundation for the protection of the textile museum holdings in the Ethnographic Museum. Their approach was based on the contemporary experiences and practices of world museums, which systematically developed during the second half of the 20th century, following contemporary standards and achievements of the conservation and restoration profession.

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