

Learning Through Drawing

Introduction

This paper considers the design process through drawings from concept to completion, highlighting the value of being able to ‘think through the pencil’¹ to communicate, understand and develop an architectural design.

As a practicing architect, I divide my time between practice and teaching in a school of architecture. My practice harnesses tactics developed within research in academia and in the studio, to pursue architectural interests in the use of drawing as a speculative tool and as a way of understanding building processes.

I am increasingly interested in supporting the students understanding of the working methodologies in which the implementation of the Kolb’s cycle of learning² by repeated reflection and evaluation is supported and inherently part of the ‘learning by doing’³ culture within both studio and architect’s office.

The architectural profession and culture are inextricably linked with drawing as the key method for developing and communicating an idea.

The increasing use of CAD⁴ as a means to present an idea does not diminish the importance of hand drawing as a tool to “discover underlying non-visual relationships”⁵. The use of computers, give a speed and efficiency to the delivering of accurate information but cannot re-place the intuitive “Thinking through the pencil”⁶ which allows a reflection on the process of developing an idea and supports an ‘ability to frame questions, not simply iterate an answer’.⁷ This paper uses the drawings made for a house, built in 2010 to extract the underlying design narrative along a chronological time line of drawings made from concept to completion .

¹ MacCormac, R. 2010: Building Ideas: essays and speculations. Right Angle Publishing Ltd. London.

² Bilyk, B. 2010. Reflective Essay: Kolb’s ‘Experiential Learning Cycle’. Germany: GRIN Publishing.

³ Schon, Donald. 1985. The Design Studio. An exploration of its Traditions and potential. RIBA Publications Ltd. London

⁴ Computer Aided Design

⁵ Burch, K. 2014. Architectural Drawing: the culture of learning an unstable currency. University of the West of England, Bristol.

⁶ *ibid.* see reference 1

⁷ Froud, D + H. Harris. 2015. Radical Pedagogies, architectural education and the British tradition. RIBA. Newcastle.

By exploring the range and purpose of drawings made through the process of designing and building, can students start to evaluate the narrative in their own work, both as a process and as concept?

Hand drawing in architectural design practices

Drawing is an aid to conversation, a mechanism to explore and solve problems as well as to represent a particular idea or a narrative that runs through a design. As the complexities of the design evolve, the greater the requirement is to maintain a clear concept from which to make decisions relating to structure, materiality and spatial organisation. With each new layer of information or requirement from the client, planning department, structural engineer, and contractor, the architect needs to evaluate the subsequent alterations or refinements and the impact on the concept that they may have. This evaluation is carried out through drawing at range of scales to fully understand the implications of any new piece of information to a design proposal. The tools that architects use to develop the design are the drawing of plans and sections, diagrammatic at the start, and using precedents that we know or find out about that relate to the problem or to our initial ideas: “Practicing architecture is asking oneself questions”⁸.

Architects may draw in a number of different ways, trying to fully understand a particular site, and imagine how people will move around the design, considering arrival sequences and practical and aesthetic controls of views and movement. As an architect, it is essential to be able to communicate through drawing and to develop an idea quickly by overlaying tracing paper for the next iteration or to highlight particular information. The drawings made through the design of a house in 2010, demonstrate the range of drawings and different technique used in the following case study.

Case study

House at Craignish

The clients were keen gardeners and cooks, wanting the kitchen and dining area to be at the heart of the house, with views to the south west. The brief was for a three-bedroom house, with a large kitchen, living room and study. The clients had identified where they wanted the house to be located, on top of a rocky outcrop that ran along the edge of their land.

⁸ Zumthor, Peter. 1999. *Thinking Architecture*. Birkhäuser. Basel..

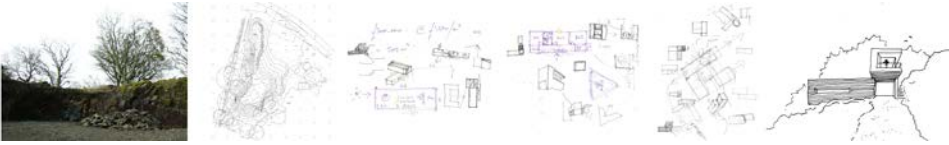


Fig. 01. Initial sketches in response to brief and site.

Source: cameronwebster architects

After obtaining a detailed topographical survey of the site, a number of alternative spatial arrangements were drawn looking at the basic relationship between spaces. It was clear that in order to be able to obtain a view, the living room would have to be above the top of the rocky outcrop, but building on top of this did not seem to be a good idea, as it would bury that natural feature. Meetings with the clients discussed costs, the area of building that the budget would allow and different possibilities, although none caught their imagination until the options were narrowed down to a few alternatives, with more realistic sketches of each.

