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Artificial Intelligence and the Revival of Local Architecture: Towards the Formulation of Smart Design Alphabets

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***Abstract*—**Amid the rise of globalization and smart technologies, local architecture faces the danger of marginalization and symbolic flattening, which calls for critical approaches that combine authenticity with contemporaneity. This study investigates the possibility of employing artificial intelligence as a tool for analysing and generating design solutions drawn from local cultural and architectural identity, by establishing "smart design alphabets" that take environmental and symbolic specificity into account. The paper starts from the problem of the erosion of local architecture under the pressure of global models, and proposes that artificial intelligence can contribute—when designed within local cultural and ethical frameworks—to reviving the spirit of place and collective memory. The study reviews central concepts such as artificial intelligence, local architecture, generative design and visual-analysis techniques, together with a critical analysis of several experiments, among them the Saruq Al Hadid Museum in Dubai, and highlights the mechanisms for integrating artificial intelligence into the reading and analysis of local elements and their intelligent, contemporary reuse. The study also discusses the socio-urban dimensions of the subject, especially in terms of cultural justice, the right to memory and symbolic representation, and presents a forward-looking vision for integrating artificial intelligence with living heritage within a participatory and sustainable architectural design framework.

***Keywords*—**artificial intelligence, local architecture, smart design alphabets.

Introduction:

In light of globalization and rapid technological development, local architecture faces a major challenge in preserving its identity while keeping pace with the demands of the age. Artificial intelligence emerges as a promising tool for analysing and developing the alphabets of this architecture, through its ability to process complex data, extract heritage design patterns and reproduce them in innovative ways. This paper aims to explore the role of artificial intelligence in establishing a theoretical and applied framework for local architecture, with practical examples and future challenges.

1. The Research Problem:

Recent years have witnessed an unprecedented development in artificial intelligence technologies, opening new horizons for architects to explore smarter design tools, capable of analysing data, deriving spatial solutions and generating advanced architectural models. At the same time, local architecture in many societies faces growing challenges that threaten it with disappearance or reduction to rigid symbolic moulds, as a result of the pressures of modernity and uniform global architectural styles. From here arises a central research problem: how can artificial intelligence techniques be activated to revive local architecture, not only at the level of form or symbols, but at the level of the core design concepts and values that stem from local culture and environment? This study aims to explore the possible integration between artificial intelligence, as an advanced technical engine, and local architecture, as a rich cultural and human field, by formulating smart design alphabets based on a deep understanding of the local heritage and employing the capabilities of artificial intelligence in the service of the sustainability of identity and the creativity of contemporary architectural solutions. In this

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context the following questions are posed:

- How can artificial intelligence contribute to reading and analysing the distinctive characteristics of local architecture and converting them into smart design inputs?
- What cultural and ethical considerations should be taken into account when employing artificial intelligence in the revival of local architecture?
- To what extent can artificial intelligence contribute to generating design solutions that emulate local identity and express the spirit of place?

2. Significance of the Study:

- Highlighting the role of artificial intelligence as a modern tool for reviving local architecture and preserving cultural identity.
- Exploring the possibilities of integrating smart technologies with design concepts drawn from the local environment and society.
- Presenting a new vision for producing smart architecture that starts from local heritage and responds to the demands of the age.
- Addressing the ethical and cultural dimension of using artificial intelligence in architectural design, to ensure that specificities are not effaced.
- Contributing to enriching the architectural literature that links technology and identity within a critical and innovative framework.
- Opening the way for architects and researchers to develop smart design models that take context into account and support sustainability.
- Supporting modern trends in generative design and data-driven architecture while preserving authenticity.

3. Objectives of the Study:

1. Analysing the potential of artificial intelligence in understanding and deconstructing the architectural and cultural characteristics of local architecture, with the aim of using them to develop smart design outputs that take the local context into account.

2. Exploring the ability of artificial intelligence techniques to generate design solutions that express architectural identity and reflect the spirit of place, achieving a balance between authenticity and modernity in contemporary architectural practice.

