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## Promoting Reading through the Integration of Library Architectural Space with Natural and Humanistic Environments: A Case Study of IFLA and Best Practices in American Library Design (Postprint)

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### Abstract

[Purpose/Significance] The integration of library architectural space with the natural and humanistic environment can effectively promote reading. Research on the natural and humanistic environment of libraries nominated for or awarded the IFLA/Systematic Public Library of the Year Award and those receiving the American AIA/ALA Library Building Awards can provide references and lessons for Chinese libraries in incorporating natural and humanistic elements into architectural spaces during old library expansion or new library construction. [Method/Process] This study employs web survey and case analysis methods to conduct inductive analysis of selected award-winning libraries with exemplary natural and humanistic environment construction in both interior and exterior spaces, summarizing relevant practical experience from these libraries' spatial development. [Result/Conclusion] Promoting the integrated development of these two aspects requires innovative design concepts and stronger theoretical support, while also guiding libraries to fully utilize natural landscapes, further explore regional culture, and optimally combine spatial factors that facilitate reading.

## Full Text

# Research on the Integration of Library Architectural Space with Natural and Humanistic Environments to Promote Reading: Taking IFLA and American Library Design Best Practices as Examples

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### Abstract:

[**Purpose/Significance**] The integration of library architectural space with natural and humanistic environments can effectively promote reading. Studying the natural and humanistic environments of libraries nominated for or awarded the “IFLA/Systematic Public Library of the Year Award” and those that have received the “AIA/ALA Library Building Awards” in the United States can provide references for Chinese libraries in reflecting natural and humanistic environments in their architectural spaces during old library expansion or new library construction. [**Method/Process**] This paper employs network survey and case analysis methods to summarize and analyze selected award-winning libraries with exemplary natural and humanistic environments in their interior and exterior spaces, distilling relevant practical experience from these library spatial constructions. [**Result/Conclusion**] Promoting the integrated development of these two elements requires innovative design concepts and stronger theoretical support, while guiding libraries to make full use of natural landscapes, further explore regional culture, and optimally combine spatial factors that promote reading.

**Keywords:** library; architectural space; natural environment; humanistic environment

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It has become common knowledge that the environmental space composed of library buildings should integrate with adjacent natural environments and social humanistic environments, a principle that has gained attention in the international library community. In 2014, the International Federation of Library Associations and Institutions (IFLA) established the “IFLA/Systematic Public Library of the Year Award,” whose first evaluation criterion emphasizes the interaction between library architecture and the surrounding environment and local culture, including how the building reflects or considers the local culture of the community and coordinates with the surrounding geographical environment [1]. The American “AIA/ALA Library Building Awards” aims to recognize excellence in library architectural design and planning, with award-winning libraries consistently emphasizing perfect integration with their surroundings. In 2020,

the jury particularly highlighted outstanding performance in site selection, environment, and historical atmosphere [2]. Both old library expansion and new library construction should make full use of the surrounding natural environment. China's "Code for Design of Library Buildings," officially implemented in 2016, clearly states that library architectural design should fully utilize natural conditions and coordinate with the environment. As Guo Xinping, Director of Taiyuan Library, emphasized at the 2019 "Library Space Construction and Reading Promotion Services" forum: "Reading spaces should have internal-external correspondence, unified tone, and cultural continuity" [3]. Similarly, at the 2017 "Library Space Reengineering and Functional Restructuring Transformation" seminar, Wu Jianzhong elaborated on the five principles proposed for the construction of Shanghai Library East, one of which was to focus on the ecological environment, meaning that library design must consider not only the library building itself but also its coordination with the surrounding environment [4].

Domestic research has long examined the impact of natural environments in library spaces on reading. As early as 1995, studies mentioned that natural lighting and ventilation better meet people's desire for a natural reading environment [5]. Library architectural spaces integrated with the surrounding natural environment make readers feel as if they are reading in nature. Some scholars have proposed from the perspective of architectural ecology that libraries should become organic entities with their surroundings by applying basic theories and various technical means according to local natural environments [6-7]. Others have discussed how contact with natural environments inside and outside library buildings helps reading from the perspective of respecting nature and promoting harmony between humans and nature [8], while some have argued from an aesthetic perspective that good natural environments can create favorable atmospheres that promote reading [9].

