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The grounded projection: A reflective examination of urban design pedagogy at Melbourne School of Design

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Abstract

Urban design education faces unprecedented challenges as ecological emergencies, socio-political risks and technological transitions converge to reshape cities worldwide. These planetary-scale disruptions necessitate pedagogical approaches that prepare future urban designers for fundamentally different professional realities. This paper presents the Master of Urban Design program at the University of Melbourne as a response to these challenges: a grounded projective approach that systematically integrates analytical rigour with speculative imagination across three sequential design studios and a culminating thesis. The paper documents a carefully orchestrated pedagogical journey: students master rule-based design thinking through intensive engagement with urban morphology, design codes, rules and regulations, then collaborate with industry partners to address pressing questions of social equity and public health, before ultimately expanding their temporal vision to envision climate-adapted and technologically augmented urban futures spanning multiple generations. Following this three-design studio sequence, the thesis studio enables students to pursue individual research expertise. Throughout this progression, Melbourne transcends its role as a mere case study to become a genuine living laboratory and a place where students develop profound contextual knowledge. This comprehensive framework demonstrates how systematic spatial-analytical foundations enable rather than constrain imaginative speculation, how individual design expertise can flourish within collaborative frameworks, and how extended temporal thinking can be meaningfully integrated into studio-based education. The program's critical contribution lies in creating space for speculation and projective work by drawing intelligently and creatively from a grounded understanding of urban design practice and enabling students to envision transformative urban futures while maintaining disciplinary rigour.

Keywords: urban design, pedagogy, education, design thinking, Melbourne School of Design

1. Introduction

Urban design educators today face profound challenges in determining the most effective ways to teach the discipline. The difficulties characterising contemporary urban design often result from past design and planning decisions. This recognition prompts a crucial question: should established approaches continue to be used in attempts to "fix" these problems, or is it time for a fundamental shift in how urban design is conceived and practised?

Historically, the future was regarded as an expansive frontier, full of optimism and possibility. Today, however, urgent issues such as climate change and various socio-political crises have brought the future into sharp, immediate focus, demanding decisive action to secure a liveable world for the generations ahead. Challenges that once appeared distant are now urgent, as environmental and social crises reshape the priorities of urban design and planning. This urgency

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arrives precisely when the field itself remains in flux and is still negotiating its theoretical foundations, methodological frameworks, and pedagogical approaches. In this context, the question becomes how to prepare practitioners capable of coupling rigorous analytical grounding with the imaginative courage to envision alternative urban futures.

Melbourne School of Design's (MSD) Master of Urban Design program recognises that addressing these unprecedented planetary challenges requires ***"grounded projection"***: a pedagogical approach that makes space for speculation and projective work while drawing intelligently and creatively from a grounded and evidence-based understanding of urban design practice. As both the authors of this paper and the coordinators of the presented design studios, we define the essence of this approach as the understanding that deep, analytical, contextual, and socially situated knowledge serves as the springboard for radical imagination.

Banerjee (2016) has called for 'reflective educators' to document their teaching experiences with clear articulation of learning objectives and pedagogical outcomes, identifying this reflective examination as a critical task for urban design educators. Yet such reflective documentation predominantly addresses individual studio experiences and derives valuable lessons (Batuman & Altay Baykan, 2014; Chiaradia et al., 2017; Higgins et al., 2009; Loukatiou-Sideris and Mukhjia, 2016), rather than demonstrating how pedagogical approaches integrate systematically across multi-year progressions. The documentation of program-level pedagogical frameworks, which demonstrate how multiple studios and pedagogies integrate across complete degree sequences, remains scarce in the literature (Kamalipour & Peimani, 2022, 2025).

Addressing this gap through a reflective examination of our sustained teaching practice, this paper presents the overall urban design education framework at the Melbourne School of Design (MSD) by systematically examining each studio's pedagogical approaches, analytical methods, and illustrative student works. Rather than focusing on isolated studio approaches, we provide a detailed examination of how three sequential design studios and a thesis studio build upon one another systematically. The thorough documentation and discussion of this sequence demonstrate a pedagogical approach that consciously and progressively integrates evidence-based and spatial-analytical understanding of urban space with speculative and long-term imagination of urban futures. This examination contributes to international discourse on urban design pedagogy by offering a reflective discussion of how systematic analytical foundations can enable imaginative capacity in addressing contemporary urban challenges.

1.1. Master of Urban Design Program at MSD

The Master of Urban Design program at MSD operates as an independent graduate program within the Graduate School of Design, positioned alongside other master's programs such as architecture and planning. Since 2017, the urban design studios have focused on a range of public concerns as the thematic framing for the studio courses. This has been systematically supported by a larger "Designing Futures" strategy, the overall vision guiding the MSD between 2023 and 2028 (Melbourne School of Design, 2023). Within this framework, the main concerns have been framed by the impact agendas of climate action, healthy places, social justice, future practice, and First Nations.

The two-year Master of Urban Design program comprises three design studios and a thesis studio, spanning four semesters. Students progress from Studio A (semester one) through Studio B (semester two) and Studio C (semester three) to the thesis (semester four). Alongside these core studios, students undertake compulsory coursework that includes planning law, urban design theory, strategic planning, and urban economics, with additional elective courses available from graduate programs in architecture, planning, and other relevant disciplines.

Urban Design Studio A introduces students to a shared knowledge and skill base that engages with urban morphology, urban metabolisms, the public realm, and health. Students are tasked with

applying systematic analytical tools within tangible projects in the City of Melbourne. This studio establishes analytical rigour through rule-based thinking, performance-based evaluation and exploration of design alternatives by manipulating urban codes and regulations.

From this crucial analytical foundation, Urban Design Studios B and C focus on two specific lenses through which they engage with urbanism, each building upon the systematic thinking established in Studio A. Urban Design Studio B is framed by a social and political lens, where the designing futures agendas of healthy places and social justice can be explored in a more detailed manner. Students apply their analytical capabilities to real-world urban challenges, working with industry partners to address transit-oriented development, urban renewal, and civic infrastructure projects.

Urban Design Studio C extends the temporal and scalar dimensions of systematic thinking through a climate action lens. It engages a more ecosystemic reading of urbanism, expanding the temporal horizons of design thinking to 75-100 year frameworks while maintaining the analytical rigour established in previous studios. This temporal extension represents a crucial pedagogical innovation: students learn to apply systematic thinking not only to immediate design decisions but to long-term ecological and planetary considerations.

The Urban Design Thesis Studio serves as the capstone experience, enabling students to apply the analytical rigour, social awareness, and ecological thinking developed across the three studios toward self-initiated research questions. This progression, from the systematic foundations of the design discipline through social complexity to ecological futures, prepares students to engage with the urgent challenges facing contemporary urbanism.

All design studios are structured around a projective view on urban design practice, introducing students to emerging and future practice concerns and skills. This spans new technologies such as expanded reality, artificial intelligence, digital mapping, and simulations, as well as learning from emerging ideas and concerns associated with urbanism. Moreover, a fundamental element across all three studios is the frequent use of Melbourne as a living laboratory for urban design investigation. This approach enables students to develop a cumulative understanding of their immediate living environment over multiple semesters, fostering deep contextual knowledge. The pedagogical framework embodies the faculty's commitment to transformative impact, ensuring graduates can operate as globally connected yet regionally relevant practitioners.

2. Urban Design Studio A

Urban Design Studio A's overall pedagogical framework spans the understanding of urban morphologies and the various ways urban designers can shape urban form, through developing a more considered understanding of the urban metabolisms that sustain our urban environments. We begin by establishing why the urban block serves as the foundational scale for urban design thinking (2.1), then reframe design itself as rule-based variation generation rather than singular creative expression (2.2). This foundation enables students to navigate multi-dimensional performance-based evaluation (2.3), extend block-level thinking to broader urban systems (2.4), and ultimately communicate design through diverse representational methods (2.5).

2.1. Urban Block as the Foundational Unit of Urban Design

Urban Design Studio A has been coordinated by Dr Leire Asensio Villoria and co-taught with Dr Onur Tümtürk, establishing a consistent pedagogical approach that has evolved through sustained collaboration and refinement over multiple years. The studio addresses a fundamental challenge in the discipline: establishing coherent urban design knowledge among students from diverse disciplinary backgrounds—architecture, planning, landscape architecture—who bring distinct design thinking habits, approaches and value systems (Palmer et al., 1997). When confronting urban design problems, these students persistently ask, *"What should we look at?"* Studio A's response positions the *urban block* as the foundational unit for the urban design process. This choice stems directly from the need for a systematic approach to accommodate disciplinary diversity while establishing a shared methodological foundation for examining urban space.

Unlike design studio pedagogies that typically either build from individual building sites to neighbourhood-scale proposals or begin with broad urban analysis before narrowing to specific design interventions, Studio A deliberately operates at the intermediary block scale, which embodies both individual components (parcels, buildings, open spaces) and generates collective urban fabrics when aggregated. The block's two-way scalability proves pedagogically advantageous, offering sufficient complexity for engaging multidimensional systems operating at distinct scales.

2.2. Design as Rule-based Variation Generation

Studio A explicitly challenges models that position design as individual creative expression or intuitive problem-solving. Instead, we encourage students to understand urban design as a systematic exploration of alternatives defined by multiple, competing performance criteria and various design codes and regulations. This shift in perspective aims to cultivate the mindset of working with typological variations rather than seeking singular solutions (Moudon, 1992; 1994). Moreover, this pedagogical stance recognises that a comprehensive understanding of existing urban morphology must precede innovative intervention. Studio A students require deep fluency in how urban form components work individually and relationally before meaningfully challenging the existing system. As Romice et al. (2020) argued: *"before learning to 'think out of the box', a reliable understanding of how the box works and what designers can do for it is required"* (p.191).

The pedagogical sequence begins with a comparative morphological analysis of selected urban grid systems from different contexts, which are updated annually to maintain contextual relevance. Urban grids offer a generative spatial framework that makes block-level urban design principles accessible to first-year students new to the discipline. They provide regular structures for understanding how design rules at multiple scales interact and generate urban form systematically. We treat urban grids as regulatory systems that define the character of urban blocks not only morphologically but also through planning rules and legislation (Busquets et al., 2019). Students examine distinct urban grids, such as Melbourne's Hoddle Grid, Barcelona's Eixample, Vancouver's downtown blocks, or Portland's fine-grain blocks, as comparative case studies. Each of these represents different regulatory approaches to block-street relationships, building-open space configurations, and density distributions.

This morphological exploration is also assisted by advanced tools and custom scripts in Rhino and Grasshopper (associative modelling), enabling students to systematically vary key parameters: block dimensions, building heights, setbacks, plot coverage ratios, and street dimensions. Students intuitively understand how different regulatory frameworks and form-based conditions derive distinct block configurations and urban characters by manipulating parameters and observing resultant formal variations. They discover, for instance, how extremely spacious Melbourne blocks (200m x 100m) accommodate different densities and building types compared to Portland's compact 60m x 60m blocks, or how Barcelona's courtyard blocks regulate inside-outside relationships through specific depth-to-width ratios and central void requirements (Figure 1).

2.3. Multi-dimensional Rule-based Evaluation Framework

Building upon this foundation, we introduce multiple performance dimensions through sequential layers constructed week by week. Each layer builds upon and constrains previous considerations, teaching students to navigate complex trade-offs between competing objectives. This demonstrates why optimal 'one-size-fits-all' designs are not only undesirable but impossible—the critical mindset we cultivate. This is followed by evaluating these iterations based on a broader range of issues, considering the outcomes of the generative process through both measurable and qualitative judgment criteria. The iterations needed to be contextualised into the wider project and site concerns.

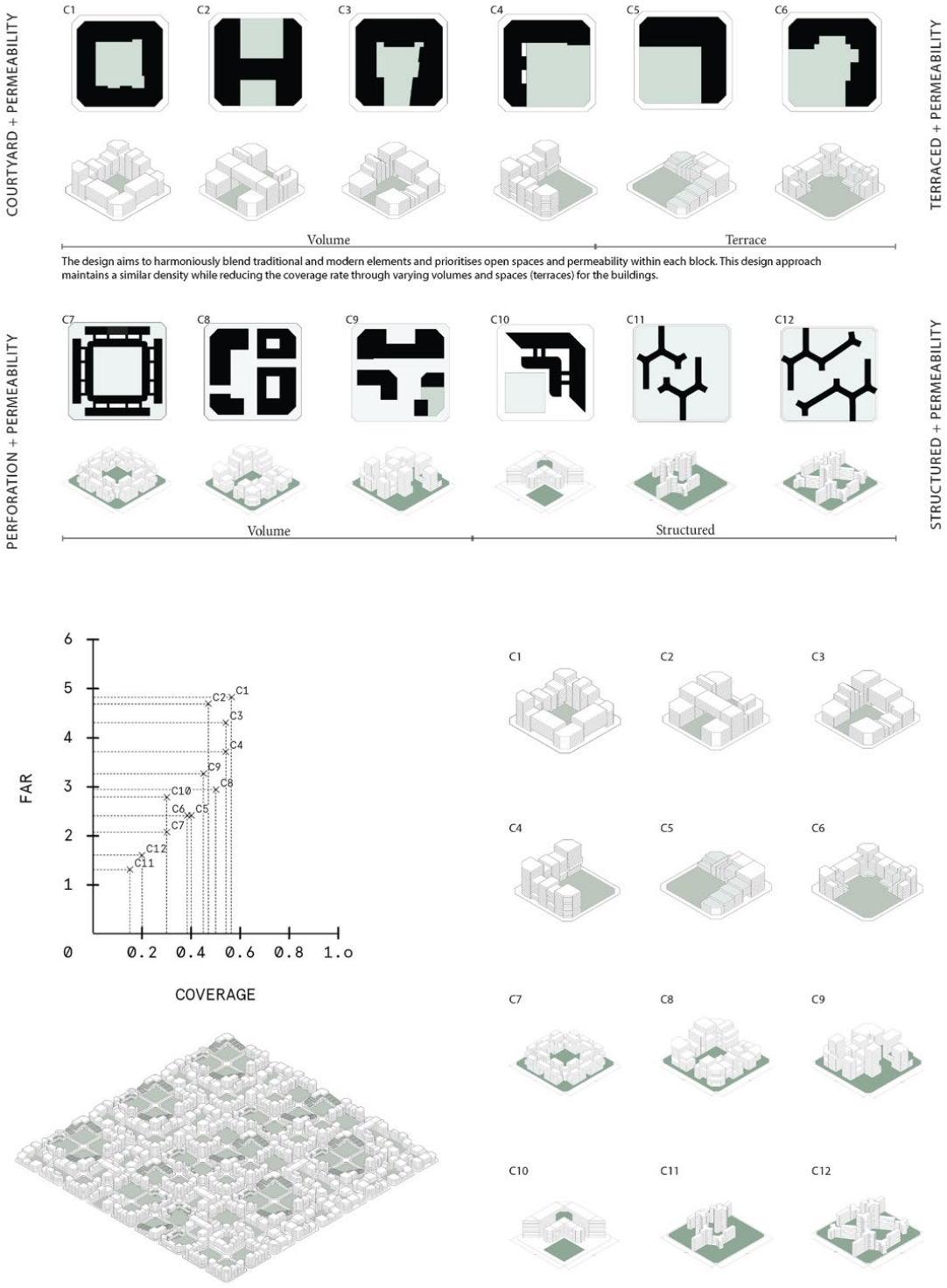

Figure 1 Parametric generation and exploration of alternative urban block configurations in Barcelona (top), comparative built density measurement and urban fabric trials (bottom) (Credit: Student team: Zhi Yi Chung, Shichen Pan – Instructors: Leire Asensio Villoria, Dan Hill, Onur Tümtürk)

Built density analysis forms the initial evaluation layer, establishing density as the essential parameter concretising urban blocks. Students assess their generated variations using Ground Space Index (GSI) and Floor Space Index (FSI) through the Spacematrix methodology (Berghauser Pont & Haupt, 2010). Rather than a classic analysis of existing conditions, students produce variations and measure them systematically. This rule-based evaluation introduces objective criteria for comparing subjectively different solutions while establishing quantitative thinking as fundamental to design evaluation.

