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Scale as a Factor of Rootedness of Architecture on the Example of Kengo Kuma's Danish Project

Skala jako czynnik zakorzenienia w architekturze na przykładzie duńskiej realizacji Kengo Kumy

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Słowa kluczowe: miejsce, dziedzictwo kulturowe, architektura, muzeum-ogród, Muzeum H.Ch. Andersena

Introduction

The extension of museums in the space of historic cities places the problem of architectural and urban scale at the center of the matter of preserving cultural heritage. Scale, which expresses both the relationship between the size of architecture and that of humans, as well as between that of architecture and its surroundings, was and remains an element of urban composition used to create landmarks and contrasts or, conversely, an order based on harmony and respect towards the historic structure of the city. Considering that building use programs and thus the architecture of museum extensions are often oversized, scale was investigated as a factor in the rootedness of architecture and in the methodology of preserving cultural heritage.

This study aimed to answer the following questions: 1) what is the role and value of the architectural and urban scale in the method of rooting architecture in a historic city's structure and the methods of valuation cultural heritage used in a given area, 2) what are the means of operating with scale that serve to root architecture in an urban setting of high cultural value. The study was intended to demonstrate whether, and if so then to what degree, the method of rooting architecture corresponds to methods of assessing and preserving architectural and urban heritage. This is the essential research gap.

The following substantive limitations were adopted: 1) – in architecture, scale has a mathematical and psychological meaning; the first meaning denotes “size, a dimensional dependence between the object investigated and the adopted reference, e.g., the meter [...], the actual, objective, absolute dimension of the object” [Lenartowicz 1997, p. 128], and the second refers to the human perception of scale in a given place; 2) – rooted architecture displays particularly strong links to place; it “Used of the Character of the Land” [Kuma 2005], and it is organic, as defined by Kuma [2009, 2020; Stec 2021, 2022], 3) – place means an area with a specific geographical location together with its environment, i.e. inanimate and animate elements, natural and created as a result of human activity; the character of a place¹ consists of its cultural and natural heritage, including its *genius loci* [Norberg-Schulz 1979], 4) – urban structure includes the urban fabric (i.e., various types of houses) and the urban skeleton that binds it together (a system of roads, squares, parks, gardens) [Zuziak 2008].

The research method consisted of a case study, an analysis of the literature and doctrinal documents. The case used in the study, selected due to its representativeness of architecture rooted in a place as proposed by Kengo Kuma and contemporary conservation methods, was the new H.C. Andersen Museum (2022) designed in Odense, Denmark, by Kengo

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Kuma & Associates. The building's use and the historical context of Odense make this case a clear and explicit illustration of the problem of architectural and urban scale in a small city. In terms of heritage valuation, reference was made to the document "IEA-SHC TASK59: FACT SHEET Multidisciplinary planning process: Enhancing the use of the European standard EN 16883:2017," [Buda, Bröstrom, n.d.] which describes eleven methods in conservation design (this document facilitates the practical application of the European standard EN 16883:2017). Specifically, reference was made to the Danish SAVE method (Survey of Architectural Values in the Environment) in which the heritage values are assessed using five parameters: architectural value, cultural-historic value, originality, environmental value, and technical value. Attribute Significance assessment was also referenced [Buda, Bröstrom, n.d.], which is structured around four key elements: scale levels (area, ensemble, building, building elements), attributes, heritage significance and aspects. The analysis of authenticity in cultural heritage protection in Denmark was also referenced [Dueholm, Smed 2014].

In terms of the rooting of architecture, the main sources are Kuma's texts: his book *Anti-Object: The dissolution and desintegration of architecture* [2008], where the strategies of designing architecture in the type of an anti-object are discussed, among others the strategy of disappearing, making connections, minimizing, erasing, breaking architecture into particles. This was followed by the book *Materials, Structures, Details* [2004], from where data on the scale of elements in the architectural layers in Kuma's projects were taken, the article *Architecture Making Maximum Use of the Character of the Land will be the Norm In the Twenty-first Century* [2005] explaining Kengo Kuma's idea of design. From Kuma's books: *Studies in Organic...* [2009] and *L'Architecture naturelle* [2020], explanations on architecture's role as a mediator between place and humans were taken. The analysis of Kuma's projects refers to the catalog [2021] and the website of Kengo Kuma & Associates. Studies containing interpretations of the idea of rooted architecture are also a source for the analysis [Stec 2021, 2022, 2024].

