Study on Spatial Composition and Reuse of Abandoned Churches

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Abstract

Due to the decreasing number of Christians, monks and nuns in Europe and the United States, the number of abandoned churches had been increased in recent years. Those abandoned churches are being transformed and converted into buildings without religious functions. Related studies mostly focus on limited target such as regions and countries, without clearly make a detailed analysis of the spatial composition of those reused churches. The purpose of this study is to analyze the spatial composition as well as the reuse of abandoned churches from an architectural point of view. The authors have investigated 106 churches, which were used as churches before and reused into buildings with another function afterwards. The data to be discussed below were mainly collected from various publications but also from available internet sources. We measured the surface area of all churches, apses, naves, height of naves, and counted the number of new added floors, which we have checked on all plans and sections of the reused churches. In the plans and sections, the rate of divided naves is higher than the rate of divided apses. This is probably related due to the sacred character of the apses area. For that, we would suggest that architects tend to keep the apses as much as possible in their original design. Churches have a big spatial volume and high ceiling heights. It is quite easy to divide, and change the former space into new spaces in accordance with the purposes of renewed buildings.

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Keywords: Abandoned churches, Reuse of churches, Conversion, Spatial composition

1. Introduction

1.1 Research Background

The church in Christianity is a place for prayers and an object of the faith. Furthermore, seeing from the point of view of architecture, churches establish the position as one field in the history of architecture up to the present age. Church architectures are not only religious architecture, but also realized by the beauty and historic significance, as well as technical progress.

However, on the one hand the number of churches which are put up for sale as real estate increases in recent years. This is because the Christians and religious community is decreasing in the for example the United Kingdom (Figure 1), and in Europe, North America, among the most significant declines. It is expected that this will continue in the near future.

On the other hand, churches are devised, and various design techniques are adopted in the existing buildings during renovation and conversion. Lots of churches are changed for other purposes, and mostly without any religious function.

1.2 Purpose of Research

There are lots of studies on the reuse of church architecture, such as A. Frattari and R. Albatici[2] whose studies are mainly focused on churches in Italy, and Greg Mirza-Avakyan's[3] studies on churches in New York, and Scottish Civic Trust[4] studies churches in the United Kingdom. Seen from the historic point of view, all these researchers were doing research in one country or of one specific area, or dealing with the new functions of the churches.

In this study, the writer discusses the reuse of churches from an architectural point of view, which is not only focused on the present situation and the space configuration of the object cases, but also analyzes the various spatial utilizations.

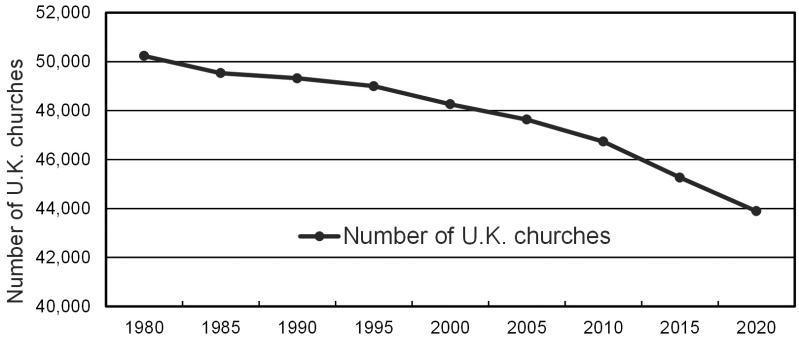

Figure 1. Number of U.K. Churches (1980-2020)

We investigated 10 cases of which spatial composition and reuse of churches, around the globe.

