Community-Based Maintenance of Historical Wooden Churches in Lviv Region, Ukraine

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Abstract
In this study we conducted a quantitative survey of the conservational state of 383 historical wooden churches in the Lviv Region of Ukraine. We focused on the treatments applied by religious communities for the protection and exploitation of the historical churches in their possession. The effect of each treatment was analyzed according to the architectural characteristics of Ukrainian wooden churches. During the investigation of accompanying conditions we were able to uncover some factors that influence the behavior of religious communities towards the cultural property they exploit. Obtained results can aid in prioritizing governmental policies on the protection of living religious heritage in Ukraine.

Keywords: wooden architecture; log construction; heritage protection; maintenance; conservation

1. Introduction
Throughout the centuries, Ukrainians have developed a unique type of ecclesiastical wooden architecture. Its outstanding universal value was recognized in 2013 by the inscription of the most prominent examples on the World Heritage List. In addition to the eight wooden churches that obtained the status of World Heritage, there are more than 2,500 historically and artistically significant monuments which remain on the territory of Ukraine, and continue to be used by religious communities.

Heritage protection in Ukraine faces challenges inherent to developing countries, such as ambiguous legal apparatus, unsettled management systems, lack of surveillance on sites and underfunding of the cultural sector. Moreover, multiple factors further complicate the task of safeguarding the living ecclesiastical wooden heritage: 1) the initial protective listing of wooden churches was made in 1963 by the Soviet government, and was not revised nor monitored on a national level by the Ukrainian government; 2) with the collapse of the Soviet Union, nationalized wooden churches were returned to the property of religious communities; 3) The majority of wooden churches are scattered in rural areas beyond the reach of resource constraint heritage authorities; 4) The wooden structures demand regular and adequate maintenance that is often in conflict with the capacities or preferences of local communities. The aforementioned factors have resulted in big losses of historical wooden heritage during the years of independent Ukraine. Presently, there is an urgent need for effective state-level and regional-level heritage preservation programs that require the revision of protective registers, to build priorities according to the conservation state of the property, and to choose strategies to cooperate with local communities.

Previous research has revealed that heritage protection in developing countries, where an effective government apparatus for heritage protection is not yet established, is highly dependent on social processes and community attitudes; therefore, state policies should take a "socially conscious" approach (Okazaki, 2011, p. 350). Currently, there is no research addressing the community-based maintenance of historical wooden churches that could guide the development of a socially conscious approach to heritage preservation in Ukraine. We aim to fill this gap with the present study, by inquiring into the social factors that influence the preservation of wooden heritage in the possession of religious communities.

2. Research Method
At the present stage, we have limited the framework of our research to the Lviv Region of Ukraine (Fig.1.), which features the biggest number and variety of historical wooden heritage. From approximately 800 wooden churches of the Lviv region, we selected 383...
monuments dating between the 16th and 19th centuries listed in the National and Local protective registers that were passed to the property of religious communities from 1989 to 1992.

The present study is based on: the fieldworks conducted in Ukraine during August 2013, January 2014 and June 2014; the descriptive and historical data on wooden churches compiled by Slobodyan (1998); the catalogue of wooden churches in the Lviv region by Victor Hromyk (2014).

We observed that the state of conservation of the monuments varied widely from exemplary maintenance practices to cases of neglect or deliberate destruction. By relying on visual analysis, historical data and documentation, we explored the types of structural additions and treatments applied by local communities to historical wooden heritage in their possession. Then, we evaluated those treatments according to the preservation needs and architectural characteristics of the monuments, as well as to the National Heritage Protection guidelines of Ukraine.

In the outcome, we were able to identify different tendencies in the maintenance of historical wooden churches and demonstrate their dependence on accompanying social conditions, such as ethnic and demographic shifts, size of a settlement and distance from the administrative center.

3. Parties Responsible for the Maintenance of the Property

According to Article 24, Part 1 of the Law of Ukraine on Protection of Cultural Heritage, the owner is responsible for the maintenance of the monument, timely repairs, and protection from destruction or demolition.

In 1992 the Presidential Decree N125 officially returned ecclesiastical properties to the ownership of religious communities after 70 years of the Soviet regime, when most of the churches were closed and appropriated by the government. The historical monuments listed in the National and Local Heritage registers were also passed into the possession or permanent use by religious communities, with the exception of the monuments listed in the Ministerial Decree "On the Historical Monuments that Cannot be Passed into the Permanent Use by Religious Communities" from 1991. This listing featured 50 entries, among them - 4 historical wooden churches.

