

SUSANA CAMPOS AND RUI BARREIRA

LISBON SCHOOL OF ARCHITECTURE,
UNIVERSIDADE DE LISBOA

EARLY STAGE RESEARCH

ARIADNE'S THREAD: A DRAWING-BASED METHODOLOGY FOR LITERATURE REVIEW

PAPER

*LEARNER GENERATED DRAWING, SELF-REFLECTIVE RESEARCH,
VISUAL STORYTELLING*

DDR STATEMENT

Design Research being a systematic inquiry which applies the conceptual complexity of design fields towards the acquisition of knowledge, it draws on design's hermeneutic circle through the application of its methods and instruments. Drawing has been traditionally within the experience of generations of architecture, design and fine arts practitioners, and offers its understanding to a first-person experience. The nature of drawing is ambiguous, being one of those things that are easy to identify but very hard to describe. One could say the same about DDR.

Drawing can be the inquisitor, since in design thinking drawing has long been used as a primordial instrument of research, projection of ideas, reflexion and evaluation. In Design Education this serves two purposes: students can reflect on drawing and all its associated means as applied to diverse subject matters and, as they explore drawing's wider scope of possibilities, they can further and complexify their design reflection skills. Thus, the appeal of drawing as a phenomenological approach to investigating and designing can foster an invaluable method of design driven research. Projecting an investigation through drawing can radically streamline the meanings, which not only affect the student, but also the results obtained.

The inquisitive nature of drawing when applied to research opens the opportunity to expose the singular discourse and make it collective, as is characteristic of a project. Like in the tale of Apelles and Protogenes, such drawing implicates language in its process and involves collaboration to fulfil its ultimate interpretation.

ABSTRACT

This paper looks into a self-reflexive study on drawing as an interface for documenting knowledge in research. Drawing is known to potentiate memory recollection and to further ideas through suggestion. However, its role in translating information while reviewing literature has not been addressed. The study focuses on such a gap, through a methodology which translates contents into drawings without loss of rigour, maintaining the standard critical and constructive approaches. The generated images are enacted by the practice of drawing, which shapes the investigation. Incorporating the main criteria for practice-based visual research, it also draws on methods such as "Graffiti Walls", which have shown that involving third parties in a creative activity to communicate contents favours complex suggestions and depth, while it generates new knowledge. The paper explores both the value of drawing as a one-way tool to register information in research and the interactive extension its appeal encompasses.

Introduction

Drawing has a wide scope of applications in Design, an activity where it displays versatility in use and appeal. In this paper we address a self-study by a PhD student in Design Education (Rui Barreira), where drawings replace the standard summaries and paraphrases in literature review. Viewing drawing as an interface between him and his peers, he resorts to the appeal and communicability of images to stimulate interaction that furthers meanings and introduces suggestion of new paths of inquiry.

The use of the sketchbook was methodologically adopted in this study. A lot of the information contained in a sketchbook holds inter-relationships towards goals [1], which garner intuitive knowledge, go beyond appeal and feed motivation.

Literature review is usually divided into four phases: data collection, selection of information, analysis, and critical synthesis [1]. At the beginning of Rui's research process, sheets filled with ideas accumulated, and he felt overwhelmed and lacking direction. "The need of a strategy which allowed me to *see* the dialogue between my ideas and my readings felt vital. I needed a method to organise those ideas before me, permitting me to visit them at ease, to add reflections and to transform them" (reflexive log).

The sheets of paper spoke to him, but he had to visualise 'who said what', and 'who spoke about whom', so he started drawing. If he was reading Elliot Eisner and found a connection to another author, he needed to give a face to these voices. He began by drawing the authors. Looking at them on his office wall, he saw an inhabited library of ideas. All were having a conversation, everything was poetically alive.

