Embracing Uncertainty and Visible Mending: Repairing the Pedagogy of Architecture in the Anthropocene

ORLA MURPHY
University College Dublin, Ireland

Keywords: Architecture, pedagogy, decarbonisation, risk

This paper describes the recent development of architectural design studio pedagogy in the Master of Architecture (M. Arch) course in University College Dublin (UCD), with a focus on shifting from the standard model of project-based learning to a more structured, but expansive and risk-based pedagogical model, in order to better respond to the climate crisis.

The paper begins by setting out the context and reasons for change. The following section describes changes made to the M. Arch Design Studio Thesis modules over three academic years (2019-2022), and the learning derived from this transformation. The paper concludes with an overview of an ambitious three-year project to redesign the undergraduate curriculum in the school as part of a national funded research project now happening across all six schools of architecture in Ireland. A case is made for a balance of structure and care, paralleled with an openness towards risk, as core tenets of a transformed pedagogy in preparing architecture graduates to act with bravery, imagination, resilience, care and skill, in order to transform the design and construction eco-system for a low-carbon society.

THE MODERN AND POST-MODERN STUDIO

Key to the traditional Design Studio model has been the development of students' ability to be what Donald Schön has called 'reflective-in-action and reflective-on-action'[1] whereby students follow an active learning, quasi-real design process, based on how a design problem would be approached in a typical architectural office, under the instruction of tutors who are also practicing architects. Students are offered project briefs and test solutions, with the advice of their tutors, and present the solution for discussion to fora of peers and expert critics. The review, or crit, is the central tool for feedback in this traditional Design Studio model. While playing an important role in the community of learning that is at the core of the Design Studio, it has come under scrutiny for its potential subjectivity, and construction of relationships of power between tutors and students which can hinder rather than help learning.[2] It has also been criticised for inadequately preparing students for the ethical and societal complexities and challenges facing the built environment today, including among others adaptation to climate change, mass urbanization and mass migration.[3]

As the built environment contributes approximately 40% of global Greenhouse Gas Emissions,[4] the onus on the practice and pedagogy of architecture to undergo transformational change is urgent. As practitioners, teachers and learners we are tasked to radically tool up on facts, figures, metrics, and regulations, to decarbonise society fully by 2050 and limit global warming to 1.5 degrees C. We are running not just to stand still, but also to be ethical, to question the tenets of modernism and extractive capitalism and colonialisation, to understand the impact of our actions and design decisions on ecosystems near and far, on people and communities, on patterns of behaviour, on processes of extraction, production, construction and disassembly, on just and inclusive societies.

Architecture has become a bit messy, less didactic, imperfect, ecological, thus requiring curricula to offer some space to, "unsettle the commonsense"[5] in order to accommodate the needs of expanding practice. Cephas et al. suggest the need to move from a position of "one-world extractivism" to a pluriverse in which "survivance becomes a continuous state of operating against the odds". [6]

In UCD, as in so many other schools of architecture, we have been grappling with how to better equip and enable our students to address these many and at time conflicting challenges, without losing sight of the core value of designing good spaces for people and places that sits at the heart of the school. In 2015, COP21 and the Paris Agreement gave us a target to aim for – to limit global greenhouse gas emissions to hold global warming within 1.5 degrees C – but in general design studio structure carried on in default mode as it had done for over one hundred years: brief, concept design, develop drawings and models (which are critiqued and reviewed) repeat, submit, move on to a new larger scale or more complex brief and repeat. The school's mainly part-time cohort of staff is engaged to teach, with little time to question whether this model remains the best way to equip future architects to operate within a broader socio-ecological tapestry of systems and spatial thinking.

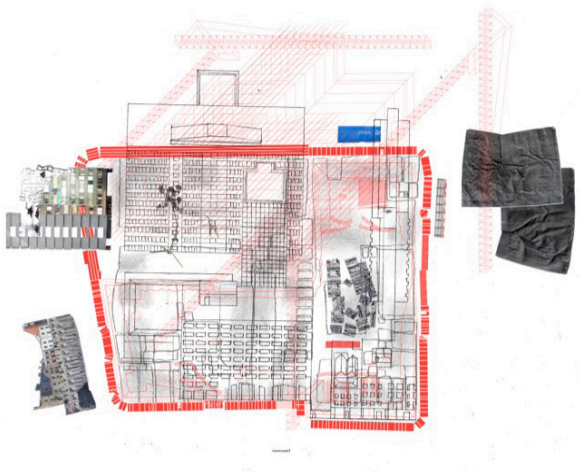

Figure 1. townsend. Emily Jones

The traditional design studio model follows practice, but this paper suggests that due to its ability to accommodate risk, education might be better able to lead or at least hold hands with practice in order for both to adapt at the scale and pace that is needed. Architecture practice is understandably slow to innovate and prototype, due to very real risk of mistakes that can impact public safety and be expensive. Education and research can allow space for prototyping new materials, for interdisciplinarity, for criticality, experiment, radicality and for imagination, ultimately for learning that can help inform practice as it shifts to a new paradigm.