Architecture rooted in the city according to Kengo Kuma

In his idea of design, Kengo Kuma assumes that architecture, like a living organism such as a plant, is not a collection of autonomous forms, organs and functions, but exists in a process of constantly changing and interchangeable relationship with its environment, in this case the historical urban environment. This process involves building, destroying and rebuilding architecture [Kuma 2009, pp. 056, 058; Stec 2021, 2022, 2024]. Like a plant that nourishes, breathes and changes in relationship with a place through its above-ground and root structures, usually hidden in the soil, natural archi-

tecture enters into a relationship with the city in processes that are visible and obscured from sight. Kuma distinguishes in architecture the layer of its production, which can be compared to the roots of a plant and its life processes (this includes the tectonics of buildings and partitions, the building's use) and the layer of its appearance (which is photographable), and states that, since the early twentieth century, since the commercial treatment of architecture as a commodity has increased and high technology has overcome local design limitations, these two layers have become increasingly separated. Kuma proposes a return to the natural connectivity of these layers. In this natural state, the appearance of the architecture expresses and even gently exposes the processes of its production and use. Kuma also relates the layers of appearance and production to place, and argues that for architecture to take root, it is also necessary for it to have an authentic connection with the place: both its appearance, i.e., the landscape, and its hidden material: the cultural, natural and utilitarian processes that create its character. The rootedness of architecture is created as a result of the interconnectedness of all these layers, belonging to both architecture and place. This multilateral relationship creates strong design constraints.²

In historical urban contexts, the full realization of this idea seems difficult to achieve, but it can provide a model for a design method aimed at identifying and gently exposing through architecture—the character of a place, its tectonics and *genius*, and through place—the character, tectonics and content of architecture.

An important aspect of the rooting of architecture in the historical structure of the city is its mediation between humanity and the environment. The result of this mediation is an anti-object [Kuma 2008], that is, an architecture united with its environment to the effect of disappearing into it.

Value of scale in the rootedness of architecture in a city and in heritage preservation methods

In mathematical terms, the scale of architecture can be referred to its vertical and horizontal dimensions. From the point of view of a person standing on the ground, the vertical dimension is perceived in its entirety at a moment's notice, even when it exceeds the size of the human body many times over, while the horizontal dimension is usually perceived in fragments and in foreshortened perspectives, not easily estimated behind the scenes of other structures. For this reason, urban landmarks tend to be tall buildings, not the longest or largest in area. In behavioral terms, the horizontal vastness of architecture is experienced by a person as they move along its walls, and the vertical vastness is experienced in a single glance without moving. The vertical size is therefore difficult to hide and is obtrusive in a city's skyline.

The scale of architecture also applies to building mass in relation to the human body. It cannot be

measured in a mathematical sense, but expresses an important proportion in human perception of the environment: between the mass and weight of a human being and the nature that makes up its natural environment (such as plants, but also hills) and the mass (and weight) of buildings. This term, used by Peter Zumthor [2014] in considering the scale of housing estate, was proposed in the study as a proxy for the scale of architecture in terms of the idea of rootedness and in the philosophy of heritage protection.

The scale of the city is determined geographically by its topography and geological, hydrographic, climatic and seismic conditions. Scale is also cultural, co-creating the meanings and symbolism of buildings, aesthetic and style principles. The scale is part of the city's landscape and acts of city's construction. This can be seen in ancient structures and buildings, whose construction techniques, wall thickness or size of apertures depend on the size of stones possible to obtain in specific socio-economic conditions.

Scale-related conditions are essential design constraints that rooted architecture must accept. This is done by matching the dimensions of architecture to the scale of elements characteristic of the local heritage, taking human scale and the historical structure of the place as an obligatory reference of building size and mass, breaking an enormous monolithic mass into particles and "partalized" architecture [Kuma 2004, p. 14] using the openwork and rarefied structures that interweave with the structure of cultural and natural heritage, using materials that transmit and reflect light for the effects of blending architecture with the environment and reflecting this environment in the wall surfaces, and adopting the scale of local trees as an indicator of self-regulating development. This makes the scale of architecture one of the most important factors in harmoniously linking a building with its urban cultural and natural heritage (in an anti-object strategy). Kuma [2004, 2008, 2021] treats scale as a mediating factor between human beings and place, which expresses his thought: "The body, matter and the environment repeatedly engage in a dialogue until certain dimensions are achieved" [Kuma 2009, p. 060]. In this dialogue, it is important to match the dimensions of architectural structures with those of humans,³ especially their hands, which have the ability to process materials.