3. Identifying the ethical and cultural frameworks that must be observed when employing artificial intelligence in the design of local architecture, so as to ensure respect for the cultural and symbolic specificity of societies and to limit the risks of distortion or replication.

1. The Concept of Artificial Intelligence:

Artificial intelligence is regarded as the study of intelligent behaviour in humans, animals and machines, and it represents an attempt to find ways in which such behaviour can be introduced into artificial machines. In addition, artificial intelligence is one of the most difficult and most controversial subjects for humanity as a whole.

Artificial intelligence lies in the way it clearly transcends the traditional boundaries of study. It combines science and engineering, since it includes the study of intelligent behaviour and how to benefit from it, and work in the field of artificial intelligence often tends to reduce the supposed separation between science and engineering, as it involves exploration through combining these two fields. The essential point is the fact that intelligent behaviour is manifested in many different respects. (Whitby)

In brief, artificial intelligence is: “an umbrella term for many technologies that imitate human intelligence and ways of thinking. Humans make their decisions on the basis of available data, so the human mind analyses and the results are based on particular data; likewise, modern technologies equipped with artificial-intelligence techniques have the ability to analyse and to simulate the human mind, in order to be more accurate in its early stages.” (Ali)

The science of artificial intelligence aims to understand the nature of human intelligence by making computer programs capable of simulating intelligent human behaviour. It means the ability of a computer program to solve a problem or make a decision in a given situation on the basis of a description of that situation, in that the program itself finds the method that should be followed to solve the problem or arrive at the decision, by referring to the many varied inferential operations with which the program has been fed. This is considered an important turning

point that goes beyond what is known as “information technology,” in which the inferential process is carried out by a human, and the most important reason for using the computer there is confined to its extreme speed. (Bonnet)

Artificial intelligence can also be defined as: “the science and engineering that make the computer an intelligent machine; it is artificial because it consists of programs and devices that cooperate to perform a complex process of understanding that can match human intelligence in understanding, hearing, seeing, speaking and thinking. We can therefore say that it is an area of computer science that focuses on creating a machine able to do what humans do in the way of intelligent work.” (al-Sayyid)

2. The Concept of Local Architecture:

By analysing civilizational values across history, we find that the sequence of architectural thought is closely tied to the development of human thought in general, since human civilization is a continuous chain of cognitive experiences and accumulated trials, and the emergence and advancement of civilizations is conditional on the extent to which societies connect with earlier experiences and cultures. Architecture has always been the face that expresses human civilizations, as Tharwat Okasha says of it: “it is the monuments and the scenes of daily life that teem with movement around them.” Local architecture, with its material and moral components, is a sincere vision that reflects the prosperity and the vital, scientific and artistic development of those who lived with it; it continues as an architectural heritage and a sincere legacy, and as landmarks that generations emulate. Hence emerges the duty to preserve this civilizational architectural legacy and to research the secrets of its material and functional beauty and its sensory effect. (Saydam, *Reviving Heritage Architectural Values in Contemporary Local Architecture*, 2013)

2.1. Definition of local architecture:

Local architecture is also defined as: “the pattern of built environment that is constructed by the traditional local expertise of a particular region; local architecture has a special charm that fascinates many architects.” This architecture is distinguished by an abundance of ingenious solutions to many local climatic, technical and social problems, and gives a distinctive visual character consistent with the visual image of the region in which it appeared. This urban pattern is usually the best regional solution at the historical level, although it may be unable to deal with contemporary needs, and newer, more efficient techniques may appear, such as new climate-control technologies.

As an intellectual vision, we say of architecture that it gives physical structure to victories and names, to needs and requirements, to memories and hope; it is also an intellectual activity.

Local architecture is: “a term used to classify building methods that use locally available resources and traditions to meet local needs, and that adhere to the basic green architectural principles of energy efficiency and the use of materials and resources close to the site. Local architecture tends to evolve over time to reflect the environmental, cultural and historical context in which it exists.”

Local architecture refers to those buildings made by folk builders in an informal manner, such as buildings with thatched roofs. It differs from the architecture of professional architects who use design methodologies.

