# The Dialectics of the Digital Commons: Tracing Critical Pedagogy from Freirean Praxis to Liberatory Simulation

## Introduction: The Ontological Vocation in a Rendered World

The trajectory of critical pedagogy, a philosophy of education rooted in the struggle for humanization and social justice, has undergone a profound metamorphosis in the transition from the analog literacy campaigns of the mid-20th century to the algorithmic environments of the 21st. At the heart of this evolution remains the seminal work of Paulo Freire, whose insistence on *conscientização*—the development of critical consciousness—provides the theoretical bedrock for contemporary investigations into digital literacy, creative coding, and participatory urbanism. This report offers an exhaustive genealogical analysis of these developments, tracing the remediation of Freirean principles through the lineage of Constructionism, critical digital pedagogy, and the emerging genre of "serious toys" in architectural and urban design.

The inquiry posits that the tools of digital simulation—specifically game engines like Unity and social platforms like Roblox—are not merely neutral instruments of representation but are active sites of pedagogical and political contestation. As these platforms are adopted by educators, architects, and community planners, they generate new "limit-situations" where the tension between liberatory agency and "platformized" surveillance plays out. By synthesizing primary sources, archival materials from major design conferences (ACADIA, CAADRIA, ISEA), and technical reports on "civic tech," this analysis illuminates how the "ontological vocation" of becoming more human, as defined by Freire, is being renegotiated in the virtual commons. The report further investigates the rise of "participatory digital twins" and "counter-twinning" as methodologies that challenge the technocratic hegemony of the "Smart City," proposing instead a "Playable City" framework that recovers the right to the city through dialogic play.

## Part I: The Genealogical Roots of Critical Pedagogy and the Politics of Literacy

### 1.1 The Brazilian Context and the Philosophy of ***Conscientização***

To understand the migration of critical pedagogy into digital spaces, one must first rigorously examine its origins in the material conditions of Northeastern Brazil during the mid-20th century. Paulo Freire’s philosophy was not an abstraction but a direct response to the "culture of silence" imposed by centuries of colonial rule and economic oppression. Brazil, a Portuguese colony from 1500 to 1822, developed a socioeconomic structure heavily reliant on slavery and the latifundia system, leaving a legacy of profound inequality and illiteracy that persisted well into the 1960s.1 Freire’s work in the 1960s, particularly his adult literacy campaigns in Angicos, was predicated on the understanding that illiteracy was not a personal failing but a political condition designed to maintain the subjugation of the rural poor.

Freire’s central theoretical contribution, *conscientização*, describes the dialectical process by which learners move from a "naive consciousness"—accepting reality as a fixed, unchangeable given—to a "critical consciousness" that perceives the historical and mutable nature of social structures. This awakening is the precursor to *praxis*, defined as "reflection and action upon the world in order to transform it".2 Freire drew heavily from Hegelian dialectics, particularly the master-slave dialectic, and Marxist class analysis, arguing that oppression dehumanizes both the oppressor and the oppressed. The goal of education, therefore, is the "ontological vocation" of all people to become fully human, a state achievable only through liberation from oppressive dynamics.1

### 1.2 The Banking Model vs. Problem-Posing Education

The mechanism of oppression in education was identified by Freire as the "banking model." In this paradigm, students are conceptualized as empty vessels or depositories, and the teacher as the depositor of static knowledge. This narration of reality—where the teacher speaks and the students listen—mechanically domesticates the learner, inhibiting creativity and reinforcing a passive acceptance of the status quo.2 The banking concept mirrors the oppressive society as a whole, projecting an ideology of adaptation rather than transformation.

In opposition, Freire proposed "problem-posing education," a dialogic model where the vertical hierarchy of teacher-student is dismantled in favor of a horizontal relationship of "teacher-student" and "students-teachers." In this model, the object of knowledge is not the private property of the teacher but a medium for critical reflection by both parties. Learning takes place through the investigation of "generative themes"—words and concepts drawn directly from the existential reality of the learners (e.g., *tijolo* for brick, *favela* for slum, *salário* for wages). By decoding these themes, learners begin to "read the word and the world" simultaneously, understanding language not just as a set of abstract symbols but as a code for power relations.5

### 1.3 Dialogic Learning and the Conditions of True Communication

Central to this liberatory project is the concept of dialogue. For Freire, dialogue is not merely conversation; it is an existential necessity and a political act. True dialogue cannot exist in the absence of a profound love for the world and for people, nor can it exist without humility, faith in humanity, and hope. It requires critical thinking that perceives reality as a process rather than a static entity.6 This dialogic framework is essential for understanding later digital pedagogies, where the "interface" becomes the medium of dialogue (or anti-dialogue).

