

# Heritage conservation in war and post-war conditions during the 1990s: The case of Dubrovnik Research Library<sup>1</sup>

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## Abstract

**Purpose.** The aim of the paper is to describe the activities undertaken by Dubrovnik Libraries during and after the Croatian War of Independence to preserve their heritage collections. The intention is also to present plans for possible future challenges as well as to compare the conditions, resources and equipment available in the 1990s and in the present.

**Approach/methodology.** The paper shows the degree of damage to the Library collections through an *in situ* case study, the basic data on how evacuation was approached, the organisation of work in crisis conditions, the storage of collections during the war period and then the relocation to the new building. The paper was based on primary sources, including first-hand accounts by the former Library Director Mrs Urban and interviews with older or retired librarians, and secondary sources such as the official report by a paper conservationist who conducted the inspection of damaged library materials *in situ*, newspaper articles, books, periodicals, doctoral thesis, emergency plan and measures etc. The research for

<sup>1</sup> The paper is the extended version of the presentation given at the virtual conference *Solidarity in Culture: Heritage Protection under Conditions of Crisis* held in the National and University Library in Zagreb in March 2021.

this paper also enabled cooperation between librarians and conservators, as well as finding, scanning and archiving valuable historic library documents, which will be, as a result, available to any future researchers and for posterity.

**Findings.** The paper presents a valuable experience of how endangered cultural heritage was protected in the past and offers contemporary insights into improving the methods of storing, preventive protection and transporting books and archive materials. To avoid previous mistakes, Dubrovnik Libraries developed the crisis response plan with emergency measures in 2020, while in the previous years numerous new resources and equipment had been put into place.

**Value.** The paper gives an overview of a thirty-year long process of caring for heritage collections and it presents perspectives from both librarians and conservators. It outlines the way new resources – human, financial and technological – were used after the war to repair the damage and prevent anything similar from occurring in the future. Hopefully, this paper will raise awareness among cultural institutions and serve as a valuable aid in the practice of crisis management as well as preventive care.

**KEYWORDS:** crisis management, cultural heritage, Dubrovnik Libraries, preventive conservation, war

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## 1. Introduction

The paper discusses the extensive damage suffered by Dubrovnik Libraries during the Croatian War of Independence, more specifically the partial destruction of the building used by the Research Library, and the subsequent evacuation, relocation, and eventual return of its most valuable collections. At the same time, the city of Dubrovnik was under siege which rendered the library a perilous location. Consequently, many staff members either temporarily left or worked from a different location. Croatia was struggling financially and protecting cultural heritage had to be delayed to make way for saving lives. It was therefore not surprising that the normal functioning of the Research Library in terms of preventive care was seriously disrupted. The events described in the paper all took place between 1992 and 1998, while the conclusion refers to the current location in the new building and the conditions of the heritage collections, as well as the measures of preventive care and conservation being used to protect them. This paper offers both the librarians' and the conservators' perspectives of the entire process.

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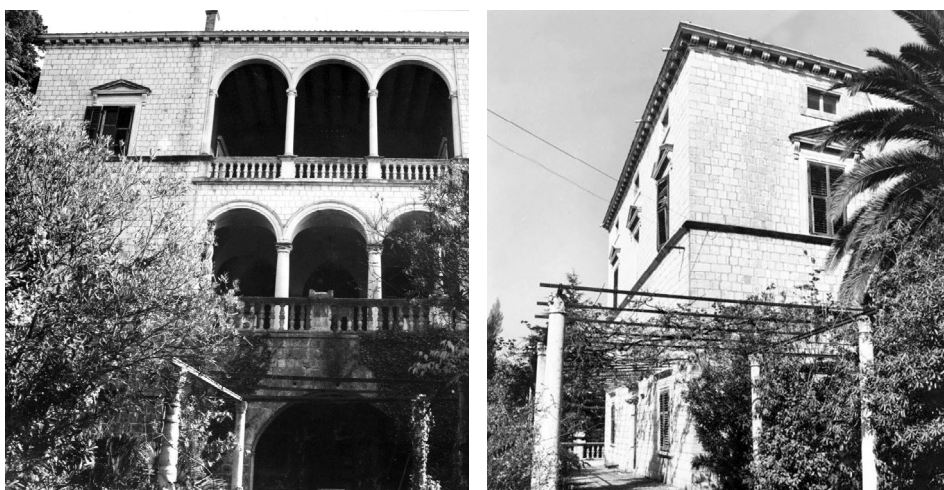
## 2. A short overview of the Dubrovnik Research Library

Today, the Dubrovnik Research Library is part of the dual institution, Dubrovnik Libraries. This institution was founded in 1936 by the Dubrovnik City Council and it was officially opened in 1941 in the Rector's Palace in the Old City (Figure 1). It was subsequently separated into two departments: the Public Library and the Research (i.e. Scientific) Library.



**Figure 1.** Interior of the Research Library in the Rector's Palace, 1970s (Source: Digital photo archive of Dubrovnik libraries, Photo taken: 1975)

Due to the lack of space, the Research Library moved to the Renaissance summer villa Skočibuha (Figure 2 and 3) located 1 km west of the Old City (Brailo 1998, 55).



