

# Monastic Enclosures and Cloisters. Understanding the Transformation from Historical Mystical Gardens to Renewed Urban Open Spaces for the Community

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## Abstract

Among the numerous historic open spaces, the green and paved areas of cloisters and their adjoining courtyards are often overlooked. In recent years, efforts have focused on preserving built heritage, while these open spaces have been neglected, in favour of larger monumental complexes. However, climate change has heightened the need for conservation, increasing the demand for the restoration and management of these areas, as they provide significant microclimate benefits.

This contribution focuses on the historical role of cloister gardens as integral components of monastic life and examines their influence on the typology of monasteries. These open and transitional spaces can be adapted to meet modern needs while maximizing their intrinsic features of protection, thermal comfort, and intimacy. By analysing the morpho-typological characteristics of a diverse range of Italian urban cloisters, this study demonstrates the advantages of integrating historical preservation with contemporary reuse and microclimate assessments to revitalize urban open spaces, thereby addressing the challenges posed by a changing climate.

*Tra i numerosi spazi aperti storici che caratterizzano le nostre città, le aree verdi e pavimentate dei chiostri sono spesso sottovalutate. Recentemente, l'urgenza di recuperare e preservare il patrimonio storico ha posto l'attenzione ai monasteri e conventi trascurando, invece, gli spazi aperti. Al contrario, il cambiamento climatico ha amplificato la necessità di conservare e utilizzare in modo differente questi spazi aperti, visti anche i notevoli benefici microclimatici ad essi connessi. Questo contributo analizza il ruolo storico del chiostro come parte integrante della vita monastica, osservando come influenzino la tipologia del monastero stesso. Gli spazi dei chiostri possono essere trasformati per soddisfare le esigenze moderne, valorizzando le caratteristiche intrinseche di protezione, comfort termico e intimità. Analizzando le caratteristiche morfo-tipologiche di una vasta selezione di chiostri urbani in Italia, questo contributo si sofferma sui vantaggi dell'integrazione delle istanze conservative, di riuso e di valorizzazione microclimatica, per rispondere efficacemente alle sfide poste dal cambiamento climatico.*

## Keywords

Monastic complex, Cloister garden, Open spaces, Resilience, Restoration.  
*Complessi monastici, Giardini dei chiostri, Spazi aperti, Resilienza, Recupero.*

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### **Cloister Gardens within Monastic Complexes: A Compendium of Urban Life**

Enhancing and preserving the sporadic green and permeable open spaces in historic, densely built cities is an issue of urgent relevance today. Intervening in historic urban areas presents a complex challenge in terms of recovering both ancient and contemporary functions (Sesana et al., 2021), particularly in light of the awareness of how climate change can impact the role of cultural heritage as a whole (Rajabi, 2024). Urban open spaces have played a significant role in the cultural, political, and economic life of societies from early civilizations to the present day.

An urban open space can be defined as any ground space within an urban environment, regardless of public accessibility, that is not covered by an architectural structure. In the diverse array of open spaces, permeable or green areas are less common than squares, porticoes, and courtyards (Stanley et al., 2012). However, they are widely recognized as effective means of mitigating urban heat islands (Ara Begum et al., 2022) and providing environmental and functional benefits for both users and nearby property owners.

Among the numerous historical open spaces, urban cloisters – integral components of extensive monastic complexes found throughout the Mediterranean region – are often overlooked. In recent years, there has been a growing focus on the restoration of con-

vents, monasteries, and their cloisters (Carranante and Linguanti, 2022), leading to various types of conservation, restoration, and re-functionalization projects. Most initiatives concerning existing monasteries and other religious complexes have transformed these spaces into public-private functions, distinguishing their current uses from their original religious purposes.

As a recent study underscore (Giandebiaggi et al., 2023), the influence of Christianity and the Church on the construction and organization of cities in Europe is quite evident. Jacques Le Goff defined our city as “the episcopal city” (Le Goff, 2011). The medieval city organizes its urban structure around numerous churches and urban monasteries.