Frank Lloyd Wright described local architecture as: “folk building that grows in response to actual needs, and has been fitted into an environment by people who know best what suits it.”

In designing his town of New Gourna (the New Village) near Luxor, Hassan Fathy incorporated brick vaults from Nubian settlements.

Factors affecting local architecture:

- Climate and geology.
- Local materials used.
- Adoption of technology.

3. Types of local architecture:

Domestic: consists of buildings designed for living and ancillary buildings such as laundry areas, kitchens, storerooms, etc.

Agricultural: includes all farm buildings and their annexes, such as farmhouses for dwelling, poultry-rearing and cart shelters.

Industrial: consists of all buildings that house industrial activities, such as windmills, watermills, corn mills and lime kilns [the Arabic reads “lemon”], etc.

Religious: includes all religious buildings, such as temples, churches and mosques.

Components of local architecture:

Construction technique: wall-cladding materials, building materials, foundations and the form of the roofing.

Plans: documented through plans and sections to show how the interior layout of these buildings was arranged and how they were presented externally.

Architectural details: windows, external stairs and interior decoration.

Other data: place, time, context, use, and the group of users.

If there is anything we should take from local architecture, it is the vital connection between humans and the environment; it re-establishes us in our own part of the world and forces us to think about pure survival. These structures offer an approach that is responsive to climate and dwelling, and they are natural solutions and resources for local housing needs. The benefits of local architecture diminished in the modern era, and it is now making a comeback through green architecture, architects and smart cities. To advance the future of architecture and sustainable building, we must first acquire knowledge of the past and employ these strategies as an integrated and organized whole to achieve optimal energy efficiency.

4. Revival in Architecture:

It is the re-employment of architectural visual elements, whether they are components of the architectural space, or elements of the general formation of the mass in space, or facade elements, and then blending them with architectural values in formative compositions that preserve authentic architectural styles and design treatments and suit the contemporary needs of societies. The idea of revival in architecture is distinguished by creativity and vitality, not by rigidity, copying and reduction. (Saydam, 2013)

5. Smart Design Alphabets for Reviving Local Architecture:

5.1. Formal and architectural alphabets:

Artificial intelligence can draw inspiration from the formal characteristics of local architecture by analysing geometric patterns and traditional ornament using computer-vision and deep-learning techniques, which helps generate new generative design models that retain the spirit of local architecture in contemporary contexts.

Formal and architectural alphabets are one of the basic foundations that artificial intelligence can help improve by integrating modern techniques with traditional methods. Traditional architectural designs represent the cultural identity of peoples, and by applying artificial intelligence we can restore these formal patterns, such as arches, columns and ornamented facades, in new and advanced ways.

Using deep learning and computer vision, artificial intelligence can analyse traditional geometric ornament and identify the repeated patterns that can be applied to contemporary designs. This can include creating generative buildings based on formal patterns extracted from local architecture, which allows modernity to be combined with heritage without losing the relationship with the cultural identity of the community.

For example, artificial intelligence can generate modern architectural designs based on traditional architectural ornament, such as the design of doors or facades, using generative adversarial networks (GANs), which learn patterns and reproduce them in an innovative way. (Alserkal, 2021)

Advantages:

- Preserving cultural identity: artificial intelligence can preserve the distinctive formal features of traditional architecture.
- Creativity in contemporary designs: using artificial intelligence, traditional patterns can be combined with innovative architectural solutions.

5.2. Environmental and sustainability alphabets:

Environmental alphabets rely on the use of artificial intelligence to improve the environmental performance of buildings through energy analysis and the simulation of environmental impact. Through techniques such as building information modelling (BIM) and thermal analysis, artificial intelligence can help design sustainable architectural environments that conform to local environmental conditions.