**Figure 2 and 3.** View of the villa Skočibuha in 1990 (Source: Pavo Urban)

The collections held in the Research Library are significantly older than its foundation date would suggest. The core collection consisted of the special collection Collegium Ragusinum originally from the Dubrovnik Jesuit College, which was donated to the Library in 1944, as well as numerous smaller donations by Dubrovnik families and individuals. The Library has also received the legal deposit copy of all titles published in Croatia since 1966. All of these collections put together meant that in 1991 the Library holdings amounted to 250,000 books

and other publications (Urban 1992, 95). However, the value cannot be expressed in numbers alone: at the time, the special heritage collections held 10,490 books<sup>2</sup> published from 1500 to 1808. They comprised three separate collections formerly known under the joint name “Old Ragusina”:<sup>3</sup> the aforementioned Collegium Ragusinum, the Antiqua collection and the Pozza-Katić collection. These collections, as a unit, were placed on the National Heritage List in 1989 (*Regionalni zavod za zaštita spomenika kulture* 1989). Other heritage collections on the list included 77 incunabula represented by the most beautifully illuminated priceless “De natura angelica” by Juraj Dragišić (Figure 4). There are also around 900 manuscripts, the oldest of which dates back to the 11<sup>th</sup> century, collection of letters by famous citizens of Dubrovnik, librettos, and the “new” Ragusina collection<sup>4</sup> – then holding 13,000 volumes (today simply called “Ragusina” – the most complete collection of books and periodicals that deal with Dubrovnik regional history). In the first half of the year 1991 the Research Library functioned normally with 16 members of staff. The library materials were being catalogued, local and international students and researchers visited regularly (Šapro-Ficović 2012, 108)<sup>5</sup>



**Figure 4.** Scanned front-page of the incunabula *Opus de natura caelestium spirituum quos angelos vocamus* by Juraj Dragišić. Florentiae, 1499. (Source: Dubrovnik Libraries)

<sup>2</sup> The number 10,490 refers to the number of books alone. The Heritage collection is a broader term and includes incunabula, manuscripts and letters, in total 13,490 items.

<sup>3</sup> The preferred name used in the Library today is “Heritage Collection” (*Spomenička zbirka*).

<sup>4</sup> Today the term *Ragusina* is used only for books, periodicals and other library materials that have either been published in Dubrovnik, written by Dubrovnik authors or on the subject of Dubrovnik and selected regional areas. In July 2023, Ragusina held 22,500 units dated from the early 16<sup>th</sup> century until present day.

<sup>5</sup> The entire incunabula can be viewed at: <https://zdr.dkd.hr/?pr=iiif.v.a&id=10031>.

### 3. The siege of Dubrovnik in 1991/1992 and its consequences on the Library and its collections

However, towards the end of the summer the situation changed dramatically. The eastern parts of Croatia, and then the Konavle region came under siege by the Yugoslav army. The city of Dubrovnik was first attacked by mortar shells on October 1<sup>st</sup>, 1991 (Mesarić-Žabčić 2009, 168). The Research Library was closed to the public and most of its staff were moved to the Public Library. The Director, Mrs Mirjana Urban, remained in the Library with the custodian even after her son was killed while photographing the destruction of the Old City in December of 1991. The library materials were not moved yet: the collections of incunabula, manuscripts and correspondence were locked in strong metal cabinets on the ground floor of the villa, while the collection of 16-18<sup>th</sup> century books remained on open shelves in the so-called “Treasury” room upstairs (Urban 2021).

The Public Library in the Old Town was the first library building to be shelled and severely damaged on May 31<sup>st</sup>, 1992 (Aparac-Gazivoda and Katalenac 1993, 44). The nightmare continued in the Research Library on the sunny afternoon of June 8<sup>th</sup>, 1992. There were around twenty people in the Skočibuha area, most of them neighbours who were using the strong and safe basement as a bomb shelter. The building was fired upon point-blank with five missiles (Brailo 1998, 56). The roof and the south-eastern corner of the first floor were severely damaged, and there was also structural damage to the building, which is a historic landmark in itself.<sup>6</sup> Three missiles hit the garden. Thankfully, no one was injured. One of the rooms and the reading room in the upstairs main hall were destroyed beyond recognition (Figures 5 and 6). A beautiful metal-and-glass chandelier, a ceiling rosette-shaped decoration and antique wooden furniture were all gone. The library collections that were lost include parts of the periodicals collection, a number of card catalogues and reference books. Fortunately, the heritage collections remained intact.



**Figure 5 and 6.** *Damage to the first floor of the Library, June 8th, 1992 (Source: Digital photo archive of Dubrovnik Libraries)*

<sup>6</sup> The villa Skočibuha is a registered protected cultural heritage site on the Register of cultural goods of the Republic of Croatia, number Z-5512 (Republika Hrvatska Ministarstvo kulture i medija n.d.).

## 4. Evacuation of heritage collection

Moving heritage collections is a challenge under any circumstances, especially in the war and post-war period. Protecting cultural heritage during the war is an extremely hard and life-threatening job. In order to fully understand the difficulties of this specific project we have to know all the factors. Firstly, the collection consisted of 13,490 old and rare books, incunabula, and manuscripts. Then, why relocate? As mentioned above, the building suffered immense damage: a part of the roof was missing, windows were broken, statics were at stake and valuable books were on the shelves and in metal safes; therefore, the initial storage space for the collection was absolutely inadequate. Microclimate conditions were the same as outdoors – it was summertime, the temperature and relative humidity were extremely high and the oscillations<sup>7</sup> between day and night were intense. The rubble was everywhere and it was all deposited on books, and at any time there could have been another attack on the building. It was clear that the books should be moved. With all that taken into consideration, the main problem was that there was no possibility of displacement despite the director's and employees' best will to save everything. They simply did not have the means, nor could they access the collection. A call for help was urged towards all possible institutions and individuals. We have to understand that at that moment the Croatian Army and institutions were saving people's lives and it was simply not possible to send people to the Library.