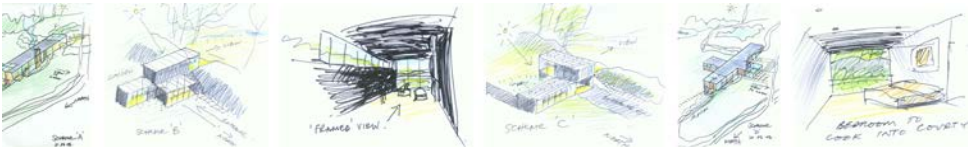


Fig. 02. Initial options discussed with client

Source: cameronwebster architects

These conversations through the drawings, clarified matters by employing an intuitive shorthand of scribbles and thoughts understood by the team. The clients enthusiastically agreed on a two-storey linear solution, lying alongside the line of the rock, with an internal stair alongside an external one leading to an upper entrance, large kitchen and dining space. The living room was raised a little

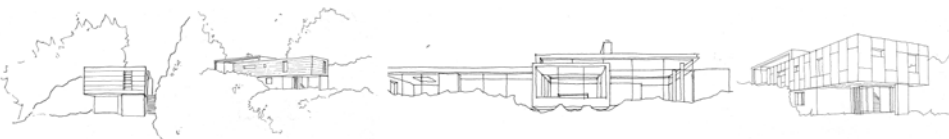


Fig. 03. External drawing studies of roof and envelope

Source: cameronwebster architects

higher, to match the contours of the rock, and the roof folded up to create a higher volume above the important kitchen. The main bedroom was extended to form a cover over the entrance and car port, and an enfilade was created on the edge of the plan with a south western view over the rock, linking the main spaces. From the entrance, lobby and up the staircase into the heart of the plan, the relationship with the envelope and view is supported through the organisation of spaces, circulation, materiality, and light. All of these aspects are considered through the drawings at a range of scales and at different moments

through the evolution of the design and construction process. At each stage of the RIBA9 plan of work, the concept of the journey up and alongside the rocky outcrop was considered.

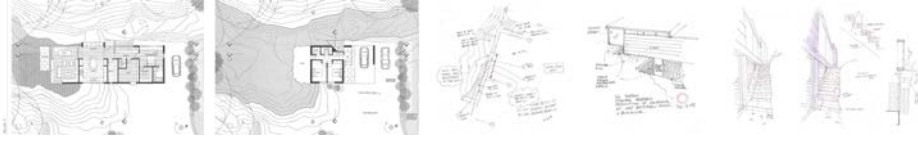


Fig. 04. Plan organisation and junctions with landscape

Source: cameronwebster architects

Once on site, sketches were immediately required for the excavation beside the rock, to clarify the levels required for the digger to work to, while developing further sketches relating to the steps and internal finishes.

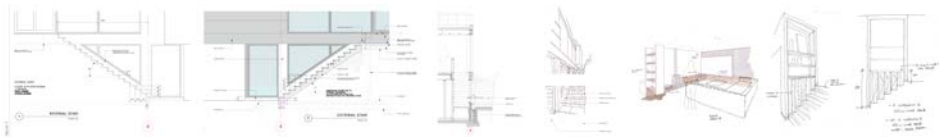


Fig. 05. Drawings coordinating the relationship between inside + outside

Source: cameronwebster architects

A range of drawings were required to interrogate key junctions between inside and coordinating several elements at different scales. The timber linings, the window reveal, the external zinc cladding, which in turn required coordination with the structure and the ground condition. A series of quick hand drawn three dimensional sketches were produced for issues raised at site visits, which may have been implicit in the construction drawings, but these sketches helped the craftsmen on site to understand what was intended and to maintain the consistent narrative of the journey up through the house.



Fig. 06. The finished house from external approach, stair in landscape and internal stair + enfilade

Source: Keith Hunter photography

⁹ Royal Institute of British Architects

The workshop

Why?

Without understanding why architects draw when designing a building, how can the student be expected to have confidence to use this methodology for their own learning?

“I draw by instinct, not architectural syntheses, but what are sometimes quite childlike compositions, and in this way, on an abstract basis, the main idea gradually takes shape, a kind of universal substance that helps me to bring the numerous contradictory components into harmony”¹⁰

Can the students be encouraged to understand that their drawings can be the beginning of an idea or path of discovery, as Aalto points out the importance of “experimentation and play”¹¹ in a design methodology.