Religious communities in Ukraine have a special juridical status that further complicates the implementation of the Heritage Law. The local religious community is a way of self-organization of citizens that can act as a juridical body in a number of legal relations. Thus, these organizations can own a bank account, provide paid religious services, accept donations and become the owner of a property. However, the organizational structure of religious communities is not controlled by any regulations. Usually, such social roles as a steward, a custodian and a cashier are informally assigned by the collective choice of the members. Priests are directed to each religious community by the central church administrations – Eparchies of the Ukrainian Greek Catholic Church, The Ukrainian Autocephalous Church, The Ukrainian Orthodox Church of Kiev Patriarchy or Moscow Patriarchy. Although fulfilling the role of the formal community's leader, priests are subject to rotations and can be recalled according to the communities' demand.

In such circumstances nobody has a legally binding responsibility or authority for the maintenance of heritage property; maintenance decisions are collectively made; and maintenance expenses are collectively funded.

4. Description of the Property

Ukrainian wooden churches are buildings of the Eastern Byzantine rite, built in the horizontal log construction technique. Log house building is the oldest known method of timber construction; it requires no special skills, no other material except wood and no tools except an axe. (Buxton, 2008) However, in ecclesiastical timber building master carpenters achieved the peak of excellence, creating unique national building styles.

Fig.1. Lviv Region of Ukraine

Fig.2. Ukrainian Wooden Church
1 – narthex, 2 – nave, 3 – sanctuary; a) – first tier open log structure; b) – first tier skirt roof; c) – series of projecting roofs; d) – dome; e) – triangular "sail" transforming the square to octagonal
The main features of Ukrainian wooden churches are the tripartite ground plan and the opening up of the cupola interior space. The Orthodox Church liturgy requires the partition of the church into three chambers: narthex, nave and sanctuary. (Fig.2.) The objective to create an open dome vault with the horizontal log construction has resulted in a range of innovative structural solutions, such as the transitions between decreasing prisms, transitions from quadrilateral to octagonal and multi-tiered hip roofs.

Among the examined group, the oldest church was built in 1502. It is located in Potelych village and was recently inscribed as a component property of the World Heritage site. The biggest group is represented by the churches of the 19th century (181), and the smallest group consists of eight churches of the 16th century. There are 54 churches of the 17th century and 140 churches of the 18th century.

Churches of the Ukrainian type occur in many stylistic varieties. Different researchers allocate from 10 (Pribega, 1997) to 12 (Logvin, 1986) distinct regional schools of wooden architecture. In the Lviv region, two architectural types are predominant: Halych and Boiko (Fig.3.).

5. State of Conservation and Exploitation

Among 383 heritage wooden churches that were passed to the property of religious communities by 1992:
- 29 are already extinct, - 8 of them were dismantled by the communities and the remaining 21 were lost to fire;
- 41 churches saw no repairs since 1992 and fell into the endangered group, due to the deterioration of crucial protective elements;
- 56 monuments were abandoned by religious communities who moved to newly built stone churches within the same settlements;

The rest of the wooden churches are being used and are regularly being repaired by the communities, however, these wooden churches continue to face issues of integrity and authenticity loss due to improper treatments.

The distinct large group (54) within the studied area consists of churches of the Latinized type - often bipartite, finished by a gabled roof instead of a dome. They were built by catholic ethnic groups (polish communities), who were deported by the Soviet Government after the Second World War. Most of the buildings were adapted for the orthodox liturgy with the use of structural additions, however many were dismantled or burned. Evidence shows that the Latinized group still remains the most endangered group among Ukrainian wooden churches with an alarming percentage of 22.2% of the sample becoming extinct during the years of independent Ukraine.

Table 1. shows the observed counts of lost and existent wooden churches compared to the expected counts under the hypothesis of proportional distribution. A big distortion can be seen in the counts of wooden churches of the Latin type. Fishers’ exact test showed that the factor of the architectural type is significant in the distribution of the lost wooden churches. (p=0.00; FET)

6. Structural Additions to the Ground Plan

The liturgy and customs of religious communities have changed over time, which led to a number of functional additions to the original structures of wooden churches. Two types of additions were the most common: exonarthex (the extension of the narthex serving as a porch) and sacristy (the service room for church clergy, usually, adjacent to the sanctuary). (Fig.4.) The custom for those extensions appears in different regions from the beginning of the 19th century, therefore, the existence of extensions in earlier structures is considered unoriginal. Only 14 out of 186 examined churches between the 16th and 18th centuries remained without any structural additions.