Following the attack in June, the roof was repaired relatively quickly, and some twenty days later the Ministry of Education, Culture and Sport issued an order that the most valuable collections be relocated. Architects and structural engineers from the Institute for Restoration of Dubrovnik and the Institute for Conservation of Cultural and Natural Monuments also ordered that the building be evacuated (Orlić 1992). Therefore, one month after the shelling, help came and people put their lives in danger in order to save cultural heritage. The Bank of Dubrovnik offered their underground vault as a safe space and so began an operation in which the Library director and five members of staff, with the aid of a conservator from Zagreb and the civil protection forces<sup>8</sup>, packed the 13,490 volumes of old and rare books from the "Treasury room" into 97 metal trunks (Figure 7) and transported them into the bank building. The evacuation was conducted in July and took seven days (Dubrovačke biblioteke 1992a). The other heritage collections (incunabula, correspondence and manuscripts) remained in the metal cabinets on the main floor of Skočibuha (Figure 8).

<sup>7</sup> By oscillations, we mean oscillations in temperature and humidity. Relative humidity (RH), expressed as a percentage, indicates a present state of absolute humidity relative to a maximum humidity given the same temperature. Paper and parchment materials are hygroscopic, they absorb and release moisture, therefore inadequate RH and temperature and oscillations leads to paper deterioration. According to Alten, temperature and relative humidity affect three decay processes: chemical, biological and mechanical. The amount of damage is directly related to the type of material, the constraint on the material and amount of RH change. Small changes cause small effects. Big changes cause big effects (Alten 1999).

<sup>8</sup> Evacuation staff consisted of the following Library employees: Mirjana Urban – director, Vice Buić – bookbinder, Nikola Bjelopera – library page, Dragana Moravec – librarian, Veljko Derado – librarian, as well as of the Delegate from the Ministry of Culture of Republic of Croatia – Marjan Orlić and his team. In addition, 15 volunteers from civil protection forces and employees of construction company "Građevinar" joined as well.



**Figure 7.** One of the metal trunks used for evacuation (Source: Digital photo archive of Dubrovnik Libraries, Photo taken: 2017)

Evacuation did not go as it should have, but it was the only possible way at the time. It was carried out with the help of the Croatian Army, members of the conservation team from Zagreb, the director and four employees of the Library, members of civil protection, and the *Građevinar Dubrovnik* company. When the collection was packed and transferred to the temporary accommodation, there was a state of general danger.<sup>9</sup> There was no time or available material for proper storage, the Library had neither boxes nor crates for transport, so they had to be borrowed, and there were not enough of them to store books according to the conservation profession standards. Consequently, the packing was urgent and sudden, and they were forced to pivot along the way, stock more books inside one crate than there should be, and pack them up in the same state as they were on the shelves. They did not have time or means to execute all the preventive measures<sup>10</sup> during the packing, but we can verify that they handled the collection with care. They also planned the evacuation, made a list of the packed items, provided support, ensured that the route is clear, and ensured a space to place the



**Figure 8.** Metal cabinet used for storing Collection of *incunabula* (Source: Digital photo archive of Dubrovnik Libraries, Photo taken: 2001)

<sup>9</sup> i. e. red alert, imminent bomb threat.

<sup>10</sup> Preventive conservation involves “all measures and actions aimed at avoiding and minimising future deterioration or loss. They are carried out within the context or on the surroundings of an item, but more often a group of items, whatever their age and condition. These measures and actions are indirect – they do not interfere with the materials and structures of the items. They do not modify their appearance.” (ICOM-CC 2008). In addition, a preservation policy should aim to achieve the best possible conditions for storing. However, financial resources, storage, accommodation and local climate will affect the extent to which these can be achieved (Chapman 1990.) In our case the books should have been cleaned mechanically and wrapped separately prior to storage.

items. They provided protection from environmental and climate factors, and protection from light and UV radiation, pollutants and from war damage. The information presented in this chapter was validated by colleagues who were actively involved during that period,<sup>11</sup> along with documented records delineating the evacuation procedures. Specifically, these documents are titled *The record of the evacuation of the vault room* (Dubrovačke biblioteke 1992a) and *The record of the evacuation of the collection "OLD RAGUSINA* (Dubrovačke biblioteke, 1992b).

After the collection was safely placed in the vault of the Bank of Dubrovnik, it was protected from immediate war damage. In hindsight, we know that there were no further attacks on Dubrovnik until the summer of 1995, but at the time it could not be predicted when the war would effectively end.

In October 1993, a conservator from the National and University Library in Zagreb, Irena Medić, visited both the Library and the bank vault and recommended that the books be moved (Gustin 1998).<sup>12</sup> For the next five years Mrs Urban tried in every possible way to secure the return of the priceless books to a safe and suitable place, alerting every relevant institution and media.<sup>13</sup> The main goal was to save the collection from decaying in sealed metal trunks located in the vault of the Bank of Dubrovnik.