In terms of humanistic environments, as libraries serve as important positions for cultural dissemination, increasing research focuses on creating humanistic atmospheres in their internal and external environments. The humanistic environment of a library represents the integration of objective conditions and forces necessary for library activities, organized according to the needs of human information exchange, forming a cultural and educational environment. This includes both material and humanistic spiritual environments, with the material cultural environment related to library space being the primary focus, such as library site selection, shape, layout, and interior decoration [10]. Libraries' material culture plays a positive role in attracting readers, and a strong cultural atmosphere motivates readers to explore and acquire knowledge. Research has discussed the importance of library humanistic environment construction from reader [11], library [12-14], or societal perspectives [15], while other studies have shown from aesthetic [16] or environmental perspectives [17] that the humanistic atmosphere created by libraries stimulates readers' desire for knowledge. However, few Chinese scholars have simultaneously analyzed the characteristics of multiple libraries' spaces reflecting natural and humanistic environments, and

the selected libraries in existing research were mostly built earlier [18-19].

Previous research on the integration of library architectural space with natural and humanistic environments mainly analyzed the overall environment of a single library, involving natural or humanistic environmental elements in space or analyzing selected cases from one perspective. Building on domestic and international research, this paper uses award-winning libraries from the past five years nominated for the “IFLA/Systematic Public Library of the Year Award” and winners of the “AIA/ALA Library Building Awards” as data sources. It selects multiple libraries that excel in coordinating library space with the surrounding environment or integrating with humanistic environments, examining them from multiple perspectives including architectural ecology, aesthetics, and psychology, and employing network survey and case analysis methods to provide explanations, reflections, and summaries. The aim is to offer references for Chinese libraries in integrating architectural space with natural and humanistic environments during old library expansion or new library construction, thereby breaking through traditional research and expanding the research dimensions of library architectural space elements that promote reading.

## 2. Cases of Library Architectural Space Integrating with Natural Environment

Research shows that beautiful natural environments, such as green spaces (grasslands, forests, or parks), blue spaces (visible freshwater or saltwater bodies), and coastal areas, increasingly demonstrate positive effects on mental health [20]. Positive psychology helps readers better engage in learning and work. China’s “Library Architectural Design Code” explicitly requires that “the green space rate within the library site should meet local planning department requirements and should not be less than 30%.” Libraries increasingly recognize the great benefits of natural environments for readers and pay attention to integrating natural elements into library spaces during old library expansion or new library construction. This study selected three libraries nominated for or awarded the 2019 “IFLA/Systematic Public Library of the Year Award” (see Table 1 ) and five libraries that won the “AIA/ALA Library Building Awards” within the past five years (see Table 2 ), analyzing their spatial design practices for integrating with natural environments.

### 2.1 Creating Surrounding Environments that Facilitate Reading Readiness

Existing practice demonstrates that the nurturing characteristics of natural environments can achieve subtle educational effects, fostering aesthetic awareness and spiritual cultivation when people are in the environment, which undoubtedly promotes reading [21]. For libraries, appropriate external space environments can not only attract more readers but also help them slow their pace through a series of transitional landscapes before entering the library, relaxing their

minds in the reading atmosphere created by the library to better enter a reading state. Most libraries winning the “AIA/ALA Library Building Awards” are directly located beside beautiful grasslands, forests, or rivers and lakes, while the “IFLA/Systematic Public Library of the Year Award” nominees or winners are mostly large urban public libraries that, considering traffic flow and transportation issues, are mostly located in prosperous city centers. Such libraries often create pleasant external environments through artificial natural landscapes, such as the water features and lawns outside Australia’s Green Square Library, making the library’s cultural 殿堂 (palace of culture) and natural environment complement each other.

