# Sacred space formation in the airport complexes spatial organization

**Liliia Gnatiuk**

Interior design department, National Aviation University, 1 Liubomyra Huzara ave., Kyiv 03058, Ukraine

E-mail: liliia.hnatiuk@npp.nau.edu.ua

**Abstract.** This publication provides an overview of the relevant considerations for the formation of the sacred nucleus in the spatial environment of airport complexes. Wealth of opportunities for the inclusion of sacred elements in the planning, design, construction, operation, maintenance, reconstruction and general organization of airports represents. This document includes only the main considerations used by the airports and which may need to be included in further design. The tasks solved by social services regardless of religion, belief or nationality are presented. The experience of modern airports in organizing a safe space where people can calm down, tell their story and gather their thoughts and just be quiet is summarized. The organization of multi-confessional, inter-confessional and non-confessional space in the general system of airport complexes is singled out. Elements of communicative design are used, which are used to recognize the sacred zone in the general space of airport complexes. An overview of emerging trends and planning problems is provided, and several regulatory models of airport space in relation to sustainable development goals are identified and discussed. There is a challenge to the expansion of airports, which has led to epic political battles in various contexts, and its implications for airport-led models of urban development. The review is guided by the concept of a sustainable airport region. The research materials contained in this document can also be used as references or as guidelines by which the project can strive to meet high standards while minimizing environmental impact.

## 1. Introduction

The architecture and spatial structure of the airport terminals is unique in its essence, as it is related to solving a wide range of issues designed to demonstrate the effective functioning of the airport complex, distribute passenger traffic, make passengers the most comfortable. The potential passenger is accompanied by many challenges when using a developed airport complex: I start from not always convenient way to travel from different parts of the city to communicative design and understanding of its location and trajectory. These issues range from urban design to systems engineering, affecting the user experience. Along with these problems, the spatial organization of the airport terminals accommodates various commercial, entertainment, trade and service facilities in addition to the main function of aviation [1]. Where the guiding parameters for determining spatial requirements depend on projected movements, time spent security restrictions and other socio-political influences. The airport terminals are now becoming a city in their own right, as it accommodates most of the amenities found in the city on a much smaller scale. The physical difficulties associated with airports are also growing, and airports are far from cities to facilitate these needs [2]. When all the above factors are combined,

they reach a complexity of almost urban scale.

The airport terminal is obliged to maintain a stable balance between all the above parameters, and violations in any of the above can lead to significant fluctuations in the operation of airport terminals. And that's why it's important for everyone to be able to find peace and balance among the fast streams. And this is what is called to create a sacred core, as separate prayer zones or rooms and a developed outside or interfaith centre, which will be organically integrated into the overall spatial structure of the airport complex.

Many resources are available for the overall design of airports and terminals, such as ICAO Annex 14, Airport Planning Guide (Doc 9184), Airport Service Guide (Doc 9137) 2 and Airport Design Guide (Doc 9157). However, there are relatively few sources specific to individual components of airport buildings. Much attention is paid to the development of certain styles of halls and gates for runways and taxiways. Other sources focus on building materials and systems, such as:

- Airport Cooperative Research Program (ACRP) Report 25, Airport Passenger Terminal Planning and Design, Volumes 1 and 2 [3];
- International Air Transport Association (IATA) Airport Development Reference Manual [4];
- ACRP Report 55, Passenger Level of Service and Spatial Planning for Airport Terminals [5]; and
- ACRP Report 10, Innovations for Airport Terminal Facilities [6].

According to the United States Department of Transportation, the Federal Aviation Administration's initial design stages for any existing or new airport come from a "general planning report." These reports consist of airport planning, environmental studies, runway orientation analysis, land use plans, activity forecasts, capacity analysis, facility assessments, and more. To achieve a balanced environment that can meet the challenges of different institutions, it is important that the positioning of each area is carefully prepared and designed to operate as expected throughout the operation of the airport complex [7].

Unfortunately, among these documents it is impossible to find recommendations on the formation of the sacred core within the airport complex. Airports have been relatively neglected in the scientific literature, despite their historical role in shaping the impression of the city - the capital and the state as a whole. Airports today are a kind of gateway, a visiting brief of the city, capital, and state. Their transformation into large urban mixed-use hubs, consolidating sub regional areas of aviation-oriented development, has highlighted their importance as agents and products of globalization. Terminals are a complex, dynamic and functional environment, with limited lines of view, changing lighting conditions, variable occupancy, where space is often occupied and cluttered and not always fully understood, especially by transit passengers [8].

## 2. Formatting sacred form of the airport complex at the level of figurative expression

With rapid technological change and ever-increasing infrastructural needs, the boundaries of urbanism and architecture are gradually fading, especially at airports. Global airport infrastructure is now seen as part of the many airports growing in such infrastructures as they seek to connect with each other on a common basis of technological progress. The interconnection of cities around the world is becoming increasingly important, as technology is now able to reduce geographical distances, and therefore we now need an infrastructure competent to accommodate all modern equipment [9]. Although the connection of one place to another is a consequence of the need to connect people from one place to another, our development plans are more about technology than people.