The suppression of dialogue is a characteristic of "anti-dialogical action," which includes conquest, divide and rule, manipulation, and cultural invasion—tactics used by the oppressor to prevent critical consciousness. Conversely, dialogic action involves cooperation, unity for liberation, organization, and cultural synthesis.6 These categories provide a robust heuristic for analyzing contemporary digital platforms: does a Learning Management System (LMS) or a "Smart City" dashboard facilitate dialogic cooperation, or does it impose a form of cultural invasion and technocratic manipulation?

### 1.4 The Spatial Turn: Critical Pedagogy of Place

While Freire focused on the social and political dimensions of situationality, later scholars synthesized his work with place-based education to form a "critical pedagogy of place." This framework argues that "being in a situation" has an inherent spatial dimension. To critically reflect on one's existence is to reflect on the spaces one inhabits; to act is to transform those spaces.8 This "spatial turn" is pivotal for connecting Freirean pedagogy to architecture and urban planning. It suggests that the built environment—like language—is a text to be read and rewritten. This synthesis laid the groundwork for "participatory design" and "radical planning" movements, which seek to decolonize spatial practices and empower inhabitants to shape their own communities.8

## Part II: The Digital Remediation – From Constructionism to Critical Code Studies

As education entered the digital age, Freire’s ideas found resonance and remediation in the theories of Seymour Papert and the burgeoning field of critical digital pedagogy. This section traces the intellectual lineage from the "generative themes" of literacy circles to the "microworlds" of creative coding.

### 2.1 Constructionism: The Maker Mindset as Praxis

Seymour Papert, a mathematician and student of Jean Piaget, developed the theory of Constructionism, which shares deep epistemological roots with Freirean pedagogy. While Piaget emphasized that children construct knowledge inside their heads (constructivism), Papert argued that this happens "felicitously" when the learner is engaged in constructing a public entity, whether it be a sandcastle on the beach or a theory of the universe.10

Papert’s work with the LOGO programming language introduced the concept of the "microworld"—a constrained, safe, yet open-ended digital environment where learners could explore mathematical concepts by "teaching" a turtle to move. This reversal of agency—the child programming the computer rather than the computer programming the child—is a direct digital analogue to Freire’s rejection of the banking model.10 Scholars have noted that Freire laid the groundwork for the "maker mindset" before the term existed, viewing the act of creation as a tool to question oppression. The convergence of Freire and Papert suggests that "making"—coding, designing, building—is a form of literacy that enables the learner to externalize internal models and subject them to public critique and dialogue.10

### 2.2 Critical Digital Pedagogy: Interrogating the Tool

In the late 20th and early 21st centuries, the field of Critical Digital Pedagogy (CDP) emerged to apply Freirean critique to educational technology. CDP asserts that digital tools are never neutral; they are encoded with political, economic, and cultural values. A critical digital pedagogy asks not just "how" to use a tool, but "why" and "whether" it should be used at all. It investigates the "hidden curriculum" of software—the assumptions about learning, authority, and knowledge that are hard-coded into interfaces.12

Key practitioners in this field argue that Learning Management Systems (LMS) often function as digital banking models, or "walled gardens," that stifle agency and enforce surveillance. In contrast, CDP advocates for "domain of one's own" initiatives and the use of open-web tools that allow students to narrate their own identities and construct their own digital architectures.12 The goal is to foster "critical digital literacy," which involves understanding the politics of the interface, the economics of data, and the power dynamics of algorithmic culture.

### 2.3 Creative Coding and the Politics of Open Source

The "creative coding" movement represents a practical application of these liberatory principles. By positioning programming as an expressive medium for artists and humanists, rather than solely a technical skill for engineers, this movement seeks to democratize access to computational power.