Following the pan-European demographic explosion at the end of the 18th century, many churches needed to be enlarged or replaced to accommodate...
bigger congregations. The traditional model of a log construction church has its technical limits of capacity. (Babos, 2004) Wide chambers without partitions of internal space face the risk of wall deformation under the weight of the dome. Therefore, to enlarge the space of the nave, architects of the past used additional side chambers creating a cruciform layout. In other cases, instead of enlarging the nave, they extended the domeless narthex or used an adjacent exonarthex to create more space for the parishioners. (Fig.5.) As many as 73 out of 186 examined churches between the 16th and 18th centuries bear the signs of enlargement.

7. Roof and Wall Coating
7.1 Coating Requirements for Best Preservation Conditions

Coating is an important part of constructive measures concerning timber protection. For wooden structures, it is essential to organize protection from condensation while at the same time allowing enough ventilation. In Ukraine, the traditional technical solution for these requirements was the type of wooden shingle coating called "gont".

Gont is normally made of pine or spruce in the shape of plaques with one side sharpened and the other side having a groove. (Fig.6.) When it is manually chopped by an axe, the fibers crumble and create a more water repellent surface. In the feudal society the task of covering all important wooden structures with gont was fulfilled by introducing it as a form of tax for the villagers. Nowadays, there are not many people who are accustomed to work with an axe with great skill and efficiency. Therefore, restoration companies often outsource this bulk job to the few remaining villages where traditions of wooden building prevail.

Since the gont covering is very expensive and time consuming, yet lasts for only 25-30 years, at the turn of the 20th century, congregations all over Ukraine started to use galvanized sheet metal to cover wooden churches. Metal covers are harmful for the timber structures mainly because of their heat conductivity. Under temperature fluctuations they generate condensate resulting in favorable conditions for biotic attack on the timber. (Bolotskih, 2006)

Gont covering in contemporary Ukraine is very rare. Even communities who otherwise show conservative behavior are reluctant to install gont covering because of: 1) long-term maintenance commitment; 2) preferences of religious communities towards shiny material for domes. Only 21 (6%) out of 354 examined surviving churches have gont-covered roofs.

All the strength of the log construction depends on horizontal logs and corner joints. Putrefaction of one element leads to the deformation of the whole structure. The replacement of logs is a common practice during the repairs of block-work buildings and can be simply done by lifting the corners above a rotten log. However, for heritage preservation purposes it is crucial to safeguard the original fabric, especially in the case of wooden churches featuring important wall paintings in the interior. Therefore, conservators are setting priorities on creating favorable conditions for better timber preservation, protecting it from biohazards, moisture and fire.

The biggest concern is the first tier of a wooden church, as it holds the whole weight of the structure and also is prone to moisture coming from the ground. The traditional solution to this matter was to leave the first tier open. Thus, it would naturally ventilate and dry. Walls above the first tier are only exposed to the moisture from precipitations, so they were treated similarly to the roofing and covered in wooden shingles.

From the middle of the 19th century, it became popular to protect the walls of churches with wooden siding often covering the first tier of the church. (Fig.7.) The Russian researcher of wooden architecture Opolovnikov (1974) observed that in the Church of
the Transfiguration in Kizhi, the rotting of the lower logs spread because of the board covering, while in the Dormition Church of Kondopoga, where the basement was equally not waterproof, logs of the first tier were in good condition.

To sum up, the best conditions for the preservation of original wooden church fabric are created by the wooden shingle roofing, open first tier and wooden shingle or board coating of the rest of the walls.

7.2 Rates of Fulfillment of Coating Requirements in Maintenance Practices

The State Construction Norms of Ukraine on Restoration, Conservation and Repair Works of Heritage Monuments (B. 3.2-1-2004) forbid using materials that can lead to the ruination of monuments or create unwanted side effects, such as salinity, increase of humidity or change of appearance (Article 5.6). Article 6.7.1.9 further forbids specifically the usage of a new material for roofing to create a "better appearance" (translation from Ukrainian by the author).

In the sample of the 354 existent wooden churches of the Lviv Region, we observed to what extent those norms were fulfilled in maintenance practices by religious communities.