In many cultures, natural elements such as the interior courtyard and the wind catcher (*barajil*) were used in traditional architecture to ensure natural ventilation and achieve thermal comfort. Artificial intelligence can simulate how these patterns can reduce energy consumption inside buildings by controlling airflow and shade. Artificial intelligence helps improve these techniques by simulating local conditions. Environmental alphabets are also expressed through the simulation of the thermal and environmental performance of local architectural patterns: artificial intelligence can reuse traditional elements such as the interior courtyard or the wind catcher to achieve thermal comfort and climatic adaptation in an intelligent way, supporting sustainable design.

Advantages:

- Environmental sustainability: improving thermal performance and achieving optimal thermal comfort.
- Lower energy use: artificial intelligence enhances the effectiveness of architectural designs that use less energy. (Koseoglu, 2021)

5.3. Cultural and symbolic alphabets:

Artificial intelligence can analyse cultural symbols and local ornament and convert them into digital data that can be integrated into design; it also enables designs that respect social privacy by analysing patterns of architectural behaviour through learning from real examples.

Cultural alphabets consist in using artificial intelligence to understand and analyse the cultural symbols and local ornament that play an important role in architecture. Artificial intelligence relies on techniques such as machine learning and image analysis to identify the cultural symbols and architectural elements associated with the identity of the community.

Through machine learning, algorithms can be trained to extract cultural symbols from images of traditional architecture and to use these symbols in contemporary architectural designs. For example, if a community relies on geometric symbols such as circular or square shapes, artificial intelligence can apply these symbols to modern designs, such as building facades or even interior architectural ornament.

Advantages:

- Preserving cultural identity: artificial intelligence can preserve the cultural and historical spirit of local architecture.
- Modern designs with cultural symbolism: integrating cultural symbols with innovative architectural solutions. (Khosrowpour, 2023)

5.4. Technical and digital alphabets:

Technical and digital alphabets rely on the use of artificial intelligence techniques such as data-driven design and deep learning to integrate environmental and social data into architectural designs. Artificial intelligence relies on analysing environmental data such as local climate, population and behavioural patterns to select designs suited to the surrounding environment.

Through the use of building information modelling (BIM) and geographic data analysis (GIS), artificial intelligence can identify the best architectural patterns that combine local aesthetics with modern needs. For example, in a region with a hot climate, it may be preferable to design buildings using natural insulating materials or reflective surfaces. Techniques such as data-driven design and deep learning also make it possible to integrate environmental, social and historical data into smart design models, which allows new solutions based on local values to be devised.

Advantages:

- Customized designs: tailoring designs to the local environment and social conditions.
- Data analysis: artificial intelligence techniques help improve architectural choices using big data. (Shrestha, 2024, p. 67)

6. Mechanisms for Reviving Local Architecture:

The mechanisms and programmes for investing in local architecture are many and take various forms. Among them: the state may invest directly in earthen buildings for limited periods; or investment companies may be established to take charge of developing these buildings; or development funds may be set up for these local buildings; or a company may be founded to invest in them. Urban-heritage buildings may also be used as they were, as housing, or as national museums, or as venues for preparing and serving traditional foods, or as studios

for painting and plastic arts, or as popular markets and places for practising craft work. The environmental spaces of urban-heritage buildings, where they exist, can also be exploited by hosting some investment activities or displaying events with mass appeal in the open spaces, by using the courtyards and in-between passages in the external spaces that exist and are attached to urban-heritage sites to hold some cultural, sporting and recreational activities. Some service and commercial centres can also be established in the environmental courtyards of urban-heritage sites. (The General Authority, 2010)

7. Experiments in Smart Design for Reviving Local Architecture:

Case study: Saruq Al Hadid Museum, Dubai – United Arab Emirates

Location (UAE Ministry of Culture and Knowledge Development, 2017):

[Guide to the Saruq Al Hadid Museum in Dubai – Sections …]