#### 2.3.1 The Processing Foundation and p5.js

A central institution in this landscape is the Processing Foundation, founded in 2012 to promote software literacy within the visual arts. The development of *Processing* (by Casey Reas and Ben Fry) and its web-based successor *p5.js* (led by Lauren McCarthy) was driven by an explicit philosophy of inclusion. Reas views software as culture, arguing that code creates "conditional systems" that reflect the biases and values of their creators.14

Lauren McCarthy’s leadership of the *p5.js* project represents a significant evolution in critical coding pedagogy. Unlike many open-source projects where diversity is an afterthought, McCarthy centered community outreach, accessibility, and inclusivity as the *foundation* of the platform. *p5.js* was designed to be accessible through a web browser, lowering the technical barrier to entry and allowing for immediate visual feedback.16 This design choice is deeply political; it asserts that coding belongs to everyone, including those historically marginalized in tech (women, people of color, non-binary individuals). The platform’s documentation and tutorials prioritize "accessible" language and diverse examples, embodying a "pedagogy of care".17

#### 2.3.2 Critical Code Studies and Aesthetic Programming

The academic discourse surrounding creative coding has given rise to "Critical Code Studies" (CCS) and "Aesthetic Programming." CCS applies the hermeneutic strategies of the humanities to the interpretation of computer code, reading it as a text that contains rhetoric, culture, and ideology.19 Scholars argue that programming education often perpetuates a "myth of axiological neutrality," presenting code as objective logic while ignoring its entanglement with colonial and capitalist power structures.

"Aesthetic Programming," as articulated by Winnie Soon and Geoff Cox, uses *p5.js* to teach coding as a critical practice. It encourages learners to "program or be programmed," fostering a politicized literacy of how software structures the world. By examining the material conditions of coding—time, energy, labor—students learn to see code not just as a tool but as a system of relations.17 This aligns with Freire’s goal of making the invisible visible; in the digital age, the invisible forces are the algorithms that govern our lives.

## Part III: "Serious Toys" – The Architectural Turn in Simulation

The principles of critical pedagogy have found a particularly fertile ground in the intersection of architecture, urban planning, and simulation. The concept of "serious toys" provides a theoretical framework for understanding how game engines and virtual environments are reshaping the design disciplines.

### 3.1 Defining "Serious Toys": From Eames to Cybernetics

The term "serious toys" was popularized by Charles and Ray Eames, the mid-century modern designers who famously declared, "Toys are not as innocent as they look... Toys and games are the preludes to serious ideas." In a 1958 interview and subsequent writings, Charles Eames argued that many transformative technologies, such as electricity and flight, began as curiosities or playthings. He viewed toys as instruments for uninhibited experimentation, allowing the mind to model complex concepts without the fear of failure associated with "serious" work.21

This concept has deep resonances with cybernetics and systems theory. A "serious toy," in this context, is a system that allows for the modeling of variables and feedback loops. It is a "transitional object" (Winnicott) that bridges the gap between the internal world of imagination and the external world of physical constraints. In contemporary architectural education, the "serious toy" has evolved from physical blocks and erector sets to digital game engines like Unity and Unreal.

### 3.2 Unity and the Simulation of Possibility

The adoption of the Unity game engine by architecture schools and firms marks a paradigm shift from *representation* to *simulation*. Traditional CAD tools (like AutoCAD or Revit) are designed to produce static representations of buildings for construction. Unity, however, is designed to simulate environments for experience. It allows for the introduction of physics, time, lighting, and interactivity.23

#### 3.2.1 Experiential Learning and Scenario Building

In architectural pedagogy, Unity serves as a "microworld" where students can test design hypotheses in real-time. This aligns with Experiential Learning Theory (Kolb), which emphasizes learning through concrete experience and active experimentation.25 Projects like the "Spaces, Places and Possibilities" initiative in Squamish, Canada, utilized Unity to create interactive "model explorers." These tools allowed community members to navigate 3D visualizations of different urban development scenarios, transforming abstract planning data into visceral, first-person experiences.26 By "playing" through these scenarios, stakeholders could understand the trade-offs of density, zoning, and environmental impact in a way that static maps could never convey.