## 2.2 Providing Comfortable Natural Light and Expansive Views

Glass curtain wall design not only connects internal and external library spaces, allowing readers to enjoy beautiful external scenery while reading inside with a pleasant mood, but also provides comfortable natural light environments for reading. Research shows that spatial light environment design is one of the three essential elements of vision [22], and “in reading rooms, the most important issue is lighting” [23]. Dim light not only hinders reading but may cause myopia and other problems from long-term reading in such environments, while overly bright light can also damage eyes. The aforementioned libraries all pay great attention to lighting issues in their designs, striving to introduce the most comfortable natural light for readers. Some libraries use skylights and large windows to allow sunlight to penetrate the entire library, such as Varina Area Library. Others moderately tilt the building to introduce more natural light from better angles, such as Louisville Free Public Library. Some libraries directly design “sky gardens” where readers can choose suitable positions to read directly in sunlight, such as Tūranga - Christchurch Central Library. Meanwhile, glass curtain wall design can greatly expand readers’ horizons, making them feel as if they are in a larger reading space and reducing feelings of privacy invasion without small compartments, allowing them to more joyfully immerse themselves in their reading world.

## 2.3 Placing Indoor Plants to Alleviate Reading Fatigue

Compared to artificial environments, people often prefer natural environments. Natural landscapes or artificial scenery with green plants or water flow have stronger appeal, and even nature-related colors and silhouettes can evoke connections with natural landscapes, making moods more pleasant. Lively green plants themselves can effectively eliminate human fatigue and relieve or restore uncomfortable physical conditions such as visual fatigue [24]. Meanwhile, a certain area of green plants inside libraries can absorb carbon dioxide from the air through photosynthesis and release large amounts of oxygen, purifying the reading environment and refreshing readers’ spirits with fresh air, enabling them to better engage in reading. For example, in Helsinki Central Library’s “Book Heaven,” a small tree is placed between every few bookshelves to remove

harmful substances like formaldehyde, purify the air, and provide a more aesthetically pleasing reading environment. Libraries such as Australia's Green Square Library and Eastham Public Library directly set up "reading gardens" inside, where readers can rest after long periods of reading and studying, relieving discomfort in the brain, vision, and body.

### 3. Cases of Library Architectural Space Integrating with Humanistic Environment

As another form of cultural expression, library architecture inherits history and culture in a solidified form, witnessing the vicissitudes of human history, fully demonstrating local characteristics and rich cultural connotations, and serving as the soul and symbol of regional characteristic culture [25]. When library architecture itself can become a cultural identifier, it naturally attracts readers to appreciate the cultural and artistic beauty of the architectural space, experience cultural 熏陶 (edification), and then begin reading or enjoying other library services. As a landmark cultural building in a region, a library represents the region's cultural image, embodies the area's civilization, collects its history and culture, and integrates regional culture both materially and spiritually [26]. This study selected three libraries nominated for or awarded the "IFLA/Systematic Public Library of the Year Award" in 2018 and 2019, analyzing their spatial design practices for integrating with humanistic environments, as shown in Table 3 .

#### 3.1 Emphasizing Iconic External Design that Integrates Regional Culture

As a region's cultural center, a library's external design largely reflects regional culture and serves as a tangible material carrier of intangible regional culture [27]. External design, as people's first impression of a library, should have strong identifiability to attract readers to "recharge" inside. Meanwhile, as a landmark building in a region, a library should inherit the region's unique culture. Therefore, the design should be endowed with rich cultural connotations from the beginning, utilizing more local cultural elements to make it part of the library's culture, turning the library into a calling card for the city that remains attractive to generations of readers and never becomes outdated. For example, Tūranga - Christchurch Central Library's striking "golden veil" façade, inspired by the rolling hills visible from the library's upper levels and the slender, thick New Zealand flax leaves that are important natural elements in local traditional culture, creates a particularly dazzling visual effect at sunset. This has become a beautiful city landmark that fills local readers with pride as they explore the library's interior.