## 5. The return of the heritage collection

In 1998, the time finally came when it was possible to return the collection to the library and thus preserve it.<sup>14</sup> Presently, the primary focus lied in safely returning this collection, involving meticulous steps like examination, preventive care, and secure storage. Initially, extensive preparation was necessary, followed by relocation, accompanied by preventive conservation measures encompassing examination, cleaning, decontamination, and subsequent storage. Numerous challenges emerged during this process, including uncertainties about the state of the collection, the sheer volume of items to manage, the substantial weight of the metal trunks,<sup>15</sup> insufficient personnel (both trained and experienced), time constraints, limited space availability (often inadequate or non-existent), constrained finances with minimal funding, uncertain collection conditions, and the need to coordinate everyone involved.

<sup>11</sup> See footnote number 8.

<sup>12</sup> The newspaper article by Olivija Gustin was never published but the Library has a copy of the article typed on the official *Slobodna Dalmacija* memorandum paper. The article was sent by Mrs Gustin to Mrs Urban in 1998.

<sup>13</sup> Numerous newspaper articles were published in *Dubrovački vjesnik*, *Slobodna Dalmacija* and other periodicals between 1992 and 1998 on the subject of the damage to the Research Library, evacuation and subsequent return and inspection of the Heritage collection of books. See for example: Seferović 1992, Seferović 1998, Jerinić 1992, Jerinić 1998, Bijelić 1995, Bijelić 1998, Mikuličin 1998.

<sup>14</sup> The city of Dubrovnik assigned a new building to the Research Library – Kaboga palace in the Old City – after the visit from the Minister of Culture in 1993. The first funding was, however, approved in 1997, and the reconstruction began in 1998 (Peko 1997, Marunić 1993, Urban 2021).

<sup>15</sup> First size metal trunk 75 x 55 x 40 cm can host approximately 80 books, and the other size 120 x 76 x 45 cm can host approximately 140 books. The trunks weighed from 30 to 120 kg.



## 5.1. Preparation

The return began. Such a size of the project required a tremendous amount of planning, coordination, money, and time. The Library director and her associates planned, coordinated a vast number of factors, and they had a small-time opportunity and minimal funding. There was no conservator employed in the Library so an expert conservator from the State Archives in Zagreb, Mrs Tatjana Mušnjak<sup>16</sup> was invited by Mrs Mirjana Urban, the Director of the Dubrovnik Library, to advise and attend the transfer and opening of the trunks.

## 5.2. Transfer

On August 18<sup>th</sup>, 1998, the heritage collection was transferred from the vault of Dubrovnik Bank to the villa Skočibuha. Regarding the size, weight and a number of trunks, the Croatian army was engaged in the transfer. Extremely heavy trunks were handled and brought to the Skočibuha courtyard (Figure 9). So, the transfer went smoothly, nothing was lost, misplaced, or damaged. Every single trunk was returned.



**Figure 9.** *Inspection of books 'in situ' in the Skočibuha gardens by a conservator* (Source: Digital photo archive of Dubrovnik Libraries, Photo taken: 1998)

<sup>16</sup> Tatjana Mušnjak is an archive consultant. Since 1985, she was a head of the Central Laboratory for Conservation and Restoration of the Croatian State Archives. Since 1996, she has been a member of the commission for the inventory and assessment of war damage on the archive material of the Ministry of Culture of the Republic of Croatia. She is an author of many books and articles, one of the most important *The protection of archival material in war conditions*, published in *Arhivski vjesnik* in 1994.

### 5.3. Storage

Careful consideration was given to the storage place; they knew that a proper one would give extra protection to the collection, and, sadly, it was impossible to have one. The only possible storage place was a small outbuilding under the eastern wall of the property. This space did not have adequate storage conditions,<sup>17</sup> but it was definitely better than leaving the collection inside the trunks. It was decided that the space would serve as a temporary solution for the Heritage collection (Figure 10), while the most valuable copies (manuscripts and incunabula) were intended to be housed inside hermetically sealed metal safes within the main building.



**Figure 10.** Temporary storage for Heritage collection books in the outbuilding, present-day (Source: Digital photo archive of Dubrovnik Libraries, Photo taken: 2023)

### 5.4. Examination and cleaning

The next step was to inspect the condition of the books so they could organise further stages of the project more precisely. Organising a cleaning and decontamination project depends on several factors: the physical condition of the books, the amount and type of surface dirt, mould and mildew that needs to be removed, the value of the books as well as

<sup>17</sup> Adequate storage conditions, specifically concerning temperature and relative humidity, play a crucial role in determining the longevity of materials. Chapman emphasises that the physical environment in which items are stored significantly impacts their lifespan. Variables like temperature, humidity, light exposure, and atmospheric pollution can all influence the organic components present in library and archive materials (Chapman 1990.) Various recommendations exist regarding the ideal temperature and relative humidity for preserving library and archival items. In Želimir Laszlo and Andreja Dragojević's *Handbook of preventive protection of works of art on paper* an optimal storage temperature of 17 to 19°C for paper materials is suggested. (Laszlo and Dragojević 2010.) Conversely, Denis Vokić, in *Preventive conservation of paintings, polychrome wood and mixed collections* proposes a room temperature range of 15 to 22°C for storage (Vokić 2007.) According to IFLA recommendations, maintaining an air temperature consistently within (18 ± 2)°C and a relative humidity of (55% ± 5%) is advisable. However, for documents made entirely of parchment and leather, a relative air humidity of (60% ± 5%) is recommended. Recent standards acknowledge the allowance for slight variations within these settings, accounting for seasonal changes, provided that these alterations occur gradually (IFLA n. d.).

the number of items that need cleaning and decontamination. Numerous factors were unknown, and to clarify them two trunks were opened as a test in the garden on the first day, and then the procedure continued for the next four days. From 18<sup>th</sup> August to the evening of 21<sup>st</sup> of August 1998, the books were taken out of the trunks, inspected, mechanically cleaned, and placed on the shelves of temporary storage. The procedure was carried out by library staff, under the supervision of the conservator. The staff did not have prior experience in this field, so they were trained on-site. The Director Mrs Urban, the conservator Mrs Mušnjak and several librarians worked in a very hot and humid environment, with minimal equipment. Cleaning equipment consisted of surgical masks, white coats, gloves, simple brushes, and an ordinary vacuum cleaner that was not efficient. Each volume was cleaned externally and internally.