LIVE EARTH NEUTRAL : UCD M.ARCH DESIGN STUDIO THESIS 2019-2022

The UCD M. Arch is a 90-credit two-year postgraduate degree. In the second year students take 15-credit Design Studio Thesis I module in the Fall semester and 25-credit Design Studio Thesis II module in the Spring semester. Traditionally, these studio modules were organised into a number of programmatic or place-based groups, led by pairs of tutors. Students advanced a position in response to the programme or place, which they then developed toward a complete and resolved thesis. In 2019, our M. Arch teaching team (led by module co-ordinator Emmett Scanlon and this author) decided to work for three years (2019-2022) to trial alternative models of teaching and learning in the Design Studio Thesis modules, with a focus on the climate emergency.

We had previously adapted the first year of the M. Arch Design Studio course to include engaged studios, live projects, co-design methods, adaptive re-use and social inclusion. A three-year project called Rising Home (2016-2019) examined housing design within the context of the housing crisis in Ireland. Studios engaged with communities on the ground experiencing homelessness, with NGOs and policy makers, with regulations around the adaptation and reuse. Each year concluded with an exhibition and publication, and sought to continue and build on engagement of previous years.

Applying learning from this experience, we felt that the Design Studio Thesis offered an opportunity for students to work in a supportive collective space (the studio) to explore expanded practice and material conditions of a low-carbon society. We were interested in the overlapping contingencies of the social and the material world, as according to Jeremy Till, “dealing with contingency calls for one to have a vision but, at the same time, to be modest and light-footed enough to allow that vision to be adjusted to the circumstances”. [7]

We aimed to shape an open and enquiry-led approach to climate resilient design; to transform the design studio to a shared space to test, to fail, to care and to repair; and to do so within a structured and supportive pedagogical model. The changes we made were structural, cultural, thematic, methodological and hierarchical, aiming to instill students with autonomy to robustly and confidently explore an aspect of climate change important to them.

The modules were introduced under the overarching heading: Live Earth Neutral. Live related to the idea that a thesis might take as its basis a live client or condition outside of the studio. Earth related to the global scale of the climate crisis and to the material nature of the built environment. Neutral suggested a space of in-between, operating in the cracks, between binary positions and resistant to dominant narratives.

CONDITIONS

Each year, we offered some Conditions to act as leaping off points. The first year focused acutely on climate change, its causes, affects and the role of architecture. Inputs encouraged students to explore their relationship to climate change through exploratory workshops, readings, precedent studies, lectures and talks, explicitly linked with climate and sustainability. We

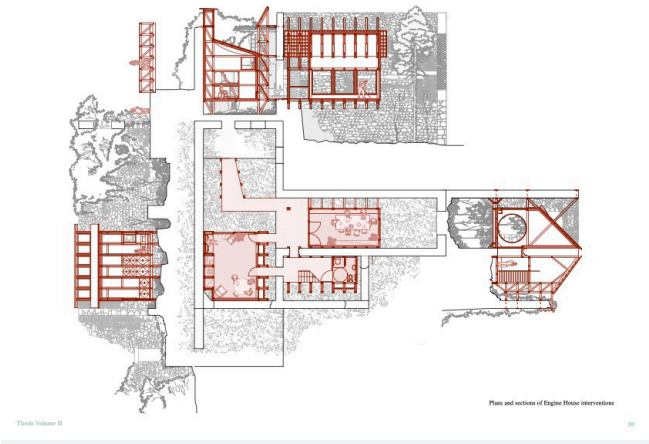

Figure 2. Engine House Intervention. Donal O'Cionnflaolaidh

encouraged students to develop reflective criticism of their own work and that of their peers, to document and record this using clear, respectful language. The work was serious and conscientious, however, in reflecting on this first year, we realised that some students felt a burden to solve climate change. This engendered a sense of anxiety in some: that no matter what they did, it would never really be enough. It held some students back from challenging accepted norms, from taking risks. The very seriousness of the problem became at times paralysing from an ethical perspective. Is Architecture over? Architecture at its core involves the production of space. In its practice, then, are we contributing more to the very problem we are trying to tackle? Would it be better if we did nothing?