### 3.2 Emphasizing Library Taste in Interior Decoration, Highlighting Ethnic Characteristics and Contemporary Features

Library interior space is where readers spend considerable time, and consequently has a deeper impact on them. Therefore, to maintain lasting appeal to readers, libraries must focus not only on external form but also on interior decoration. Library decorative art design is closely related to the library's educational service attributes and determines the library's taste. Appropriate interior decorative design can create an atmosphere conducive to the 发挥 (exertion) of artistic education functions, allowing the educated to be subtly immersed in reading and achieve comprehensive development [28]. School 7 Library's carpets printed with black-and-white old photos, Tūranga's statues, murals, and paintings, and LocHal Library's train seat decorations all create a strong cultural atmosphere that enhances the library's historical and cultural connotations. This not only highlights the library's cultural taste but also provides readers with spatial visual artistic enjoyment, making them reluctant to leave and attracting them to return to this humanistic 殿堂 (palace) to read books and enjoy other services, thereby acquiring knowledge to improve their own literacy.

## 4. Reflections and Recommendations

As carriers of cultural inheritance, integrating culture into library architectural spaces and displaying cultural contexts can give libraries more lasting appeal.

### 4.1 Emphasizing Innovative Concepts for Integrated Natural and Humanistic Environment Development

Design concepts are the dominant ideas established by designers during the conceptualization of spatial works, endowing them with cultural connotations and stylistic features. Good design concepts are crucial as they represent the essence of design and can make works personalized, professional, and distinctive. For example, during the initial design phase of the 2019 IFLA-nominated Tūranga - Christchurch Central Library, architects established close cooperation with Matapopore Charitable Trust, an organization dedicated to helping local Ngāi Tahu people protect and inherit their traditional culture. As a result, the final Christchurch New Central Library embodies the rich traditional culture of the Ngāi Tahu people in everything from building materials to human flow lines, creating a strong local humanistic atmosphere [29].

Outdoor environments are extensions of libraries and necessary passages for readers entering the library. From perspectives of natural aesthetics and green energy conservation, library design should maximize the use of existing natural landscapes, considering locations near parks, along rivers and lakes, or on the edges of wetlands during site selection, making the surrounding natural environment and library an organic whole. On this basis, artificially constructed landscapes can be added, incorporating artificial lakes, lawns, flower beds, and other features around the library to reduce traces of urban noise. For instance,

the 2019 AIA/ALA award-winning Louisville Free Public Library is located in a forest, with the design team attaching great importance to sustainable development, thus maximizing the protection and utilization of the forest [30].

In China, the Library Society of China jointly held a unique German landscape architecture exhibition with the Goethe-Institut Beijing and five German architectural firms in various Chinese libraries in 2005, aiming to introduce German contemporary architectural designers' landscape architectural styles and design concepts to Chinese audiences and open a new window for Chinese urban architectural design concepts [31]. In recent years, newly built domestic libraries have gradually been located in or adjacent to parks, such as the Zhongshan Memorial Library built in 2019, which adopted the design concept of "library in a park" from the initial design phase, directly integrating into the existing landscape. Similarly, Ningbo Library built in 2018 was directly located above a wetland, making full use of natural beauty.

Environmental psychology considers green the most calming color, giving people a sense of comfort. When green in natural landscapes reaches 25% of human vision, it can optimize mental activity [32], a state of mind that undoubtedly enables better reading. Designers should establish the concept of integrated library space and natural-humanistic environment development from the beginning of design, conducting on-site investigations of the library's location environment and making full use of its surrounding natural and humanistic environments.

#### 4.2 Deeply Exploring Local Culture with Cultural Connotations

Since libraries are cultural buildings, an important design issue is reflecting national or local cultural characteristics [28]. In library space planning and reconstruction, libraries should combine regional characteristics and features to build regionally distinctive library spaces. Only in this way can they form their unique style against a common background and remain relevant even after ten years or longer. From the perspective of environmental psychology, readers' aesthetic appreciation of library environments includes two levels: (1) overall perception of formal aesthetic factors, including initial discrimination and basic experience of visual factors such as light and color in library space environments, which is superficial; and (2) deeper understanding of certain artistic conceptions and atmospheres felt from the formal beauty of the library space environment itself [33]. The application of these two levels in library space design should enable libraries to present a certain environmental atmosphere that can reflect local culture or community customs.