### **5.5. Decontamination**

While inspecting a short and accurate description of the condition of the entire collection and a list of damaged items were made. No matter how carefully the plan is made, it will change on short notice, and you will need to adapt in a moment, as was the case here. Due to the weather conditions, there was heavy rain – the inspection of a total of 97 boxes was accelerated, so 34 of them were inspected in detail and the books were cleaned using an ordinary vacuum cleaner and a soft brush, while mould and mildew were cleaned with cotton swabs.<sup>18</sup> Now after 6 years in hermetically sealed trunks, the books were on the shelves in closed storage. On 22<sup>nd</sup> August in the morning, when the storage room was opened there was a very unpleasant odour – that could possibly have been bacteria and mould – which made it clear that the decontamination had to be done.<sup>19</sup> They tried to do the analysis of particles, but, unfortunately, the Croatian Institute of Public Health in Dubrovnik at the time did not have the equipment for that kind of analysis. Having in mind that not all books were thoroughly cleaned, the decontamination could not be done by coating the books. As an alternative, they decided to soak the newspaper sheets in the solution of 5% thymol<sup>20</sup> in 96% alcohol and place it above the shelves and on the floor.

<sup>18</sup> Mechanical removal of mold and fungi should always be done on inactive mold and fungi. When it is visible that the molds and fungi are no longer active, the removal can begin. Due to lack of oxygen in metal trunks, they were inactive and the removal could be done.

<sup>19</sup> Decontamination is a method of suppressing molds and fungi. Molds and fungi develop on paper when certain conditions are met. The conditions are: that the RH is higher than 70%, the temperature is 15 to 40°C, the presence of oxygen and the presence of organic material that serves as a nutrient substrate (in this case, the paper itself is food).

<sup>20</sup> Thymol (also known as 2-isopropyl-5-methylphenol or IPMP), with the chemical formula C<sub>10</sub>H<sub>14</sub>O, is classified as a natural monoterpene phenol. It belongs to a group of Antifungal Agents, which are substances designed to destroy fungi by inhibiting their growth or reproductive capabilities (National Center for Biotechnology Information 2023). For a considerable period, thymol vapors have been utilised to combat fungal infections in cultural assets, particularly in books and paper-based artworks. Typically, these items are subjected to thymol vapors within an enclosed system for specific durations, as recommended, which may range from several days (Baer and Holben 1988).

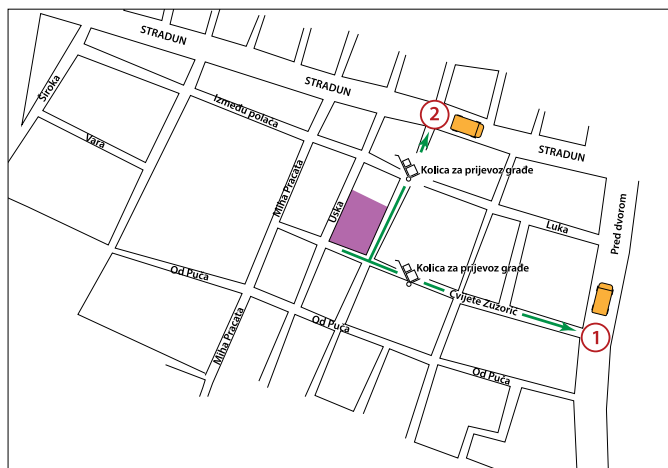
## 5.6. Report by expert conservator

Regarding the condition of books, there was visible physical, chemical, biological, and mechanical damage. It is important to state that we cannot know which damage was caused by storage and transport conditions during the war period, and which was damaged before, and one thing is important to state: the evacuation, relocation, and storage did not cause irreversible damage to the collection. The official report following the relocation was written promptly and it contained information regarding the condition of the books and the cost of restoration.<sup>21</sup>

## 6. Transfer of library material to the new location of the Research Library

### 6.1. The new Library building: Palace Bassegli-Kaboga

The city of Dubrovnik assigned a baroque palace (Bassegli-Kaboga<sup>22</sup>) in the City walls (Figure 11) to the Research Library (Peko 1997) but that building had yet to be thoroughly renovated and adapted for library purposes. In 2000, part of the library material was placed in the Old City of Dubrovnik which was registered in 1966 as a cultural asset and in 1979 included in the UNESCO World Heritage Register<sup>23</sup> and moved to the Baroque palace Bassegli-Kaboga on the Cvijeta Zuzorić street (Figure 12).<sup>24</sup>



**Figure 11.** Ground plan of the Old City with Bassegli-Kaboga palace, coloured in pink (Source: Suton 2020)

<sup>21</sup> Mušnjak 1998.