By revealing this process in the earlier stages of an architectural education, could it support the students’ knowledge and understanding in why architect’s draw and incorporate it into their own developing working process.

The workshop was arranged into two consecutive sessions and offered to 30 architectural undergraduate students during the first semester and within the school of architecture studios. The facilitator was responsible for introducing the case study, setting the tasks and establishing a structured time framework, for each session. The facilitator prompted reflection on each of the tasks between sessions and took note informally of participants’ responses.



Fig. 07. The time line of drawings was pinned to the wall

Source: author

The students were introduced to the case study project through the chronological display of drawings from early conceptual sketches through to the final completion of the house. These working drawings are not typically available to undergraduate students, so being able to discuss the key aspects of the design development with them and answer questions relating to design

¹⁰ Pallasmaa J. 2009. *The Thinking Hand – Existential and Embodied Wisdom in Architecture*. J Wiley and Sons, UK

¹¹ Reed, P. 1998. *Alvar Aalto, Between Humanism and Materialism*. The Museum of Modern Art. New York

decisions and construction coordination, in reference to the particular drawing, gave a relevance of the methodology of ‘thinking through the pencil’¹²

“By asserting an explicit structure of the design process for conscious enquiry, the student obtains means awareness, time and techniques to construct links between them at particular instances of the design process and intensify her or his personal design framework.”¹³

Key aims for the workshop were considered and allowed a series of tasks to be carried out once the case study and associated drawings were presented.

- To demonstrate through a case study, drawing as a fundamental tool in evaluating a design narrative and in supporting a working methodology.
- To increase student confidence in drawing, to help facilitate peer support, reflection, communication and to support a narrative through their own working methodology.
- To make drawing fun and relevant to their own work as well as to the context of architecture.

Session 1 – Playing with a Line

A session to introduce the idea of process and critical judgement through individual tasks and collaborative drawing along a long table.

Warm up tasks: To ‘loosen the drawing hand’ were timed for fun but also to show the students that they can make marks that make sense quite quickly. Drawing 100 parallel lines in 1 minute, 100 circles in 30 seconds, 100 cubes etc. Changing pace and repetition of this task aimed to build confidence, alongside peers and engage in a collaborative exercise reminiscent of the studio and the architect’s office.

Reflection: The students swapped places around the table and found a clear piece of the paper on which to draw a plan of their bedroom. This exercise involved their recall of information and ability to communicate the layout, in proportion. A piece of tracing paper laid over their plan allowed changes to be made, which would improve it or question it: “Experiments in the virtual world of tracing paper”¹⁴

¹² *ibid.* see reference 1

¹³ Öztürk, M. N. and Türkkan, E. E. 2006. The Design Studio as Teaching/Learning Medium — A Process-Based Approach. *International Journal of Art & Design Education*.

¹⁴ Schon, Donald. 1991. *The Reflective Practitioner*. Arena, Ashgate publishing Ltd.

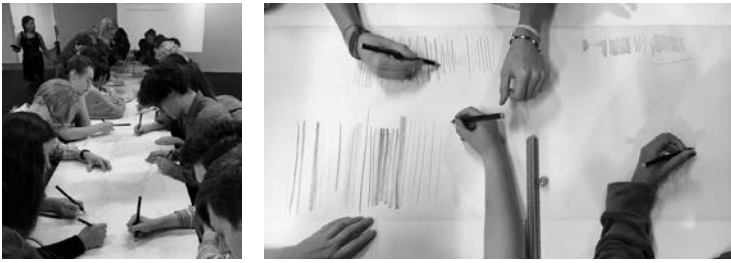


Fig. 08. Session 1 – playing with a line

Source: author

Session 2 - Lines that Communicate an architectural idea

This session used an architectural precedent to reinforce how to draw and verbally communicate ideas. The students were arranged into pairs sitting back to back and each handed a clipboard with an information sheet of an architectural built precedent.

The task was for one student to put their architectural vocabulary to use and describe the building to the other, with enough architectural language to allow the other to draw it.

After 15 minutes the students were asked to pin their drawings to the wall, discuss what they had drawn and reflect on the exercise together. They swapped places to carry out the same task with a different precedent and after 15 minutes, again, their drawings were pinned to the wall to discuss and reflect on the vocabulary they had used to describe what they were seeing and how this was understood by their partner.