01. The number of research objects in different country
02. The number of research objects in different category of reused purpose
03. Renovation places of existing buildings due to the change of use purpose
04. Rate of renovated items of church
05. Classification of newly established spaces
06. Rate of dividing space of church
07. Rate of newly established floors
08. Height of naves and area of whole churches
09. Area of whole churches and new floors
10. Height of naves and floors

We searched previous research documents and related websites to study and collect data about the present condition of the reuse of Christianity church facilities. Followed by investigation on the spatial composition analysis, we captured the accompanying drawings; plans and sections, converted all those information into CAD data; by using VectorWorks2014 software (Figure 2). We also measured the surface area of all the churches and heights of the naves. To check the scale of the drawings, we used the scale on the drawings, because there are yardsticks for tracing, and measuring them. In addition, those churches of which we couldn't find the

scale and dimensions, we used chairs and stairs as the basis for the dimensions. Through the analysis of the different reuse formations and space utilizations, the authors hope to summarize a better church reuse method from the architectural perspective.

2. The Outline of Research Subjects and Research Methods

In this study

- We have analyzed buildings which were used as church architecture before.
- Churches where the religious function have finished, and have been changed into a new use.

The target examples meet these two points and there were 106 churches to be located around the world provided in the preliminary investigation. We defined "the religion facilities for Christianity" as "church architecture"; churches, chapels and monasteries will perform festival places in Christianity.

Firstly, we used the internet and previous research documents to study the present conditions of the reuse of Christianity church facilities and we did a preliminary investigation concerning the purpose of data collection of our research objects.

Secondly, with photographs and drawings of the research objects, we did the investigation on the churches successfully about their inside and outside construction of the original churches and new construction.

Finally, from the refurbishment plans and drawings, we focused on the areas, height, division of the existing space, the new floors of the original churches, and also we made an investigation on the inside renovation of their function change.

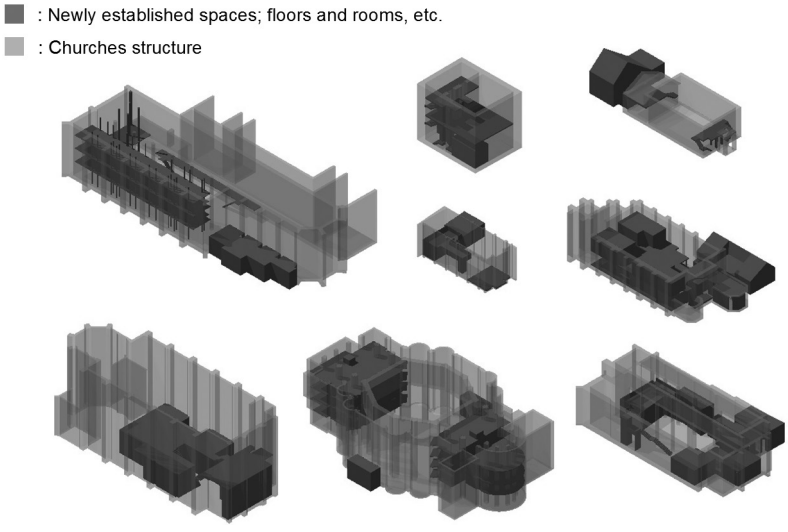

Figure 2. For example, the Spatial Composition with Newly Established Space Measurement.
(Source: the authors, 2015)

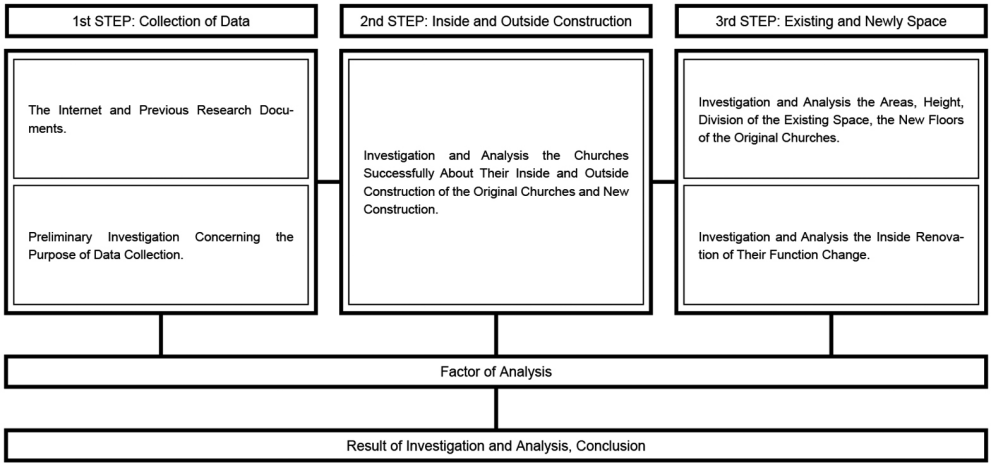

Figure 3. The Research Flow.