Solar analysis constitutes the second layer through *heliomorphism*, which involves a systematic evaluation of solar access and shading performance (Waldheim et al., 2020). Students design solar envelopes to maximise buildable volumes, ensuring buildings do not cast shadows on neighbours or open spaces. Solar fans are used to evaluate whether open spaces receive adequate sunlight across hours and seasons through dynamic parametric modelling in Grasshopper (Figure 2). This environmental layer reveals how density optimisation conflicts with solar access requirements, necessitating a conscious trade-off navigation by students rather than simple maximisation.

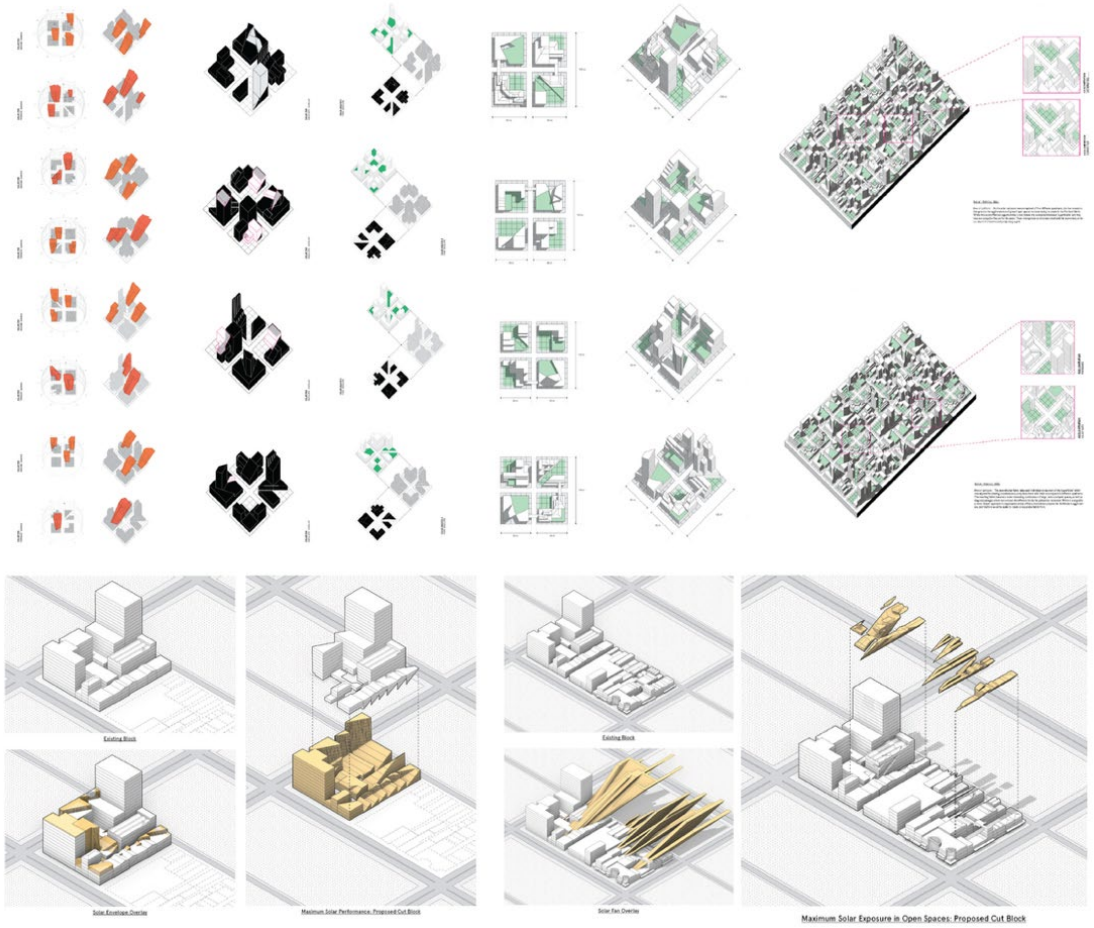

Figure 2 Urban block variations through solar analysis (top) (Credit: Student team: Nicholas Ots, Jordan Schmid); Urban block variations through solar analysis (bottom) (Credit: Student team: Alina Sebastian, Astha Shah, Vaishnavi Singh – Instructors: Leire Asensio Villoria, Dan Hill, Onur Tümtürk)

Urban metabolism forms the third evaluation layer, introducing flows of energy, materials, and information sustaining urban life. Student teams investigate the following processes: hydrological systems and landform, waste management, energy systems, urban ecology, microclimates, or transport networks. For instance, when studying hydrology, the various groups employ runoff analysis to model land surfaces, computing runoff behaviour and flood risks in urban blocks while devising configurations for water treatment within established density and solar constraints. This performance-based variation transforms understanding from a static spatial arrangement to a dynamic systems thinking, revealing how various metabolic processes and their intrinsic dynamics influence the spatial character of urban block variations over time (Figure 3).

Figure 3 Urban block variations through exploration of metabolic processes: Water flow analysis (top), materialisation of strategic interventions at block scale (bottom) (Credit: Student team: Nicholas Ots, Jordan Schmid, Alina Sebastian, Astha Shah, Vaishnavi Singh – Instructors: Leire Asensio Villoria, Onur Tümtürk)

Civic space and public life complete the evaluation and exploration framework, examining how block configurations enable or constrain social and cultural experiences. Most crucially, students begin imagining what type of public life their design alternatives afford. Supplemented by global precedent studies and literature, they assess which variations afford what possibilities, evaluating interface quality, accessibility, active-passive façade, and walking experiences from a pedestrian perspective. This imaginative process reveals further trade-offs and conflicts, as students discover how their previous formal decisions determine the affordances of urban blocks (Figure 4a). Urban public and social space typologies, including squares, parks, laneways, and public gardens, are also studied. An understanding of urban civic spaces is drawn from established categories of public spaces while also speculating on other, more novel and emerging precedents. This is framed by the course engagement with the City of Melbourne's Future Streets program (Figure 4b-4c).

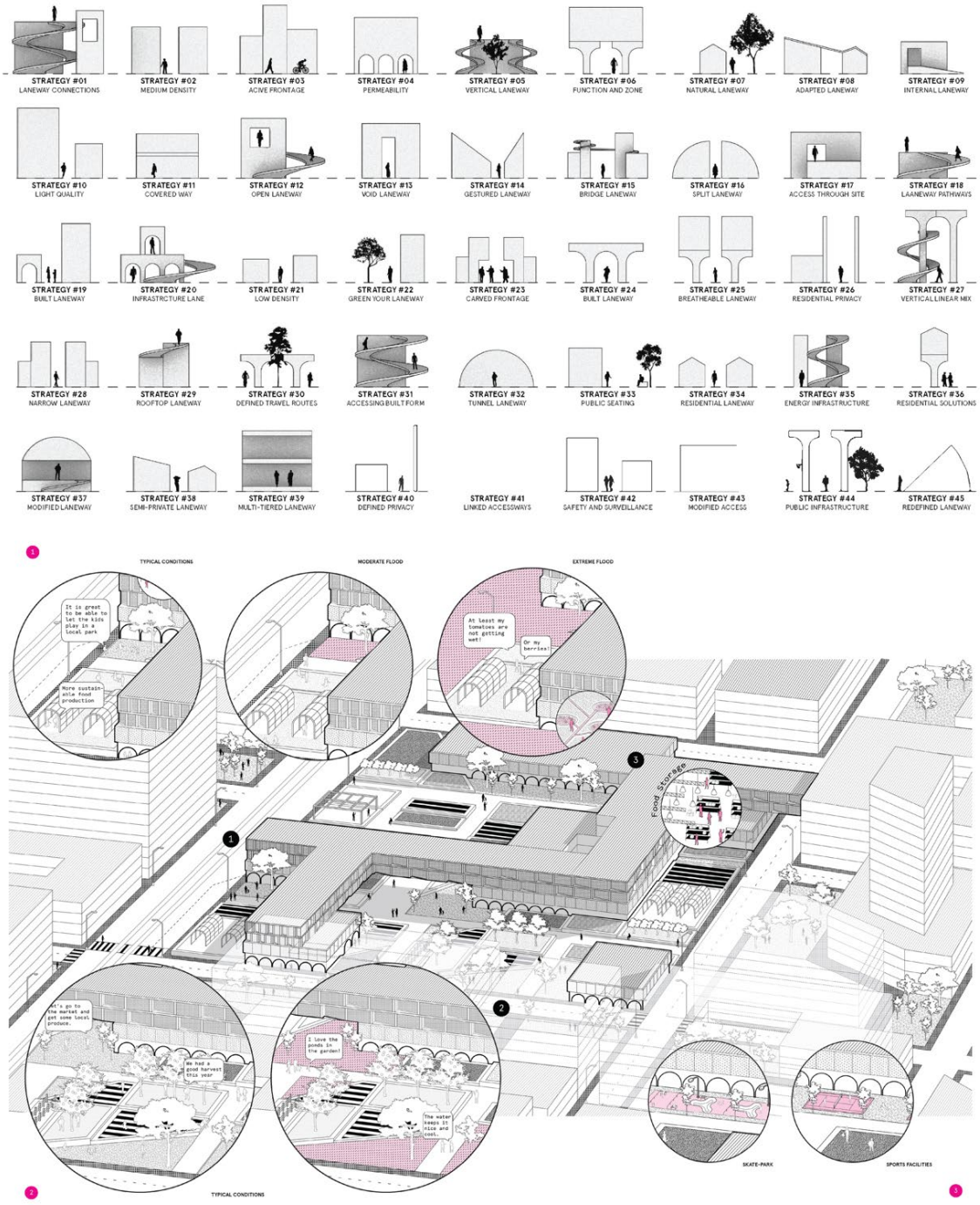

Figure 4a Exploration of public space typologies and affordances (Credit: Student team: Nicholas Ots, Jordan Schmid – Instructors: Leire Asensio Villoria, Onur Tümtürk)

While benefiting from the capacity to define many of its systems and constituents with a degree of objectivity, urban design is engaged with complex concerns. It is required to mediate between various parameters, considerations, and diverse stakeholders. The course is predicated on the idea that urban design is a practice that mediates different influences. It locates proposals that satisfy complex questions rather than offering optimised answers to bounded problems.

Figure 4b Imagination of future streets and public plazas of Melbourne (Credit: Student team: Wanti Zhao, Yuning Zhou, Chensong Gao – Instructors: Leire Asensio Villoria, Onur Tümtürk)

Figure 4c Imagination of future streets and public plazas of Melbourne (Credit: Student team: Hongkai Zhang, Kehan Shang, Huicong Xu, Vikram Giri – Instructors: Leire Asensio Villoria, Onur Tümtürk)

This multi-layered framework, progressing week by week, operates through concurrent design thinking, where technical skill acquisition, site-specific analysis, and design concept formation co-occur through iterative engagement with given sites, variations, and toolsets. Our approach consciously rejects linear models that separate analysis, synthesis, and design into sequential phases, positioning design alternatives as conjectures and hypotheses that are tested against contextual conditions and continuously modified (Hillier & Leaman, 1974; Hillier et al., 2025; Çalışkan, 2012). Design concepts of students emerge through systematic exploration rather than preceding it.

Our studio setting supports this process through weekly workshops introducing analytical tools (parametric design, associative modelling, density calculation, solar modelling, hydrological analysis) alongside theoretical frameworks and precedent studies. Each week presents new challenges, accompanied by specific toolsets to address them, progressively equipping students with critical thinking and variation generation approaches. As students generate and evaluate alternatives across introduced performance dimensions, they simultaneously develop an understanding of site-specific opportunities and constraints, discovering design ideas through systematic testing of variations against real conditions.

2.4. Scaling-up: From Urban Block to Urban Systems

While maintaining the urban block as a foundational module, we require students to apply systematic scalar extension of their block-level solutions through repetition, variation, or adaptation to new contextual circumstances. Students use selected urban block variations as generative seeds for neighbourhood, district, and city-scale strategies. They discover how systematic block-level thinking aggregates into larger urban transformations.

One exemplary project involved students assigned a block containing multi-story car parking. Through the metabolic evaluation layer, they converted this single-purpose parking into a multi-functional infrastructure for rainwater harvesting in one of their block variations. Scaling up to address the broader flooding issues in Melbourne's city centre, students analysed hundreds of similar car parks throughout the central area. They realised that strategically maintaining the most essential car parks while transforming others into ecological infrastructure could fundamentally address the city's flooding challenges (Figure 5). Thus, a block-level ecological strategy became a comprehensive urban design concept and question.

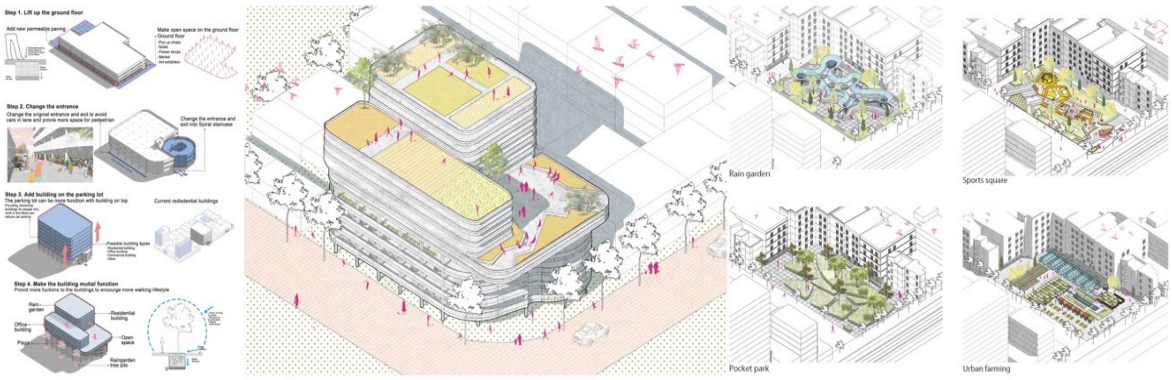

Figure 5 Transformation of multi-storey carparks in Melbourne city centre (Credit: Student team: Zikang Zhao, Wanbing Yu – Instructors: Leire Asensio Villoria, Dan Hill, Onur Tümtürk)

Another exemplary scaling involved students whose block variations explored diverse pedestrianisation strategies. Several groups scaled their pedestrian-focused urban blocks to propose pedestrianising Bourke Street, one of Melbourne's major city centre thoroughfares. A key design idea embedded within their block variations became a research question for wider city-scale

pedestrianisation (Figure 6). This demonstrates how simple variations can generate urban-scale conjectures, which are tested through design.