The historical image of the cloister is an integral part of the urban landscape, evoking a serene and introspective open space reminiscent of a protected garden (*hortus conclusus*). This stands in stark contrast to the temptations of the material city. The cloister served as the focal point of the religious complex, featuring a centrally planned open space encircled by a loggia on one or more levels. The central area was primarily designated as green space, incorporating Italian gardens, vegetable gardens, and areas for cultivating plants and fruit trees, enhanced with decorative elements such as wells, benches, and other features.

The research the Department of Engineering and Architecture at the University of Parma have been promoting for two years has thoroughly analysed approximately one hundred urban cloisters (Gheri and Matoti, 2024). These cloisters have recently been repurposed for commercial activities, including restaurants, museums, and exhibitions, and have also been transformed into venues for hospitality and education.

Considering current needs, the availability of extensive green spaces within the historic city, akin to cloisters in a monastic enclosure, presents an invaluable opportunity to mitigate the effects of climate change, control the urban heat island effect, and enhance cultural heritage itself.

### **From mystical garden to a renewed urban open space for the community**

The cloister space is intrinsically linked to its monastic function, serving as a sacred garden for monks and friars of various orders (Oursel et al., 1985). It is a quintessential '*locus amoenus*', a serene garden where they can cultivate fruits and aromatic herbs, find space to walk, pray, and gather for moments of communal life. Furthermore, it symbolizes a biblical archetype of the earthly paradise—the garden of creation—where the life of humanity and all creation originates.

The cloister serves as an organizing element around which the daily and annual rhythms of the entire monastic complex unfold and are defined (Masullo et al., 2020). Its distinctive features allow it to be easily differentiated from the courtyard. While both share functional elements such as perimeter porticoes and a central space, which may be variably paved or landscaped, the cloister is characterized by its private nature, in contrast to the public atmosphere of the palace courtyard.

The cloister serves as both a transitional space and a venue for various activities, characterized by its

role as an open yet sheltered area that accommodates the public and communal aspects of monastic life. The compactness and seclusion of the monastery, particularly exemplified by the cloister, primarily aim to provide its inhabitants protection from human threats and, more generally, from the encroachments of the outside world. In the daily life of the monastery, the enclosed yet contemplative space of the cloister fosters a spiritual and symbolic atmosphere. Within its walls, a multitude of activities occurs, encompassing not only religious practices but also study and research, production and cultivation, as well as prayer and singing.

All these activities are safeguarded by the monastery's enclosure, shielding them from the secular demands of urban life (De Rubeis and Marazzi, 2004).

The reserved and introverted nature of the monastic open space is further emphasized by the wide variety of activities that take place within the enclosures. The elements of protection, meditation, and prostration distinctly characterize the urban cloister, distinguishing it from the isolated cloisters typical of more coenobitic orders, such as the Carthusians and the Camaldolese, who situate their monasteries far from urban centres in secluded locations, removed from the distractions of the world (Ravesi, 2023).

The religious rule is fully expressed in the compositional order exemplified by the plan of San Gallo<sup>1</sup>, every function is organized around the porticoes of the cloister, reminiscent of the peristyles found in Roman houses. The sacred atmosphere of the portico is enhanced by the shifting light that floods the covered space, creating a transitional environment that is shielded from the elements and the harshness of direct sunlight.

The openness to the sky and the surrounding rooms of the convent, combined with its closed and introverted nature in relation to the chaotic and corrupt city, creates an innovative type of space. This unique

environment offers contemporary cities an opportunity to safeguard and preserve their distinctive characteristics while restoring numerous benefits that are often lacking in other open spaces (Ouellette, 2005).

Although the cloister, a central element of monasteries and abbeys, was originally designed with features that promote transcendence, it can now adopt a new social and physical role, considering contemporary cultural transformations (Maffei, 2017). This revival of the cloister's enclosing character, for which it was conceived and developed over centuries throughout Europe, contrasts the dynamism of modern life with the slow and monotonous rhythms of the past (Duarte Rodriguez, 2015). By reintroducing a public and social function to the open space of the urban cloister, we can, in a sense, restore the social role and cultural engagement that have historically defined monastic life.