3. Survey Results and Analysis

3.1 The Number of Research Objects in Different Countries.

The number of research objects in different countries (Figure 4) shows that most renovations of churches happened in Italy, followed by the Netherlands and the United Kingdom, which has the third largest number of reused churches. In almost all those countries, there are churches which have finished their religions functions and were those functions have changed into other occupations. Most of them changed into "houses", such as apartment complexes and personal houses.

In addition, "theater" facilities including concert halls and stages could be found distributed over many countries. Conversion of church architecture does not only concentrate in one country.

Then, in the purpose (Figure 5) of reuse, 33 cases were converted in "houses", which was the biggest group. The second are "cultural facilities"; such as theater, library, and exhibition spaces, we found 25 cases. The third group are "commercial facilities"; eating, drinking and general commercial facilities, with 18 cases. The functions are widely various after their renovation.

3.2 Renovation Places of Existing Buildings Due to the Change of Use Purpose

We divided the renovated places into five categories, outer walls, roof, the inner walls, floors and ceilings, and investigated the percentage of refurbishment and renovation respectively (Figure 6). The proportion of floor renovation is much larger than others, which is caused by the damages of the floors. Besides this in order to protect better the original floors, new floors are built. The inner walls are usually renovated by interior decoration. For the ceilings, when they are made of wood as floors, they are renovated, while for the vault ceiling, the renovation is less. For the outer walls, which are usually made of bricks, concrete and stones, the renovation of them are less.

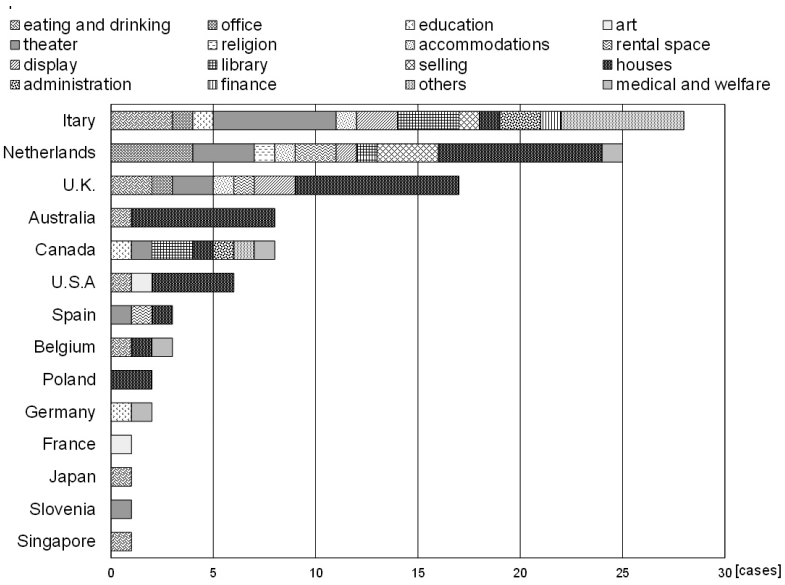

Figure 4. The Number of Research Objects in Different Countries.
(106 churches / Source: the authors, 2015)