Figure 6 Pedestrianisation of Bourke Street in Melbourne city centre (Credit: Student team: Runhan Yuan, Rice Mok, Krishna Maya Nair – Instructors: Leire Asensio Villoria, Onur Tümtürk)

2.5. Multiplicities in Design Communication

Reflecting our variation-based urban design approach, we emphasise design communication through multiple representation techniques. While valuing procedural thinking throughout the semester, academic requirements necessitate tangible design outputs. We dedicate the final 2-3 weeks to helping students develop comprehensive communication portfolios: design research booklets in hard copy format, poster presentations, 3-minute video narratives encouraging creative and prompt communication of design ideas, 3D digital models and fly-through animations, virtual reality experiences enabling audience immersion, and laser-cut or 3D-printed physical models.

This diversity serves two purposes: accommodating different learning styles within our diverse cohort, while also demonstrating that urban design communication must adapt to varied audiences, including technical specialists, community stakeholders, and policymakers. Our end-of-year exhibition, MSDx, showcases these diverse representation techniques through a combination of hard-copy materials, digital screens, VR headsets, and physical models (Figure 7).

Studio A's systematic block-based pedagogy establishes a critical perspective for urban design education by positioning variation generation, performance-based evaluation, and systematic comparison as foundational skills of future urban designers. This approach develops students' capacity for evidence-based decision-making while cultivating critical thinking, which is essential for subsequent academic semesters and their future professional practice.

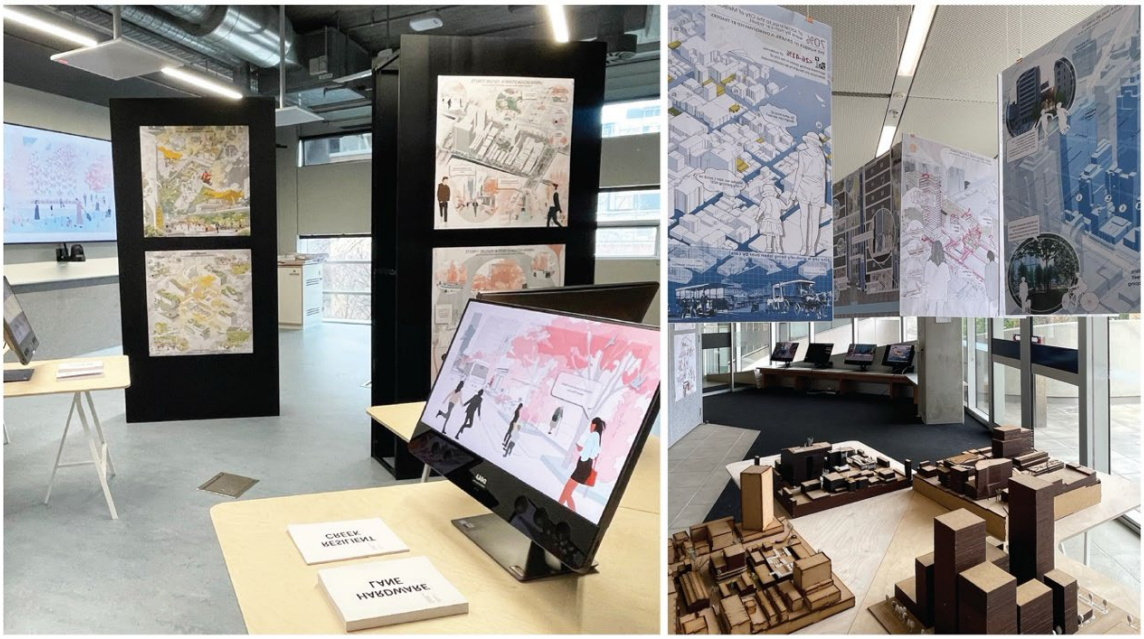

Figure 7 Urban Design Studio A's MSDx materials illustrating various communication media and techniques (Photos: Onur Tümtürk)

Our methodology in Studio A emphasises multiplicities over singular solutions through rule-based exploration and prepares students with systematic thinking and analytical rigour. Students develop confidence in navigating complex urban challenges while understanding trade-offs between competing performance criteria by immediately engaging with design through an analytical perspective. This foundation proves crucial as students advance to subsequent studios of the Master of Urban Design program.

3. Urban Design Studio B

Building upon Studio A's analytical rigour and systematic thinking, Urban Design Studio B applies these foundational capabilities to the fundamental societal and political processes. This shift toward social and political engagement reflects one of the discipline's core responsibilities. Urban Design Studio B and C operate as the two studios that afford students a focus on approaching the creative practice of urban design through two important and distinct conceptual framings of the city. Studio B acknowledges the city as a reflection and outcome of social, political, and cultural practices. It directs students towards the ideas and processes which connect the social and political lives of its diverse constituents and citizens to the ways in which we imagine the forms of the city. The studio also explores how the thoughtful organisation and inclusion of public infrastructure, services, and social spaces can help cultivate a more equitable and inclusive city.

Rather than allowing pedagogical approaches to emerge from arbitrary professional preferences, urban design education requires a systematic grounding in the stewardship of the public domain and the reproduction of urban meaning within democratic civic life (Cuthbert, 2006, 2007). While Studio A develops systematic tools for analysing urban morphology, density, and metabolic processes, Studio B extends this analytical framework to address the MSD's Designing Futures agendas of healthy places (Mah & Asensio Villoria, 2016; Sepe, 2020) and socially responsive design (Loukaitou-Sideris, 2020).

In recent years, Urban Design Studio B has focused on concerns related to the design of urban systems, sites, infrastructure, and the public realm, with a particular emphasis on how it enriches and enables the cultivation of an active and vibrant civic realm. These studios have been coordinated by Dr David Syn Chee Mah and taught by industry-based studio leaders, including

Sander Versluis and the UN Studio global team, which included Caroline Bos, Dana Behrman, and Ren Yee, as well as Michael Powell at Skidmore, Owings & Merrill, Andy Fergus, and Prof. Donald Bates.

This professional practice-oriented approach differs from participatory design or co-design pedagogies that involve direct community collaboration in design processes. Instead, it brings students together with industry partners who are engaged with real-world urban design challenges their offices are currently addressing. This exposes students to how professional practitioners navigate social and political processes, understand diverse community perspectives, and respond to stakeholder input within the constraints and opportunities of actual practice contexts within a design studio setting.

3.1. Melbourne as a Living Laboratory

Melbourne continues to serve as the living laboratory for urban design investigation, but with an explicit focus on understanding and addressing the city's social and political challenges. Students engage directly with Melbourne's urban communities through site visits, stakeholder meetings, and collaborative workshops with local organisations. This immersive approach enables students to apply their systematic analytical skills to real urban conditions while developing an understanding of how social infrastructure, civic spaces, and community needs intersect with the formal and metabolic systems they studied in Studio A. The sustained engagement with Melbourne's diverse neighbourhoods, from the expanding suburban rail corridors to the densifying inner city precincts, provides students with direct experience of how social equity, accessibility, and community wellbeing can be systematically evaluated and enhanced through urban design interventions.

This course's social and political framing of urban design has informed the development of studios dedicated to a range of Melbourne-sited projects related to specific social concerns. This has included studios tasked with projecting how to define compelling forms of public space associated with new transport interchange nodes in Melbourne's expanding suburban rail infrastructure, adapting existing urban precincts to more deliberately address the prevalence of its expanding urban nomad communities, and the conception of the city as an intentional design project informed by social and political ideas.

3.2. Diverse Professional Partnership Models

The studio, led by Michael Powell of Skidmore, Owings & Merrill (SOM) in 2024, exemplifies how transit-oriented development requires the systematic integration of social and infrastructural analysis. The studio focused on proposing the urban redevelopment of the transit hub area in the Box Hill activity centre: an area slated for density and housing uplift as well as transformation into a central transport node in Melbourne's middle ring suburbs. This site forms one of the main stations along the proposed suburban rail loop project: a major project in Melbourne that has the potential to support the development of alternative centres to the main central business district. While alleviating pressure on the city centre, it also provides the opportunity to define an activity centre in Box Hill that could transform its social life and economy. The studio utilised the transit-oriented development model to propose a reorganisation of the public realm: using transport infrastructural investment as a catalyst for embedding significant public realm expansions on the site (Figure 8).

The studio focused on how infrastructure and the public realm can be used to structure the way in which housing and densification are managed intelligently on this site. Students learned to apply multi-dimensional evaluation frameworks to balance competing demands of transportation efficiency, housing affordability, and community space provision. It also involved conceptualising how a new town centre for Box Hill is embedded in the everyday lives of its citizens. The studio supported students in considering how their proposals operate as social infrastructure, as well as conceptualising the representational aspects of the public realm. This focus on the design of the city's public spaces is most recently extended in a studio led by Professor Donald Bates: revisiting the site adjacent to Melbourne's Federation Square. This studio extends dedicated consideration

of the detailed design of both public spaces and embeds it within a focused examination of how it enables and cultivates the social and public practices of its citizens.

Figure 8 Box Hill Activity Centre (Credit: Student team: Alina Sebastian Rose, Rice Mok, Rasia Firayasan, Vaishnavi Singh – Instructor: Michael Powell (SOM))

UN Studio's approach demonstrates how urban design can address demographic change and spatial adaptation. More importantly, it reframed the conventional urban design studio structure around a specific urban subject: the urban nomad. Rather than basing proposals around conventional abstractions such as populations and communities, the studio assumed the particular lifestyles of the urban nomad as the basis for understanding and transforming the site. UN Studio structured the Urban Design Studio B course 2025 around reorganising a high-density precinct

within inner city Melbourne. They used the district's growing digital nomad population to determine how this underserved, yet overdeveloped part of the city could be retrofitted. As the urban nomad lifestyle was assumed as the lens through which the site was reorganised, this enabled students an understanding of the challenges of the site in relationship to how it may support everyday life practices of particular urban actors: highlighting the significant inadequacies in civic and social infrastructure to support the social and cultural lives of the central business district's large itinerant populations of international students, newly arrived migrants, and highly mobile professionals: amongst others. Urban design proposals and strategies focused on the multiple scales of the public realm, as well as civic and transport infrastructure interventions that would reorganise the site to support the social lives of these often marginalised or seemingly transitory actors in the city (Figure 9). Leveraging the practice expertise for diagramming complex information: the UN Studio-led course illustrates how rule-based thinking can be applied to emerging social patterns, testing multiple spatial scenarios for evolving urban demographics. The deliberate framing of the studio balanced this through the careful consideration of the very tangible life practices of an urban subject. It required urban design students to consciously consider the city as a lived site: challenging the abstractions and remote view that have characterised planning practices at various points in history.

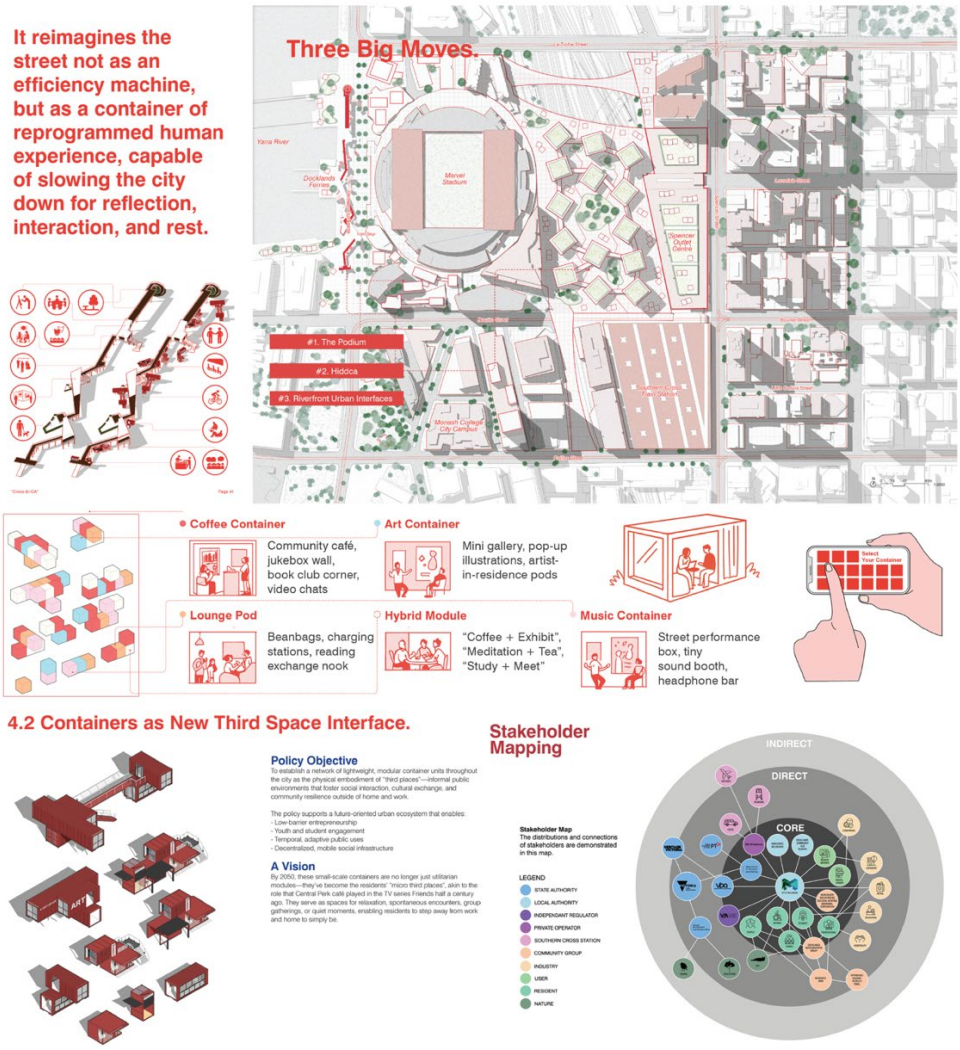

Figure 9 Three Big Moves (Credit: Winky Zheng – Instructors: Sander Versluis with Caroline Bos, Dana Berhman and Ren Yee (UN Studio))

Through these diverse professional partnerships, students learn to maintain analytical rigour while navigating the complexity of stakeholder interests, regulatory constraints, and community needs. The studio invites students to reflect on how political and social practices inform the city

while speculating how various sites may be reorganised to support a more open and equitable city. Studio B's focus on the social and political dimensions of the city: exploring the urban forms and organisations which both enable and represent the social and cultural lives of its citizens, is contrasted and complemented by the ecosystemic view of urbanisation explored in Urban Design Studio C. As students complete both studios, they are exposed to an engagement with urban design as a practice informed by the city as a social and political site, on one hand and urbanisation as a process where many systems and subsystems dynamically interact.

