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Review of Philosophy. Art of Art

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Abstract

Understanding beauty as an expression of life, this research redefines architectural aesthetics through a dynamic, evolutionary design paradigm that integrates biological models, mathematical methods and real-time environmental responsiveness. Drawing inspiration from load-efficient animal structures swallow nests and honeybee hives—the study employs parametric modelling and genetic algorithms to interpret "living" design genes. Macroenvironmental data on site, climate, hydrology and biodiversity establish parameter sets for automated generation of multiple proposals, each evaluated for environmental performance via energy simulation, CFD analyses and quantified ecological services and for aesthetics via proportional deviation, façade variability and psychophysiological metrics (eye tracking, EEG, heart rate variability). Evolutionary operations (crossover, mutation) iteratively refine design populations to balance sustainability and high-dimensional beauty.

To enact this process, adaptive hardware and software systems deploy movable façades and shape-memory alloys that "breathe" in response to real-time temperature, solar radiation and wind data, subtly adjusting wall ratios and proportions (including nuanced deviations from the golden ratio) to optimise comfort and visual harmony. The building's life cycle is framed in three stages growth, maturity, ageing each governed by bespoke aesthetic and control strategies: growth curves inform membrane tension and slab expansion; maturity harnesses timed façade variability and planting systems; ageing celebrates material patina as temporal beauty.

Central to this vision is the establishment of the Architect's "Yue" role, an integrated coordinator combining architectural, structural and environmental expertise to dissolve traditional hierarchies and elevate the rigour of environmental analysis. To sustain innovation, a balance between advanced research and practice is urged: degree attainment becomes obligatory, while politically motivated competitions yield to more meaningful evaluation axes, fostering deep theoretical engagement and creative autonomy.

The Architects "Yue" Organisation Group a collaborative, family-like entity aims to reduce overtime, enhance intellectual productivity and strengthen resilience in cutting-edge design and manufacturing. Anticipated pilot projects across diverse climates will validate universal principles of dynamic aesthetics. An open science platform will disseminate design genes, algorithms and control software to catalyse interdisciplinary co-creation. By positioning environmentalists as central producers and supporting Ph.D. level research in robust manufacturing, this framework aspires to embed "living beauty" in future cities and architecture.

Keywords: Design; Façade; Beauty; Architects

Introduction

This paper reviews the definition of beauty previously posted on the SSRN server [1]. Based on my paper, "Proposal that 'Environmentalists Follow the Lead of Architects and Structural Engineers'", which revisits the idea of environmentalists collaborating with architects and structural engineers, I will conduct an in-depth study of architecture [2]. While we have found an answer to the philosophical question of whether beauty is the manifestation of life, the practical application of this concept remains challenging. Beauty may essentially lie in life's final moments or its process. Human and

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animal activities in terms of "living" have evolved since primitive times and can be said to be supported by numerous civilisations. However, although humans construct most buildings, their structures can be greatly inspired by those created by animals, such as swallow nests and honeybee hives [3,4]. These structures also contribute to biology. Moreover, human and animal genes are applied to AI technologies, such as "genetic algorithms," and these insights are hidden in nature. Additionally, genetic algorithms are used in architecture to calculate energy-saving processes and numerous papers have been written on this topic [5-7].

Mathematical beauty is found not only in the process of deriving equations, but also in the numerous art designs that use mathematical formulas [8]. Number sequences, such as the golden ratio, are considered one of the factors contributing to beauty and therefore deserve attention. Despite many research studies on this topic, it remains difficult to define beauty completely.

This paper is based on a review of previous studies and takes the concept of “dynamic aesthetics” in architecture as its starting point. It reinterprets “beauty” not merely as static proportions or decorative forms, but as a “reflection of living beings.” In order to visualise and incorporate the "living" process into design, an integrated approach combining biological insights [9-11] and mathematical methods is essential [12]. The load-optimised distribution and high area efficiency observed in animal nest-building and beehive structures inspire architectural structures and spatial composition, embodying the dynamism of continuous environmental response. By defining these as design genes and evolutionarily optimising them through parametric modelling and genetic algorithms, architecture matures over time. Even the process leading to its "final moments" becomes a tangible aesthetic experience.