We found that only the treatments of 20 wooden churches were able to fully satisfy the aforementioned conditions. In another 163 cases, metal sheets were used for roofing, however, other regulations were followed. One hundred and thirty cases demonstrated more serious violations of the maintenance norms, including the use of varieties of decorative metal sheet roofing - gilded, corrugated or shingled metal sheets (31 cases) (Fig.8.), 39 cases of partial covering of the walls with metal sheets or plastic panels, 14 cases of excessive use of metal sheets (Fig.9.) and 31 cases of the excessive use of plastic panels to cover the walls of the structure, including the first tier. In the remaining 41 cases, wooden church roofs and wall coatings were not renewed since 1992; they have deteriorated and can no longer protect the underlying timber structure from moisture penetration.

8. Types of Maintenance Behavior of Local Communities

In view of the contrasting rates of compliance with the preservation norms, we assumed different patterns of behavior of religious communities towards the heritage they own and exploit. Judging from the state of exploitation of the examined property coupled with the character of roof and wall treatments applied by communities, we were able to determine the following three patterns of behavior:

I. Conservative – community overall follows recommendations of heritage practitioners, does not violate heritage legislation while continuously using wooden churches.

II. Utilitarian - community violates heritage legislation in order to adapt wooden heritage to its needs and tastes, and practices uncertified repairs.

III. Abandoning - community builds a new church abandoning the old one. (Table 2.)

Eighteen cases in need of repair from the conservative group (I) face a positive perspective since communities continue to use them and are likely to take care of them. On the other hand, churches that were recently repaired but then abandoned by religious communities are unlikely to receive regular maintenance and therefore will deteriorate, unless adapted for other functions. Twelve cases of best practices among the abandoned group of churches represent the efforts of such adaptation conducted by extended communities (exceeding the circle of parishioners).
Consequently, bigger and stronger communities can guaranty better preservation of historical wooden churches. In our sample, such factor as the settlement size showed significant impact on the distribution of two extreme variables: absence of timely repairs and "best practices". (p<.001; FET) (Table 3.)

Table 3. Settlement Population and Communities' Behavior Crosstabulation Analysis

<table>
<thead>
<tr>
<th>Type of Behavior</th>
<th>Population of the Settlement, ppl</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Under 2000</td>
</tr>
<tr>
<td>No Repairs since</td>
<td></td>
</tr>
<tr>
<td>1992 (Expected Count)</td>
<td>(34.3)</td>
</tr>
<tr>
<td>Best Practices (Expected Count)</td>
<td>(16.7)</td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
</tr>
</tbody>
</table>

Another crucial tendency is the change of maintenance behavior with the increase of the distance from the regional administrative center – Lviv. (Table 4., Fig.10.) In the most remote areas of the region, societies are more traditional and less controlled by the authorities. We observed that the rates of abandoning and conservative behavior gradually drop and utilitarian behavior gradually increases with the distancing from the regional center, $X^2 (6, N = 354) = 22.91$, p = .001.

Table 4. Behavior of Communities Distributed by the Distance from the Administrative Center- Lviv

<table>
<thead>
<tr>
<th>Type of Behavior</th>
<th>Distance from Lviv, km</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-40</td>
</tr>
<tr>
<td>Abandoning (Expected)</td>
<td>17</td>
</tr>
<tr>
<td>Utilitarian (Expected)</td>
<td>12</td>
</tr>
<tr>
<td>Conservative (Expected)</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
</tr>
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9. Conclusions

The examined group of 383 historical wooden churches in the Lviv region that passed to the property of religious communities by 1992, demonstrated various maintenance tendencies, with only 20 cases satisfying National Heritage protective regulations; 124 cases of improper repairs; and 41 cases of the lack of timely repairs. On top of that, 29 wooden churches of the sample were lost — intentionally or by accident – and 56 wooden churches are currently abandoned by religious communities and need to be adapted for other functions.

Maintenance tendencies showed a correlation with such factors as the size of a settlement, the distance from the administrative center and the architectural type of the church, which suggests the significant influence of social and cultural processes on the state of conservation of wooden churches in the region. In-depth case studies are needed to describe the underlying social and cultural processes in more detail.

Further inquiry into community-based practices of church maintenance and exploitation will contribute to the development of a more comprehensive and effective heritage legislation that acknowledges inevitable change of living religious heritage, while at the same time ensuring the transition of its intrinsic values to future generations.

Notes

1. Church dating according to Slobodyan (1994).
2. Drawings are adapted from Zharikov (1986).
3. Drawings are adapted from Samoilovitch (1999).

References