4. Urban Design Studio C

Studio C has been coordinated by Prof Justyna Karakiewicz, who has developed the studio's distinctive approach to extended temporal thinking and ecosystemic focus through an imaginative and systematic design methodology. *Moving from the typical project timelines, Studio C operates across 75-100-year frameworks, positioning students to think beyond conventional planning horizons toward ecological futures that acknowledge deep time and planetary considerations.*

As an advanced urban design studio, the studio acknowledges that the distinction between nature and society has grown increasingly porous in the Anthropocene era, the epoch in which human activity profoundly influences Earth's processes. This is particularly visible in cities like Melbourne, where flood risks in neighbourhoods such as Docklands and Fishermans Bend have spurred integrated responses. The city council has developed various interventions to maintain the area's resilience, sustainability, and liveliness for generations. However, these efforts deserve a reflection: are piecemeal solutions sufficient, or is a more profound change needed in our relationship to nature?

Studio C's pedagogical approach shifts toward a new perspective that acknowledges humans as participants in a complex, interconnected web of life, whose well-being is inseparable from planetary health (Alberti, 2016). Thriving will depend on embracing innovation while respecting ecological limits and learning from natural systems. This paradigmatic shift requires students to apply the systematic thinking developed in previous studios to questions that operate across multiple generations.

The following sections describe the students' work in the recent Urban Design Studio C (2023–2025), demonstrating how design thinking can be extended to address climate futures. These three studios address distinct but interconnected themes: shifting from asking what nature can do for humanity to examining how urban design can nurture and repair the natural world; exploring the role of urban infrastructure in climate adaptation and flood resilience; and preparing future urban designers not only to collaborate in multidisciplinary teams but also to ensure their designs support both their immediate sites and the surrounding urban context.

4.1. Creative Triggering: Speculative Thinking in a Short-term World, Designing in the Slow Lane

Urban design has often defaulted to superficial "quick fixes" that address symptoms rather than root causes, resulting in short-lived solutions to deeply structural challenges. A shift is urgently needed toward systemic, long-term, and ecologically grounded approaches that acknowledge the interdependence of human and non-human life. This studio explored such a paradigm through a century-long design investigation of Melbourne's Fishermans Bend precinct, marked by industrial contamination, increasing flood risk, and complex cultural histories.

The design studio positioned Fishermans Bend as both a site and a metaphor for broader urban dilemmas. Once a valued wetland for Aboriginal communities, the area was marginalised and industrialised by European settlers who viewed it as undesirable terrain (Victoria Planning Authority, 2025). Contemporary ecological understanding reinstates marshlands as critical assets, as they store and purify water, buffer against floods and droughts, sequester carbon, and serve as biodiversity hotspots.

Students applied the systematic analysis and evaluation approaches gained from earlier studios to this extended temporal framework, developing multi-dimensional analysis across 75–100-year horizons. Adopting "fast, medium, and slow" strategies over this timeframe, the studio developed a staged approach that filtered pollutants, sequestered carbon, and reversed biodiversity loss, while creating opportunities for recreation, education, and employment.

The studio's work visualised Fishermans Bend's gradual transformation across distinct stages: Stage 1 (2025–2030), Stage 2 (2030–2050), and Stage 3 (2050–2100). The plan integrates "slow, medium, and fast" approaches, with small to large-scale projects reflecting incremental and adaptive development rather than abrupt overhaul (Figure 10). This temporal thinking embodies urban design's fundamental orientation toward creating enabling conditions rather than predetermined outcomes. Thus, Studio C aims to cultivate students' understanding that the discipline's effectiveness lies in establishing frameworks that support adaptive and evolutionary processes for the long run.

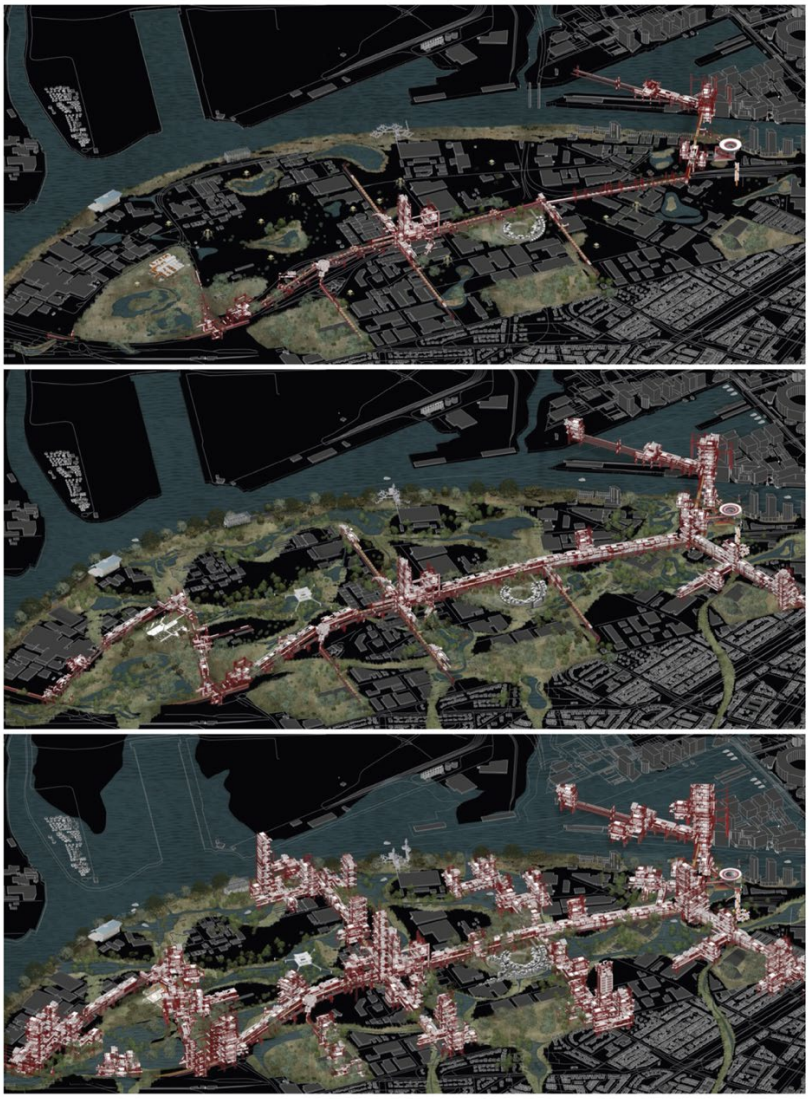

Figure 10 Fishermans Bend development stages: 2025-2030 (top), 2030-2050 (middle), 2050-2075 (bottom) (Credit: student team of UD Studio C 2023: Creative triggering – Instructors: Justyna Karakiewicz, Theo Blankley)

The studio developed a novel two-way pedagogical approach that operates on parallel tracks, addressing the inherent necessities of urban design practice where individual expertise must contribute to larger collective strategies. Students simultaneously developed individual design projects while contributing to larger-scale collective infrastructure strategies. This resulted in eight individual projects operating within two large-scale urban infrastructure strategies that brought

everything together. The projects demonstrate how individual creativity and collaborative coordination are essential responses to the complexities of contemporary urban design. Rather than treating individual and collaborative work as separate phases, the studio demonstrated how these scales of intervention can inform and strengthen each other throughout the design process.

The larger-scale collective decisions that guided individual responses emerged from collaborative workshops that utilised parametric tools and ecological theories. Students collectively employed analytical methods to identify strategic action points for the overall site transformation, building upon the systematic evaluation approaches established in Studio A while extending them to address ecological restoration and climate adaptation questions.

A notable component involves restoring the area's original wetland conditions, beginning with intervention at the site's lowest points. This step is both ecological and symbolic, acknowledging the historical and natural context while setting the foundation for sustainable urban development. The slow, blue-green infrastructure indicates where the first perturbation into the existing system (creative triggering) should occur and how it should gradually become the driving force of development. This infrastructure enables nature to reclaim the land, making it an active source of potential again (Figure 11).

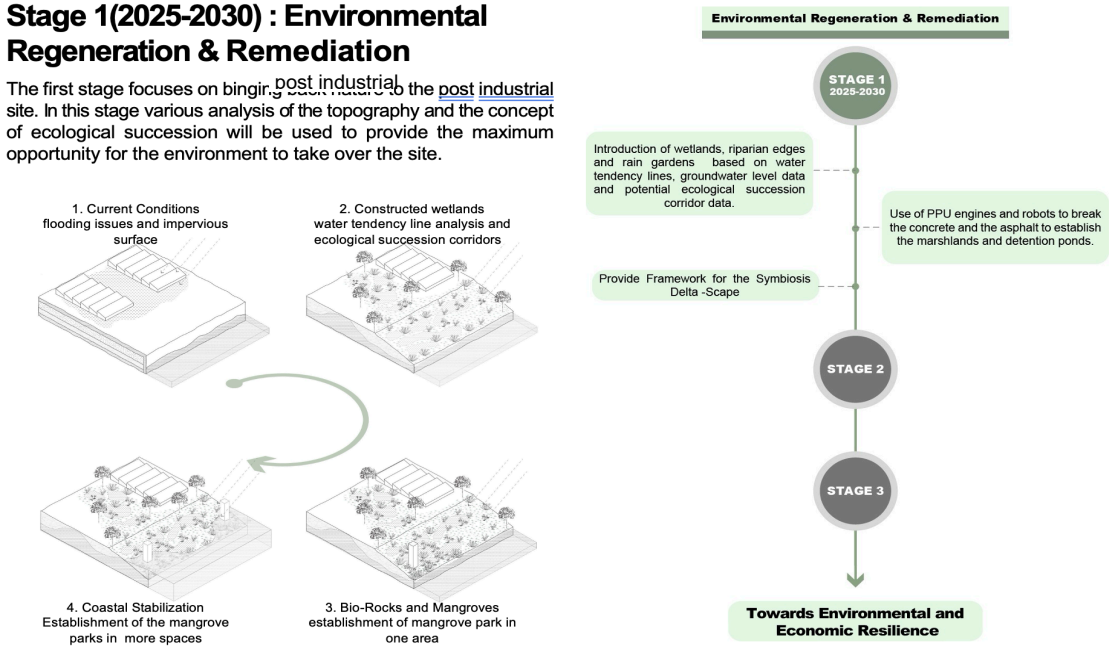

Figure 11 Environmental regeneration and remediation strategies (Credit: Student team of UD Studio C 2023: Creative triggering – Instructors: Justyna Karakiewicz, Theo Blankley)

The collective decision was to use colonisation and succession theory as the guiding framework. After selecting the lowest points on the site, which are currently empty, students used the Grasshopper script *Physarealm* collectively in workshops to determine the optimal location and direction for potential wetland expansion (Figure 12). This parametric analysis enabled students to make evidence-based collective decisions about macro-scale strategies while providing clear guidelines for individual project development.

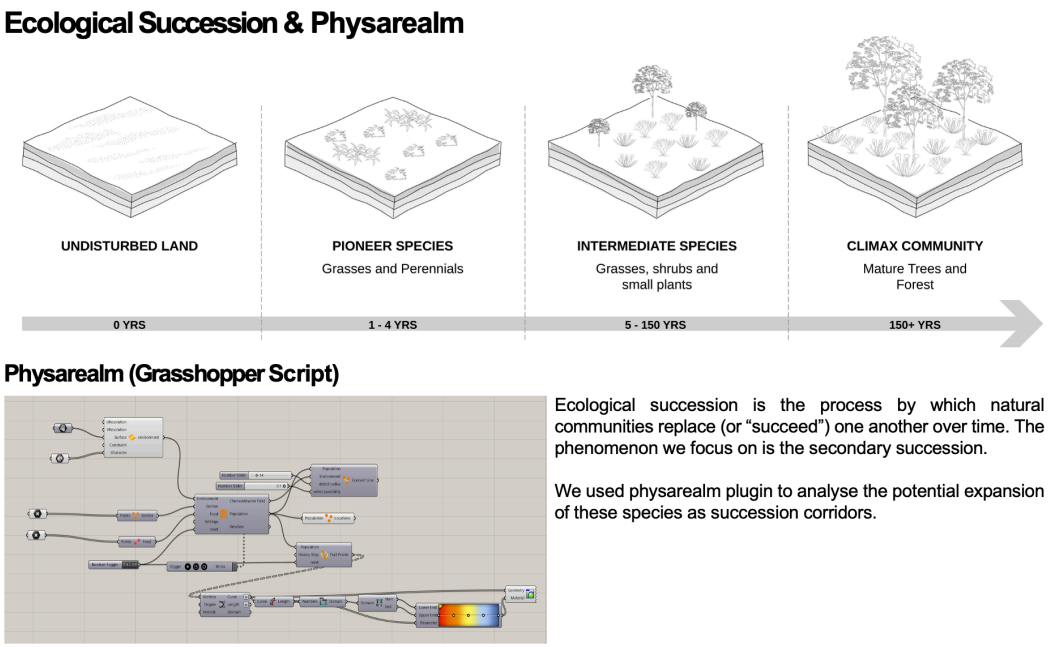

Figure 12 Ecological succession simulation via the Physarealm parametric tool (Credit: Student team of UD Studio C 2023: Creative triggering – Instructors: Justyna Karakiewicz, Theo Blankley)

Areas situated on past marshland (often low-lying) will be especially prone to chronic flooding, waterlogging, and potential infrastructure failure as sea levels continue to rise over the next two centuries. The collective analysis determined that selecting the lowest points on the site for initial intervention will enable wetland access to water and retain this water even during the dry season (Figure 13). With ecological succession, the wetland will be able to expand across the site, providing vital services such as water purification, carbon storage, flood mitigation, and habitat for biodiversity.