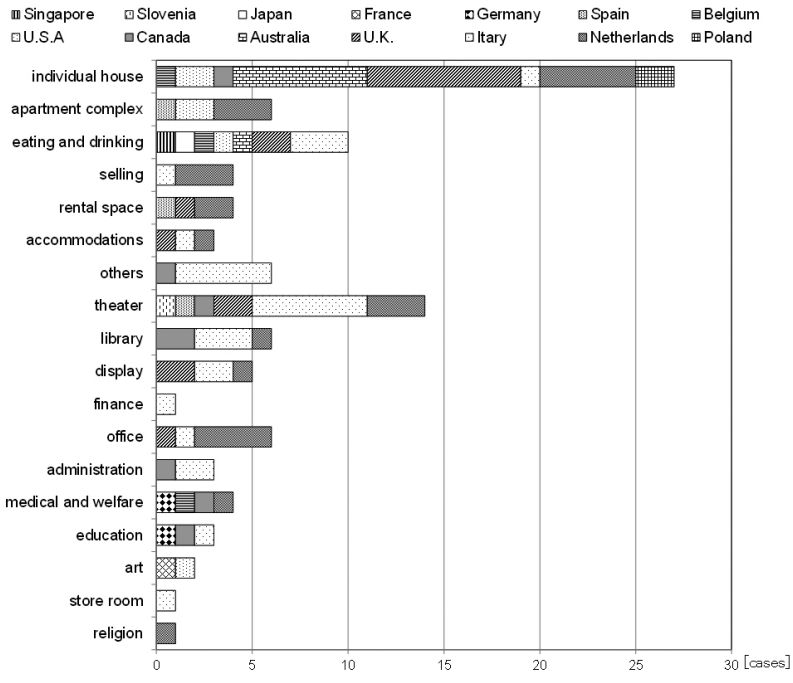

Figure 5. The Number of Research Objects in Different Category of Reused Purpose.
(106 churches / Source: the authors, 2015)

If the buildings are registered as cultural assets by the country or local government, or sometime if put the surrounding scene into consideration, the original churches are not renovated.

Renovatable part of church is precisely determined, when church is registered as a heritage list. For example, “Rijksmonument”, “Provinciaal Monument”, “Gemeentelijk Monument”, Netherland. In particular, it is a condition to renovate without changing the existing facade of the church.

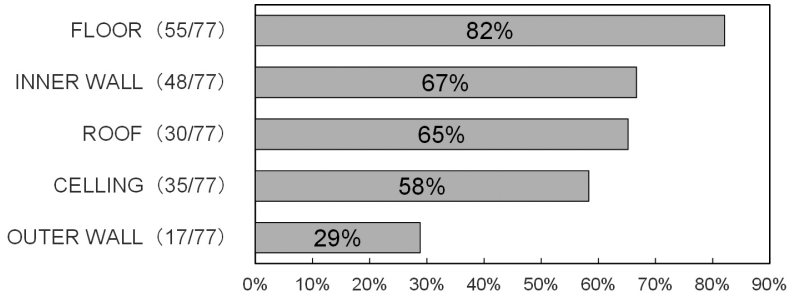

Figure 6. Renovation Places of Existing Buildings Due to the Change of Use Purpose. (77 churches / Source: the authors, 2015)

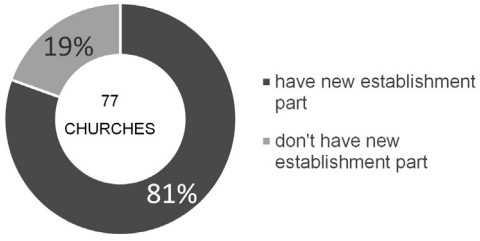

Figure 7. Rate of Renovated Items of Church. (77 churches / Source: the authors, 2015)

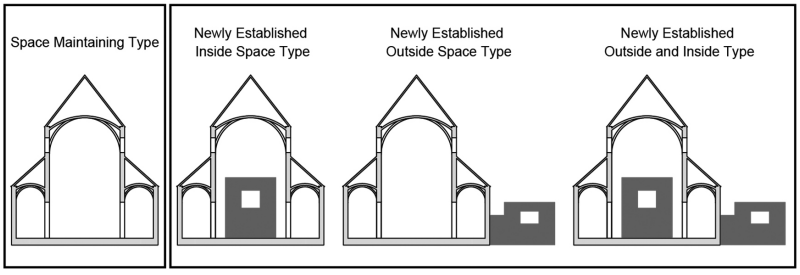

Figure 8. Classification of Newly Established Space Types.