The scale of a historical city should be seen as a cultural heritage value. In reference to the SAVE method, it should be analyzed in five categories: 1) architectural value, 2) cultural-historic value, 3) originality, 4) environmental value (including urban value), 5) technical value (materials and their processing, structural techniques). In reference to the Attribute Significance assessment method [Buda, Bröstrom, n.d.], scale should be seen as an attribute heritage significance and aspect in reference to the city's area, namely its fabric and structure (which include transport and circulation infrastructure and urban green-

ery), the ensemble, the building and the details of the fabric and structure.

Scale of the H.C. Andersen Museum in Odense as an urban / environmental value, architectural value, technical value, cultural-historic value (SAVE) and Attribute of heritage (Attribute Significance assessment)

To Kuma [2021, p. 128] architectural and urban scale proved to be a key element of the new H.C. Andersen Museum in Odense, Denmark, "in the heart of the city where Andersen was born."⁴ It was recognized as an design constraint that reflects the city's history.

Odense was founded in the tenth century and is one of Denmark's oldest cities,⁵ and today is the country's third-largest (with an area of 304.3 km² and a population of just over 200,000), located on Funen. It played an important role during the Middle Ages and Renaissance, when trade and commerce were key elements of urban life and development. The importance of Odense at the time is evidenced by the fact that Danish Queen Christina (who died here in 1521) chose it as her residence in the sixteenth century. It developed especially in the eighteenth century due to trade with Lübeck and Norway. From the nineteenth century onward, Odense had been industrializing to such an extent that in the twentieth century it was the country's largest industrial city outside the capital, with large companies of Danish business pioneers C.F. Tietgen and Thomas B. Thrig. After the financial crisis at the beginning of the twenty-first century, the city allocated DKK 34 billion for revitalization and development, including the construction of a light rail, the revitalization of the center (with the Andersen Museum) and the harbor area, and the construction of a new university campus. Modern Odense is a center of robotics and technology: computers, airports and UAVs, but also a center of culture and tourism abounding in architectural and urban monuments. The city's structure is also made up of numerous historic parks and gardens.

The city's history is recorded in its urban structure and scale. The current center of Odense stretches between Østre Stationvej with Kongens Haven Park to the north and the park zone to the south and southeast. Relics of traditional medieval and Renaissance urban fabric: half-timbered and wooden houses are scattered throughout the new development. Their concentration is found in a well-preserved historic structure in the eastern part of Odense, with a characteristic scale of the urban skeleton: winding, narrow cobblestone streets. The City Museum is located in this part of the city, which includes the urban fabric and skeleton of the entire district. To the north, the area is occupied by the humblest and smallest scale medieval houses once inhabited by the poorest social group. This is where the house where Andersen was probably born is located⁶ (Fig. 1).



Fig. 1. H.C. Andersen's birth house, from the outside; all photos by B. Stec

Ryc. 1. Dom, w którym urodził się H.Ch. Andersen, od zewnątrz; autorką wszystkich zdjęć jest B. Stec

Due to its historic nature, Odense's urban structure (fabric and structure) is its cultural heritage. Thus, the scale of the fabric and urban structure of Odense, especially its eastern part, is a heritage value in five categories: architectural (A), cultural-historic (C-H), originality (O), environmental (E), and technical (T), as per SAVE. In Attribute Significance assessment, scale can be seen as an attribute significant cultural heritage (AS) of urban fabric and the skeleton (structure) on different levels, from the area level, to those of the ensemble, building, and detail.

The project for the new Andersen Museum was a revaluation in the urban sense, as it was part of Odense's development plan to close a section of the four-lane Thomas B. Thriges Gade expressway (built in the 1960s) and create a new connection between the disparate parts of the city: the medieval and modern, drastically cut off by this way [Harnow 2022]. As part of the revitalization, the section of this street was closed to be replaced by a light rail connecting northern and southern Odense (Fig. 2). The revitalization plan called for the 10,000 m² plot for the new Andersen Museum to also include a part of a new light rail, pedestrian and bicycle transportation zone. The plot occupies the area bounded to the north and east by old streets with medieval buildings, to the south by new residential 2 or 3-story, and to the west by 3 or 4 or 5-story buildings.

The contrast between old and modern buildings is due to the different scales: the height and size of the houses, the building mass of the urban structure, and the degree of regularity and fragmentation. The modern district has wide, straight high-speed streets and several-story buildings, usually made of brick in shades of brown, red and ochre.