### **The microclimatic benefits of cloister gardens**

Outdoor open areas, such as courtyards and cloisters, have historically been utilized and designed as integral building elements. In addition to their roles in distribution and protection, these spaces exemplify effective bioclimatic architecture, serving as passive devices to enhance the energy efficiency of buildings. They can help regulate outdoor temperatures, decrease energy demand, and minimize the reliance on indoor air conditioning systems (Zamani, 2018).

Despite their prevalence in the Mediterranean region for both religious and historical reasons, the potential of cloisters has received limited attention. Therefore, assessing and enhancing the recursive, typological, morphological, and bioclimatic characteristics of these open spaces can facilitate their recovery and revitalization, allowing them to be reintegrated into urban environments as adaptive solutions in response to climate change.

Numerous studies have demonstrated that open spaces can significantly reduce energy consumption and improve the microclimate of surrounding buildings (Salata et al., 2016). Various micro-environmental and morphological factors significantly influence the thermal behaviour of open spaces between buildings. These factors include geometry, building proportions, orientation, characteristics of openings, the presence of adjacent structures, and the choice of finishing materials. Furthermore, architectural elements such as sunshades, porticoes, loggias, and courtyards, along with the presence of vegetation and water features, can alter the overall microclimate within these open spaces. This, in turn, affects indoor and outdoor temperatures, solar radiation, and natural ventilation.

One of the most important aspects to consider is the variation in shading that occurs throughout the day and the seasonal changes affecting both open and covered spaces.

Recent studies have examined the role of courtyards and open spaces in mitigating the effects of overheating in a changing climate (Naboni et al., 2023). In the case of vegetation, such as lawns or borders, the evapotranspiration of plant masses further contributes to enhancing thermal comfort in open central areas.

The courtyard during the hot season reduces sensible heat, thereby lowering the perceived air temperature. Additionally, trees and tall plants help to mitigate both direct and reflected sunlight.

During daylight hours, the enclosed architectural configuration acts as a thermal trap, improving heat retention. The impermeable surfaces start to release the energy accumulated overnight, taking into account factors such as capacity and thermal conductivity.

Nevertheless, the cooling process in the courtyard is relatively slow, primarily due to the lack of effective heat dissipation through convection, which is a re-



**Fig. 1** - A selection of some of the 110 urban cloisters and their new urban and civic functions. Clockwise from above: Cloister of San Paolo in Parma; Grand Cloister of San Pietro in Reggio Emilia; Cloister of Bressanone in Bolzano; Cloister of Pienza; the Cloister of San Nicolò l'Arena in Catania; the Cloister of the Monastery of Santa Caterina d'Alessandria in Catania. (Photo B. Gherri, 2024).

sult of the nearly complete absence of ventilation between the enclosed space of the courtyard and the surrounding urban environment.

### The new functions of historic cloisters: a critical analysis

Therefore, this research examines the historical, testimonial, and environmental aspects of cloisters, as well as the broader open spaces within monastic complexes. It focuses on identifying urban cloisters located throughout the Italian peninsula that have recently been restored and repurposed for various functions, thereby transcending their original religious purposes.

The ongoing study aims to identify the resilience potential of monastic structures in terms of accommodating new functions while preserving their historical significance. Additionally, it seeks to understand their role in mitigating the effects of climate change and overheating-related phenomena in urban areas. So far, the study has collected data from 110 case studies, which are distributed throughout dense and

compact urban environments. A brief selection is presented in Fig. 1.

The analysis gathered information on the geometric characteristics of the cloisters, including the number of orders, the porticoed sides, the architectural finishes, the current functions, the year of establishment of the monastery and cloister, and the year in which the new function was established or the renovation work commenced.

This data provides a comprehensive overview that is essential for understanding the potential and challenges associated with the new functions emerging within cloisters and their monastic complexes, observing the original features of the cloisters before the recovery project and after the renovation (fig. 2). The first assessment pertains to the distribution of cloister climatic zones according to the Köppen-Geiger climate classification (Köppen, 1936).

