A Study on “Cross-Ring Model” of Scottish Religious Architecture Landscape

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Abstract

By analyzing prototypes of religious architecture landscape within Scotland, including Roman Catholic Churches, Presbyterian Churches, Synagogues, Mosques, Hindu Mandirs, Tibetan Buddhist Temples, Sikh Gurdwaras, and Baha’i Centers, and the morphological changes of their inculturation in Scotland, the article makes a conclusion that their common feature is the “Cross-Ring Model”. According to the identity of the user to judge the sacred grade, Scottish sacred space is classified into four types: three, one, five, nine. The “Cross-Ring Model” is the handle that remodels and transforms the attributes of religious space. It is also an innovation tool for reconstructing modern religious architecture. Applying the “Cross-Ring Model” in rebuilding immigration’s religious architecture can help them smoothly integrate into the diverse religious environment in Scotland.

1. An analysis of prototype of Scottish religious architecture landscape

Early indigenous religious buildings in Scotland were Pictish Cennrigmonaid, then the Catholic Church were accepted in the early 10\textsuperscript{th} century. In 16\textsuperscript{th} century Scottish religious Reformation destroyed most of the Catholic Church. Nowadays the major religious building in Scotland is the Presbyterian Church, and a little Roman Catholic church and the Scottish Episcopal Church which were rebuilt after the 19\textsuperscript{th} century, and the other nation’s religious buildings are constructed by immigrants. All immigrants had experienced three stages: Firstly to reconstruct residence but only can offer small-scale worship service, secondly to transform the old church or public building, and focus on rebuilding interior ethnic religious space, finally to self-design and construction their sacred spaces, and have definite ethnic and religious symbols both interior and exterior. Now immigrants had reconstructed 9 synagogues, 30 mosques, 3 Hindu temples, 6 Sikh Gurdwaras, 1 Tibetan Buddhist monastery, etc. The Baha’i is still transforming residence. Religious buildings above all attempted to reproduce the prototype of ethnic sacred space in Scotland, and gradually tend to be Scottish style in the process of reconstruction and innovation. Religious architecture landscapes are aiming to create a space for believers to surround and worship. Due to the different center points, radius, borders, and the sacred hierarchy, various denominations had reshaped diverse worship paths and spatial forms. However, there exists a “Cross-Ring Model” hiding in every sacred space. On the basis of “Cross-Ring Model” which is composed of a Greek Cross, outer circle, inner circle, and sub-circle, by subdividing and moving and rotation space, denominations reshaped the module and orientation of their architecture landscape. Greek Cross means the location and orientation, the center of the innermost circle pins the physical center of the space, and the outer circle defines the boundary of the...
architectural landscape. The parallel sub-circles within the circle are in a progressive relationship, and the mirror-symmetrical sub-circles are hierarchical. Every sacred space could be graded by the identity of the user and space permit that he is granted (Figure 1). For example, the early Christian church was built on a Greek Cross, and its horizontal and vertical axis is of three sacred grades (figure 1a). Then the Nave extends westward to form a Roman Catholic church based on a Latin Cross which has three sacred grades, from eastern it covers Choir Altar, Nave and Narthex respectively. Since the Scottish Reformation the Presbyterian church advocated simple space that without West-Facade twin Towers, Central Spire Tower and Transepts. The plan are mostly rectangular but still fall into three grades: the Altar, the Middle Hall, and the Service Area (Figure 1b); According to the description of Moses Tabernacle in Jewish scripture, Professor Paul V.M. Flesher pointed that the Tabernacle can be five sacred grades depending on the user’s identity: the Most Holy Place (the space behind the Veil used by the highest priest), the Holy Place (outside the Veil used by the mid-priests), the Courtyard (used by the lower priests and the Levites), outside the Courtyard (tents Jews dwelled) and other spaces (non-Jewish spaces). But Scottish Synagogues are simplified into three grades: the Ark is the Most Holy place (Figure 1c, 4c), the Bimah is the Holy Place and the prayer pew is Secular World. The Qibla wall of mosques is all towards Mecca, that is the longer wall of mosques is tangents line of the circle surrounds the Mecca. Elements of the functional mosque are square open-air garden, the Qibla wall and roof calling prayer used by Imam. The garden center is also used to store the Holy Fire and Wudu water for worship (Figure 1d). Scottish mosques developed into an inner courtyard, a Mihrab in the middle of the Qibla wall and a towering minaret. The foundation of Hindu five-tower temple is likewise a square, and four towers at the corner and the central tower together form a Hindu Mandala. Around five pagodas there are many ritual walk paths for prayers to surround and reflection (Figure 1e). Tibetan Buddhist temples are based on a square ground, encompassing the Buddha-hall to build Dvipa in quartet directions and eight escorts structures, plus four-color pagodas to form the Tibetan Mandala (Figure 1f). The prototype of Sikh Sri Harmandir Sahib was built on a square site in the center of the pool. It’s facade absorbed Islamic architectural style and built four small domes in the four corners surrounding the main dome on the roof. And around the minor domes, to build four smaller domes again to form a multi-grade sequence, meanwhile the interior is gorgeous Hindu temple style (Figure 1g). Baha’i worship house is a round plan with 9 entrances, and landscape like pool and plants is arranged along the 9 axis. If cut it into 9 pieces like cake, each parts are equal both in dimension and shape (Figure 1h). Applying the “Cross-Ring Model” to analyze the prototypes of Scottish religious architecture landscape, it was found that the modulus for layout of the Roman Catholic, the Presbyterian and Jewish was three, and the mosque was one. Hindu, Buddhist and Sikh temple was five, and Baha’i is nine.
2. The application of the “Cross-Ring Model” in Scottish religious Architecture landscape