However, it is extremely important to figuratively solve the architectural and spatial structure of the airport, not only to the totality of volumes, but the volume that carries certain information about the place [10].

Thus, the airport in Yerevan was built (Figure 1). When approaching Yerevan, passengers sitting at the windows on the left, a few seconds before landing, can see from a bird's eye view near the temple,

and then, touching the concrete strip, flash past the airport, which stylistically recalls the shape of the ancient temple.

Indeed, in a ruined state, the church of Zvartnots is an open circle on the west side. In the same way, in the form of an open circle, into which lanes of roads flow, the plan of the terminal is constructed.

Zvartnots Church was built in 643-652 near Echmiadzin - the residence of Armenian Catholics, and was a unique artistic and constructive three-tiered system with a round plan. According to the Armenian historian Sebeos, the temple built under the Catholicos Nerses III, it was planned to move the residence from the Dvina to Vagarshapat (Figure 2).

Dwini and Hor-Virap are similar Zvartnots church in his native Taiko village of Ishkhan. The ceremony of consecration of the colossal temple was attended by the Byzantine Emperor Constantine II, who wished to build the same in Constantinople.

Zvartnots stood for three centuries, having survived more than one earthquake. However, during the Arab conquest remained in desolation. Its complex structures were gradually destroyed and, unable to withstand another strong earthquake due to the weakness of the pillars of the second tier, the temple collapsed in the X century (Figure 3).

At the same time in the capital of Armenia Ani Tsar Gagik and architect Trdat made an attempt to recreate Zvartnots. But this building suffered the same fate - the temple of Ani, named after his titar Gagikashen, also collapsed.

The temple, according to the reconstruction of T Toramanyan, was a round three-tiered dome structure (diameter of the lower tier 35.75 m). A cross is inscribed in the circle of the base, the three wings of which are formed in a semicircle by six columns, and the eastern wing - the apse - was a blank wall covered with mosaics and frescoes.

The altar apse has a high elevation, on one side there is a pulpit, in front there is a baptismal font. Behind the apse adjoined a square room, apparently a sacristy, from which climbed the stairs to the corridor that ran along the top of the first level.

At the same time, proposals were made (in particular, by Professor V Harutyunyan) to build a new one next to the ruins of the old Zvartnots, but with a reinforced concrete foundation - to actually recreate the life-size model of the temple - and thus give the opportunity to see the greatest creation of Armenian architectural genius.

A similar proposal is contained in the study of the famous scientist-culturologist Levon Abrahamyan, who substantiates the correctness of the construction of a new cathedral in Yerevan in the form of Zvartnots. L. Abrahamyan in his text refers to the opinion of the Catholicos Vazgen I, whose dream was to build a new cathedral in the form of the church Zvartnots, but on an enlarged scale.

This proposal, however, was not implemented [11].

But back in the mid-1970s, during the design of the new terminal, which began hosting international flights at Yerevan Airport, the architects gave its plans the shape of a circle, thus revealing the connection between the new modernist building and the 7th-century architectural monument. Thus Novy Zvartnots is an airport of the end of the 20th century.

The terminal got its name because it is located a short distance from the medieval temple Zvartnots - one of the main masterpieces of Armenian architecture.

Modern architectural form is a combination of modernity and tradition [12], high-tech modernist building - evidence of progress and development (Figure 4).

**Figure 1.** Yerevan Zvartnots International Airport Terminal.
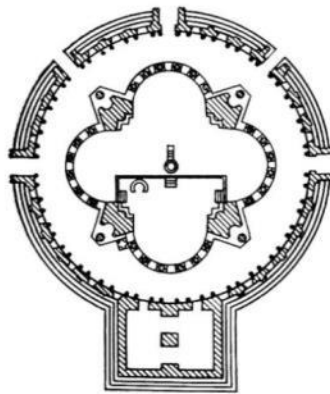https://novostimira.com/novosti_mira_42546.html



**Figure 2.** Plan of the Zvartnots temple, 643-652 (left). Statue
of King Gagik Bagratuni (right), who built the church of St.
Gregory the Illuminator in Ani around 1,000 AD on the model
of the Zvartnots temple.



**Figure 3.** Zvartnots Temple.
Aerial photography.



**Figure 4.** Zvartnots Airport
in Yerevan. Foundations,
structures of external radius.
Photo of the late 1970s.

**3. Interdependence of the formation of prayer zones and political decisions**

In the absence of understanding and support, as well as inadequate formation of flows, the concentration of believers can nullify all the work of all services of the airport complex [13].