As illustrated in Fig. 3, most of the Italian cloisters fall within the temperate climate zone. Among the cloisters assessed, 52% of those underwent revitalization, retrofit, or repurposing projects are classi-



**Fig. 2** - a) Convent of the Benedictine Nuns of Santa Maria della Neve, Piacenza, before (above) and after the renovation project (below). On the right side (b) the Cloister of San Paolo, Parma, before (on the left) and after the renovation project (on the right) (Photo B. Gherri, 2024).

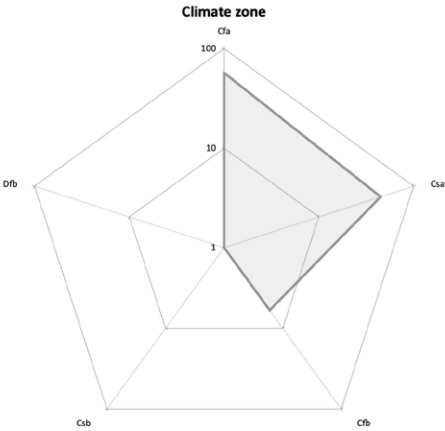
fied as Cfa, which corresponds to a humid subtropical climate. Additionally, 40% are categorized as Csa, representing a hot-summer Mediterranean climate; 5% are classified as Cfb, indicating a temperate oceanic climate; 1% is classified as Csb, denoting a warm-summer Mediterranean climate; and 1% is classified as Dfb, representing a warm-summer humid continental climate, which is found in the Alpine region.

Analysing each cloister's year of construction (Fig. 4), most of them were erected during the sixteenth century (22%) or during the medieval era. Specifically, 20% of cloisters date back to the twelfth century and 19% to the thirteenth century. Approximately 26% of the assessed cloisters are from the Renaissance period, while only 7% were constructed from the 1700s onward. The oldest examples include four cloisters, which were built around the eleventh century.

Nevertheless, the period classification can be valuable for typological and restoration considerations, and it should be incorporated into future renovation interventions for cloisters.

Moreover, the radar graph in Fig. 4, located on the left, illustrates the evolution of current cloister functions over the years. Regardless of their year of establishment, 20 upgrading interventions were conducted between 1980 and 1990. Twelve cloisters, accounting for 11% of the total, underwent retrofit projects between 2000 and 2009. Additionally, 25 cloisters, representing 23% of those assessed, have been renovated since 2020, with some transformations still in progress. Approximately 20 cloisters began renovations in the early 1920s to 1940s.

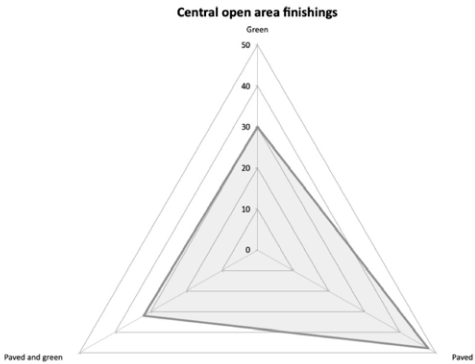
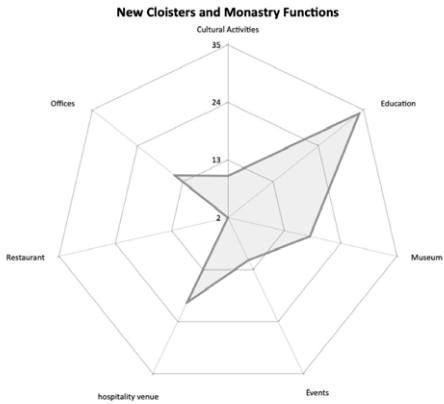
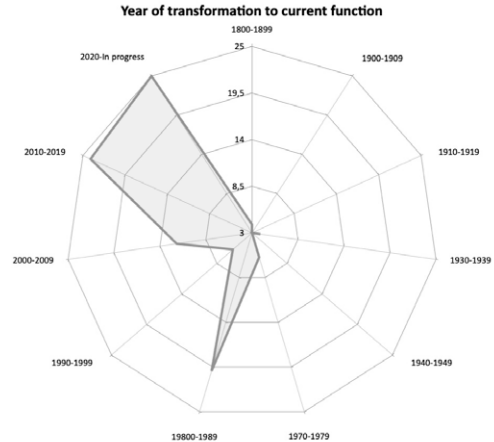
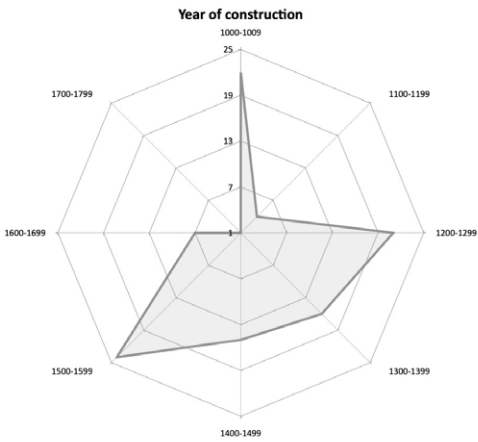
A deeper analysis of the primary functions assigned to the monastery complex, and the cloister area reveals that the graph in Fig. 5 indicates that most retrofitted cloisters are currently utilized as educational venues, comprising 31% of the total. This category includes universities, music schools, theatres, and secondary school classrooms. Additionally, 20 out of 110 selected spaces (18%) have been converted into accommodation venues, such as five-star hotels, hostels, bed and breakfasts, student dormitories, and private residences.



