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The research trajectory includes supervising thesis students on the professional Master's, whose projects lie within art, architecture, and social architecture. Current research has sought to investigate—the hyperreal photomontage representations of architectural possibilities. Recent study involved a Doctor of Philosophy in Architecture at the School of Architecture and Planning, Waipapa Taumata Rau (University of Auckland) titled "Sublime Follies: Unveiling the Realm of Multiple-Reality Architecture".

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Hope is on the Horizon: Temporal Layering; Architecture and AI

Dr Annabel Pretty

Abstract

This paper explores the intersection of architecture, generative artificial intelligence (GenAI, hereafter), and the 4EA framework (Embodied, Embedded, Enactive, Extended, and Affective cognition) (Kousoulas et al., 2024) through the allegory of Pandora's box, where hope (Bloeser & Stahl, 2022) remains a guiding beacon amid the troubles unleashed by rapid technological advancement. Drawing on Christine de Pizan's *The Book of the City of Ladies* (de Pizan, 1982 [1405]), which envisions a sanctuary for feminine potential, the study juxtaposes historical allegory with contemporary 'phygital' (physical-digital) design paradigms (Belitskaja, 2023)*.

Through the lens of 4EA, the paper examines how GenAI-integrated architecture might embody new possibilities for urban spaces, blending cognitive interaction, embedded intelligence, and 'affective' design. This integration poses critical questions: Can GenAI-infused architecture mitigate humanity's existential woes, or will it deepen inequalities and alienation? De Pizan's levels of reality provide a conceptual scaffold for reimagining the boundaries between digital abstraction and physical presence and the seamless blurring of each.

Ultimately, the paper argues that hope persists in the hybridity of architecture and GenAI, offering opportunities to construct inclusive, responsive spaces that extend human potential (Rehm

& Jovanovic, 2022). However, realising this vision requires careful negotiation of the tensions between dystopian fears and utopian aspirations, reminding us that hope, like architecture itself, must be intentionally designed.

KEYWORDS: Architecture, Generative AI, Christine de Pizan, Hope

Introduction: Pandora's Box Redux

The convergence of GenAI and architecture presents a modern-day Pandora's box. As these two forces entwine, they unleash a cascade of challenges: the pervasive surveillance (Zuboff, 2020) of urban spaces, the homogenisation of cultural expression, and the virtual footprints of digitally orchestrated and conceived cities. Yet, just as in Pandora's ancient myth, one element remains amid the turbulence—hope.

Pandora's box serves as a fitting metaphor for the 4EA framework, as outlined by the writing of Kousoulas, Radman and Sohn 'Noesis Without a Mind' encompassing Embodied, Embedded, Enactive, and Extended, 'Affective 'cognition (Kousoulas et al., 2024, p. 01). Each dimension reflects the complex interplay between GenAI's digital interface and architecture's metaphorical physicality, challenging us to rethink what it means to inhabit the spaces we create.

Counterbalancing this uneasy opening is Christine de Pizan's *The Book of the City of Ladies [1405],* an allegorical construction of possibility. Pizan envisioned a sanctuary where all women could thrive, challenging the limitations of her time. De Pizan was

deliberate in naming her visionary creation [...] "kingdom of femininity" the City of Ladies rather than the City of Women [...] all woman can find a place and realise their feminine potential." (de Pizan, 1982, p. xxx). City of Ladies offers a counter-narrative to the chaos GenAI might bring: a hopeful blueprint for reimagining inclusion, diversity, and potential (Sauvagnargues et al., 2016, p. 47). *This paper asks whether architecture and GenAI, through the emerging 'phygital 'paradigm (Belitskaja, 2023), can deliver on this promise. Can the intersection of embodied intelligence and built form become a vessel for hope on the horizon, rather than another iteration of despair?*

The 4EA Framework and Pandora's Box: A Troubling Fit?