The museum is located in the historic Al Shindagha district in the heart of the Emirate of Dubai, in what is known as Bur Dubai, on an area estimated at about 1,100 square metres. The district is a fabric of historic buildings that form the core of old Dubai. The new museum integrates traditional Emirati architecture with modern technologies and is a symbol of the efforts to revive this historic district. The museum uses the latest technical methods in exploring the site of Saruq Al Hadid (“the Metals Trail”), one of the desert archaeological sites that was a centre of metal industries for roughly 3,000 years. The museum is the place where the finds of the Saruq Al Hadid site are displayed to visitors; it is one of the unique and important archaeological sites, as one of the main centres for smelting copper and manufacturing tools and various vessels in the region since the beginning of the second “modern age” (1270–800 BCE) [sic]. The site comprises a wide archaeological area of about 2 square kilometres containing archaeological features extending from the third millennium BCE to the end of the Iron Age. Within it stands a sandy mound rising between 5 and 7 metres above the original ground level of the site, its outer surface covered with large quantities of metal slag, lumps of copper ore, fragments of iron material and fragments of pottery. The museum gives a wonderful picture of the skills and achievements of the inhabitants of the site who laboured in this smelting works.

[Saruq Al Hadid … stories thousands of years old …]



7. Artificial Intelligence Techniques in the Museum:

7.1. Remote sensing using satellite images + artificial intelligence: analysing satellite images such as ALOS/PALSAR-2 and WorldView-3 and feeding algorithms with these images to detect archaeological patterns. (Dubai Media, 2025)

7.2. Ground-penetrating radar (GPR) with automated analysis: using ground-penetrating radar (GPR) equipment to analyse the data produced by radio waves in order to detect structures buried underground. (Dubai Media, 2025)

7.3. Machine-learning algorithms for analysing archaeological data: using artificial intelligence (machine-learning algorithms) to analyse archaeological data, such as discovered artefacts, and classify them by shape, inscriptions and materials. (Khalifa University, 2024)

7.4. 3D scanning and remodelling: that is, using laser-imaging technology to create precise three-dimensional models of the site and its holdings.

7.5. Virtual reality (VR) and augmented reality (AR): that is, integrating virtual- and augmented-reality technologies to display archaeological artefacts and re-enact historical scenes. (Khalifa University, 2024)

8. Analysing and Reading Architectural Characteristics Using Artificial Intelligence:

8.1. Analysing visual elements using computer vision:

Artificial intelligence is used to classify architectural styles by analysing images using techniques such as deep learning and convolutional neural networks (CNNs).

- Applied example: a study conducted by Workman et al. (2017) used artificial intelligence to analyse architectural images from Google Street View and to identify the architectural style and geographic location accurately, which enhances understanding of local architecture. (Workman, 2017)

8.2. Analysing ornament and traditional elements:

Pattern-recognition techniques can distinguish heritage ornamental elements—such as mashrabiyyas, arches and stucco ornament—and classify them by region or time period.

- Arab example: a study published in the journal IJoHSS in 2023 used artificial intelligence to develop design souvenirs inspired by the stucco ornament of Al-Ahsa. (al-Subai‘i, 2023, p. 89)

[Deepbrain AI | How to: Create a guide video …]

9. Converting Architectural Characteristics into Design Inputs:



9.1. Analysing environmental and contextual data:

Artificial intelligence can integrate and analyse data on weather, terrain and community traditions and convert them into design inputs that enhance compatibility with the local environment. (Smiley, 2015)

9.2. Generative Design:

Generative design algorithms based on artificial intelligence can produce architectural models inspired by local architecture, while controlling parameters (such as lighting, ventilation and materials).

- Real-world example: using tools such as Autodesk Generative Design to develop building designs inspired by Yemeni heritage, taking the hot, dry environment into account. (Autodesk, 2021)

9.3. Preserving identity with innovation:

Artificial intelligence is used not only as a technical tool but also as a cultural mediator that helps preserve architectural identity through the "intelligent interpretation" of local heritage and its integration with modern functional needs. (Saleh, 2022, p. 142)

10. Artificial Intelligence and Its Effect on the Cultural and Ethical Dimensions of Local Architecture:

The use of artificial intelligence (AI) in reviving local architecture falls within what Lefebvre calls the "production of space" (Lefebvre, 1991), where cities are built not only with matter but with meanings, symbols and collective memory. Artificial intelligence, in this context, becomes a new tool for producing space, which may reproduce symbolic domination or reinforce cultural pluralism.