**Fig. 3** - Graph of climate zone distribution for the assessed cloisters (B.Gherri, S.Matoti, L.Rovetta, 2024).

**Fig. 4** - The radar graph of the cloisters' year of construction is divided into centuries (a), while the year of transformation to new functions is divided into decades (b) (B.Gherri, S.Matoti, L.Rovetta, 2024).

**Fig. 5** - New cloister functions are organized according to the primary functions assigned (a), along with the finishing materials used in the central open area of the newly retrofitted cloister gardens (b) (B.Gherri, S.Matoti, L.Rovetta, 2024).



Notable examples include Santa Caterina in Parma, which is being transformed into university accommodations for students, with the project still ongoing, and the hotel Relais Il chiostro di Pienza (Siena). Cultural activities, including museums, account for 16%, while event spaces and offices represent 10% and 14%, respectively. Only 2 out of the 110 spaces have been fully repurposed to accommodate restaurants. Some notable examples (Fig. 6) include the cloister of San Giovanni in Monte, in Bologna, and the renovated Cloister of San Nicolò l'Arena in Catania. The latter underwent a comprehensive restoration and adaptive reuse project led by architect Giancarlo de Carlo during the 1980s, aimed at repurposing both the indoor and outdoor spaces to accommodate the University of Catania.

Eventually, specific observations have focused on the repurposing of the central cloister gardens, categorizing the case studies into paved areas, predominantly green spaces, and mixed treatments.

Out of 110 cloisters, 48 are either currently paved or projected to be paved, representing 44% of the total. Additionally, 27% are adorned with greenery, including lawns and Italian gardens, which are variably decorated with shrubs and trees. Furthermore, 29% of the cloisters utilize mixed treatments.

Discussions and further advancements for future-proof interventions

Gathering critical parameters that support microclimatic considerations is essential, particularly when evaluating the climate resilience of new functions and whether restoration projects adhere to the original historical and morphological aspects of the primitive cloister space. For instance, restaurants and event-oriented venues predominantly feature paved surfaces. This preference can be attributed to the convenience provided by impervious materials, whether for outdoor tables, movable seating arrangements, or in re-

sponse to adverse weather conditions. Conversely, among 13 case studies related to cultural activities, only three include a central green garden. This data is intriguing as it suggests that, in most public spaces in central areas, repurposing projects have opted to radically transform the concept of a primordial mystical or heavenly garden by selecting impermeable finishing surfaces. These aspects are often overlooked in discussions about the microclimatic advantages and benefits associated with central green areas, which are frequently overshadowed by strict functional concerns.