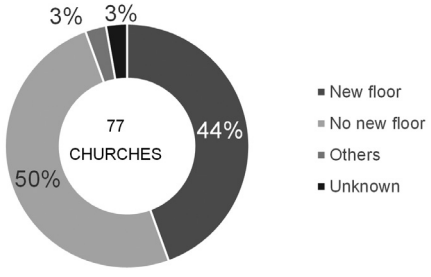

Figure 9. Classification of Newly Established Spaces. (77 churches / Source: the authors, 2015)

3.3 Spatial Composition of Reused of Churches

3.3.1 Classification of Newly Established Spaces

With the reuse of the church, we classified our research objects into two categories; whether or not they have new rooms, walls and floors. And we investigated a percentage of them (Figure 7). The new establishment part is 81% of the whole. From 36 plans used for the repair of the target example, we classified the space use in the reused churches into new part and the component originally (Figure 8). On the one hand “Space maintaining type” does not have new parts such as rooms and walls, while maintaining a space as a church, by changing churches as rental spaces.

On the other hand, in the reuse with new parts, we can classify them into 4 categories;

1) Space Maintaining Type
2) Newly Established Inside Space Type
3) Newly Established Outside Space Type
4) Newly Established Outside and Inside Type

Figure 9 shows the ratio of space utilization classification. The category “Space maintaining type” has the fewest cases. The reason for this is because the research objects do not include reused cases of the rent space.

3.3.2 Plans and Sections of Reused Churches

Based on the 36 plans, we focused on the spatial components of the churches naves, apses, aisles and transepts to investigate the plans and sections configuration after the reuse of the church interior (Table 1 and Table 2). Apse is the most important place in churches and nave where believers pray exit in all of the subject cases plans was obtained. In some cases, churches don’t have aisle, and transept. In some research objects, churches do not have aisle and transept, which in the process of renovation; nave is considered the same as aisle and transept, which also is the reason why we compared these three together.

Comparing the nave and apse, it was found that new floors and divided space are both existed during the renovation (Figure 11 and Figure 12). This is because these areas were changed into larger integral spaces, which is easy to insert new floors and to divide the space. Apse, compared with other spaces, is the most sacred place in a church, thus new floors are less inserted and are not divided. Figure 13 shows that various renovations are existed during the church reuse.

In addition, churches that have been reused as individual houses are small in scale. Figure 14 shows the existing building area, and the height of the nave.

Churches that have been reused as theaters are usually renovated from large scale existing building area, and the height of nave. But small churches are reused as individual houses, or reused as large scale facility to attract customers like libraries, the number of floors after reuse shows that the existing building area has increased, and the number of levels after reuse also tends to have increased. The existing building area is concentrated less than 1,000 square meters, and two floors.

The height of church architecture has enabled newly established floors. Figure 15; Height of nave and the new number of levels show that if the height of nave is higher, the number of floors after reuse also tends to have increased.

4. Conclusions

The essential points of our arguments;

1. The study on “the number of research objects in different countries” we collected 106 buildings, which were used as churches before, and were reused as abandoned churches. There are mostly renovations happened in Italy, followed by the Netherlands and the United Kingdom. Most of the churches were transformed into housing projects.

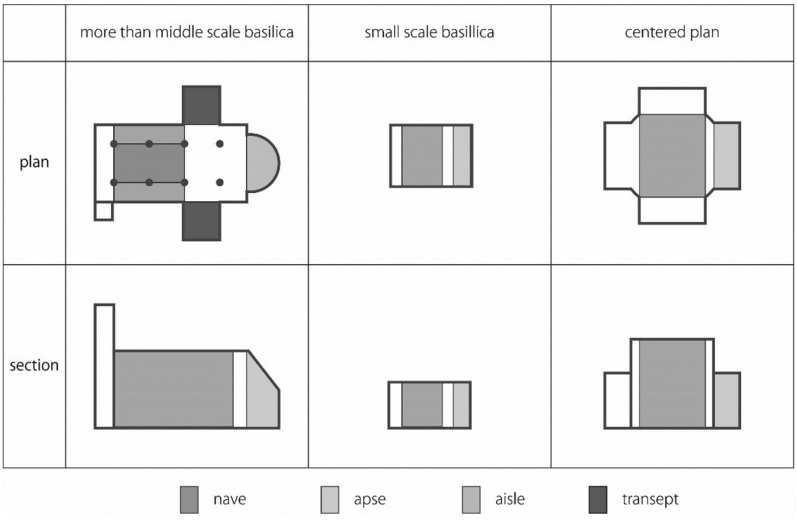

Table 1. Spatial Composition of Churches.