Kuma designed the zone between the areas, which differ so sharply in scale, as a museum-garden space⁷ taking the scale of the district's historical and natural heritage as the primary reference for the architecture (value E and C-H). The garden was developed in co-operation with Danish landscape architects MASU Planning. The design, which includes a garden and the



Fig. 2. Odense – green streetcar track in place of removed four-lane road; to the left is the new H.C. Andersen Museum designed by Kengo Kuma Associates; 2022

Ryc. 2. Odense – zielony tor trolejbusowy zamiast zlikwidowanej czterojezdniowej drogi; po lewej widoczne Muzeum H.Ch. Andersena zaprojektowane przez firmę Kengo Kuma & Associates; 2022

Tinderbox cultural center, significantly expanded the pre-existing museum, of which the corner one-story house of the writer's birth⁸ at the intersection of Hans Jensens and Bangs Boder streets and built in 1930 Memorial Hall, an octagonal building covered with a pyramid, concealing a painted panorama inspired by Andersen's autobiography *The Fairy Tale of My Life* (its final scene depicts the granting of honorary citizenship to Andersen in Odense in 1867) remains. The buildings have been adapted by Kuma for the new museum and are now accessible from inside. The total area of the new museum is 5,600 m² [Harnow 2022].

Kuma adhered to the height restrictions so that the new museum would not surpass Memorial Hall and the tallest of the medieval buildings. Limiting the height and scale of the building mass was probably the reason for an important decision: to place as much as two-thirds of the museum underground (Fig. 3). As a result, the larger above-ground portion of the plot was developed as a public garden with walking and bicycle paths (Fig. 4). In the garden from a curved walls of hedges mark the contours of the space underground. Paths equipped with steps or inclined platforms wind between the hedges, connecting different levels of the terrain.

In the cityscape, the new museum can be seen as a complex of oval pavilions growing in a garden laid out on different levels. Their scale maintains the value A and E (Fig. 5, 6). Closest to Andersen's birth house and Memorial Hall is the entrance pavilion with foyer and ticket offices, and the museum store pavilion connected to them. A café pavilion emerges from the garden to the west, and a pavilion with Ville Vau Wonderworld for children (workshops for children, including theater, stage design, costume design, and painting) in the south. The museum is approached, in addition to a path on the side of the streetcar line, by a gate adjacent to Andersen's birth house on Hans Jensen Street. Similarly to the other house flanking the birth house on

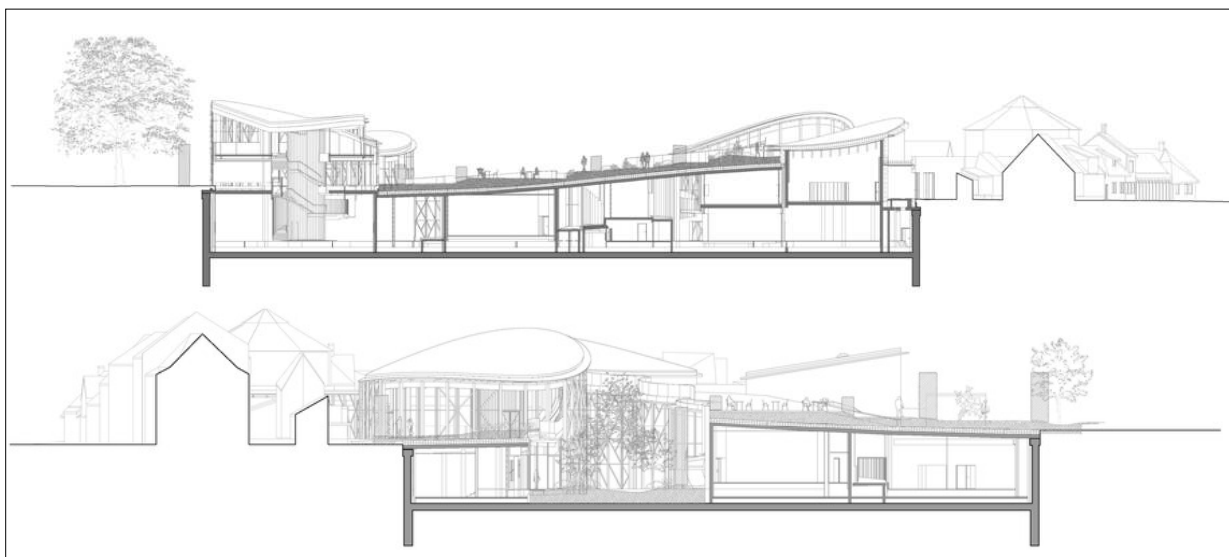


Fig. 3. The H.C. Andersen Museum, sections; source: H.C. Andersen Hus Museum / Kengo Kuma & Associates, ArchDaily (accessed: 22.04.2025)