10.1. Cultural dimensions:

10.1.1. Cultural meaning and collective identity:

Artificial intelligence constitutes both a threat and a possibility at once: if it is used without a local knowledge reference, it may produce a "culturally hollowed-out" architecture, subject to the logic of algorithmic modelling rather than to local collective meaning. It is therefore essential to design algorithms according to local symbols—such as ornament, climatic patterns, or even tribal social systems—and not merely to import ready-made models. (Tzonis, 1981)

10.1.2. Critique of algorithmic colonialism:

Culturally "marginal" societies face the danger of alienation when artificial-intelligence systems are designed from outside their context, which reproduces a "digital colonialism," as described by Ramesh Srinivasan (2017). Those who design these systems must therefore be held to account—in what language, and according to which values. (Srinivasan, 2017)

10.2. Ethical considerations:

10.2.1. The right to the city and the right to memory:

According to Harvey (Harvey, 2008), the "right to the city" does not mean only access to resources, but also the right to shape memory and identity. When local architecture is revived using artificial intelligence, it must be built on genuine participatory consultation with local residents, and not through "smart designs" imposed from above. (Harvey, *The Right to the City*, p. 23)

10.2.2. The intersection of ethics and technology:

There is a pressing need to frame artificial-intelligence technologies in architecture within an ethics of cultural care, as proposed by "human-centred design," which stresses ethical values such as diversity, inclusion and spatial justice. (Dourish, 2006, p. 541)

11. The Role of Artificial Intelligence in Generating Local Identity:

11.1. Artificial intelligence and the "spirit of place" (*Genius Loci*) [the source reads "Genius Local"]:

According to Christian Norberg-Schulz (1980), the concept of the "spirit of place" is linked to the manifestations of human experience in space, where place is understood not as a mere physical structure but as a container of memory, identity and social practices. From this standpoint, the ability of artificial intelligence to emulate the "spirit of place" depends on its ability to understand and reason about the socio-cultural contexts that produce urban meaning. (Norberg-Schulz, 1980, p. 15)

11.2. Artificial intelligence from a socio-urban perspective:

11.3. Artificial intelligence as a tool for "reading collective memory":

Through deep-learning algorithms, artificial intelligence can analyse archival images, architectural patterns, historical texts and even the narratives of local residents, to generate architectural designs that reflect the symbolic structure of the place. This makes it possible to produce design solutions that internalize the cultural structure of the community. The use of StyleGAN algorithms also makes it possible to generate facades inspired by the traditional Hejazi style after training them on a local visual archive. (Liu Y., 2024, p. 293)

11.4. Generative design and local identity:

Artificial intelligence constitutes a generative design tool that allows hundreds of design scenarios emulating local architectural identities to be tried out. But this technical possibility must be regulated ethically and sociologically to avoid the "hollow replication" of a fragmented and ideologized identity. (Harvey, 1996, p. 312)

11.5. Limits and algorithmic misunderstanding:

Despite the computational power of artificial intelligence, it does not possess the phenomenal perception of spatial experience, since it treats culture as data that can be encoded (Codeable Culture), which may reduce the "spirit of place" to a formal decoration. This is what Marc Augé calls "non-places"—places without memory (Augé, 1995, p. 77).

11.6. Fair representation and symbolic pluralism:

If artificial-intelligence technologies are integrated into participatory processes with local communities, they can produce an architecture more representative of cultural diversity and multiple identities, which restores the standing of the act of the "right to architectural expression," as Lefebvre put it in the context of the "right to the city." (Lefebvre, 1996, p. 147)

Findings of the Study:

1. **The possibility of reading local specificities digitally:** artificial-intelligence techniques—such as computer vision and deep learning—have proved their ability to analyse the formal and ornamental characteristics of local architecture and convert them into design inputs that can be generated.

2. **Artificial intelligence as a cultural mediator:** when trained on local data, artificial intelligence can contribute to producing designs that express identity and respond to collective symbolism, not just form.