### 3.3 The Plethora Project: Gamifying the Commons

A pivotal figure in the theorization of "serious toys" for architecture is Jose Sanchez, director of the Plethora Project. Sanchez explicitly merges video game design with critical architectural theory to challenge the "platform capitalism" of the design industry. His work argues for "Architecture for the Commons"—systems that allow for distributed authorship and participatory design.28

* ***Block'hood*:** Sanchez’s game *Block'hood* is a city-building simulator that critiques the growth-at-all-costs logic of traditional games like *SimCity*. In *Block'hood*, the core mechanic is ecological balance and entropy. Players must construct neighborhoods from a catalog of blocks (apartments, trees, solar panels), but each block has inputs and outputs. If a block’s needs are not met, it decays and collapses. This "procedural rhetoric" teaches systems thinking and sustainability, embodying Freirean praxis by forcing the player to reflect on the consequences of their design decisions.30
* ***Common'hood*:** Building on this, *Common'hood* focuses on the social dimensions of space. It is a "squatter settlement simulation" where players manage a community of characters with unique needs and backstories, scavenging materials to build shelter and infrastructure. The game explicitly deals with themes of labor, inequality, and mutual aid, serving as a "serious toy" for understanding the political economy of the built environment.33

### 3.4 Zaha Hadid Architects: Parametricism and Gamified Participation

The application of these principles extends to high-end architectural practice. The Bhooshan Studio at Zaha Hadid Architects (ZHA), part of the Architectural Association’s Design Research Lab (DRL), investigates "participatory agency" through gamification. They employ "cyber-physical platforms" that allow users to configure housing layouts or urban densities using game-like interfaces. These inputs are then rationalized by parametric algorithms to generate fabrication-ready designs.35

While this approach claims to democratize design, it has drawn critique for potentially retaining a top-down power structure. Critics argue that while the user is given a "sandbox," the "rules of the game" (the parametric constraints) are still dictated by the architect, limiting true emancipatory potential. This tension highlights the difference between "consultation" (users selecting options) and true "co-creation" (users defining the problem), a distinction central to Freirean pedagogy.36

## Part IV: The City as Classroom – Participatory Planning, Digital Twins, and the Playable City

The principles of critical pedagogy—dialogue, participation, and critical consciousness—are increasingly being applied at the urban scale. Digital tools are transforming urban planning from a technocratic exercise into a participatory pedagogical process, often referred to as "civic tech" or "participatory design."

### 4.1 UN-Habitat and the ***Block by Block*** Initiative

One of the most successful applications of "serious toys" in the Global South is the *Block by Block* initiative, a partnership between UN-Habitat and Mojang (creators of Minecraft). This program addresses the exclusion of marginalized communities from urban planning processes due to the technical barriers of traditional architectural drawings.

* **Methodology:** The program uses Minecraft to create rough 3D models of public spaces in developing countries (e.g., Kibera in Nairobi, spaces in Nepal and Haiti). Community members—including women, youth, and slum dwellers—are invited to workshops where they redesign these spaces within the game.
* **Freirean Impact:** Minecraft serves as a "lingua franca" or a "digital pidgin" that transcends literacy barriers. It allows participants to visualize their "generative themes"—safety, lighting, sanitation—and translate them into a spatial language that planners can understand. In Kibera, youth used the game to identify dark spots prone to crime and proposed lighting solutions that were subsequently implemented. This process validates the "local knowledge" of the residents, shifting them from objects of planning to subjects of design.37

### 4.2 euPOLIS and the Gamification of Nature-Based Solutions

The *euPOLIS* project represents a European approach to gamified participation, focusing on Nature-Based Solutions (NBS) for urban health. The project developed the *euPOLIS* game, a simulation tool that allows citizens to propose and test urban interventions. By shifting technical calculations (engineering, cost) to the backend simulation, the game empowers citizens to focus on value-based propositions. It creates a dialogic interface where the expert knowledge of planners and the lived experience of residents can meet.39

### 4.3 Digital Twins: Between Technocratic Control and "Counter-Twinning"

The concept of the "Digital Twin"—a virtual replica of a physical city—is currently a site of intense ideological contestation. In the dominant "Smart City" discourse, digital twins are tools for optimization and control, fed by real-time sensor data to manage traffic, energy, and policing. This model often aligns with "surveillance capitalism" and the banking model of information, where data is extracted from citizens to manage them more efficiently.41

However, a "critical digital twin" movement is emerging. Researchers advocate for "participatory digital twins" or "counter-twinning," which incorporate qualitative data—stories, memories, and aspirations—alongside quantitative metrics. A notable case study in Gothenburg, Sweden, explored "counter-twinning" as a form of resistance. By allowing citizens to annotate the digital twin with their own narratives and "invisible" data, the project sought to foreground marginalized perspectives and challenge the commodification of urban life. This approach transforms the digital twin from a tool of surveillance into a "material-dialogic space" for collective memory and future-making.44

### 4.4 The "Playable City" vs. The "Smart City"

The "Playable City" framework has emerged as a direct critique of the "Smart City." While the Smart City prioritizes efficiency and seamlessness, the Playable City emphasizes friction, spontaneity, and human connection. It uses the same infrastructure (sensors, screens, networks) to create moments of play and "carnivalesque" disruption.