Ryc. 3. Muzeum H.Ch. Andersena, przekroje; źródło: H.C. Andersen Hus Museum / Kengo Kuma & Associates, ArchDaily (dostęp: 22.04.2025)



Fig. 4. Bike path in the garden area of the H.C. Andersen Museum
Ryc. 4. Ścieżka rowerowa w strefie ogrodowej Muzeum H.Ch. Andersena

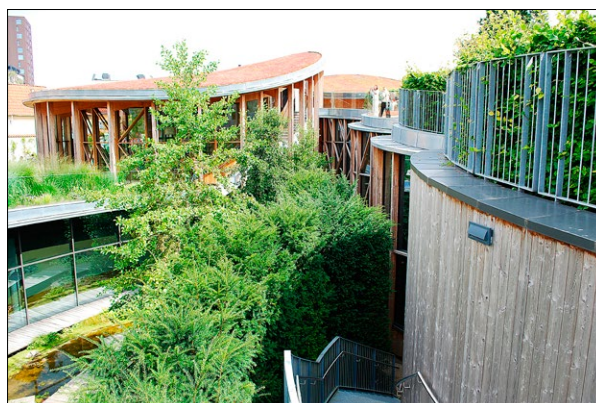


Fig. 5. The H.C. Andersen Museum
Ryc. 5. Muzeum H.Ch. Andersena



Fig. 6. The H.C. Andersen Museum, site plans in the urban context; source: Google Maps (accessed: 16.05.2025)

Ryc. 6. Muzeum H.Ch. Andersena, plany sytuacyjne w kontekście urbanistycznym; źródło: Google Maps (dostęp: 16.05.2025)



Fig. 7. The facade of the Museum at Bangs Boder street frontage
Ryc. 7. Fasada Muzeum w obrębie pierzei ulicy Bangs Boder



Fig. 8. H.C. Andersen's birth house, interior
Ryc. 8. Dom, w którym urodził się H.Ch. Andersen, wnętrze

the side of Bangs Boder (Fig. 7), it consists of an old house renovated by Kuma's office in cooperation with a local architect.

Andersen's birth house is extremely low, but its size is typical of old Odense, as evidenced by the craftsmen's houses in the City Museum. The house has been carefully conserved technically and stripped of furnishings, presenting the textures of the walls, floor and ceiling, that is, the pure architectural value, space and scale of the interiors (Fig. 8). Here, the respect for the scale value T is visible. The walls facing the courtyard are visible from inside the new museum (Fig. 9).

The Memorial Hall, also undergoing careful technical maintenance, is now located in its entire outline inside the museum, with only a portion of its tower rising above the roof of the new museum. Inside is a rotunda covered with a classical coffered dome with an oculus. The scale of this monument was a reference for the new pavilions and as an AS attribute.

Above-ground pavilions have wood-frame construction, with pine wood inside and larch wood outside. In the exterior walls, they reflect the design of Odense's traditional half-timbering and effectively blend the architecture into the garden (value T). Kuma justified the size of the pavilions by the need for a space illuminated by daylight: "The architectural structure is reduced to the programs that require natural light—their volumes above ground are minimized to the scale of small pavilions floating among the hedges, trees and green in the garden" [Kengo Kuma draws on fairytales for Hans Christian Andersen museum].

The exhibition is hidden underground in spaces with a reinforced-concrete structural system. The above-ground and below-ground oval forms are chained together by a tour path on a 130 m long ramp that descends 6 meters below grade and meanders around the oval forms. The new museum is therefore a single, multidimensional building, but due to most of it being located underground, it appears to be much smaller than it actually is. The above-ground part of the museum emerges in the garden as separate pavilions of

wood and glass. With their oval shapes, they support the form of the central Memorial Hall building (AS).