2.1 Typical applications of the “Cross-Ring Model”
Scottish Traditional Catholic Church is characterized by twin towers on the west facade, the towering minaret above the Cross, the Transepts, the square Chior Altar, the Holy Sepulcher in Crypt, the square Chapter House and the Cloister garden, etc. Most of the Scottish Roman Catholic Churches had been destroyed including the once largest Pilgrim Church the St. Andrews Cathedral, which is used as a Museum of Site nowadays. The worship paths were a series of ellipses: the Canons worshipped in Chior Altar and the small chapels in Transepts, they also paraded on the Processional path along Cloister garden on Sunday. Pilgrim worshipped surround side altars in the Nave and Chapels in Aisles (Figure 2a). Most of the Scottish Presbyterian Churches are rectangular plan. For example, the Greyfriars Church is a six-bay with three aisles. The upper yard is a square site surrounding the building and cemeteries both in the lower, south and west yard lead to elliptical paths respectively (Figure 2b). The courtyard of Giffnock Synagogue is a narrow site, where the main building is hidden behind a parking lot, Kosher coffee and a Jewish apartment. The building’s facade is low-key and the orientation points to the Jerusalem exactly (Figure 2c). Scottish mosques are oriented to southeast precisely and opening windows on other walls usually results in Prayer Hall dim. The natural light from Golden Domes and artificial lighting is used to improve the light environment. The Glasgow Central Mosque by Clyde River has a square courtyard, ingenious minarets and the Qibla wall which match the axis of the site, becoming typical example of modern mosques that combined western architectural styles (Figure 2d); The Edinburgh Hindu Mandir remodeled once Presbyterian Church except its facade, and the Nave was transformed into two floors. The first floor is a multi-purpose hall and the second floor is a shrine temple (Figure 2e). The prototype of Kagyu Samye Ling Monastery in Scotland is Sangye Buddhism Temple in Tibet. However, only the south landscape was constructed to form a “Four-Ring” asymmetrical layout, which did not to encircle and guard the Buddhist temple.
The landscape in other three directions was to be completed (Figure 2f). The Glasgow Sikh Gurdwara reconstructed five domes on the roof asymmetrically, and the interior follows the gorgeous Hindu style (Figure 2g). The Scotland Baha’i Centre was remodelled from a Georgian villa. The worship space is narrow and using the Fireside ceremony to express the Baha’i doctrine on space equality (Figure 2h). Comparing these typical applications of the “Cross-Ring Model” can find out that they are generally coincide with the prototype of the original sacred space, but in order to adapt to the climate and site conditions of Scotland, the center of some cases shifted and the axis was rotated, proving that the “Cross-Ring Model” is an innovative tool for rereading and reconstructing the ethnic and religious architecture landscape.

2.2 Atypical applications of the “Cross-Ring Model”
Catholic churches rebuilt after the Catholic Revival was mostly for Irish and Polish immigrants. The buildings are mostly rectangular with the restrained style. For example, Glasgow St. Andrew Church has no West Twin Towers, Central Minaret and Transepts. The major function is compressed into the Nave and Aisles, and the western church parallel to the eastern courtyard (Figure 3a). St. Giles Church is the mother church of Presbyterian. In 1976, the Altar was moved from the eastern end to the middle of four central pillars, resulting in the pews both east and west were arranged face to face. The unique central Altar with the Chior and Organ Loft form a north-south axis which superior to the east-west axis, and tends to be concentric circle in sacred grade(Figure 3b). Most courtyards of the Jewish synagogue are employed to parking. The Font is enlarged as Mikvah with living water, and the interiors are U-shaped planning around the Ark. For example, Edinburgh Jewish Hebrew Synagogue has a H-shaped architecture, and Mikvah building stands on the southeast Corner of the courtyard. The original lady balcony and double-layer dome of the Hall were set aside due to budgetary reasons. Now it gets a little and a big prayer hall, although the Ark facing northeast instead of Jerusalem (Figure 3c).
Edinburgh Central Mosque rotated axis towards Mecca resulting in the lack of a quadrangle and producing the four triangular plots tend to be useless, but the quality of the Mosque’s environment would not influence Muslim’s devoutness (Figure 3d). Edinburgh Hindu Mandir rebuilt shrines on the northeast wall, and small shrines or tables on the other walls. The ground was covered with white cloths by orthogonal axis, in this way it constructs a hidden interiors centralized Mandala (Figure 3e). Kagyu Samye Ling Monastery in Scotland constructed a central building with a quadrangle, but only the west wing is the Buddhist temple, the others are monk dormitory, canteens, libraries and etc. The temple is a Tibetan style and the roof is intended to imitate the Mandala tower. The building is different to the centralized layout with central architecture of Sangye Buddhism Temple in Tibet (Figure 3f). The Edinburgh Sikh Gurdwara was transformed from a Romanesque single-tower church, and it is impossible to reconstruct five domes on the roof, but the miniatures are completed on top of the interior shrine (Figure 3g). In addition, the Scottish Inter-Faith Association is aiming at promoting the mutual understanding and integration of various religious groups. It also chooses the ring shape layout regularly when organizing a series of joint worship (Figure 3h). In order to adapt the site conditions and meet functional requirements, the above-mentioned religious architecture landscape have undergone space transformations in terms of orientation, axis and sacred grades under the premise of obeying doctrine, proving that the atypical application of the “Cross-Ring Model” can also transform the religious attributes of these buildings.