Name	explanations
Nave	It is pray space for Christian.
Apse	It is the most sacred and important place in church.
Aisle	It is pray space for Christian. In some cases, churches don’t have aisle.
Transept	It is pray space for Christian. In some cases, churches don’t have transept

Table 2. Name of Spatial Composition of Churches.

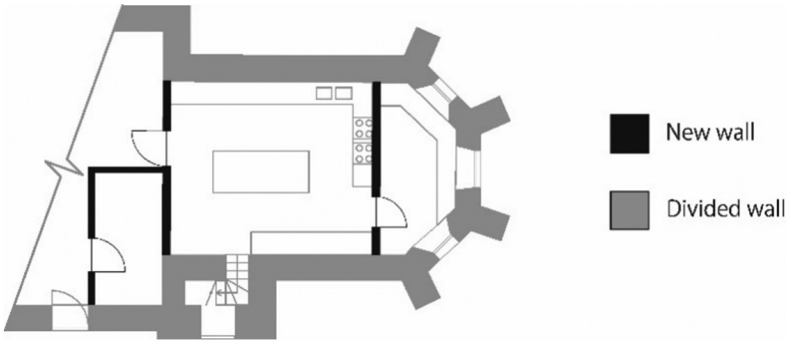

Figure 10. For Example Dividing Space of Church.
THE ABBEY CHURCH CONVERSION/Chloe Northover

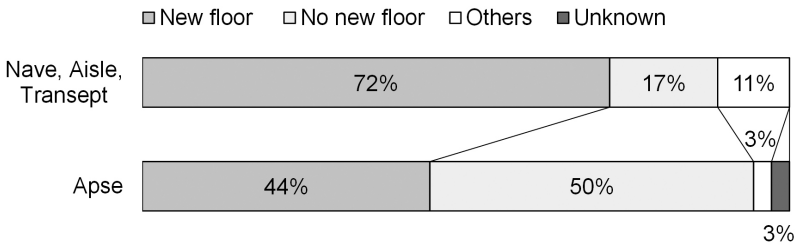

Figure 12. Rate of Newly Established Floors. (77 churches / source: the authors, 2015)

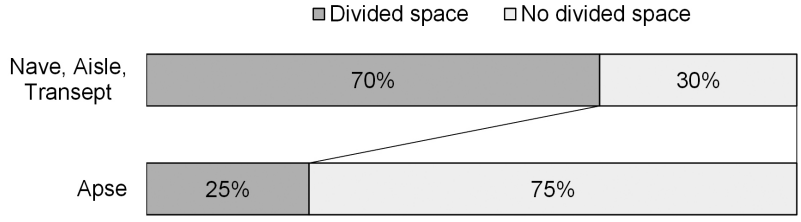

Figure 11. Rate of Dividing Space of Church. (77 churches / Source: the authors, 2015)