We adapted the Conditions to a looser model in the second year, beginning with Unfinished Business from each student's perspective on their own education to date. In the third iteration, we began with the particular (material conditions at a close scale) and worked with students to build their understanding of connected systems: the material, ecological, social and political. We included the values of the New European Bauhaus – beauty, inclusion and sustainability. We invited students to begin together in the same physical place (in this case the main thoroughfare O'Connell St in Dublin) and to start at a close up scale, before being free to move outwards as their work developed. Somewhat counter-intuitively the more we encouraged spatial specificity and closeness at the outset, the greater the freedom students had to then diverge and explore more varied interests from a common point of departure.

We emphasised the expanded view of practice, one that is more interested in what architecture *does*, rather than what it *is*, and tried to relieve the responsibility of having to 'solve' the climate crisis, whilst still testing the system change needed to negotiate and imagine a low-carbon, inclusive and climate resilient future. We sought to open up space for students to find their own path of enquiry within the context of climate change, but not directly charged with fixing it. This involved a simultaneous expansion of inputs, alongside a clear teaching and learning structure.

INPUTS OUTPUTS

We introduced a range of regular inputs that included lectures, masterclasses and workshops. For example, in the workshop Future Where, students were invited to situate their thesis idea within a story at some future time and place, and to then describe this imagined idea, and the conditions in which it could come about, through writing and drawing. Each Friday we began the day with 'Five on Friday' – where a teacher and a learner would each share 5 slides about ideas that they were currently interested in – music, art, material, plants, spaces, anything including but not limited to architecture. Establishing a supportive and active studio environment helped us adapt to online learning during Covid, so that while learning apart we stayed together and took care to provide structure, and find new ways (e.g. Miro, Zoom) to share work at home but still together.

TEACHING AND LEARNING STRATEGIES

Alongside these inputs, we introduced structured teaching and learning strategies. We wrote plain English detailed rubrics for the modules, as well as clear and succinct Module Descriptors, Learning Outcomes and briefing updates. We offered more diverse and regular feedback and assessment based on Universal Design for Learning principles and talked students through this process and its rationale.

Burridge et al. have critiqued inward facing institutional pressures that have prioritised accreditation criteria and course topics over pedagogy and well-being, with an all too often dominance of the object view of architecture (what architecture is) over the impact view of architecture (what architecture does).[8] Counter to this approach, we emphasised Parity of Esteem as co-learners and student health and well-being and discussed these with the learners. Invited critics were briefed ahead of reviews about our approach, with the aim of supporting students in a spirit of open and joint endeavour. Presenting students were invited to sit if they chose, changing the presentation of their work from one of defence, to one of collective reflection. In the final Show + Tell reviews, students presented the work of their peers. This small change shifted the students focus from their own work, to that of their peers and colleagues, away from what the traditional somewhat competitive and introspective teaching environment to a more collective learning space.

SPACE TO FAIL

By the third year, we realised students were still driven by the non-stop momentum of the academic semester system, and that there was little or no space to experiment without risk. We realised we needed to carve out some space to fail. We introduced short Testing Cycles. These were discrete, but repeated components lasting three to four weeks, in which students could trial an approach, set out a path and make a specific study,

Figure 3. Vuew from Market Square toward Town Hall. Dominic Fahy.

reflect upon what worked or didn't and plan their next step. At the end of each cycle, students shared their work in a Show + Tell review, critically reflected upon it, and wrote a short text on what they learned and their plan for the next cycle. Each cycle was graded with feedback. Component grades were banked but could improve over the course of the semester (but never deflate). This gave students assurance of their learning trajectory (they were clear about how their were progressing) but also about what they could improve or focus on in subsequent components, in line with clearly written criteria in the assessment rubric. In a sense these cycles allowed for tests to fail, to not work, to change direction without risk of falling behind or losing momentum.

DEVELOPING A POSITION

The parallel expansion of how to be an architect in the Anthropocene, gave space to learners to develop their position along a broad spectrum related to architecture as climate action.

By the third iteration in 2021-22, students were visibly comfortable departing from the need to deliver a finished solution. Their work imagined radical beginnings (order and disorder in the city, queer space), more-than-human clients (moulds, fungi, insects, birds), intimacy with materials (water, timber, mycelium, repurposed pre-cast panels), novel understandings and re-imagining of the rural condition, the material of unlimited hospitality and care, the connection between food and production and society and more. While the breadth of study was significant, a shared common focus was intimacy with and care for the material world.

It has been heartening to watch these graduates progress beyond the academy with confidence. They are exhibiting their work, they are engaged in research on climate policy, they are hosting workshops and advocating for change. They are winning awards – which is nice too. But more than that, they are kind and generous peers, critical thinkers, curious and creative spatial pirates. The future in their hands looks bright.