Although some underground spaces have a skylight or clerestory, they are most often deprived of daylight. However, the corridors leading to them are flooded with sunlight coming here from sunken gardens. Kuma writes: "Underground world is connected to the garden above through series of sunken garden that appears like a 'hole' on the ground, 'portal' from fairytale world to the world outside" [New Hans Christian Andersen Museum Kengo Kuma and Associates]. The museum has two sunken gardens, a larger and a smaller one. The larger one equipped with a path over a wetland with marsh vegetation belongs to the museum's closed zone. The smaller one, like the other sections of the garden, is open to the public, and it subducts to the entrance to the underground garage under the streetcar tracks. The gardens are equipped with benches. Inclined platforms and stairs lead to a garden level almost flush with the roofs of the pavilions allowing new viewpoints of the medieval district. From here one can see the harmony of the shades of the antique tile and the red lichen on the roofs of the pavilions (Fig. 10). The scale of these



Fig. 9. H.C. Andersen's birth house, from the interior of the museum

Ryc. 9. Dom, w którym urodził się H.Ch. Andersen, wnętrze muzeum



Fig. 10. The roof of the H.C. Andersen Museum with a panoramic view of the rooftops of the medieval buildings

Ryc. 10. Dach Muzeum H.Ch. Andersena z panoramicznym widokiem na dachy średniowiecznych budynków

paths refers to the scale of the historic skeleton (structure) considered as an AS attribute.

The sense of the museum's scale, especially that of its structural mass, has been modified via operating with sunlight. Illuminating the underground corridors with glazed walls open towards the sunken gardens effectively eliminates the sense of a monolithic and overwhelming concrete mass. This is also served by designing reflections in the glazed walls of the pavilions in their lower part.

To maintain the scale of the historic district, the size of elements easily recognizable in the structure of the museum's walls, floors and ceiling are important. Thus, the foyer and store have a clear structure made of wooden columns and ceiling beams radiating from them. Their scale corresponds to the size of a rather small tree. The columns that form the internal arcades of the pavilions are of similar size. Openwork structures made of wood that clearly reference tree trunks and crowns reinforce the similarity of the architectural elements to the garden's material and weaken the feeling of actual building mass. In a clear way, above-ground structures harmonize with the garden, and hidden underground, concrete—with the ground, that is, earth and rock. In a similar sense, the museum's sense of scale is influenced by the fine texture of the flooring: in the foyer and store, the floor is made of fine tiles of Nordic granite, similar to the cobblestone pavement of medieval streets, and in the interiors of other pavilions, floors and ash plank benches. Garden paths have a gravel surface or paved with cobblestone or small herringbone tiles. This confirms that scale of the historic urban fabric and skeleton as an AS attribute.

The composition of the architectural ensemble reflects the three parts of the museum exhibition: Life

– an above-ground part of the museum with a garden; Fairy Tale – an underground part dedicated to the interpretation of Andersen's twelve fairy tales; and Legacy – the birth house and Memorial Hall. The scale of each part is treated as an AS attribute and a C-H value.

At the Andersen Museum, several cultural meanings of a particular human scale can be identified, namely, the scale of the child: The museum – 1) was built in Odense in connection with Andersen's birthplace, – 2) includes the house where the writer lived during his childhood, – 3) reflects the world of fairy tales, primarily dedicated to children, – 4) includes the Ville Vau Wonderworld for children, – 5) was built in the vicinity of medieval houses so small that they resemble models for children's play.

Having the museum partially underground has a cultural basis, as it corresponds to the content of the museum read by Kuma [2021 p. 128] as "the duality of the opposite that surround us; real and imaginary, nature and manmade, human and animal, light and dark... Our architectural design is to reflect this essence of his work in architectural and landscape form." This refers to the C-H value.

The architects point out that the inspiration for the wooden structures of the pavilions' walls was also a reference to Andersen's fairy tale *Tinderbox*, in which a withered tree with a void inside the trunk turns out to be a place hiding a treasure and the secret key to the treasure—a piece of tinder. Metaphorically, the tale refers to the entire premise of the museum-garden and the discovery of nature's treasure within it. This corresponds with the contemporary trend of original presentation of nature in the city [*Aspekty konserwatorskie i ekologiczne w ochronie krajobrazu* 2019]. The scale of the small garden was treated as an AS attribute.

ROOTED ARCHITECTURE Value of scale in:	SAVE Value of scale	Attribute Significance assessment. Scale as AS attribute
– matching new architecture to existing urban fabric (houses)	– architectural (A): size, especially the height of the building, its mass, shape, tectonics, floor wall and ceiling structure	– of urban fabric: size, height, size of floors, build mass, Shapes and details of the houses
– express character of place (genius loci)	– cultural-historic (C-H) recognized as an important constraint that reflects the city's history and place-based identity	– of the city's structure, indicate the identity factor (aspect) of the size of urban fabric connected to the size of historical urban skeleton (width and proportions of the roads, streets, squares, gardens, paths)
– preserve and highlights of historic original elements of surroundings as the authenticity factor of the place	– originality (O) preservation of the original scale and shape of the local monument as the place's authenticity value	– of the city's heritage significance as the place's authenticity value
– matching the new structure to existing urban skeleton – matching building mass to human body and nature – integrate different parts of the city	– environmental (E), bring back the human scale, human scale of the building's mass	– of the complex of the urban fabric, urban skeleton and green zones together oriented towards human scale and integration
– matching the city's traditional tectonics and detail to the place	– technical (T) preservation of the size of the elements of the tectonic structure and of the walls and surfaces	– of the circulation zones, size of infrastructures facilities and areas (parking lots)