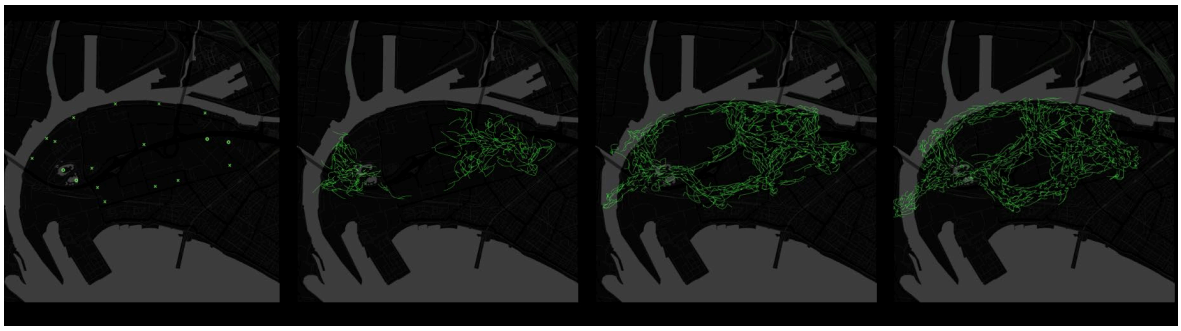

Figure 13 Restoration of the wetland, starting with the lowest points on the site (Credit: Student team of UD Studio C 2023: Creative triggering – Instructors: Justyna Karakiewicz, Theo Blankley)

This systematic approach to site analysis enabled students to develop individual architectural responses that contribute to the collective ecological strategy. Each project operates within a macro-scale framework, addressing specific programmatic, spatial, and technological questions that emerge from the larger restoration strategy.

The Fishermans Bend studio highlights a crucial shift in urban design education and practice: from reductive, short-term interventions to systemic, regenerative strategies that operate across decades and ecologies. It underscores the necessity of rethinking conventional approaches to land deemed problematic, recognising instead the latent potential in landscapes once dismissed. The pedagogical innovation lies not only in the extended temporal framework but also in demonstrating that individual design creativity and collective strategic thinking can operate simultaneously and productively. Students learn to contribute their analytical rigour and design skills to collaborative processes while developing their capacity for independent design thinking—preparing them for professional practice where both capabilities are essential.

4.2. Missing Link: New Typologies and Approaches

Rather than treating each studio as a completely new and different theme, Studio C 2024 built upon the knowledge base developed in the previous Fishermans Bend restoration project, creating continuity between semesters while consistently addressing the agendas of local municipality planning. The restored wetland ecosystem developed in 2023 raised fundamental questions about site integration and connectivity: how could the regenerated Fishermans Bend precinct be meaningfully connected to the surrounding urban fabric and the broader Melbourne metropolitan system?

In response, Studio C 2024 focused on rethinking one of the most emblematic infrastructural forms: *the bridge*. Here, the bridge was not simply a connector but was reconceived as both *liveable* and *living*: a dynamic infrastructure capable of transformation, reconfiguration, and adaptation. Against the backdrop of climate change, marked by intensifying storm surges, flooding, and coastal erosion, the studio sought to reconceptualise the bridge as something regenerative, not only mitigating risks but also nurturing ecological and social resilience.

The chosen site, Melbourne's Docklands, across the Yarra River from Fishermans Bend, provided fertile ground for this reimagining while maintaining a direct connection to the previous year's work. Vulnerable to flooding yet central to the city's future development, Docklands provoked students to test radical ideas for an architecture of adaptability that could integrate with the restored wetland systems developed in 2023. From this investigation, three projects stand out:

The Bridge as a Web Structure challenged conventional notions of the bridge as a neutral span. Nicholas Ots, Sihan Zou, Shichen Pen, Deifeyang Li, and Sarah Safira Indah Putri imagined it as a "web", which is an infrastructural network that not only connects but also transforms its surroundings. This visual metaphor aimed to portray infrastructure as a catalyst for change, sending ripples through the city’s fabric, moulding its social and physical reality (Figure 14).

Submerged Connectivities took a radically different typological approach. Michelle Lee, Shilo Burgess, and Jiang Zhiyuan rejected the bridge as an aerial crossing, proposing instead an underground and underwater system that revives Docklands by restoring it to its original wetland traces. The project envisioned a structure that grows and adapts over time, utilising recycled materials and biologically enabled innovations, such as mycelium. This "living infrastructure" is designed to withstand flooding, shifting seamlessly with rising waters and the evolving needs of its occupants (Figure 15).

Symbiosis Delta-scape explored how architectural intervention at the edge of land and water can operate as an extension of ecological systems. Jing Kang's project, set along the tidal estuary of the lower Yarra, integrated architectural forms with natural defences such as mangroves and oyster reefs. By deploying these soft systems, the design absorbed and filtered floodwaters while creating new landscapes of habitation, recreation, and education (Figure 16). Throughout the studio, these projects were shaped by broader questions essential for the future of urban resilience: how can cities adapt their physical and social infrastructure to address climate challenges while fostering thriving communities simultaneously?

Figure 14 The bridge as web structure (Credit: Student team: Nicholas Ots, Sihan Zou, Shichen Pen, Deifeyang Li and Sarah Safira Indah Putri – Instructor: Justyna Karakiewicz)

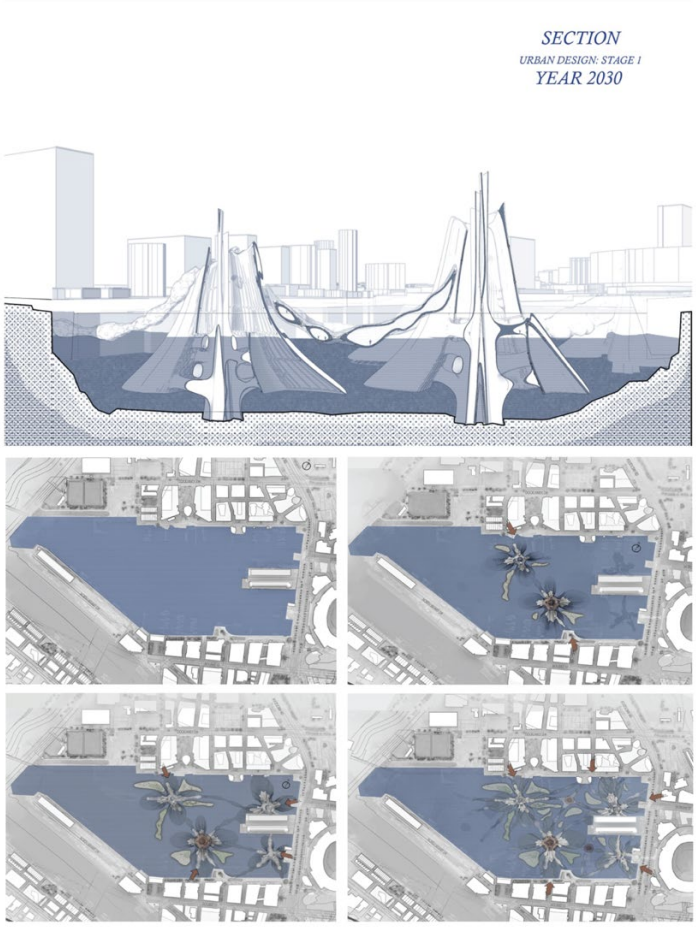

Figure 15 Section through termite-like structure (top) and development of the site plan from 2025 to 2080 (bottom) (Credit: Student team: Michelle Lee, Shilo Burgess and Jiang Zhiyuan – Instructor: Justyna Karakiewicz)

Figure 16 Ecological integrated waterfront at Fishermans Bend (top); Section illustrating edge conditions (bottom-left); Section illustrating processes within the bridge structure (bottom-right) (Credit: Jing Kang – Instructor: Justyna Karakiewicz)

4.3. Cyborg City: AI-augmented Climate Futures

In a world where artificial intelligence is increasingly embedded in our lives, society stands at a pivotal crossroads. Will we harness this powerful technology ethically, or risk being subsumed by it? Building upon the ecological restoration strategies of 2023 and the infrastructural connectivity explorations of 2024, Studio C 2025 extended the systematic analytical framework to encompass technological integration and AI-augmented climate solutions.

Through AI-augmented and imaginative inquiry, students investigated innovative models for sustainable living, focusing on three visionary concepts: *Foam Cities*, *Perturbanism*, and the *Cyborg*. Drawing on Peter Sloterdijk's philosophy, Foam Cities reimagine urban environments as networks of interconnected bubbles, reflecting the intricate social and spatial bonds that define modern communities (Sloterdijk, 1998). Perturbanism introduces urban design strategies based on minor, dynamic disruptions, fostering resilience by empowering cities to adapt fluidly to change (Karakiewicz, 2020). The Cyborg concept envisions a fusion of organic and technological elements, expanding human potential and redefining our interactions with machines and the natural world.

Students developed adaptive proposals that seamlessly blend architecture, advanced technology, and ecological systems by integrating artificial intelligence. In the opening week of the semester, students envisioned a better future for the area surrounding Southern Cross Railway Station in Melbourne. This strategic site connects to both the 2023 Fishermans Bend restoration work and the 2024 Docklands connectivity investigations. Over the remaining eleven weeks, they collaborated in groups to demonstrate how AI-driven ideas could materialise in reality. Ultimately, eight distinct visions emerged (Figure 17).

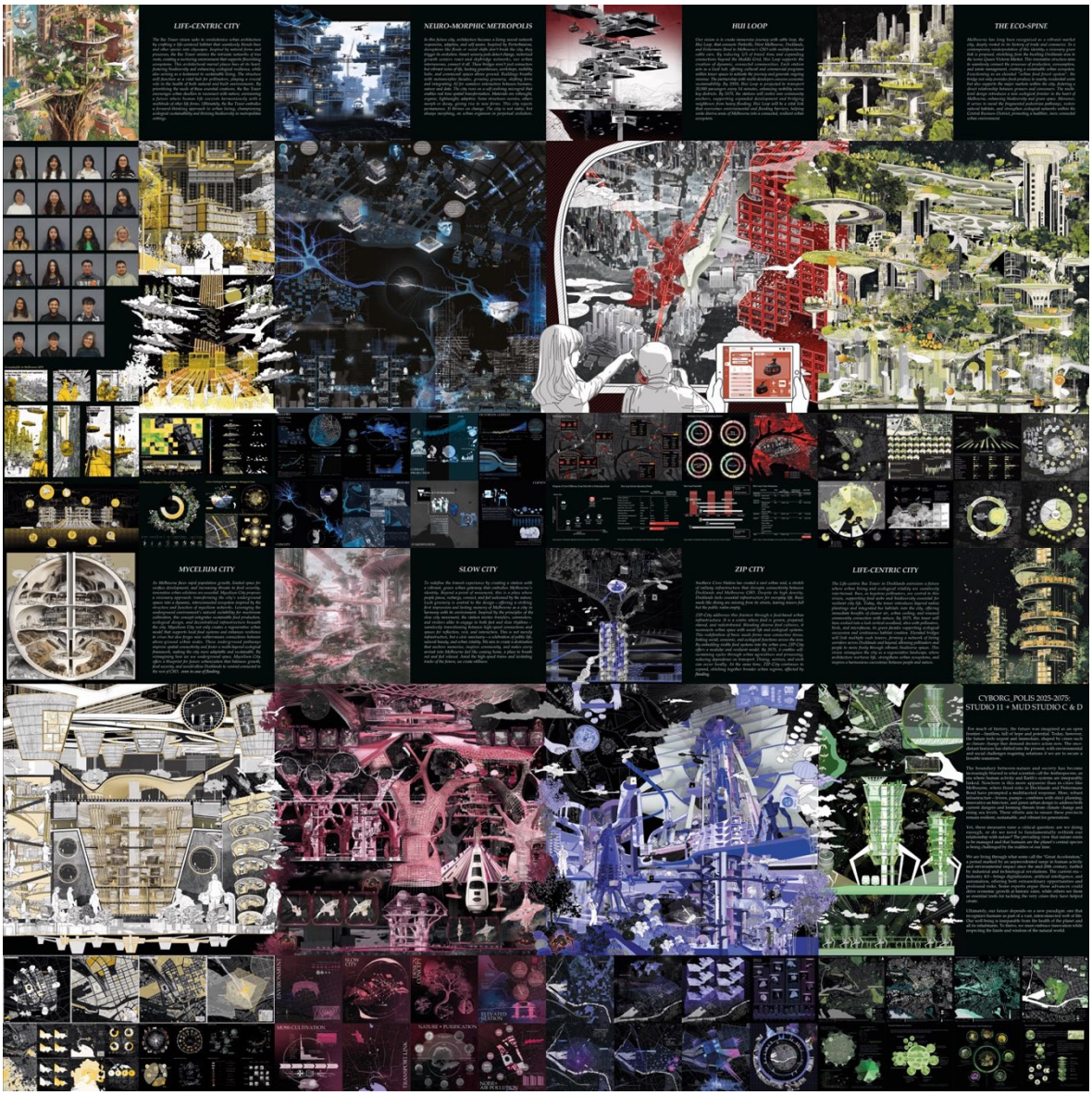

Figure 17 Eight unique visions of the students (Credit: Student team: Shangxi Hou, Mingchen Zhao, Astha Shan, Sulochana Khatri, Vendant Shrivastav, Rice Mok, Qianyu Liu, Huicong Xu, Krishna Maya Nair, Sixiao Wang, Kehan Shang, Chenghui Lu, Yian Feng, Alina Rose Sebastian, Raisa Firasyan, Anastasia Anindyasarathi, Shiyu He, Jingmeng Zhang, Ziyang Zhang, Vikram Giri – Instructor: Justyna Karakiewicz)

In the final days, students worked to integrate their projects, illustrating how these diverse proposals could collectively safeguard a large city district from rising water and severe flooding. Collaboration expanded, as all 24 students negotiated project boundaries and compromise, learning to work effectively within multidisciplinary teams and larger collectives while maintaining the core integrity of their ideas (Figure 18).

The three-year sequence of Studio C demonstrates how advanced urban design education can challenge students' conventional thinking while building systematic analytical and imaginative capabilities across extended temporal frameworks. By progressing from ecological restoration

(2023) through infrastructural innovation (2024) to technological integration (2025), students develop the capacity to apply rigorous and imaginative design thinking to the urgent challenges of climate action, preparing them for the independent research and self-directed investigation that characterise the thesis studio. Students emerge from Studio C equipped not only with technical analytical skills but with the collaborative capabilities and long-term thinking necessary to address the urgent challenges that will define their professional careers.