Specifically, in the early stages of design, information about the macroenvironment, such as site characteristics, climatic conditions, water circulation and biodiversity, is acquired and used to establish design parameters. Based on this information, a framework is created that automatically generates multiple design proposals while simultaneously evaluating their environmental performance and aesthetic indicators. Environmental performance is calculated using energy simulation, Computational Fluid Dynamics (CFD) to evaluate the thermal and wind environments and a quantitative assessment of ecological services [13,14]. Aesthetic indicators are measured using a multivariate model that combines proportion deviation, façade variability and user psychophysiological data, such as eye movement trajectories, brain waves and heart rate variability [15]. This stage's data is treated as genetic information. Evolutionary operations, such as crossover and mutation, are applied to inherit design proposals that embody sustainability and high-dimensional beauty. This approach is advocated by Yamamoto Fuyutaka, who represents the "environmentalist" perspective. These proposals are passed on to the next generation.

Furthermore, developing hardware and software technologies to implement this dynamic design process is essential. A system that acquires real-time data on outdoor temperature, solar radiation and wind speed and induces deformation of structural elements using movable facades and shape memory alloys will enable the building to "breathe" as if regulating its body temperature. These autonomous control mechanisms optimize fluctuations caused by preset evolutionary design parameters in real time to balance aesthetic comfort and environmental performance. For instance, minor adjustments to the wall-to-wall ratio in response to indoor-outdoor temperature differences, along with proportions slightly shifted from the golden ratio, can enhance solar shading while maintaining visual balance [16].

Furthermore, it is proposed that the life cycle of a building be divided into three stages: "growth," "maturity," and "ageing." Evaluation indicators and control strategies corresponding to each stage should be incorporated into the design. During the growth stage, emphasis is placed on the aesthetic beauty of the growth process. The tension distribution of the structural membrane and the modular expansion pattern of the floor slab are generated according to the growth curve. The maturity phase optimises environmental responsiveness with highly controlled timing for variable facade and planting system operation. In contrast, the ageing phase intentionally allows materials to weather and discolour, showcasing the natural beauty brought about by the passage of time. Thus, the architecture changes over time, as if it were "alive," providing users with a variety of aesthetic experiences.

The role of the environmentalist is to support the design and evaluation processes. Environmentalists are not merely engineers who reduce energy efficiency or ecological impact; they are integrated producers who create mutual resonance between architecture and the environment, embedding aesthetic experiences within their dynamic, reciprocal movement. Environmentalists collaborate with ecologists, biologists and data scientists. They continuously feed the inputs and outputs generated at each stage of evolutionary design into a feedback loop to refine the design genes. This creates a cybernetic system in which architecture self-regulates and self-actualises repeatedly in tandem with the environment, transcending the mere imitation of nature.

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On the other hand, the practical application of this dynamic aesthetic presents many challenges [17]. First, the durability and maintainability of the mechanisms that move architectural elements based on real-time environmental data must be verified to ensure stable long-term operation. Second, there is the black box problem of evolutionary design. The causal relationship behind why forms derived from genetic algorithms are aesthetically superior must be clarified and design knowledge must be formalised into explicit knowledge [18]. Third, co-creation with users and communities requires forming a social consensus to accept fluctuating environmental aesthetics. To overcome these challenges, multi-faceted verification through pilot projects and empirical experiments is indispensable.

Demonstration fields can be used to verify applicability under various environmental conditions. Examples include residential buildings in temperate humid climates, public facilities in areas prone to heavy rainfall and research facilities in arid desert areas. Throughout the building's lifecycle, environmental performance and aesthetic evaluations will be conducted in parallel with each project. For instance, statistical analyses will examine the correlation between changes in rainwater recovery rates and psychophysiological responses to variations in façade shapes. This will enable us to verify the consistency between theoretically derived design parameters and aesthetic experiences in real-world environments, thereby extracting universal principles of dynamic aesthetics.

Furthermore, to return these research results to the academic community and industry, we propose creating a platform that makes the designed genes, analysis algorithms and real-time control software publicly available as a database accessible to anyone from an open science perspective. This co-creation platform is expected to connect environmentalists, architects and researchers in various regions, accelerating the circulation of knowledge and technological evolution.

In conclusion, this research attempts to redefine "beauty" and transform it into practical design topology. For architecture to behave like living organisms and sustainably "live" in a reciprocal relationship with the environment, a comprehensive paradigm shift integrating design knowledge, technology, evaluation and social acceptance is necessary. Environmentalists serve as central stakeholders, pioneering new specialised fields and reorganising the intellectual foundation and practical framework of the entire architectural field. The dynamic aesthetics and evolutionary design process proposed in this research will serve as the cornerstone for creating "living beauty" in future cities and architecture.