* **Critical Pedagogy of Play:** Playable City interventions often function as "urban hacks" that reveal the hidden rules of the city. By turning a staircase into a piano or a streetlight into a shadow-puppet theater, these interventions invite citizens to re-engage with their environment and with each other. This aligns with Freire’s notion of humanization; it reclaims the city as a space for life and interaction rather than just transit and commerce. It suggests that the "right to the city" includes the right to play and to reshape the urban fabric.46

## Part V: Critique, Contradiction, and the Political Economy of Platforms

While digital tools offer immense potential for liberatory education, they are deeply embedded in capitalist structures that often contradict Freirean ideals. A critical analysis must confront these tensions, particularly the "platformization" of education and the neocolonial implications of certain design practices.

### 5.1 The Paradox of Corporate Platforms: Roblox and Labor

Roblox represents a complex paradox for critical pedagogy. On one hand, it is a powerful constructionist tool that democratizes game design for the "Alpha Generation," fostering peer-to-peer learning and creativity.49 On the other hand, it is a closed, proprietary platform driven by profit.

* **Exploitation of Digital Labor:** Critics point out that Roblox’s business model relies on the unpaid or underpaid labor of millions of child developers. The platform extracts value from their creativity while exposing them to "surveillance capitalism" mechanisms, such as behavioral profiling and data harvesting. This relationship mimics the "feudal" dynamics of the gig economy rather than the liberatory dynamics of the commons.50
* **Surveillance in the Classroom:** The integration of platforms like Roblox into school curriculums introduces commercial surveillance into the learning environment. This violates Freire’s insistence on the classroom as a safe space for critical consciousness, transforming students into data subjects whose behavior is mined for prediction and modification.12

### 5.2 Neocolonialism in Design: The Case of Próspera

The tension between liberatory rhetoric and neocolonial reality is starkly illustrated in the *Próspera* project in Roatán, Honduras. This "charter city" or ZEDE (Zone for Employment and Economic Development) utilizes advanced digital governance and architectural design (partnering with Zaha Hadid Architects) to create a semi-autonomous jurisdiction.

* **Critique:** While proponents frame it as a laboratory for innovation and economic freedom, critics and local communities view it as a neocolonial enclave. The project uses digital tools to bypass national laws and establish a private governance structure, effectively commodifying sovereignty. This "start-up city" model, often justified through the language of "leaping" development stages, can be seen as a digital reincarnation of colonial extraction, where local populations are displaced or disenfranchised by a techno-elite. This stands in direct opposition to the "critical pedagogy of place," which demands accountability to the local historical and social context.53

### 5.3 The Struggle for the Digital Commons

The antidote to these exploitative dynamics, as suggested by scholars like Jose Sanchez and the open-education movement, is the construction of a "Digital Commons." This involves:

* **Open Source as Praxis:** Using and creating open-source software (like Godot, Blender, or p5.js) is a political act that reclaims the means of digital production from corporate monopolies.
* **Data Justice and Sovereignty:** Educational initiatives must prioritize "data justice," teaching students not just how to code, but how to interrogate the ownership and ethics of data.
* **Cooperative Governance:** Platforms for "commoning" should be governed by their users, not by shareholders. This aligns with Freire’s vision of a society where "men and women are not objects of history, but Subjects".28

## Conclusion: Toward a Critical AI Literacy

The trajectory of critical pedagogy from the sugar cane fields of Pernambuco to the voxelated landscapes of the Metaverse is not a linear progression but a complex remediation of emancipatory ideals. Paulo Freire’s fundamental insight—that education is a political act of humanization—remains as relevant in the age of Artificial Intelligence as it was in the age of the typewriter.