Tab. 1. Scale values in methods of rooted architecture, SAVE and Attribute Significance assessment method, identified in H.C. Andersen Museum in Odense

Tabela 1. Wartości skali w metodzie zakorzenienia architektury, SAVE i metodzie oceny znaczenia atrybutów, rozpoznane w Muzeum H.Ch. Andersena w Odense

Also of cultural significance is the museum's composition woven into a winding tour path reminiscent, according to Kuma [2021 p.128], of the main messages of Andersen's writing, which "reflect the author's life and his lifetime journey." Kuma also noted that "The idea behind the architectural design resembled Andersen's method, where a small world suddenly expands to a bigger universe" [Kengo Kuma draws on fairytales for Hans Christian Andersen museum]. Therefore, the scale was considered as an AS in different levels and a C-H value.

Results

Mediating between different scales was undertaken here by the structure of the museum-garden, in which architecture intertwines with the garden and its paths on different levels: "The meandering path and hedge garden is to bring back the human scale quality to make a soft link to the urban area of the city" [New Hans Christian Andersen Museum | Kengo Kuma and Associates]. The revitalizing role of greenery here is to strengthen the internal linkage of the urban skeleton of old Odense and the urban fabric of two distinct scales [*Aspekty konserwatorskie i ekologiczne w ochronie krajobrazu* 2019]. The "particized" [Kuma 2004, p. 14] mass of the museum refers to the fine historic fabric in the neighborhood, as well as the green mass. This effect is not the result of imitation, but the tectonics of the buildings and the structures of this walls, floors and ceilings (A, O, T values). This significantly serves the purpose of authentic harmony with the heritage (values C-H and E) [Dueholm, Smed 2014].

In the new Andersen Museum, one can see the implementation of the guidelines indicated in the method SAVE and Attribute Significance assessment method [Buda, Bröstrom, n.d.]. This is how the Andersen Museum restores urban value in the revitalized area of Odense from the scale of the urban structure with transportation infrastructure through the urban fabric complex and urban skeleton to the birth house and Memorial Hall. The case study allows us to determine the usefulness of the method in question.

To restore the heritage and human scale of the revitalized area, hiding most of the building mass underground play an important role. Equally important is to avoid any monumentality. There is no classical axis of entry or symmetry to emphasize the authority of the great writer, but it would deviate from the atmosphere of Andersen's fairy tales) [Harnow 2022]. Covering of the pavilions with curved roof planes prevented a sense of monumentality (values A, C-H). As a result, they are perceived as irregular forms, and thus smaller than they really are, because the expression of monumentality of the forms increases with their geometric regularity. This architectural lesson was given by Peter Behrens and Juliusz Żórawski. Behrens propagated the view⁹ that the monumentality of a building is not only due to its dimensions, but also to the articulation of geometric solid in its form. This principle resonates with the description of the interaction of cohesive and weak forms in Żórawski's theory. Thus, the Andersen Museum's architecture loses grandeur also because of its irregular and soft shapes.

The scale of the new Andersen Museum is one factor in restoring the site's core identity derived from

its character. It improves the resilience of the urban structure and urban planning system, recognizing that “Resilience is the ability of systems to respond to changing circumstances or disruptions in such a way that their basic characteristics are restored” [van Assen et al. 2017, p. 39]. In this context, loss related to the closure of the four-lane highway and the limitation of the height of buildings improve the performance of the system, restoring the features of the identity of the place: the value of cultural heritage, urbanity related to the human scale of development and urban infrastructure, pedestrian and bicycle traffic, meeting place, health-promoting and recreational potential.

Thanks to the unification of architecture with greenery the scale of the museum-garden has an internal self-regulation in the harmonious urban development of the historic city district [Zachariasz 2009, p. 96].