The interplay between GenAI and architecture can be examined through the lens of the 4EA framework, revealing how these dimensions shape our engagement with the built environment and its potential for either hope or anguish:

Embodied cognition highlights the physicality inherent in both architecture and GenAI systems, anchored in human sensorial interaction. The tactile, spatial, and visual dimensions of these systems prompt us to ask whether this grounding in human experience might counteract some of the dystopian "troubles" GenAI threatens to unleash.

Embedded Intelligence explores how GenAI functions as an integrated layer within architectural systems, seamlessly blending into the infrastructure of cities and buildings. Yet this raises a critical question: does such integration amplify existing societal anxieties, or can it offer solutions that ease humanity's burdens?

Enactive processes consider how GenAI and architecture together construct meaning, creating spaces that respond to human needs and actions. Could these dynamic interactions inspire hope, or do they risk devolving into frustratingly glitchy environments (Menkman, 2009, 2011; Pretty, 2023) that alienate rather than connect spatial constructs?

Extended cognition frames the city as an externalisation of human thought and culture, with GenAI functioning as the urbanised brain. But as these systems grow increasingly complex, one wonders if hope can endure amidst the overload of digital and cognitive stimuli.

Finally, the Affective dimension probes the emotional resonance of GenAI-enhanced spaces. Do these environments comfort and inspire, or do they instead evoke an unsettling uncanniness that leaves us longing for more authentic connections? Together, these perspectives illuminate the multifaceted implications of architecture and GenAI, balancing the promise of hope against the weight of uncertainty.

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The City of Ladies: A Hopeful Blueprint

De Pizan offers a striking historical precedent for exploring the creative possibilities of artificial intelligence— the allegorical city, conceived as a sanctuary for feminine potential, resonates beyond its time as a broader framework for realising untapped potential—whether human, feminine, or even machinic (Steyerl, 2013). This vision of a constructed space where all forms of possibility can flourish serves as an evocative metaphor for what GenAI might achieve when applied to 'phygital 'architecture.

From a feminist perspective, de Pizan's commitment to inclusion (de Pizan, 1982, p. xxxvii) takes on new meaning when interpreted as a manifesto for AI-driven governance and design (Cixous, 2003). Just as de Pizan sought to create a "kingdom of femininity" that embraced diversity and empowerment, GenAI

can aspire to foster inclusive systems that reflect a multiplicity of voices and perspectives, reimagining algorithmic and architectural structures alike.

Further, de Pizan's exploration of different levels of reality (1982, p. xvi) invites a dialogue between allegorical and material forms of architecture. By drawing on her layered approach, one can reimagine the principles of the 4EA framework—Embodiment, Embeddedness, Enaction, Extension, and Affect—in digital and physical spaces, pushing the boundaries of what architecture can be in an GenAI enhanced world.

Hope on the Horizon: The Future Beckons

Bringing together the myth of Pandora's box, Christine de Pizan's allegories, and the transformative potential of GenAI reveals a complex intersection at the horizon of human ingenuity. Pandora's troubles echo through the challenges posed by GenAI and architecture today, while de Pizan's City of Ladies offers a hopeful counterpoint—a vision of what might be built if creativity, inclusivity, and diversity guide our designs. GenAI, with its promise of innovation, stands poised to bridge these narratives, embodying both the perils and the possibilities of our time.

Yet, hope, as always, remains in the box. Its realisation depends on those who wield the tools of creation—architects, designers, and technologists—and on the intentions behind their work. Will they construct spaces that embody human potential or reinforce the troubles already let loose? The outcome hinges on how carefully one balances optimism with caution. Would individuals place their trust in algorithms to construct a shared vision, or

would their confidence ultimately depend on the financial investment associated with such systems? The answer likely resides in the intricate interplay of human hope, scepticism, and pragmatic considerations. Hope is not merely a cognitive stance; it is shaped by our awareness of the possibilities and probabilities of future events. It also carries a conative dimension—unlike simple expectations, hopes are deeply connected to and informed by our desires.

Perhaps hope isn't just on the horizon; perhaps it's in the pixels.

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