“A deep approach to learning, allowing a student to describe their work with reflection and observation that will carry forward to the next iteration.”¹⁵



Fig. 09. Session 2 – Lines that communicate an architectural idea

Source: author

¹⁵ Ramsden, P. 2003. Learning to teach in Higher Education. Routledge Falmer. London.

Evaluation

By changing the mode of drawing, from sitting together along a long table, to standing and drawing against a wall, the workshop was active and students engaged animatedly and enthusiastically with each other and the different tasks. It allowed the students to try out different formats for drawing to test their own preferred mode and supported the communities of practice learning theory, specifically the concepts of a shared experience of learning¹⁶.

Students were invited to complete a questionnaire, which sought to investigate their experiences of the workshop in alignment with the key aims that asked whether the demonstration of a case study and all associated drawings, could give an insight to their own developing working methodologies. The questionnaire was completed by the 30 undergraduate architecture students who had participated. The facilitator took note of the informal conversations and reflections during the workshops and evaluated the success of the activities within the 2 hr workshop.

Thematic analysis was used to identify themes within the qualitative data gathered in the questionnaire and four major themes¹⁷ identified were as follows:

- Understanding drawing in the process of design.
- Peer Interaction/ communication
- Confidence / anxiety
- Application of drawing as a methodology for themselves.

By presenting the case study at the workshop and showing the range of drawings used along the design process, it allowed students to understand the relevance of drawings for the communication of information to a range of audiences.

“The LTD sessions helped me understand the purpose of an architectural drawing to act as a visual language - a medium between thoughts and reality. By drawing diagrams, I feel more comfortable with expressing my thoughts behind an architectural concept.”¹⁸

Architects draw for themselves to understand and develop a design but often are drawing in front of someone to communicate an idea or test a solution. Being able to have confidence in the lines that are drawn, is fundamental when working collaboratively as in the architect’s office or in the design studio.

¹⁶ Lave&Wenger.1991.Situated Learning: Legitimate Peripheral Participation. Cambridge: Cambridge University Press

¹⁷ Maguire and Delahunt.2017. Doing Thematic Analysis: A Practical, Step by Step Guide for Learning and Teaching Scholars. AISHE. Ireland.

¹⁸ Student participant

“I thought that everyone would be judging my drawings however the more the session developed the more comfortable I got.”¹⁹

Evaluation of the LTD workshops must be ongoing, since the intention is to introduce a working methodology to the students at the beginning of their architectural education. While the questionnaire showed that 100% of the participants aimed to continue to use hand drawing in their working practices, it would be interesting to track them through their studies, to assess development in their working methodologies and see if they manage to continue hand drawing as the key vehicle for speculation²⁰.

“I draw daily...it’s the best way to understand ideas in my head”²¹

Summary

In developing the workshop with the Undergraduate architecture students in mind, it raised awareness within the student participants of significant issues that affected the way they used drawing in their working methodology. Anxiety around drawing in front of others, understanding what the drawing is trying to convey, having confidence in the marks being made on the paper and ultimately what drawings are used for in the profession of architecture.

The workshop aimed to create an active session with students ‘learning by doing’ and enforcing key principles of repeated reflection and evaluation through drawing.

Conclusion

Learning how to develop this working methodology is crucial to those engaged in the study of architecture. Introducing the architectural vocabulary through the case study design narrative in support of the drawings gives meaning, context and confidence to the student in understanding other architects work and how they might apply critical judgement and develop their own architectural framework.

Through the recent Covid 19 pandemic, we have seen the turn to online learning, working from home and the loss of the physical studio space. Being able to engage with peers and colleagues over the drawing board or meeting table has been replaced with online zoom meeting and platforms such as Padlet + Miro, in an attempt to replicate the interactions, found in the physical studio environment.

The incidental interactions within the studio have been lost and opportunities for discussions over an intuitive shorthand of scribbles and

¹⁹ Student participant

²⁰ Allen L + Pearson L C. 2016 Drawing Futures: Speculations in contemporary drawing for art and architecture. UCL Press. London

²¹ Student participant

thoughts are not supported in the same way by CAD drawings or in the use of drawing tablets or iPad. Increased student anxiety over the period of the pandemic has led to a reluctance to draw as a peer group online and has hindered the rich seam of opportunity for quick reactions to drawn ideas.

The argument for students to test their ideas through hand drawing is even more important whilst faced with isolation due to the pandemic. Issues relating to digital accessibility has exposed great inequalities amongst students who don't have drawing tablets or computer software, stressing the importance of being able to rely on analogue means to develop their own working methodologies in isolation; to explore, evaluate, iterate and communicate an idea through quick iterative hand drawings.

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