Figure 3 Atypical applications of the “Cross-Ring Model” in Scotland

2.3 Comprehensive applications of “Cross-Ring Model”

The Scottish Episcopal Churches which were reconstructed after the Catholic Revival looks like the Roman Catholic Church. For example, St. Mary’s Episcopal Church in Scotland is a large scale, high-profile building with several ellipse worship paths (Figure 4a). After removing pew the Presbyterian Church’s functional boundary naturally flows to flanks, and the furniture is arranged
differently depending on the ritual theme. For instance, the Greyfriars Church adopts the circular layout at the Advent Festival (Figure 4b). The synagogue has three sacred grades, the Most Holy Place is compressed into Ark, meanwhile the fabric Veil evolves into multiple layers made of metal, wood and fabric. The central Bimah is used as a Holy Place and pew seats are secular world. The plan is suitable for the declined Jewish community, allow Rabbis holding the scriptures to walk around the Bimah on the Sabbath, giving Jews an opportunity to touch and kiss it (Figure 4c). The Edinburgh Academic Mosque was reconstructed from a church which orientation was not towards Mecca. The mosque rotated the prayer carpet’s axis and using the Minbar to rebuild the virtual Qibla and Mihrab. Although there is a conflict between the carpet and the walls, the long side of the blanket became a tangent to the larger circle surrounding Mecca (Figure 4d). Hindus usually surround the shrines to worship within Mandir, but during the festival they walk out and parade their gods’ statues in Scottish public space (Figure 4e). Buddha Hall of Kagyu Samye Ling Monastery is a north-south rectangular, ordinarily is divided into three rooms for shrine hall, scripture hall and multi-function room. However, in festival all partitions are removed and space are open competely. It’s sacred grades are reduced to three and are progressive (Figure 4f). The floor of the Sikh Gurdwara is covered with a red carpet on the white cloth in a symmetric way, but the pulpit located in the northwest corner, resulting in western audiovisual quality in higher than eastern (Figure 4g). In addition, when Scottish Inter-Faith Associations often organize joint worship and the Scriptural Reasoning activities in various religious buildings, it has applied the “Cross-Ring Model” layout several times (Figure 4h).

Figure 4 Comprehensive applications of the “Cross-Ring Model” in Scotland

3 Conclusion
Due to religious leaders, clergy and believers to worship surround different areas respectively, sacred space is judged several grades, so Scotland religious architecture landscape is classified into four types:
“three, one, five, nine”. Roman Catholic church is Cross-shaped “three” type, Presbyterian Chruch is recessive “three” type, and Jewish Synagogue is U-shaped “three” type. Mosque is “one” type points to the center, Hindu Mandir is centralized “five” type and Tibetan Buddhism temple is Mandala “five” type. Sikh Gurdwara is “five” type on the roof and Baha’i Center is “nine” type. However the “nine” should be regarded as a conceptual number under the Great Harmony in an ideal society. It tends to decentralize just like the space vision of the Scottish Inter-Faith Associations for weakening spatial hierarchical (Figure 5).

“Cross-Ring Model” has many attributes like centrality, equality and unlimited expansibility, making it to be a general spatial model to reread and reconstruction of religious architecture landscape. “Cross-Ring Model” is the handle that remould and transform the style of religious space, and also an innovation tool for reconstructing modern religious architecture. In future, the headquarter of the Scottish Inter-Faith Association will be inevitably to be a modern application of “Cross-Ring Model”.

Modern physics points out that all the particles are in a circular motion. “Surrounding” is the way they exist and get the centripetal force. Flexible applying “Cross-Ring Model” immigration able to rebuild ethnic religious architecture landscape quickly to obtain salvation, and smoothly integrate into Scottish diverse religious environment. Using “Cross-Ring Model” to recognize the common spatial nature of the various religions space, can trace back the wisdom sources that modern Scottish social can integrate the multi-religion, multi-ethnic and multi-cultural.

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