Furthermore, there is a shortage of people capable of managing architects, structural engineers, environmental engineers and construction sites. Therefore, rather than clients, knowledgeable individuals should be responsible for management. This concept is referred to as "architectural healing," but such individuals do not yet exist. The first step is to establish the role of the environmental engineer and promote the concept of architectural healing in management (Architect"癒').

Review of Literature

Architect"癒' that brings together architects, structural engineers and environmental engineers

Architects are recognised as having greater authority than structural or environmental engineers. Mechanical and electrical design, for example, is at the lower end of the hierarchy and employs an extremely large number of staff by super-general contractors. With such a pyramid-shaped structure, it is impossible to design good buildings. Well-known design firms have repeatedly exploited ideas and I often hear that the actual designers are young professionals. Frankly, i question the significance of architects' existence. Structural engineers occupy a position akin to that of artists and focus on structural perspectives; therefore, they appear to pose no particular issues. I hope they continue to excel as expert professionals. On the other hand, as I have advocated in previous reports, environmental engineers should conduct practical numerical analyses that are genuinely useful rather than superficial and simplistic. With that in mind, I believe that better buildings will be created if someone who has mastered all three fields design, structure and environment takes charge of coordination and hierarchies disappear. This coordinating role is referred to as "Architects “Yue', and, as defined earlier, it encompasses all aspects of coordination.

Maintaining a balance between research and practice

Setting aside the excuse of being busy, members in all fields recognize the need for advanced intellectual abilities and exceptional resilience to carry out research and practical work at the forefront of their fields simultaneously. Therefore, while degrees are fine, evaluations based on unrealistic or politically motivated competitions should be abolished. In reality, there should be a different evaluation axis. For this reason, many engineers should be encouraged to study foundational theories more thoroughly. Obtaining a degree should be an expected obligation. Abolishing exam structures similar to

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those seen in architectural licensing exams, along with making degree attainment a requirement, would be preferable. This would reduce unnecessary memorization and allow for more creative work. We kindly request your understanding of this matter.

Architecture that walks alongside architects "Yue" organisation group

Architecture is not just a friend; it is a member of the family with whom we spend time. The Architects "Yue" Organisation Group is committed to conducting meticulous, cutting-edge manufacturing and research while reducing overtime hours, improving intellectual productivity and strengthening resilience to make numerous buildings more robust. For reference, **Figure 1** shows a conceptual diagram of the Architects 'Yue organisation group.

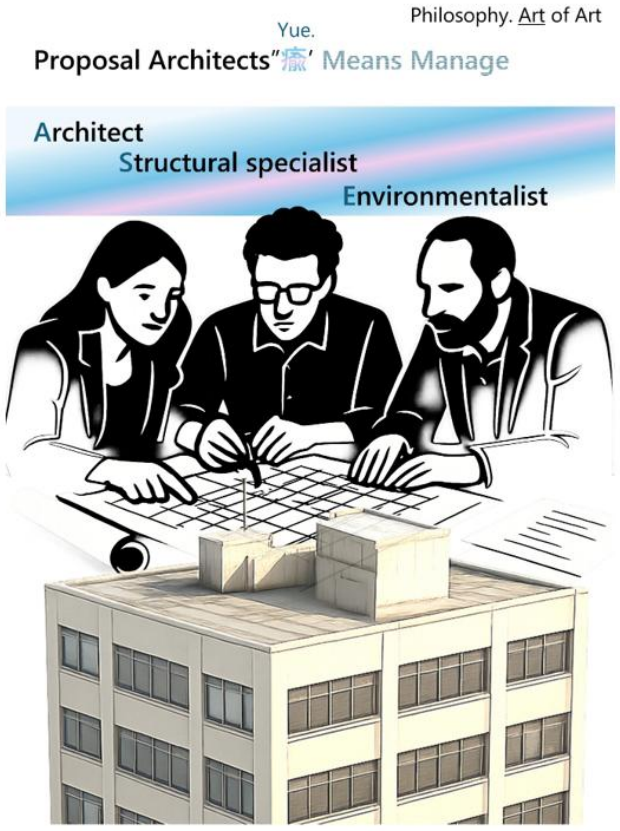

Figure 1: Conceptual diagram of the architects "Yue" architectural organization group.

Conclusion

In this paper, as a follow-up to the previous report, we present a proposal for fundamental reform of the architecture field by the Architects "Yue" organisation group and its organisational structure. Currently, several Ph.D. holders are making significant contributions to the field of manufacturing. Their work differs greatly from playful numerical analysis, so it is worth paying close attention to them and encouraging future studies.

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