<sup>22</sup> The spelling of the name of the palace may differ in various sources, but in this paper, it is kept in the same manner as on the Dubrovnik Libraries' official website (Dubrovačke knjižnice. n.d.).

<sup>23</sup> UNESCO World Heritage Collection. n.d.

<sup>24</sup> Bogdanović n.d.



**Figure 12.** *Bassegli-Kaboga palace in the Old City, new seat of the Research Library, present-day* (Source: Digital photo archive of Dubrovnik libraries, Photo taken: 2023)

Manuscripts, incunabula and correspondence remained in the villa Skočibuha in metal vaults that are inadequate for storing paper and parchment material (lack of air circulation, compressed material which further favours the development of mould, metal parts on incunabula damaging the covers of neighbouring books). After the vault space in the Research Library building was made available in 2010, the rest of the material (manuscripts, incunabula and correspondence) was transferred there.

## 7. Establishment of a Conservation Department

At the end of 2008, the first conservator was hired, and since then the systematic implementation of preventive conservation of materials began. The Conservation Department was originally located in a room on the third floor of the Dubrovnik Research Library. After the space of the old bookbindery near the villa Skočibuha on Boninovo was renovated, the Department moved there in early 2014. Since the end of 2018, a large part of preventive conservation has also been performed *in situ* in the Research Library.

Currently, the Library employs three conservators-restorers. Due to the large volume of material, in recent years, priority has been given to preventive conservation in order to protect as much of the holdings as possible and prevent further deterioration. Priority is given to collections stored in the vault of the Research Library (Manuscript Collection, Incunabula Collection, Correspondence Collection and Graphic Collection).

## **8. Storage of transferred collections in the Research Library**

### **8.1. Manuscript Collection, Incunabula Collection and Correspondence Collection**

These collections were moved to a new space in 2010 where they are today. The vault is located between the 2<sup>nd</sup> and 3<sup>rd</sup> floor of the Research Library building. The room has no windows and each of the walls, including the floor and ceiling, are exterior walls.

The vault is entered through a lobby (3 m<sup>2</sup>) with a window facing northwest. Opposite this window there is an anti-burglary metal door with a steel security vault lock, through which the vault is entered. In the vault space (5 m<sup>2</sup>) there are two wooden shelves (270 × 230 cm) and a wooden cupboard (200 × 100 × 40 cm) opposite the front door. The shelves and the cupboard are about 2 cm away from the walls.

#### **8.1.1. Preventive conservation interventions**

Currently, there is a datalogger in the vault that collects data (temperature and RH) over a period of time via a sensor and stores it in the internal memory. The device works through a computer program, so that all data can be transferred to a computer in the form of graphs showing the measured values. This enables detailed monitoring of microclimatic conditions in space and detection of possible causes of changes in values in a given period of time.

An air dehumidifier has been installed in the lobby, which is crucial, especially in summer when warmer air from the outside causes high RH growth (the vault space is a few degrees lower in summer than outside due to very thick stone walls and the location of the space itself).

The door was removed from the cupboard containing the incunabula, in order to improve air circulation, and all incunabula were inspected and documented with a recommendation for conservation and restoration work.

### **8.2. Heritage Collection (Collection of old and rare books)**

As mentioned, the Collection of old and rare books consisted of three parts: the Antiqua collection, the Collegium Ragusinum collection and the Pozza-Katić collection (today also the fourth newly established Natali-Pozza-Sorgo collection). In 2000, it was moved to a newly renovated space (four rooms separated by doors of the total area) on the first floor

of the Bassegli-Kaboga Palace (Figure 13), where it is still located today.<sup>25</sup> The books are housed in wooden cabinets with glazed doors (Figure 14). Each cabinet has an opening of 10 x 30 cm, in which decorative brass rosettes are built in, which enables greater, although not sufficient air circulation. Cabinets are moved away approx. 10 cm from the walls.<sup>26</sup> An additional problem is that most of the books on the shelves are stacked without any space between individual items.

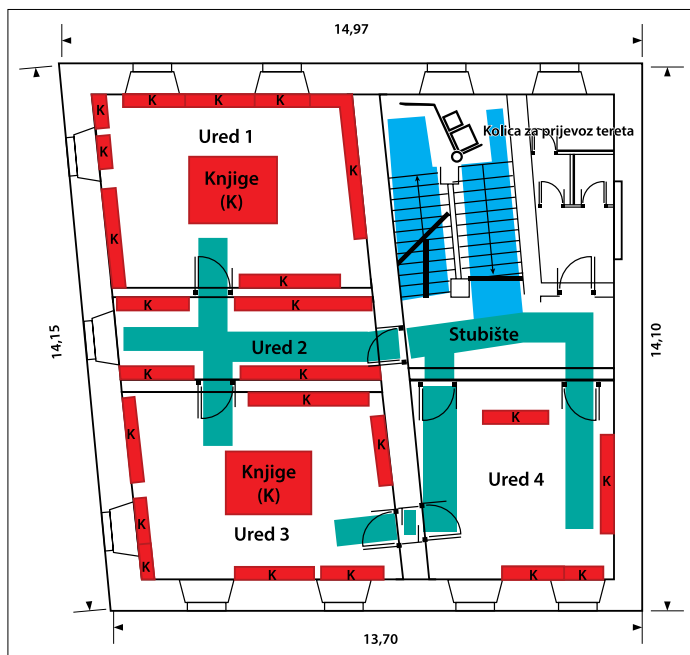


Figure 13. Ground plan of the Collection of old and rare books on the first floor of the Bassegli-Kaboga palace (Source: Suton 2020)

Lighting in the room is also not suitable, because it consists of fluorescent tubes, which emit light of excessive intensity (higher than in the case of LED light), and a high level of UV radiation.