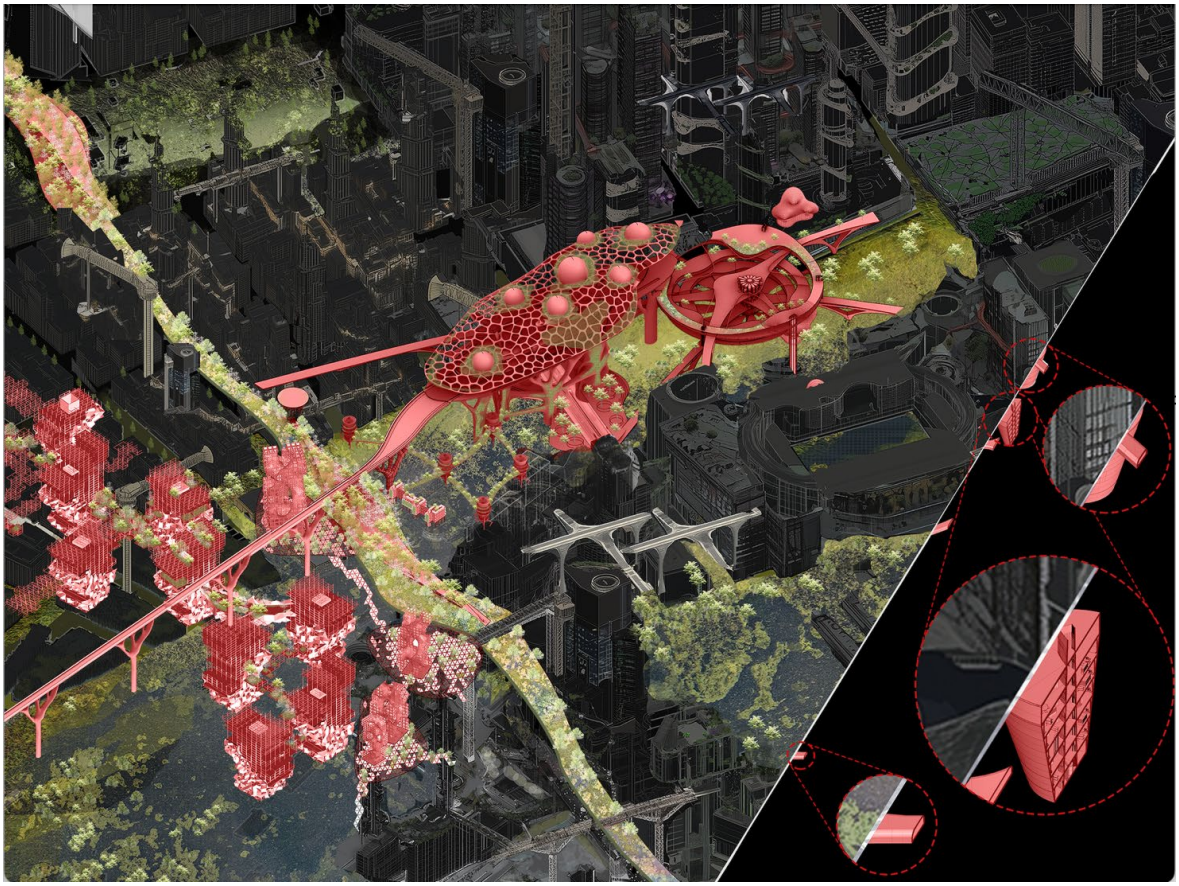

Figure 18 Collective image of the students (Credit: Student team: Shangxi Hou, Mingchen Zhao, Astha Shan, Sulochana Khatri, Vendant Shrivastav, Rice Mok, Qianyu Liu, Huicong Xu, Krishna Maya Nair, Sixiao Wang, Kehan Shang, Chenghui Lu, Yian Feng, Alina Rose Sebastian, Raisa Firasyan, Anastasia Anindyasarathi, Shiyu He, Jingmeng Zhang, Ziyang Zhang, Vikram Giri – Instructor: Justyna Karakiewicz)

5. Urban Design Thesis

The Urban Design Thesis, coordinated by Dr David Syn Chee Mah, serves as the capstone subject for the urban design program. It operates as a studio-based course that integrates design research methods, enabling students to develop research questions and hypotheses addressed through design. The thesis studio is structured to allow students to apply much of what they have learned in the program toward exploring a self-initiated thesis question. It involves an introduction to traditional academic research methods as well as an equal focus on connecting this traditional research to design-led research.

The thesis studio challenges the conventional thesis model, which is often viewed as the outcome of solely individual scholarship, instead positioning collaboration and negotiation as essential capabilities (Lang, 2005), while enabling students to develop individual mastery. This approach reflects the pedagogical philosophy established throughout the program: contemporary urban design requires both systematic individual analysis and collaborative strategic thinking.

It also reflects the nature of urban design as the convergence of many different urban concerns, systems, and practices. While students in the course are supported to pursue the traditional thesis

mandate of individual expertise, they are also required to bring their respective mastery to conversations with their peers. Mirroring the nature of contemporary urban design, where urban designers need to be able to operate across multiple scales, multi-levels, and across a diversity of systems. Rather than solely supporting individual scholarship, the thesis studio encourages students to build bridges between their own interests and expertise with those of their peers through a collaborative development of larger urban frameworks for sites in metropolitan Melbourne.

The course operates through a two-phase framework that mirrors the dual approach developed in Studio C. Students begin by creating their individual thesis research focus, articulating clear research questions, conducting literature reviews and precedent surveys, and synthesising this information to devise analytical frameworks and toolkits on urban design topics of their own definition. The second phase of the design research focuses on developing collective and collaborative urban design frameworks. Despite an open brief that allows students to pursue expertise in particular urban systems, processes, practices, and typologies, this collaborative requirement ensures that students learn to integrate their analytical capabilities with the concerns and systems introduced by their peers. This structure affords students experience in more traditional models of academic scholarship and supports them in pursuing creative practice as a form of knowledge production. This approach to design research is supported by the conscious framing of the project's contexts and themes. These sites and themes are chosen to engage students with less established challenges and contexts.

On one hand, sites such as peri-urban developments on the city's outer edges offer a less familiar context for the students to engage with. As many existing urban design concepts have emerged from various European and North American centres, they are generally informed by and rooted in sites that bear little resemblance to the outer suburbs of Melbourne. The European city and even the American sprawling suburb do not provide analogous references for these sites, as they either differ in terms of their morphologies or have significantly different ecological and social contexts. Confronting students with challenging and unfamiliar sites that are not regularly addressed in urban design literature and best practice requires that they engage more deliberately and inventively with these sites.

Another strategy for cultivating a learning environment supportive of design research is using urban themes or challenges that require a significantly projective position. A focused interest in the climate emergency requires urban designers to engage with an uncertain context: the future. It requires considering mitigation and adaptation strategies for conditions that are not fully known. This means that engaging with the climate emergency requires students to construct scenarios of how the climate emergency will transform familiar sites in the city. Developing strategies for the climate emergency is an inherently projective act: forcing students to construct their sites. For the H2O studio series of the Urban Design Thesis Studio, the site assigned to the students was not a specific location. Instead, students were tasked with considering the hydrological system as the primary site of their engagement, shifting them away from conventional urban design concepts of place to a more systemic approach to climate as an urban concern.

5.1. H2O (2018-2023)

The thesis studio has evolved thematically to address the urgent challenges of contemporary urbanism. Between 2018 and 2023, the urban design thesis emphasised the exploration of urban strategies that engage with climate change challenges, facilitating projects focused on urban hydrological systems and their entanglement with the city's energy and waste cycles, as well as engagement with food and material supply chains. These projects were based on the understanding that a systematic approach to urbanism offered valuable strategies for addressing climate change. It also focuses on the major drivers of change and challenges the overemphasis on studies of place as the primary means of initiating an urban design project. When considering the different scenarios of how the hydrological cycles and associated urban metabolisms may alter, familiar sites

in Melbourne may be rendered uncanny. This uncanniness problematises the existing tropes and best practice models of place-based ideas for urban design as it operates from a conservative position rather than a projective one. Given that addressing climate change requires consideration of what could be, rather than what is, the choice of framing urban design as a projective engagement with the climate emergency compels students to move beyond existing urban design conventions. As they thoughtfully and rigorously construct future scenarios and strategies for addressing these unfamiliar contexts, they are actively constructing novel urban design knowledge.

The group projects defined multi-scalar interventions that established alternative metabolic processes and practices to initiate and sustain regenerative urbanism. Some projects engaged with peri-urban sites to propose environmentally regenerative agricultural practices on the city's edge. Others focused on how the city's volatile, liminal water edges could be reconsidered as new forms of public realm for both human and non-human agents (Figure 19).

This phase of the urban design thesis studio was predicated on the urgent need to define an alternative interdisciplinary urban design practice that offered strategies for mitigating and adapting to the major public concern of the climate emergency. Building on urban design knowledge, the course supported the cultivation of a much-needed agility and exploratory emphasis on design research that acknowledges the strengths and shortcomings of established urban design best practices. This recalibration of the role of the thesis in an academic setting is informed by the need to support future urban designers who will be at the forefront of practising in an era of great uncertainty under climate change.

5.2. Transformers (2023-2025)

Since 2023, the thesis studio has expanded this forward-thinking approach to develop comprehensive urban frameworks for Melbourne's outer suburbs. Using the city as a laboratory for design research, students were tasked with developing strategies for transforming the city's activity centres within its sprawling metropolitan area. Over the last two years, this focus has been on urban renovation of outer suburban areas, such as Wyndham and Ringwood, which sit on the outer edge and experience some of the fastest population growth in the country.

A strategic focus on offering an alternative to the mass-produced suburban sprawl model that exemplifies these sites is crucial. The location of activity centres in these sites (areas slated for density and housing uplift) offers an opportunity to devise an alternative suburbia that can serve as a model for suburban retrofitting, offering a compelling alternative to the current model of Melbourne's sprawling suburbanization. These sites are also where the demographic change of the country is most visible, with Wyndham housing much of its recent migrants and some of its most multicultural communities. Melbourne's outer west is also defined by a dry and heat-stressed environment: a region characterised by native grasslands that are rapidly being eroded for the rollout of generic housing developments.

The focus on peri-urban developments on Melbourne's outskirts presents students with a less familiar urban site, while also requiring them to engage with the very particular ecosystems and landscapes associated with these sites. While much urban design typically focuses on city centres and more familiar urban models, Melbourne's outer suburbs present a less celebrated site for urban design focus. Besides the relative paucity of good urban design models, these sites also present students with significant challenges that are not easily addressed through conventional urban design theories and practices. In these sites, students in the course are expected to demonstrate their capacity to apply their knowledge and skills in a considered, thoughtful, and creative manner.

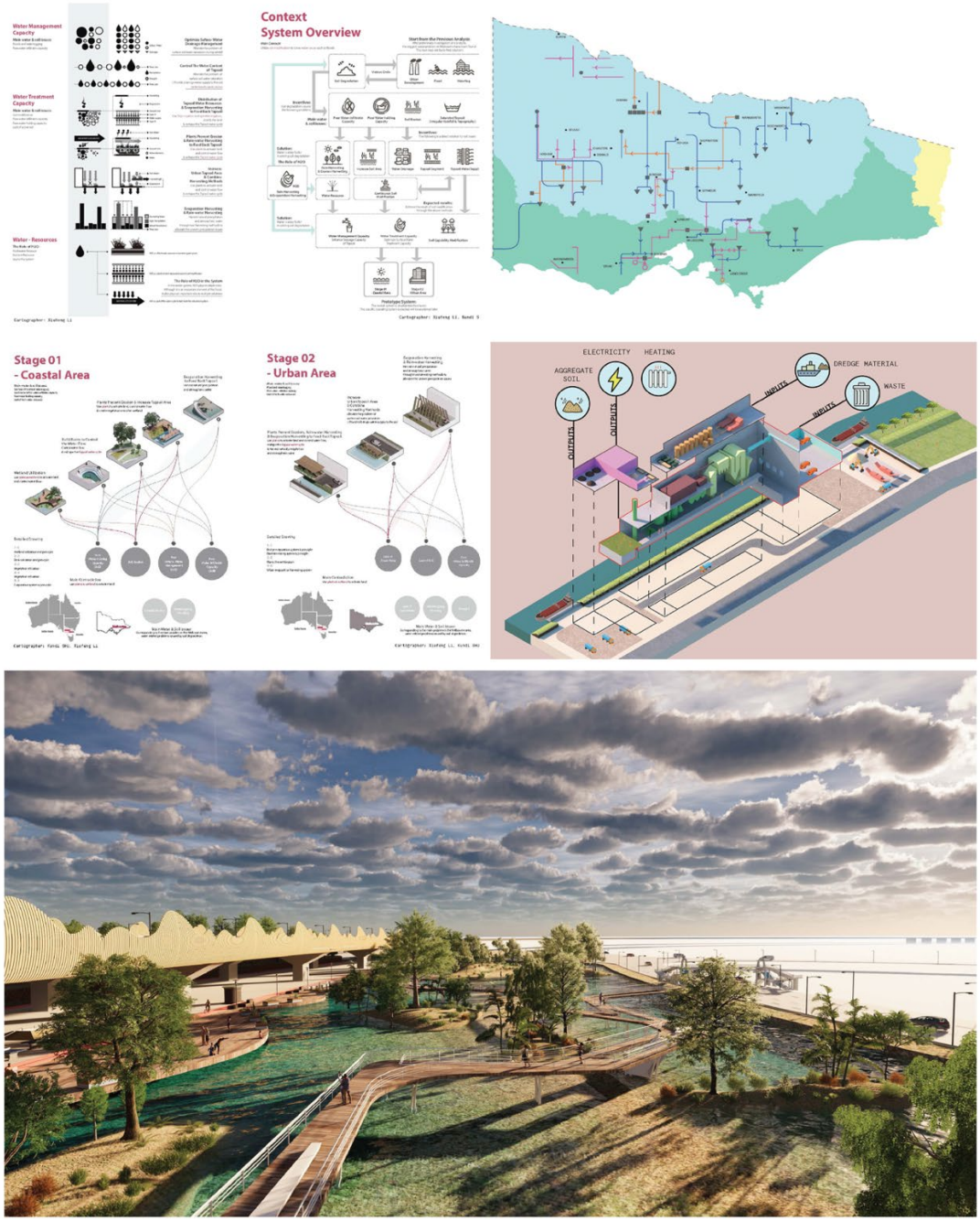

Figure 19 Urban hydrology metabolism diagrams (top) (Credit: Student team: Johnray Lee, Damian Shannon, Phuong Jamie Tran, Huey Jean Tan, Phoebe Goh, Fern Cheong, Xiufeng Li, Kundi Shu, Yuyao Wang, Peilin Wu, Bowen Ma, Spencer Murdoch, Le Minh Thuc Truong, Zhisheng Yin); Urban Water Park (bottom) (Credit: Student team: Bowen Ma, Spencer Murdoch, Le Minh Thuc Truong, Zhisheng Yin – Instructors: Leire Asensio Villoria, David Syn Chee Mah)

Students individually develop their own expertise in specific urban concerns but are tasked with developing a collaborative urban framework for these sites. This has helped cultivate sophisticated multi-systems frameworks. These include Xinru Liu's detailed designs for a tactical urbanism toolkit, which transforms what she calls suburban voids, such as the ubiquitous on-surface parking lots in Melbourne's suburbs (Figure 20).