Conclusions

The method of rooting architecture corresponds to the methods of assessing the architectural and urban heritage values adopted in Denmark: SAVE and as an Attribute in Attribute Significance assessment [Buda, Bröstrom, n.d.] in that they treat scale as a highly significant attribute of heritage at all scale levels. They recognize and maintain architectural, cultural-historic, environmental and technical value. They apply to views in the city skylines and to the tectonics of historic and new buildings and their complexes. The overall dimensions of urban fabric are taken into ac-

count, especially the heights, but also the dimensions of the building elements that make up the structures of the walls, ceilings, roofs and floors, and the building's mass, as well as the scale of urban skeleton: roads, paths, squares and green areas. The cultural value and involves recognizing, interpreting and incorporating into architecture the meanings and symbolism of scale in the city's heritage. These methods value the original scale and reject the strategy of harmonizing with the surroundings through superficial cladding, and correspond to the demands of authenticity in the protection and conservation of cultural heritage. In using these methods, the architect identifies and highlights the scale that gives identity to the place, and thus mediates the dialogue between the human body and the urban structure.

Designing the scale, including the extension of old museums, is a strategic project, therefore it must be controlled by guidelines. Practitioners often expect simple and concrete guidelines oriented towards the design process. The five categories of scale values indicated in the table concern improving the characteristics of the scale as the Attribute and the Architectural Value in the Environment. They can be easily applied to design strategies and may have practical use as guidelines also in other historical urban contexts, for example in Poland.

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¹ This term is close to the Japanese notion of the nature of the place [Duch ukryty w drzewach 2022; Stec 2022].

² Kuma [2020 p. 67] uses a strong metaphor when he writes: “Constraint is the mother. Constraint brings everything to life. [...] nature and constraint are two sides of the same coin.”

³ Taking the length of the human body as a unit of length measurement was common before the adoption of the meter in 1795.

⁴ H.C. Andersen lived in Odense until the age of fourteen, when he left for Copenhagen to become an actor. There, after finishing his education, at the age of 24 he published his first literary work under his name, his creative career spans 7 novellas, 40 plays, 5 travelogues, 1,000 poems, 3 autobiographies and 158 tales. He became famous for his tales with a universal message, translated into more than 160 languages.

⁵ According to legend, Odense was a Viking town and the seat of Odin, one of the three main gods of Norse mythology.

⁶ There are no documents confirming Andersen's birthplace as a specific house.

⁷ The Albert Kahn Museum in Paris, which was expanded and adapted by Kengo Kuma & Associates almost at the same time, is also a type of garden museum [Stec 2024].

⁸ At the time of Andersen's birth, there were five families living in this house [The world as you know it? H.C. Andersen Hus]. The future writer was born here in 1805 as the son of a shoemaker and an illiterate washerwoman. After two years, he moved in with his parents in another district of the city on Munkemølle Street in a larger, though also one-story house (now called Andersen's parents' house), where his father had a shoemaker's workshop.

⁹ He gave university lectures on the subject [Gössel, Lauthäuser 2010].

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Abstract

The research problem explored in this article is the value of architectural and urban scale in the idea of the rootedness of architecture and the methodology of protecting cultural heritage. The research is based on a case study of the extension of the H.C. Andersen Museum in Odense, Denmark (by arch. Kengo Kuma, 2022), which was selected as a representative case for the idea of rooted architecture and current conservation philosophy. It also illustrates well the problem of scale in a small historical city. The analysis was based on the assumptions of the idea of the rootedness of architecture in a historical city and the means of rating heritage values in selected conservation methods and systems, with a reference to scale. The findings present the valuation of the architectural and urban scale in methods of rooting architecture in place and preserving cultural heritage. The compatibility of these methods has been demonstrated, as visible in a similar respect afforded to the scale of the historical context and human scale.

Streszczenie

Problemem badawczym podjętym w artykule jest wartość skali architektoniczno-urbanistycznej w idei zakorzenienia architektury i metodologii ochrony dziedzictwa kulturowego. Metodą badania jest studium przypadku rozbudowy Muzeum H.Ch. Andersena w Odensee (arch. Kengo Kuma 2022), wybranego jako przykład reprezentatywny dla idei architektury zakorzenionej i aktualnej filozofii konserwatorskiej, a zarazem dobrze ilustrujący problem skali w niewielkim mieście historycznym. Jako narzędzie analizy przypadku opracowano założenia idei zakorzenienia architektury w mieście historycznym i sposoby wartościowania dziedzictwa w wybranych metodach konserwatorskich, z odniesieniem ich do skali. Wyniki badania przedstawiają wartościowanie skali architektoniczno-urbanistycznej w metodach zakorzenienia architektury i ochrony dziedzictwa kulturowego. Wskazano na zgodność tych metod widoczną w podobnym respektowaniu skali kontekstu historycznego i skali człowieka.