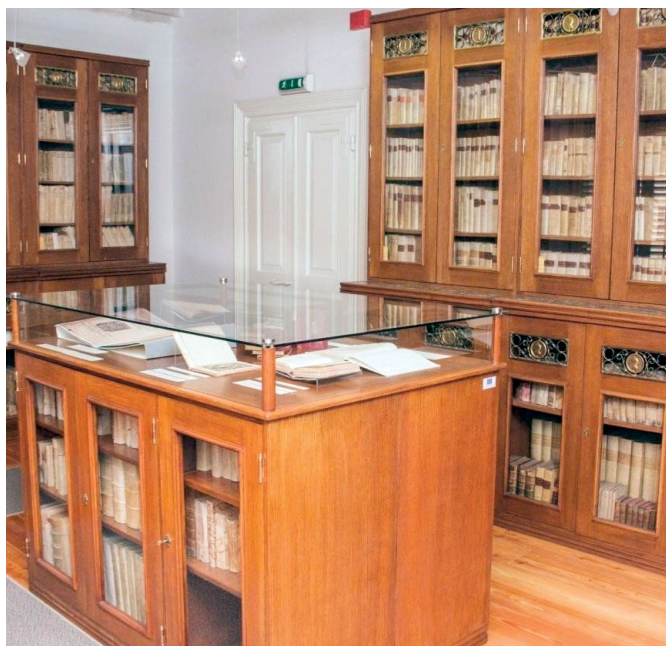
### 8.2.1 Preventive conservation interventions

One data logger was placed in the interior of the Heritage Collection, which enables monitoring of microclimatic conditions in the room and detection of possible causes of value changes in a given period of time and two hygrometers (measures temperature and relative humidity).

In 2020, two dehumidifiers were installed in room 2 and 4 and one air humidifier was placed in room 3. In 2022, smoke and fire detection devices were installed in each of the four rooms.

<sup>25</sup> Bogdanović n.d.

<sup>26</sup> Each of the four rooms has exterior walls where capillary moisture is present.



**Figure 14.** Collection of old and rare books on the first floor of the Bassegli-Kaboga palace (Source: Digital photo archive of Dubrovnik Libraries)

### 8.2.2. Archival storage

All folders, boxes and envelopes are made of archive acid-free cardboard or paper, which have a minimum alkaline reserve of 2 % calcium carbonate that neutralises the acid in the paper which ensure ISO 11108 standard (Hoel 1998), to serve the purpose through the influence of (possible) acidity of the material itself through the longer time. In order to gain space, some manuscripts/correspondence went in a common box or folder if they were of approximate dimensions, and provided that they were arranged by ordinal numbers.

## 9. Crisis response plan

In 2020, Dubrovnik Libraries commissioned an emergency plan for all possible crisis situations from an independent engineering firm. The plan (Suton 2020) made the recommendations that follow.

### 9.1. Possible crisis situations

Possible crisis situations include fire, burglary or theft, flood, earthquake and war. The building does not have an adequate degree of fire resistance (an internal hydrant network and a fire alarm system that is outdated and defective). Existing fire protection is in the form of portable fire extinguishers installed in all rooms. Extremely significant library items



should be kept in metal fireproof cabinets in the vault. The plan is to develop a complete and safe fire protection system in accordance with applicable regulations. In 2021, Dubrovnik Research Library implemented technical protection of the Library collections by installing video surveillance. In the case of fire protection, we have updated the fire alarm system. In the near future, we have a plan to implement a fire-extinguishing system consisting of FM-200,<sup>27</sup> fire extinguishing gas, which is environmentally clean, harmless to humans, colourless and odourless, and does not affect the expansion of ozone holes.

There is a greater risk of flooding (proximity to the sea / tidal wave) but above all of the more common in this area are natural disasters such as heavy rains. It is also important to check the condition of the water pipes in the building. In the event of a stronger earthquake, the damage to the building would be significant. The construction of the building would be endangered, as well as the people who might be in the Library space at that time, as well as books. As a result of the earthquake, there could be a fire in the building. In that case, multiple evacuations would be carried out: rescuing and evacuating people, repairing the consequences of the earthquake (extinguishing the fire), and only in the next step the rescue of books would be started. The risk of war and its destruction is very small, but it must not be ruled out. In this case, primarily people would be endangered and the rescue of the material would be done only if the conditions were safe for the life and health of the people who would evacuate the books.

## 9.2. Collection evacuation priority

As the holdings of the Research Library of Dubrovnik include over forty thousand volumes of books, periodicals and other archival material, an evacuation plan has been made according to the priority of cultural and historical value (Table 1).

**Table 1.** *Collection evacuation priority (Suton 2020)*

Priority	Collection	N° of volumes
1.	Vault (manuscripts, incunabula, correspondence, graphic collection...)	approx. 1200
2.	Ragusina collection (reading room on the 2 <sup>nd</sup> floor)	approx. 15 000
3.	Collection of rare and old books (Heritage collection)	approx. 12 000
4.	Collection of periodicals (office on the 3 <sup>rd</sup> floor)	approx. 5000
5.	Reference collection	approx. 5000
6.	Varia collection (on the ground floor)	approx. 1800

<sup>27</sup> FM-200™, alternatively recognized as HFC-227ea, serves as a clean agent fire suppressant designed to extinguish fires while complying with the NFPA Standard 2001 for Clean Agent Fire Extinguishing Systems. These clean agents exhibit rapid and efficient fire suppression, ensuring safety within occupied areas without leaving behind any residue (Fire Trace International, n. d.).

