buildings

MDPI

Editorial

Harmonising Nature and Mind: Biophilic Design, Neuroarchitecture and Human Wellbeing in Intelligent Buildings

Yangang Xing [1,*], Alexander Sumich [2], Jordan J. Bird [3], Andrew Knight [1] and Derek Clements-Croome [4]

[1] School of Architecture Design and the Built Environment, Nottingham Trent University, Nottingham NG1 4FQ, UK; andrew.knight@ntu.ac.uk
[2] Institute of Psychology, School of Social Sciences, Nottingham Trent University, Nottingham NG1 4FQ, UK; alexander.sumich@ntu.ac.uk
[3] Department of Computer Science, School of Science & Technology, Nottingham Trent University, Nottingham NG1 4FQ, UK; jordan.bird@ntu.ac.uk
[4] School of the Built Environment, Whiteknights, University of Reading, P.O. Box 219, Reading RG6 6AW, UK; d.j.clements-croome@reading.ac.uk
* Correspondence: yangang.xing@ntu.ac.uk

Buildings influence human experience and wellbeing, but translating this relationship into evidence-based design guidance remains challenging. Biophilic design, neuroarchitecture and intelligent building technologies offer complementary approaches to understanding how environmental conditions relate to human responses. The nine papers in this Special Issue address this challenge through reviews, assessment frameworks, applied studies and computational modelling.

Tekin et al. [1] review 435 studies to map research trends and identify gaps in biophilic design. Sedghikhanshir and Montelli [2] propose the Biophilic Intensity Matrix (BIMx), a decision-support framework for characterising interventions by their properties, intensity and duration. Khalil and Steemers [3] introduce the Neurobiophilia Index, integrating ten environmental dimensions to assess environmental enrichment. Together, these contributions map the evidence base and propose tools to support more systematic design and evaluation.

Three papers examine nature-based approaches in care and learning environments. Thomas et al. [4] pilot virtual nature experiences for older people in care settings, combining immersive environments, wearable sensors and self-reported measures. Erdoğan et al. [5] investigate relationships between spatial characteristics and user experience in a hospital healing garden. Stigsdotter and Lottrup [6] document an evidence-based design process for a rooftop garden at a Danish social and healthcare school, highlighting stakeholder engagement and co-design. These studies address virtual interventions, the experience of physical landscapes and the process of translating evidence into design.

The remaining papers extend the discussion to building performance, public space and hospitality. Alyahya et al. [7] use computational fluid dynamics to investigate biomimetic ventilated façades in hot, arid climates. Zhang et al. [8] combine thermal modelling and pedestrian distribution to identify where outdoor thermal comfort interventions may be most effective. Elshaer et al. [9] examine biophilic interiors in rooftop restaurants in relation to guest satisfaction and sustainable hospitality. Their distinct contributions span façade engineering, pedestrian-centred urban analysis and commercial interior design.

These studies demonstrate the range of methods used to investigate nature, buildings and human experience, although their findings are not directly interchangeable. Future research should strengthen the validation of assessment frameworks, evaluate interventions over time and distinguish technical performance from demonstrated wellbeing outcomes.

Check for updates

Received: 26 October 2026
Accepted: 30 October 2026
Published: 1 November 2026

Copyright: © 2026 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

Intelligent building technologies may support this work through environmental sensing, simulation and adaptive control, if occupant privacy, accessibility and autonomy remain central considerations.

The new Special Issue, Neuroarchitecture and Biophilic Design for Human Well-Being, invites research on the psychological and physiological effects of architectural environments, biophilic interventions, neuroarchitecture-informed assessment, inclusive design and technologies for evaluating human–environment interactions. Contributions connecting empirical evidence with practical design applications are particularly relevant. The aim is to advance understanding of how built environments can support human wellbeing through evidence-informed, sustainable and inclusive design.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Tekin, B.H.; Tunahan, G.I.; Disci, Z.N.; Ozer, H.S. Biophilic Design in the Built Environment: Trends, Gaps and Future Directions. *Buildings* **2025**, *15*, 2516. [CrossRef]
2. Sedghikhanshir, A.; Montelli, R. Biophilic Design Interventions and Properties: A Scoping Review and Decision-Support Framework for Restorative and Human-Centered Buildings. *Buildings* **2026**, *16*, 515. [CrossRef]
3. Khalil, M.H.; Steemers, K. The Neurobiophilia Index. *Buildings* **2026**, *16*, 637. [CrossRef]
4. Thomas, C.; Xing, Y.; Knight, A.; Brown, D.J. A Biophilic Therapeutic Framework for Ageing Well in Care Settings. *Buildings* **2025**, *15*, 4558. [CrossRef]
5. Erdoğan, R.; Berk, Ş.; Soydan, O.; Tekinalp, M.F. Spatially Linking User Experience and Environmental Conditions: An Evidence-Based Evaluation of a Hospital Healing Garden. *Buildings* **2026**, *16*, 2068. [CrossRef]
6. Stigsdotter, U.K.; Lottrup, L. Designing for Health and Learning: Lessons Learned from a Case Study of the Evidence-Based Health Design Process for a Rooftop Garden at a Danish Social and Healthcare School. *Buildings* **2026**, *16*, 393. [CrossRef]
7. Alyahya, A.; Lannon, S.; Jabi, W. Biomimetic Opaque Ventilated Façade for Low-Rise Buildings in Hot Arid Climate. *Buildings* **2025**, *15*, 2491. [CrossRef]
8. Zhang, D.; Liu, G.; Kang, K.; Chen, X.; Sun, S.; Xie, Y.; Lin, B. Quantifying Thermal Demand in Public Space: A Pedestrian-Weighted Model for Outdoor Thermal Comfort Design. *Buildings* **2025**, *15*, 2156. [CrossRef]
9. Elshaer, I.A.; Azazz, A.M.S.; Zayed, M.A.; Ameen, F.A.; Fayyad, S.; Fouad, A.M.; Fathy, E.A.; Hamdy, A. Environmental Design Innovation in Hospitality: A Sustainable Framework for Evaluating Biophilic Interiors in Rooftop Restaurants. *Buildings* **2025**, *15*, 3474. [CrossRef]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.