BUILDING CHANGE: EMBRACING UNCERTAINTY AS A MEANS TO RESILIENCE

UCD, along with all six schools of architecture in Ireland, is now reviewing its undergraduate curriculum to address the changing landscape of practice in the context of climate change and housing need, as part of a national funded project called *Building Change: Designing a Resilient Future through Architecture Education*. Our challenge, as educators is to co-design with students and staff what a curriculum for architecture now needs to be. Reflecting on the changes made in the UCD M. Arch course, key to our approach is the acknowledgement of the material as

Figure 4. My Apartment in Dublin, Plan. Lily O'Donnell.

fundamental to architecture as well as its parallel entanglement within social, cultural, economic and political systems.

We are actively engaging with all staff and students in the school to co-design a transformed curriculum. A school wide survey of staff and students at the outset of this project revealed gaps in the curriculum as well as potential for overlap, collaboration and transformation. Connections between lecture modules and studio modules are evolving so that learning across theory, history, environmental design, technology and studio all move and inform one another. Student curators represent the perspective of students in each year and feedback their ideas and criticism as the project evolves. Students also meet with their peers from other partner institutions to share their experience. Pilot studios in each of the six partner architecture schools in Ireland are trialling different approaches – working across themes, pedagogies and tools – and sharing findings each year. Staff training is offered both within the teachers contracted hours and as formal CPD, with each university developing and piloting at least one 5 Credit CPD module which is then made available to staff in all of the schools. Opportunities to learn from international best practice is available through the Erasmus+ programme.

Colleagues have contributed ideas for Quick Wins – ideas that can be quickly supported and introduced to help drive a cultural shift in the school, for example a designated garden that can be developed as a space to trial material and ecological live build mini-projects; a maps of staff expertise in specific areas whom students or staff can contact for specialist assistance in areas such as conservation, material knowledge, environmental modelling, ecology. Partners in industry are invited to contribute their perspectives in relation to construction, digitisation, materials, regulatory change, risk. The project has initial funding until 2025, but the process of change will need to continue.

We accept that no single solution, or perfect version of a new curriculum exists. There are a lot of moving parts. But our experience in the M. Arch programme has taught us the value of respectful co-learning, of forging space to take risk, within a clearly communicated structure that includes all voices and views, and values alternative abilities and interests within the spatial field and expanded practice of architecture.

We have learned that in the face of extraordinary uncertainty that the climate crisis entails, we cannot simply replace care with software, we cannot pretend to certainty when resilience, innovation and imagination are more valuable to our craft than ever. Timothy Morton finds consolation in this in-betweenness, which "irritatingly, or wonderfully, means you never have the perfect design".[9] Instead, we can perhaps find hope in the need

to trust in each other, to learn from failure, to welcome all voices, and to throw open the doors to other disciplines in a spirit of respectful listening and collaboration. Test, make, reflect, with parity of esteem. In doing so, we can accept that the process of continuous mending of the planet is a new paradigm and transformational for the practice of architecture, and is necessary for us both as teachers and learners but also as citizens and caregivers of the world.

Figure 5. Testing Mycellium Bricks. Aisling Mulligan.

ENDNOTES

1. See Donald Schön, *Educating the reflective practitioner* (San Francisco, CA: Jossey-Bass, 1987) and Donald Schön, The reflective practitioner: How professionals think in action (New York: Basic Books, 1983).
2. David McClean & Neasa Hourigan (2013) Critical Dialogue in Architecture Studio: Peer Interaction and Feedback, Journal for Education in the Built Environment, 8:1, 35-57, DOI: 10.11120/jebe.2013.00004
3. Nadia Charlambous and Giorgios Kyriazis, *Housing Design in Uncertain Environments* (Germany: Jovis, 2018
4. Irish Green Building Council, *National Net Zero Whole Life Carbon Roadmap for the Built Environment in Ireland, Preliminary Recommendations: Vision for 2050*, (Dublin: Irish Green Building Council, October 2021)
5. Ross Adams, Ivonne Santoyo-Orozco, Olga Touloumi & on behalf of Bard College, "Unsettling Architecture's Commonsense", Journal of Architectural Education, 76:2 (2022): 29-33, DOI: 10.1080/10464883.2022.2097500
6. Jay Cephas, Igor Marjanović & Ana Miljački, "Pedagogies for a Broken World", Journal of Architectural Education, 76:2, (2022): 2-4, DOI: 10.1080/10464883.2022.2097491
7. Jeremy Till, *Architecture Depends* (Cambridge, MA: MIT Press, 2009) p 59.
8. Frank Burridge, Aaron Cayer, Kirsten Day, Peggy Deamer, Andrea Dietz, Jessica Garcia Fritz, Palmyra Geraki, Daniel Jacobs, Valérie Lechêne & Natalie Leonard, "Beyond Capitalism?", Journal of Architectural Education, 76:2, (2022) 34-42, DOI: 10.1080/10464883.2022.2097501
9. Timothy Morton. *All Art is Ecological*. (London: Penguin Random House, 2018), 77.