### 9.3. Storage of evacuated material

The recommendation according to Suton is to ask the City of Dubrovnik for consent to move the evacuated material temporarily to one of the nuclear shelters in the area of the City of Dubrovnik, which is in good working order (Suton 2020, 31-32).

## 10. Conclusion

The paper aimed to describe in detail the process of dealing with an unprecedented damage to the moveable cultural heritage in the recent decades of European history on a small case-study of the Research Library in Dubrovnik. Following the direct shelling of the Library building, the emergency evacuation of old and rare books had to be carried out quickly but safely, under the constant threat of bombing and fire. The Library Director, with a handful of employees, assisted by the City and Government institutions, managed to evacuate 10,490 books into a bank vault and return them six years later while constantly trying to alarm the public and gain financial support from the local authorities. The inspection of the returned books was performed *in situ* by a visiting expert and followed by a report and guidelines for restoration. The estimated cost was 267.000 HRK at the time which is the equivalent of 110.000 euros today.<sup>28</sup> This was clearly too expensive for the Library budget. There was never an official reparation of war damage but the books were gradually sent to Zagreb to be restored as the Library received funds from either donations or the Ministry of Culture in smaller amounts. However, the Library was given a new building in the Old City – the Bassegli-Kaboga palace – where all the heritage and/or locally significant collections, as well as administration offices, are still situated today. It is the official seat of Dubrovnik Libraries. A second building, right around the corner, had already been allocated to the Public library in 1996. This proximity of our two institutions is a definite strong point for both library staff and patrons. The Research Library building was opened in the spring of 2000, when the Collection of old and rare books was finally located in appropriate conditions in a separate room with humidity control, regular ventilation, under constant supervision and protected from fire and burglary. A few years later, the new Library directors made sure that the oldest and most fragile items were safely placed in a vault and that three conservators were employed. There is also an emergency plan specifying the evacuation priority. Therefore, the preventive conservation and care for library materials have been significantly and constantly upgraded over the last thirty years.

Today we have numerous papers and guidelines written on the topic of relocation of cultural heritage. There are also unfortunately various experiences in evacuation from numerous institutions due to earthquakes, floods etc., so asking for advice, help and referral to literature is no longer a problem. In 1998, the literature on moving heritage collections was scarce, and it was difficult to obtain information and experiences from others, so our colleagues were forced to react promptly and adapt to a very hazardous situation. Overall, the

<sup>28</sup> The value was calculated by comparing the average net salary in Croatia in 1998 and 2023 and its ratio to the estimated cost of restoration.

relocation happened and it did not run smoothly or completely by the book, but it served its purpose: the Collection was rescued and preserved to the present day. The librarians and other institutions did a colossal job which saved the entire collection from certain destruction, and they deserve all the gratitude and respect.

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## Sažetak

### **Zaštita kulturne baštine u ratnim i poslijeratnim uvjetima 1990-ih: primjer Znanstvene knjižnice u Dubrovniku**

**Cilj.** Cilj rada je prikazati aktivnosti koje su Dubrovačke knjižnice poduzele za vrijeme i nakon Domovinskog rata kako bi zaštitile svoje baštinske zbirke. Drugi je cilj iznijeti planove u slučaju budućih nepogoda, kao i usporediti uvjete, resurse i opremu dostupne 1990-tih godina i danas.

**Pristup/metodologija.** Rad se temelji na primarnim izvorima, uključujući svjedočanstva iz prve ruke bivše ravnateljice Mirjane Urban i ostalih djelatnika knjižnice te sekundarnim izvorima kao što su službeno izvješće konzervatorice za papir iz Državnog arhiva u Zagrebu koja je provela inspekciju evakuiranih knjiga *in situ*. Ostali izvori su novinski članci, knjige, službeni dokumenti, doktorske disertacije, fotografije, plan mjera za slučaj opasnosti i drugi. Istraživanje je uključivalo suradnju između knjižničarske i restauratorske struke, kao i pronalaženje, skeniranje i arhiviranje vrijednih povijesnih knjižničnih dokumenata.

**Rezultati.** Rad uspoređuje zaštitu i brigu za baštinske zbirke u tadašnjim ratnim uvjetima s današnjom situacijom te kroz usporedbu i prezentaciju Plana za slučaj opasnosti iz 2020. godine nudi moguća rješenja za buduće izvanredne situacije i načine kako unaprijediti rad u kriznim uvjetima.

**Originalnost/Vrijednost.** Rad daje pregled tridesetogodišnjeg procesa zaštite baštinskih zbirki iz perspektive knjižničara i konzervatora-restauratora. Iskustvo Znanstvene knjižnice Dubrovnik u ekstremnim uvjetima ratnog razaranja i način na koji su novi ljudski, financijski i tehnološki resursi kasnije pomogli nadoknaditi štetu trebalo bi drugim ustanovama poslužiti kao primjer iz prakse kriznog menadžmenta i preventivne zaštite te spriječiti slične događaje.

**KLJUČNE RIJEČI:** Dubrovačke knjižnice, krizni menadžment, kulturna baština, preventivna zaštita, rat

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