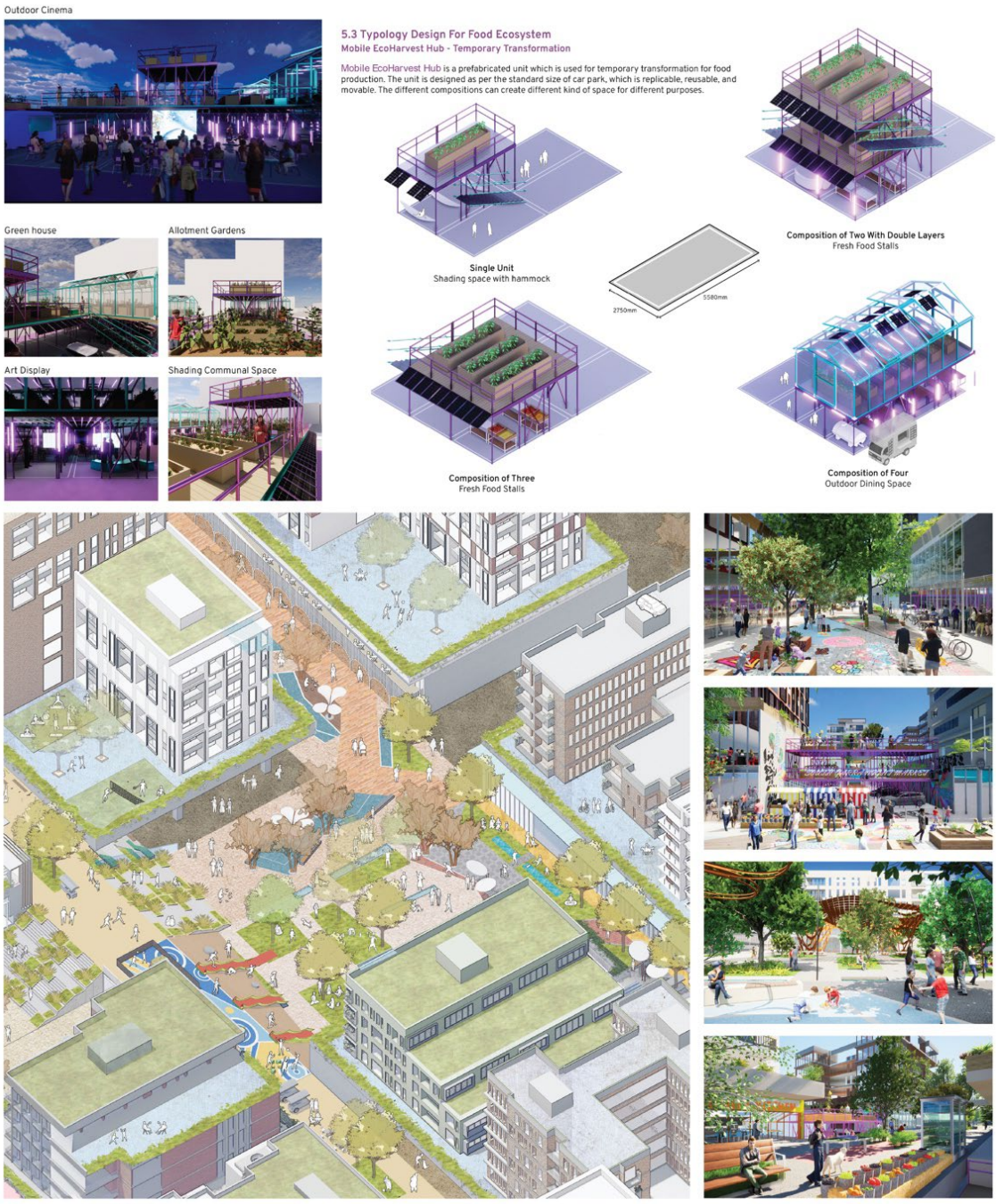

Figure 20 Tactical urbanism toolkit for carparks (top) (Credit: Xinru Liu); Activity Centre Design (bottom) (Credit: Student team: Ankita Malik, Xinru Liu, Rujie Zhang, Wenhao Zhang, Wanshan Li – Instructor: David Syn Chee Mah)

Nicholas Ots' proposal for studying the urban poche helped define how housing and the public realm may be regulated to produce compelling third spaces (Figure 21). Judy Huang's thesis on micromobility focused on the multiple scales at which it could inform the retrofit of a car-dominated outer suburban activity centre to integrate active mobility modes (Figure 22). Andrea de Silva's strategies for transforming large shopping centre multi-level car parking buildings from ubiquitous single-use structures into multi-functional and temporally dynamic programmed spaces. Learning from digital delivery platform systems: Yuning Zhou proposes a new logistical system for cultivating and distributing whole foods in Melbourne's outer suburbs, an area that can often be a fresh food desert (Figure 23).

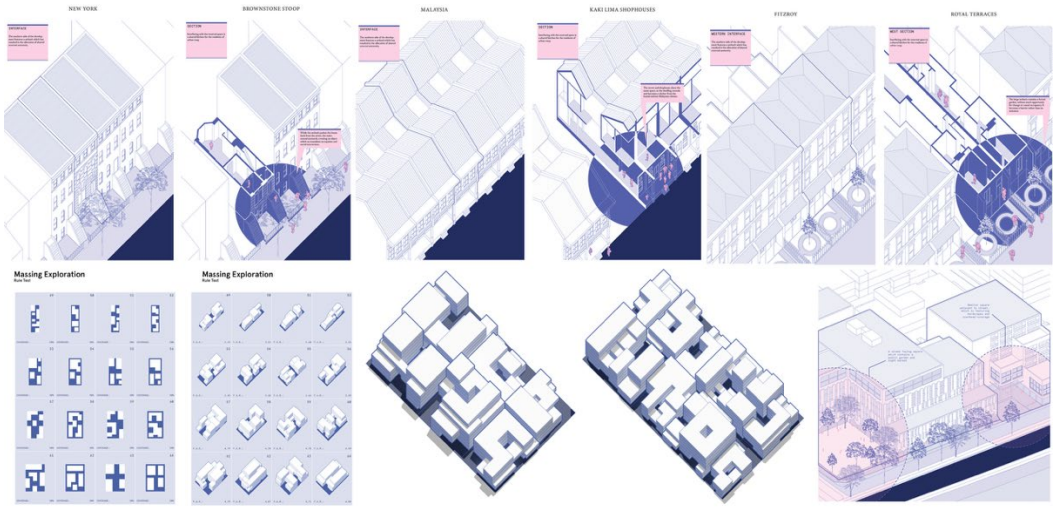

Figure 21 Urban Poche in Ringwood's Activity Centre (Credit: Nicholas Ots – Instructor: David Syn Chee Mah)

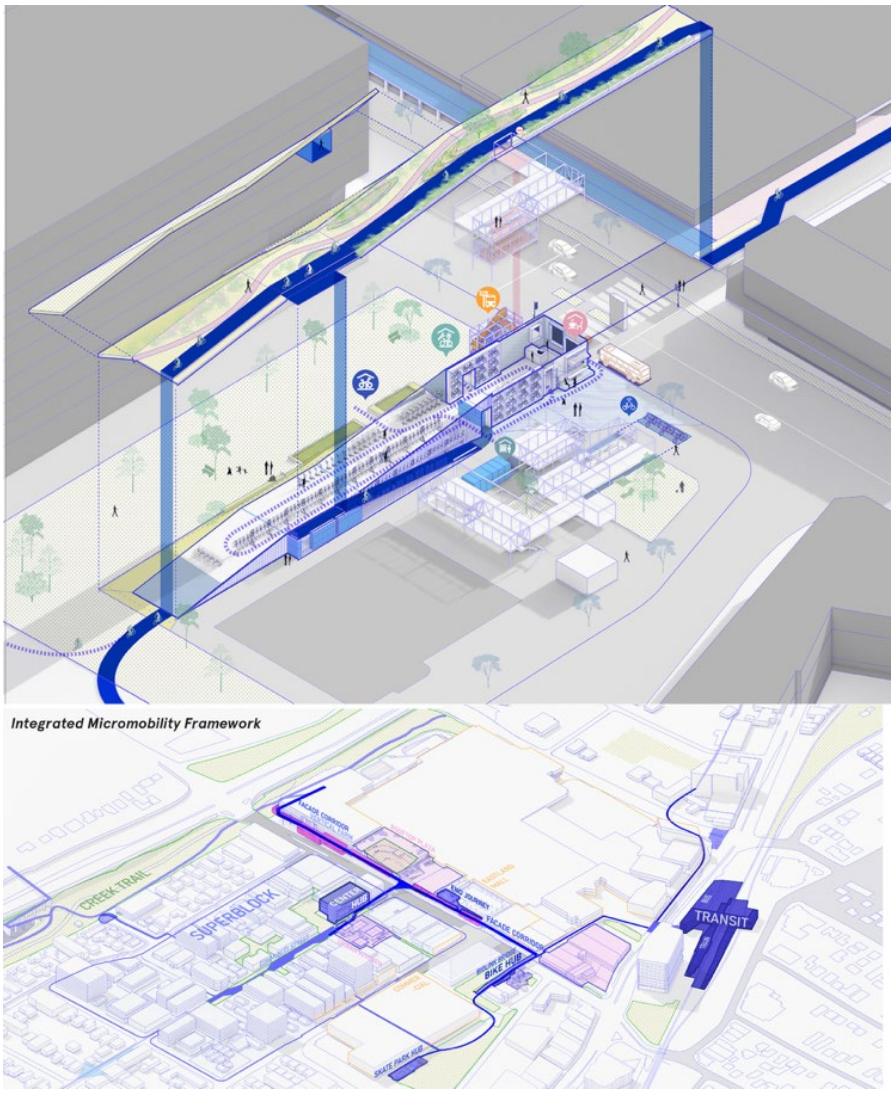

Figure 22 Micro-mobility in Ringwood (Credit: Judy Huang – Instructor: David Syn Chee Mah)

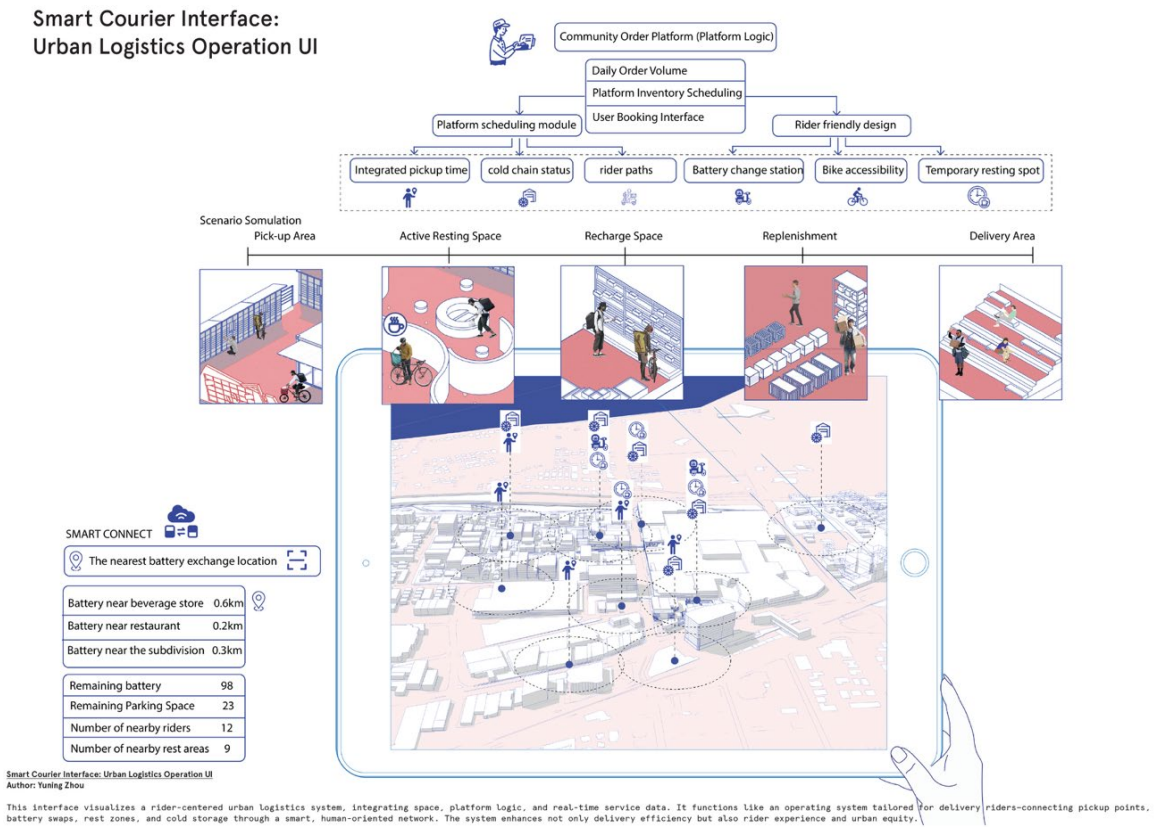

Figure 23 Access Fresh (Credit: Yuning Zhou – Instructor: David Syn Chee Mah)

As a collective response, students' research and proposals help define a multi-dimensional proposition for alternative urbanisation: a proposition to shift current practices and policies on city growth. This research is urgently needed to address the numerous challenges facing contemporary urbanisation while articulating urban practices that reduce our urban burden on the planet.

Overall, the thesis studio has been organised around both individual and collaborative research. Its structure challenges the dominant idea that a thesis is related solely to individual scholarship and places importance on collaboration and negotiation, while affording students the capacity to build individual mastery. Therefore, while this course affords students individually directed research, it also requires that each student negotiate with the concerns and systems brought by their peers through a group project in the second half of the semester.

The course is arranged to facilitate a wide-ranging engagement with the designated sites as students bring a range of their own interests to the collaborative development of an urban framework. Spanning between mobility, spatial justice, ecological, urban form, and tactical urbanism interests, amongst others, the thesis studio encourages and orchestrates a multi-level and multi-scalar proposal. Mirroring the idea that urbanism is sustained through the confluence of multiple concerns, processes, practices, populations, and materials, the course acknowledges that various values, authors, and stakeholders shape contemporary urban design. This also extends the capacity of these future urban designers to understand the complexity of each urban design site and problem. It expands urban design creative practice to a more complex yet grounded deliberation on the challenges of contemporary urbanism: a productive hybrid between research and design which neither the academic thesis nor design studio masterplan can support on its own.

6. A Way Forward: Prototyping Future Urban Design Studios

The Master of Urban Design program at Melbourne School of Design embodies a perspective for how future urban designers may think, work, and act in an era of unprecedented planetary challenges. Through the systematic progression across distinct studios, we argue for reimagining

urban design education that moves beyond traditional disciplinary boundaries toward collaborative, evidence-based and imaginative practice capable of addressing the urgent complexities of contemporary urbanism. Our grounded projection perspective creates space for radical speculation by drawing intelligently from systematic understanding of urban design practice and embracing the analytical rigour necessary for credible intervention. This approach is characterised by agility and openness in reframing contemporary urban concerns, allowing each studio to build pedagogical approaches that acknowledge the multiple lenses through which cities may be viewed and imagined. Rather than simplifying complexity, the program benefits from engaging directly with the multifaceted nature of contemporary urban design practice.