The integration of "serious toys" and game engines into education and urban planning offers profound opportunities for **dialogic learning** and **participatory design**. Tools like Unity and Minecraft allow communities to "write the world" in three dimensions, visualizing alternatives to the status quo and challenging the hegemony of expert planners. However, the "platformization" of these tools threatens to enclose these liberatory practices within "walled gardens" of surveillance and extraction.

The future of liberatory digital design lies in "Critical AI Literacy"—a pedagogy that empowers learners to understand not just the mechanics of generative AI and simulation, but the power structures they reinforce. It demands that we move beyond the "banking model" of digital consumption to a "problem-posing" model of digital creation, where the "Digital Twin" becomes a "Counter-Twin," and the "Smart City" becomes a "Playable City" of the commons.

### Table 1: Evolution of Pedagogical Models from Analog to Digital

| **Component** | **Freirean Pedagogy (Analog)** | **Critical Digital Pedagogy (Digital)** | **Key Tools/Platforms** |
| --- | --- | --- | --- |
| **Role of Learner** | Co-investigator; Subject (not Object) | Maker; Coder; User-Designer | p5.js, Scratch, Zines |
| **Role of Teacher** | Facilitator; Problem-poser | Mentor; Co-learner; Guide on the side | GitHub, Discord, Wikis |
| **Methodology** | Culture Circles; Generative Themes | Critical Making; Creative Coding; Glitch Art | Processing, Digital Storytelling |
| **Literacy** | Reading the Word & World | Critical Code Literacy; Algorithmic Awareness | Python, Data Visualization |
| **Objective** | *Conscientização* (Critical Consciousness) | Digital Agency; Data Justice; "Hackability" | Open Source Movements |

### Table 2: Comparative Analysis of "Serious Toys" in Urban Planning

| **Platform / Project** | **Core Mechanic** | **Pedagogical Goal** | **Freirean Alignment** | **Critique / Limitation** |
| --- | --- | --- | --- | --- |
| **Block by Block (Minecraft)** | Voxel-based construction; simplified modeling | Participatory design; Community engagement | High: Empowers marginalized voices to "name" their space. | Dependency on proprietary software (Microsoft); translation to reality. |
| **Block'hood / Common'hood** | Ecological balance; resource management | Systems thinking; Entropy; Mutual aid | High: Focuses on interdependence and "commons" rather than profit. | Niche audience; complexity barrier; high system requirements. |
| **euPOLIS Game** | NBS (Nature-Based Solutions) simulation | Co-creation; Health & Well-being metrics | Medium: Dialogic interface between experts and citizens. | Potential for technocratic "gamification" rather than true agency. |
| **Roblox Urban Planning** | Open sandbox; Social gameplay | Youth engagement; Future city visioning | Medium: Agentic play; peer-to-peer learning. | **High Risk:** Surveillance capitalism; labor exploitation; walled garden. |
| **Digital Twins (Smart Cities)** | Real-time sensor data; predictive modeling | Optimization; Efficiency; "What-if" scenarios | Low (usually): Often top-down and technocratic. | "Counter-twinning" is needed to add social/qualitative layers. |

### Table 3: Key Figures and Their Contributions to Liberatory Design

| **Figure** | **Domain** | **Key Contribution / Concept** | **Connection to Critical Pedagogy** |
| --- | --- | --- | --- |
| **Paulo Freire** | Education / Philosophy | *Conscientização*; Banking Model; Dialogic Learning | The foundational theorist of liberatory education. |
| **Seymour Papert** | Comp Sci / Education | Constructionism; Microworlds | Linked "making" with learning; bridged Piaget and Freire. |
| **Charles & Ray Eames** | Design / Architecture | "Serious Toys" | Reframed toys as preludes to serious ideas and scientific discovery. |
| **bell hooks** | Cultural Criticism | Engaged Pedagogy; Transgressing boundaries | Emphasized the "soul" of students and the classroom as a site of resistance. |
| **Casey Reas** | Digital Art / Code | Processing; Software as culture | Democratized coding; framed code as an expressive, non-neutral medium. |
| **Lauren McCarthy** | Art / Tech | p5.js; Diversity in tech | Explicitly centered inclusion and community in the design of coding tools. |
| **Jose Sanchez** | Architecture / Games | *Block'hood*; Architecture for the Commons | Applied game engines to architectural theory; anti-platform capitalism. |
| **Shajay Bhooshan** | Architecture (ZHA) | Gamified Design; Participatory Agency | Uses "serious games" for high-density urban design participation. |

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