Such an uprising was blamed on US President Donald Trump's decision not to allow Syrian refugees to enter indefinitely and to ban citizens of six other Muslim countries from entering the United States for three months [14]. In response, Muslims stranded at airports turned them into a mosque, where a call to prayer is raised and prayers are said. According to Gulf Online monitoring for local websites, the American newspaper Michigan said that Muslims were stuck in American airports in Detroit, converted the halls in the chapel, raised a call to prayer, and then performed a prayer in front of travellers, which for a long time stopped the work of the relevant airport services, organized a certain collapse (Figures 5-7).

Muslims stranded at Detroit airport prayed in the corridors to protest the decision, saying a large number of non-Muslim travellers took part in the protest, thus supporting the protesters [15]. The protest was really great because it was done peacefully. The position of everyone around the prayers was one of the most exciting scenes because they all felt like they were on the right side.



**Figure 5.** Detroit International Airport. Prayer in the baggage claim hall. https://alkhaleejonline.net/



**Figure 6.** Detroit International Airport. Prayer in the waiting room. https://alkhaleejonline.net/



**Figure 7.** Detroit International Airport. Personal prayer in the waiting room. https://alkhaleejonline.net/

## 4. Specifics of arrangement of prayer zones for different denominations

It is extremely important that, regardless of the beliefs, beliefs, denominations of the passengers, everyone be able to find a prayer area and a multi-denominational team of chaplains available to listen to, counsel or serve certain religious services.

Such zones are increasingly being created at international airports. Thus, in the terminals of Paris-Charles de Gaulle and Paris-Orly, you can find areas for meditation for different denominations, which are distributed in space and time [16]. There is also a Catholic Mass (Terminals 1, 2E, and 2 F), a Protestant service, a synagogue, and a Muslim prayer area. To prevent the accumulation of a large number of prayer books, these areas can be found in virtually all terminals of airport complexes (terminals 1, 2E, and 2 F). It is also important to arrange wet areas for ritual ablutions, as well as a dressing area, which would serve as a certain vestibule and separate the noisy waiting rooms from the hall of concentration and prayer [17].

The prayer room of Taoyuan Airport is divided into zones for women and men by a light screen, which will still allow you to be alone and focus on prayer practice (Figure 8).

Frankfurt Airport also allocates separate areas for Muslims, Christians and Jews, which are equipped with a symbol of the relevant religious affiliation (Figures 9-10).



**Figure 8.** Prayer room in Taoyuan Airport.
https://www.google.com/imgres?imgurl=https://lookaside.fbsbx.com/lookaside/crawler/media



**Figure 9.** Frankfurt Airport Synagogue.



**Figure 10.** Frankfurt Airport Christian Chapel.

## 5. Visual communication as a specific arrangement of prayer areas

Visual communication is an extremely important component of the interior design of airport complexes [18]. When traveling through the airport, it is important to follow all the instructions on the signs. But it is also extremely important to have a clear graphic design of the pointers [19].

Appropriate graphic markings should be both on the scheme of the plan and directly in the space of the airport complex (Figure 11). The details should not have separate signatures, or have signatures in the main languages of the world (Figures 14-5), but should be clear to foreigners and not cause conflicts of understanding (Figures 12-13). It is located near the B3 exit in Terminal 1 of Taoyuan International Airport. When you come here, you will see 3 religious signs, but inside there are 3 separate rooms. For Muslims, of course, it is a sign of a star and a crescent, for Christians - a cross, Buddhism - a solar sign. Understanding by each relevant religion and sect is important [20].

**Figure 11.** London airport Gatwick chapel and prayer room.
https://www.gatwickairport.com/at-the-airport/passenger-services/chapel-prayer-room/



**Figure 12.** Prayer room in Taoyuan Airport.
https://www.google.com/imgres?imgurl



**Figure 13.** prayer room in Taoyuan Airport.
https://www.google.com/imgres?imgurl



**Figure 14.** New Chitose Airport.



**Figure 15.** Tokyo Haneda Airport.



**Figure 16.** Hokkaido New Chitose Airport.
http://prcand.me/posts/2011/12/19/prayer-room-hk-airport.html



**Figure 17.** Naha airport.
https://www.naha-airport.co.jp/en/terminal/international/

**Conclusion**

Problems with tickets, passports or visas are among the reasons why travellers can turn to church social services. Assistance for travellers is available if the passenger is experiencing social difficulties, needs guidance, has problems with a passport or visa, or you have to return to your country regardless of your religion or nationality (financial emergency as a result of theft, purchase of a new ticket or booking fees, etc.). People are usually depressed in such situations, feel lost or need support due to an unexpected situation.

Therefore, it is important to create a safe space for social services so that people can calm down, tell their stories and gather their thoughts. Of course, it can be a sacred core, a chapel, a room for prayer. Support should be tailored to individual needs. The point is to help people help themselves. And here it is extremely important to create a space of multi-confessional, inter-confessional or non-confessional. As well as appropriate communication design in a multi-threaded environment.

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