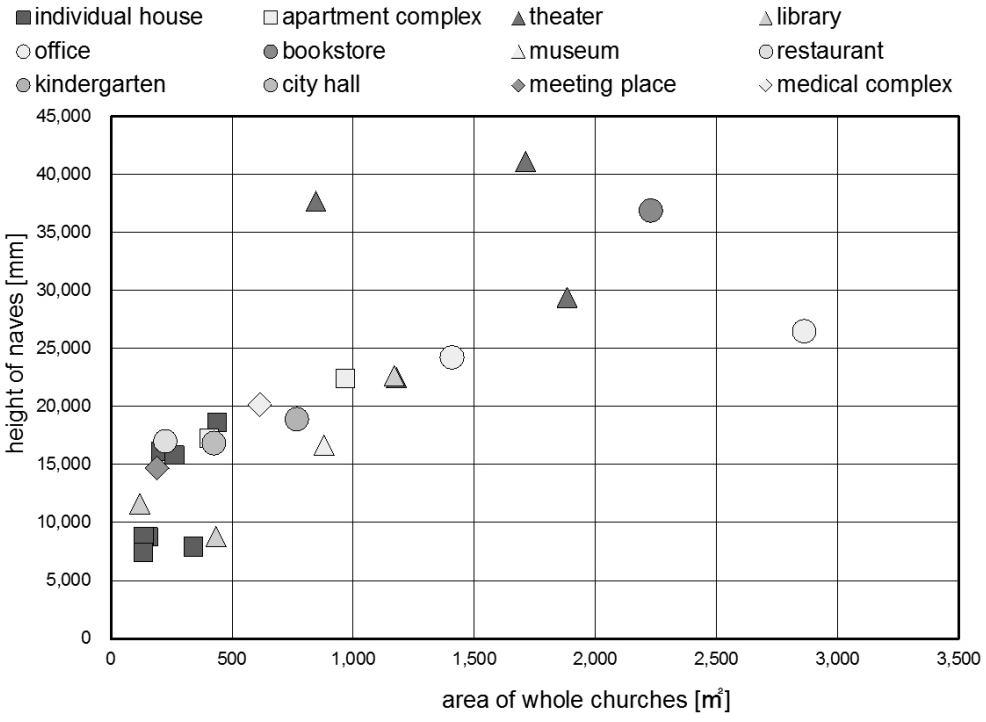

Figure 13. Height of Naves and Area of Whole Churches. (36 churches / Source: the authors, 2015)

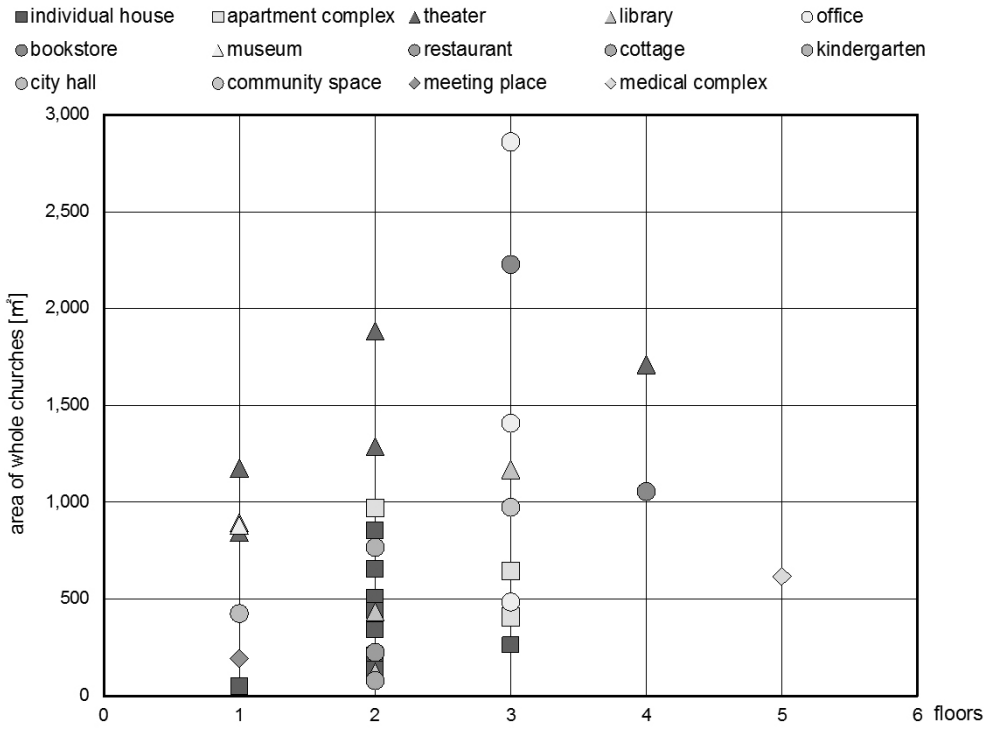

Figure 14. Area of Whole Churches and New Floors. (36 churches / Source: the authors, 2015)