In a recent comprehensive examination of urban design programs worldwide, Yavuz Özgür and Çalışkan (2025) identified three primary pedagogical models in urban design education: normative pedagogy (focusing on systematic performative analysis of what constitutes good urban form), pragmatic pedagogy (emphasizing professional practice and real-world problem-solving), and exploratory pedagogy (engaging speculative scenarios and future possibilities). Their analysis of 70 international programs documented significant pedagogical variety that could be categorized according to these models. In this paper, we demonstrate that the Melbourne School of Design's Master of Urban Design program reflects each of these identified pedagogical approaches through its sequential studio progression, offering a comprehensive educational framework.

Studio A's role in developing a foundation for urban design is extended through a rule-based variation generation and multi-dimensional evaluation frameworks. It establishes the systematic analytical foundation characteristic of normative pedagogy and introduces students to the forms, systems, and practices which constitute the city. Studio B is informed by a social and political lens through which urban design and the city are viewed. It benefits from the industry-based studio leaders who bring current practice experiences engaging with the city’s communities, stakeholders, and governance. Students are tasked with developing an understanding of the social, cultural, and political practices that shape the city.

Studio C transforms analytical capabilities into speculative design thinking, applying evidence-based methodologies to 75-100-year temporal frameworks that challenge conventional planning horizons. As a complement to Urban Design Studio B, it is framed by an ecosystemic view of urbanism. This progression illustrates how normative, pragmatic, and exploratory approaches can complement each other when properly sequenced within an urban design program. Thus, MSD's sequential integration builds capabilities systematically across all three models within a coherent educational progression that prepares students to navigate the full complexity of contemporary urban challenges.

Melbourne's role as a living laboratory throughout the program establishes another crucial pedagogical principle: deep, sustained engagement with place generates cumulative student understanding. This approach demonstrates how repeated engagement with the immediate urban context enables students to develop the contextual expertise necessary for meaningful intervention. The city becomes not merely a site for design exercises but a complex system demanding long-term stewardship and collaborative responsibility (Figure 24).

The program's emphasis on collaboration between students across individual and collective design projects reflects an understanding that contemporary urban challenges exceed the capacity of individual designers or singular disciplinary perspectives. Thus, students learn that urban design operates through negotiation, compromise, and shared responsibility. They also recognise that urban design operates as a collective art, where creativity emerges through shared engagement between professionals and users across time (Marshall, 2016). This preparation proves essential for professional practice where technical expertise must contribute to larger collaborative processes.

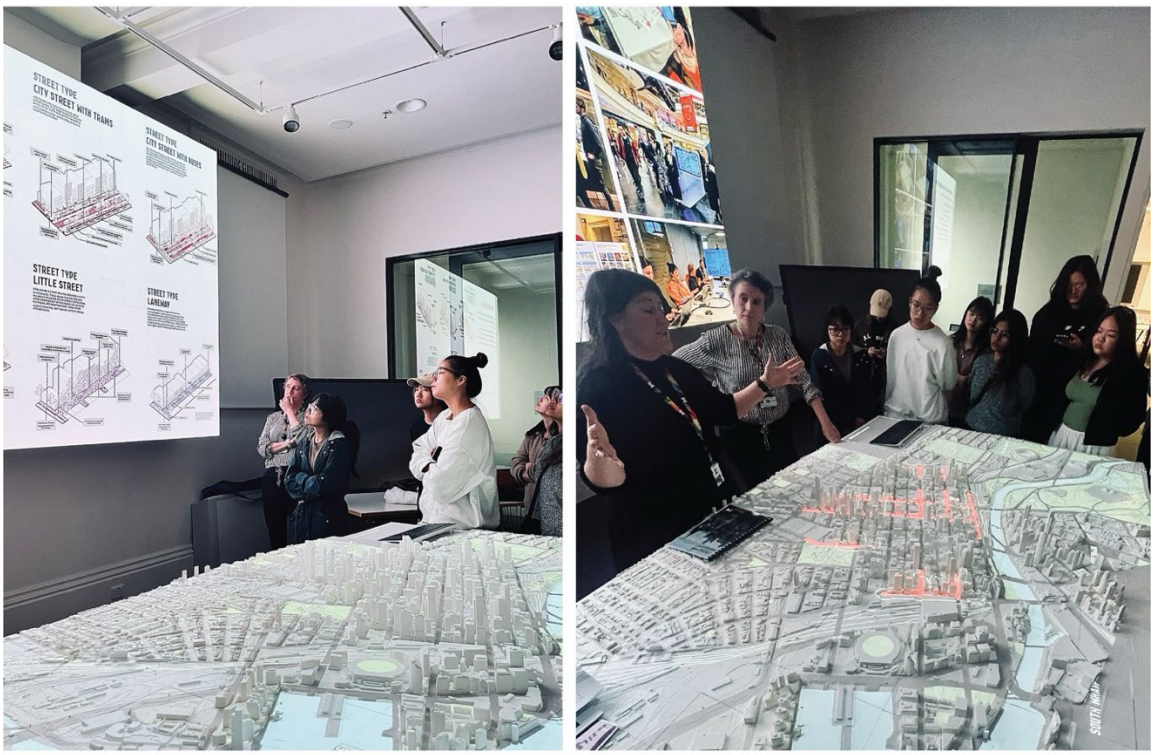

Figure 24 Students exploring the city of Melbourne's Future Street Initiative (Photos: Onur Tümtürk)

Perhaps most significantly, the program's futuristic perspective and temporal expansion in Studio C, from conventional project time spans to a century horizon, positions future urban designers to think beyond typical planning time frames toward ecological and planetary considerations. Since urban design decisions span multiple generations, this extended temporal thinking necessitates novel methodologies that foster imaginative capacities through nonlinear design approaches. Rather than following conventional linear design methods, Studio C consciously employs speculative image production and backcasting techniques that work backwards from envisioned futures to systematic design strategies (Çalışkan et al., 2020).

This studio-based progression, forming the pedagogical spine of the graduate program, operates within a broader curriculum structure that includes theory seminars, technical workshops, and elective courses. While this paper focuses explicitly on documenting the three sequential design studios and a thesis studio as the core pedagogical framework, we acknowledge that a comprehensive examination of how supporting courses interact with and reinforce studio-based learning would constitute valuable direction for future research on urban design pedagogy (Kamalipour & Peimani, 2025).

In recent years, studios conducted in the Urban Design Studios B and C stream have been supported to prototype future urban design studios that may form part of the ongoing focus of the program. This included a studio led by Leire Asensio Villoria, with Rose Hung (of the Urban Land Institute), speculating on how new technologies and infrastructural systems might impact the city more systematically.

In 2024, *Infrastructural Urbanism: Towards a Net-zero City* focused on projecting how electrified mobility, microgrid energy networks, and waste-to-energy systems may transform the city at a metabolic, organisational, and formal level. This included projects that proposed novel mobility infrastructures associated with electric vehicles, which also doubled as new social spaces in the city. The project by Judy Huang, Wanyi Zhao, and Yunning Zhou also offered multiple strategies, including retrofitting the city's current petrol station networks and providing tangible examples of

how brownfield sites may be reclaimed as locations for integrating these new infrastructures (Figure 25).

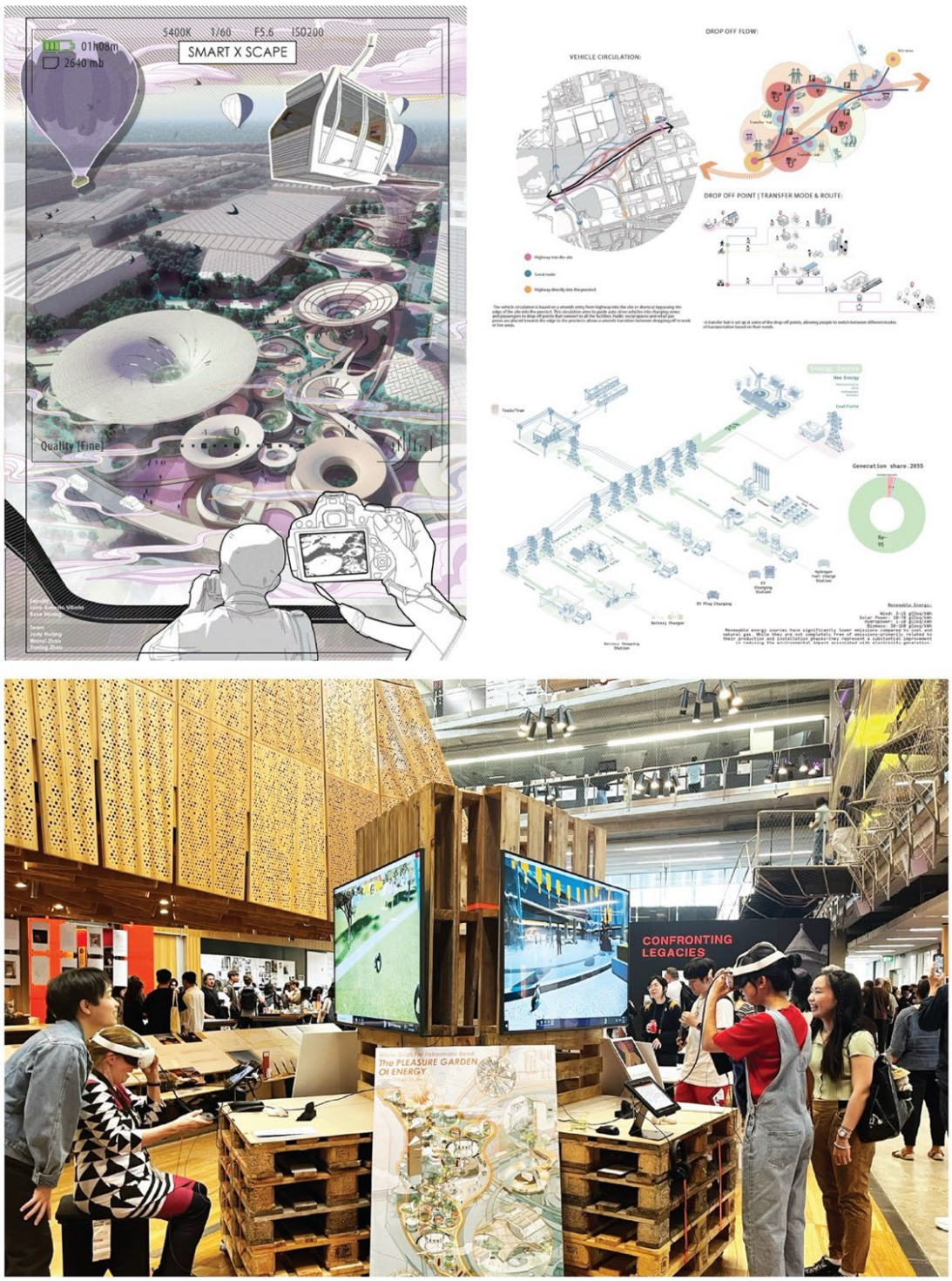

Figure 25 Student work examples from Infrastructural Urbanism: Towards a Net-Zero City (Credit: Student team: Judy Huang, Wanyi Zhao, Yuning Zhou- Coordinator: Leire Asensio Villoria- Instructors: Leire Asensio Villoria, Rose Hung)

Our sustained experience in coordinating these studios over multiple years demonstrates both significant strengths and areas that require further development. Studio A's systematic morphological foundations effectively establish shared analytical vocabularies, which are essential for subsequent work in the program. We continuously experiment with new digital tools (parametric modelling in Grasshopper, AI-assisted urban analysis, generative design applications, and VR-enabled spatial exploration) as pedagogical prototypes for engaging students with recent

technological transformation. However, balancing technical skill development with creative confidence-building remains challenging, particularly for students from diverse disciplinary backgrounds who arrive with varying levels of technological literacy. Moreover, the rapid evolution of digital tools, including GenAI applications in design, demands ongoing pedagogical adaptation to ensure students develop critical perspectives on technology's role in shaping cities.

Studio B's industry partnerships offer invaluable professional exposure, connecting students directly with current practice challenges, particularly in areas such as social equity, community engagement, and governance structures. Yet maintaining pedagogical continuity across different industry collaborators each year presents ongoing challenges, as each partnership brings distinct methodological approaches and project expectations that require careful integration with the program's broader pedagogical framework. We continue to develop frameworks that ensure consistent attention to the social and political dimensions of urban design practice, regardless of which industry partner leads the studios.

Studio C's extended temporal frameworks challenge conventional planning horizons, enabling students to think speculatively about climate futures. However, we recognize difficulty students face in developing credible long-term ecological scenarios without extensive prior training in climate science, ecological processes, and environmental systems thinking. This challenge highlights the critical importance of supporting theory courses on climate urbanism, ecological design, and environmental systems, which can reinforce studio-based learning.

These critical reflections reveal how MSD Urban Design Studios respond to interconnected contemporary urban challenges (technological transformations, social crises, and ecological emergencies) while acknowledging ongoing pedagogical development needs. Prototyping future studios demonstrates the program's commitment to remaining responsive to emerging challenges while maintaining pedagogical coherence. These experimental studios test how the established *grounded projection* framework can accommodate new concerns, technologies, and creative approaches while preserving core commitments to analytical rigour, collaborative capacity, and planetary consciousness. Recognising that design is simultaneously problem-solving and problem-making (Karakiewicz, 2019), these studios prepare students to understand that every urban intervention creates new realities even as it addresses existing challenges. As urban design education continues to evolve globally, the MSD framework offers one pathway toward preparing urban designers who can engage complexity, embrace emergent opportunities within uncertainty, and take collective responsibility for the planetary futures their decisions will shape.

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CRediT Authorship Contribution Statement

Onur Tümtürk: Conceptualization, methodology, writing – original draft, writing – review & editing, resources, visualization, project administration. Justyna Karakiewicz: resources, visualization, writing – review & editing. Leire Asensio Villoria: resources, visualization, writing – review & editing. David Mah: resources, visualization, writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

Data will be made available on request.

Ethics Committee Approval

Ethics committee permission is not required.

Resume

Onur Tümtürk is an Assistant Professor of Urban Design and Morphology at Bilkent University and a Postdoctoral Research Fellow at MIT's Senseable City Lab. His research focuses on understanding how urban form conditions shape various processes in cities, bridging novel approaches including morphometrics, machine learning and spatial analytics. He has published extensively in leading journals such as Cities, Environment and Planning B, and Urban Design International. Onur's research has been awarded prestigious grants including the Fulbright Postdoctoral Research Grant (2025–2026) and the Marie Skłodowska-Curie Postdoctoral Fellowship (2026–2028). He received his Bachelor's in City and Regional Planning (2015) and Master's in Urban Design (2018) from METU, and his PhD from the University of Melbourne (2024). His doctoral research was recognized with the Melbourne Centre for Data Science Doctoral Academy Fellowship (2022), the Bharat Dave Prize for Novel Approaches in Design Research (2023), and the Dean's Prize for Research Excellence (2023). Prior to joining Bilkent University, he taught at Melbourne School of Design (2020–2024), coordinating Master of Urban Design and Architectural Design Studios and teaching specialised courses on urban morphology and design.

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