3. **Architecture as a space of collective memory:** artificial intelligence strengthens the tools for retrieving vanished architectural symbols and reusing them in new contexts without effacing their meanings.

4. **The shift of artificial intelligence from a tool to a design partner:** generative design, through artificial intelligence, offers approaches that allow multiple models to be derived on the basis of the cultural, climatic and social dimensions of the place.

5. **The importance of an ethical and cultural framing of smart technologies:** without conceptual and contextual controls, artificial intelligence may turn into a tool of replication or cultural alienation, which calls for the adoption of design models centred on the human being and the local community.

6. **Participatory design is fundamental to building smart local architecture:** communities must take part in shaping the features of the smart space, so as to ensure respect for the right to the city and to memory, and to prevent the production of "non-places."

Recommendations and Suggestions:

Recommendations:

- **Integrating artificial intelligence into architectural curricula:** the need to develop university curricula in schools of architecture to include artificial-intelligence applications in analysing and drawing inspiration from local architecture, which strengthens students' ability to link authenticity and modernity.

1. **Creating open-source digital platforms:** supporting open-source digital platforms concerned with documenting local architecture and converting its elements (ornamental, structural, environmental) into data that can be processed by artificial intelligence.

2. **Encouraging joint research projects:** supporting joint research among schools of architecture, departments of computer science and sociology to develop smart design tools that reflect the cultural specificities of societies.

3. **Establishing ethical and cultural controls for using artificial intelligence in design:** drafting codes of conduct and ethical standards that take the cultural and symbolic dimension into account in the use of artificial intelligence in architecture, to ensure that architectural identity is not reduced to a hollow formalism.

4. **Motivating municipalities and urban planners to adopt contextual AI solutions:** calling on government bodies and planners to employ artificial-intelligence tools based on understanding the "spirit of place" in urban-renewal processes, especially in historic areas.

5. **Involving the local community in architectural revival processes:** adopting participatory approaches in the use of artificial intelligence, which ensure that local residents take part in defining their cultural symbols and their real needs.

Suggestions:

1. **Launching a "Local Architectural Intelligence Centre":** establishing a specialized research centre concerned with developing AI tools to analyse and stimulate local architecture within a comprehensive academic and cultural framework.

2. **Building a digital library of local architectural patterns:** creating a visual and textual database using artificial intelligence, containing the elements of local architecture from different regions, to serve as a reference for designers and researchers.

3. **Organizing applied workshops:** organizing training workshops for architectural practitioners on how to use artificial-intelligence tools in drawing on local architecture and developing sustainable design solutions.

4. **Supporting smart architectural competitions:** launching architectural design competitions based on employing artificial intelligence to revive local architectural heritage, in cooperation with cultural bodies and municipalities.

5. **Adopting artificial intelligence as a tool in restoring historic buildings:** employing artificial-intelligence techniques such as computer vision and 3D scanning in the restoration of heritage buildings, ensuring accuracy and respect for the original context.

6. **Creating an "intelligent lexicon" of architectural symbols and ornament:** developing artificial-intelligence-based algorithms to classify and interpret local symbols in architecture and present them in a flexible form that can be used in contemporary projects.

Conclusion:

In an age in which the digital revolution intersects with the challenges of cultural sustainability, artificial intelligence emerges not only as a design tool but as a platform for rethinking the essence of local architecture and its relationship to identity, memory and environment. This study shows that the potential inherent in artificial intelligence is not limited to formal innovation, but extends to deconstructing and recomposing cultural and architectural symbols in the service of reviving the "spirit of place." Achieving this, however, remains contingent

on a critical vision that frames these technologies within humanistic and socio-urban approaches, which emulate not only form but the social, environmental and cultural content of the community. Smart local architecture is not built by algorithms alone, but by our ability to integrate technology within living knowledge contexts that respect plurality and specificity. Envisioning the future of local architecture therefore requires a shared knowledge project, in which artificial intelligence intersects with community knowledge, creativity with memory, and technology with ethics.

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