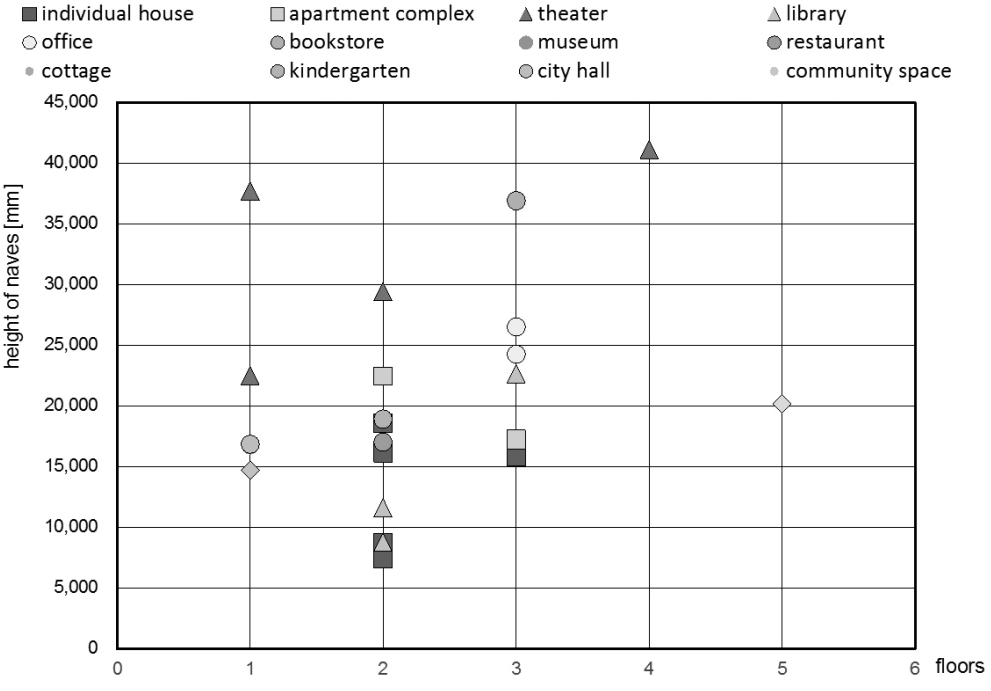

Figure 15. Height of Naves and Floors. (36 churches / Source: the authors, 2015)

2. The study on “renovation places of existing buildings due to the change of reuse purpose”, we divided the renovated places into five items, and investigated the percentage of refurbishment and renovation respectively. As survey results, there is a high percentage of the floor that had been renovated, and low percentage of outer walls that had been renovated. There is a difference in the percentage of refurbishment by the spatial configuration area.

3. The study on “classification of newly established spaces”, we sorted renovated churches by presence or absence of new space installation, and new space installation site. There were mostly newly established inside space type which have newly space only inside, and second newly established outside and inside type. It accounts for 94% of the entire two types.

4. The study on “plans and sections of reused churches”; it was focused on the plan, section, changes in nave, isle, transept that make up the church space and the apse in a space. After reuse of the churches, the spatial change of apses resulted to be small compared with the change of the spaces such as naves, isles and transepts.

5. The study on “area, height of naves, new floors of renovated churches”, we proved that there is a bias in the application about reuse by scale of abandoned churches. Furthermore, the larger the area of the abandoned churches is; and the higher the height of abandoned churches, we found that the number of new floors had increased after renovation.

Abandoned churches are reused widely in lots of countries according to their different scales and functions. The inner space distribution and constructions of the original churches are renovated for their new functions. According to the different height and space configurations of the original churches, architects should try to maintain the original spatial composition and meet their new functions requirements.

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