Moreover, the distribution of new functions according to climate zones, as illustrated in Fig. 7, reveals that within the numerous cloisters located in the Cfa climatic zone (indicated in orange), 17 serve educational purposes, 11 provide hotel and other accommodation options, 9 host events, 8 function as museums, and 7 offer a variety of cultural activities.

Observing the Csa cloisters (light blue), it is evident that the predominant functions include primary schools, universities, and other educational activities. Various events, functions, and venues can be identified within the Csa climate sites.

Most of the cloisters that have been repurposed for new functions clearly benefit from the presence of the open central garden, even though only a small portion of these new functions preserves the green space. In most cases, the central open courtyard is transformed into a mixed-use area, which partially appreciates the presence of the unpaved sections.

### **Towards a new transformative dimension**

Given the awareness of the magnitude and characteristics of overheating in urban areas, focusing on the potential and the historical and functional roles that cloisters have played in the past can be crucial for promoting and enhancing resilience as a cli-



**Fig. 6** - Clockwise, the Cloister of San Giovanni in Monte, which is used by the University of Bologna, and the Cloister of San Nicolò l'Arena in Catania serve as two examples of university repurposing. Below, the Cloister of Pienza and the rendering of the upcoming residence of Santa Caterina in Parma (Photo B. Gherri, 2024).

mate adaptation strategy through the restoration of cloisters.

It is evident that specific typological transitional spaces, such as cloisters, can serve as a viable solution for preserving and adopting aspects of cultural heritage that have been overlooked for centuries. Today, these spaces can be transformed into strategic places of resilience, turning challenges into opportunities.

Proper adaptation and restoration actions can be employed to revitalize the intrinsic values of open spaces, aiming to address the overheating challenges while providing citizens with rare examples of tranquil, green, and unbuilt areas.

### Notes

<sup>1</sup> The well-known St. Gall Plan (circa 820) is regarded as the first utopian drawing of a monastery. Today, it is considered one of the most renowned representations of monastic garden details from the Early Middle Ages, as it provides an idealized depiction of monastery gardens during this period.

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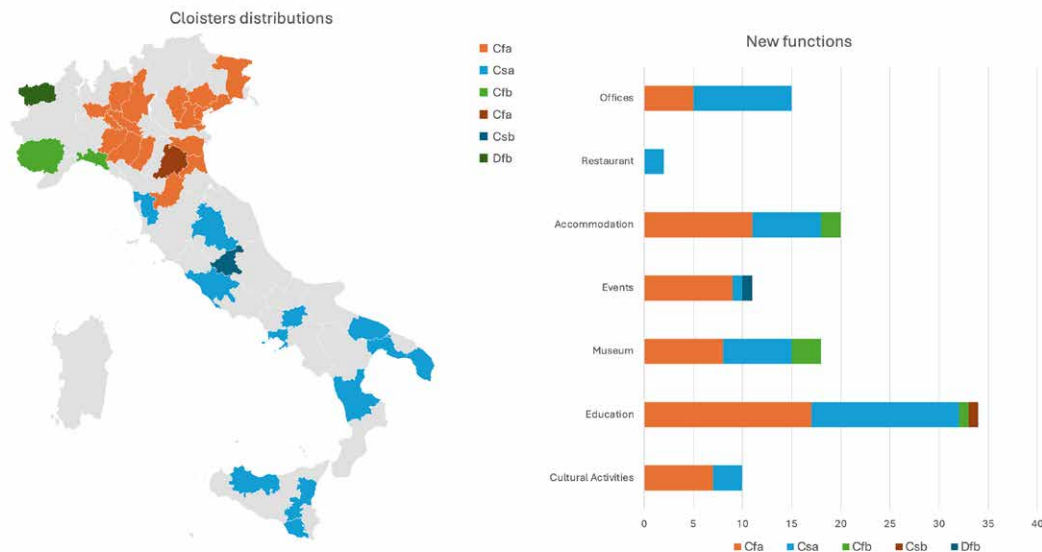
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**Fig. 7** - Map of the cloisters distributions and the new functions divided into main categories (B.Gherri, S.Matoti, L.Rovetta, 2024).

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