School 7 Library fully preserves the original school's personality and atmosphere, giving citizens a warm feeling that attracts many residents to re-enter this place full of memories to read, helping the city regain vitality. Library interior decoration should also reflect and combine its own unique community culture [34]. Libraries can deeply explore the cultural characteristics and connotations of their regions and display them on walls, reading spaces, corridors, etc., through

murals, sculptures, reliefs, cultural signs, and other forms. This not only beautifies the library's reading environment and complements the space but also better promotes local culture, inherits national history, enhances the library's cultural atmosphere and historical heritage, and stimulates strong 求知欲 (desire for knowledge) in readers while they enjoy beauty and experience cultural 熏陶 (edification). Through broader reading and learning, readers can improve their cultural literacy. Tūranga - Christchurch Central Library fully applies the culture of the Ngāi Tahu tribe in various artworks such as murals and bronze statues, creating an excellent reading atmosphere while decorating the library.

### 4.3 Rationally Configuring Spatial Factors to Create Reading-Promoting Environments

For large cultural buildings like libraries, without systematic analysis of lighting, color, interior decoration, and other issues before design, it is difficult to truly implement reader-centered and technology-driven new library space construction concepts, provide better reading environments for readers, and promote reading. Meanwhile, from the perspective of design aesthetics, local beauty should be subordinate to overall beauty. Local beauty placed in an uncoordinated environment will only appear 突兀 (jarring), while overall beauty gives people aesthetic enjoyment and brings psychological pleasure [18]. Therefore, while libraries should pay attention to natural and humanistic environment construction, they must also have holistic awareness, considering all spatial factors that promote reading and providing the most comfortable space possible for readers.

Some libraries, in their eagerness to showcase their uniqueness, blindly apply foreign architectural styles or elements that do not match their region, regardless of the city's overall appearance or the library's surrounding environment, ultimately losing overall beauty by overemphasizing certain design elements. However, more and more libraries are beginning to take action to avoid such situations. While introducing natural light indoors to provide better reading light for readers, many libraries also pay attention to the discomfort caused by overly bright sunlight. For example, America's Pico Branch Library avoids direct sunlight on glass and reflected light that causes reader discomfort through the design of deep overhangs and canopies while introducing natural light. Different libraries adopt different approaches, but the ultimate goal is to provide better light environments for readers.

Many newly built libraries in China are also paying increasing attention to overall coordination. For instance, the Jining Library built in 2019 uses adjustable louvers to allow readers to enjoy optimal reading environments, the Chuzhou Library uses a combination of aluminum panels and glass on its exterior facade to find the optimal combination that presents a colorful appearance on urban roads while better controlling reading light for readers, and Suzhou's Second Library optimizes the use of natural light in the building by setting the rotation angle of glass. Meanwhile, library glass window design can connect internal and

external spaces, blur boundaries between them, bring outdoor scenery indoors, and expand readers' reading horizons. Libraries should conduct systematic and comprehensive analysis and consideration of all spatial elements involved before design and optimally combine these elements to provide better reading environments for readers.

Factors in library spaces that promote reading include various natural and humanistic elements such as internal and external lighting, color, signage, furniture design and placement, and artistic decoration. These can be explained and demonstrated from multiple disciplines including behavioral psychology, environmental behavior science, and cognitive neuroscience. The principle is that reading-conducive environmental atmospheres inside and outside library spaces can act on readers' psychology and brain through spatial perception media such as vision and hearing, generating reading motivation that drives their reading behavior, thereby achieving the purpose of space promoting reading [35]. On this basis, libraries should continuously innovate in design concepts to create better reading space environments for readers that meet the requirements of the new era. Thus, while continuously improving hardware facilities, libraries should focus on connotation construction, providing readers with better reading spaces that integrate natural and humanistic environments, making libraries spiritual homes for all readers.

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