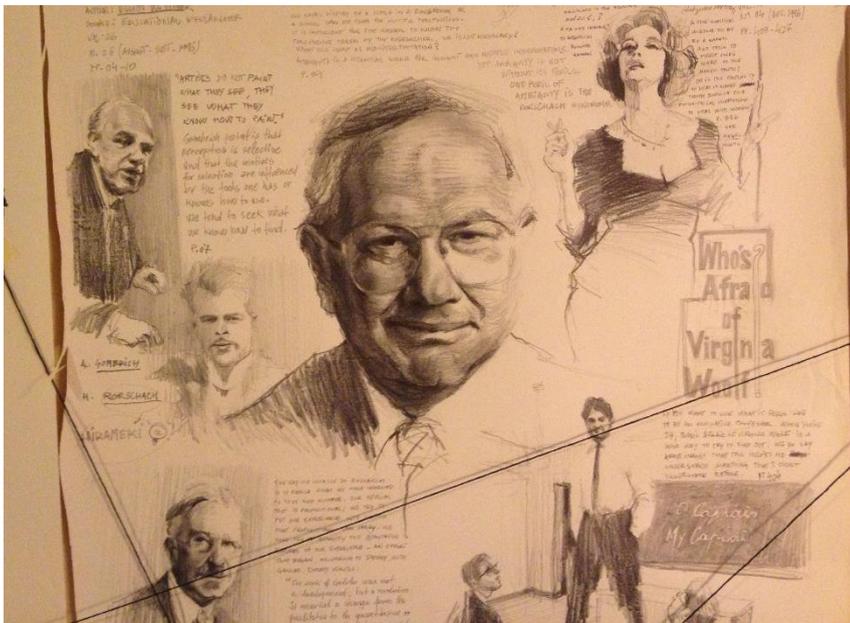


Figure 1: Elliot Eisner at the centre and the found connection, John Dewey, bottom left

When colleagues entered the room, they always had something to say about the authors, which led Rui to realise that his methodology had sparked an interest. "My drawings felt the same: as soon as the door closed behind my colleagues, I could see them smiling. They were communicating!" (reflexive log). By suggesting further readings, Rui's colleagues widened his research. Therefore, he began drawing more portraits, each signifying a new strand of research, all caught up in conversations.

With the intent of probing what these conversations were about, he illustrated the most significant passages, enabling a straightforward consultation and a consequent backtracking. Working with graphic narratives, he connected Dewey to Eisner, Dewey to Gadamer, and so

forth. It was remarkable that he needed to resort to visual cues to establish dialogues, to engage in reflexive thinking, and to communicate; this was his language. Furthermore, his involuntary exhibition had brought him precious inputs and suggested that the exploration of interactive drawings could guide and enrich his research.

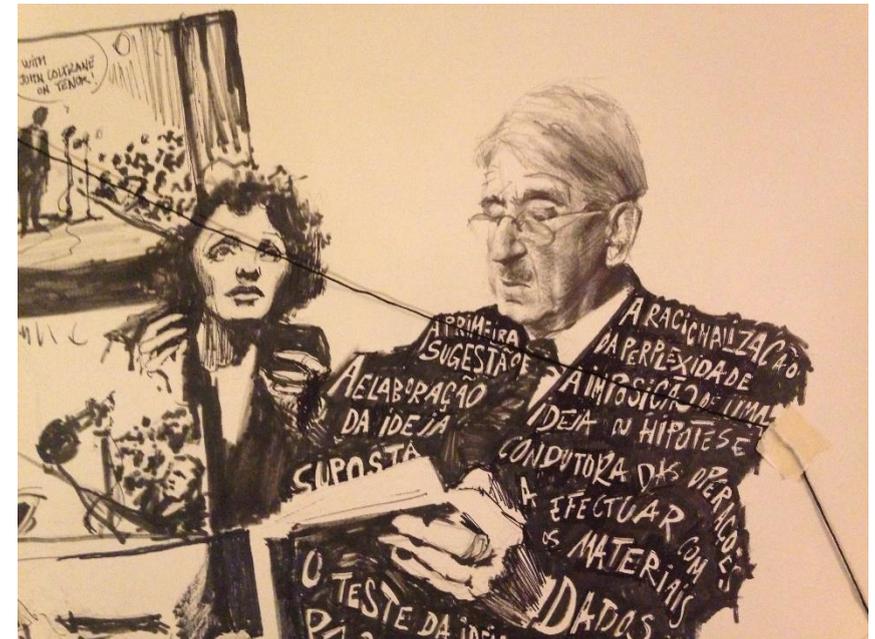


Figure 2: According to Dewey, the five phases of reflective thinking.



Figure 3: From left to right: Dewey, Eisner, Gadamer

Drawing as a learning strategy

A philosophy of drawing as a theoretical ground or as a foundation in teaching practices, from medical studies to design, has been considered by numerous authors. A multidisciplinary cohort of researchers, ranging from cognitive psychology to the philosophical study of drawing, found that its practice enhances performance across all activities [2]. As a learning-by-doing interactive methodology, sketching was helpful in effective learning of anatomy and students who had learned to draw tended to apply it as an active learning method in the following academic years [3]. Drawing can promote a constructive perception to overcome fixation effect among designers and problem solvers [4], and it proved to enable students to memorise science text [5]. In domains of engineering and marketing with participants from a variety of backgrounds, drawing showed to be an accessible subject to laypersons [6].

Kolko's view (2020) is that drawing can be helpful in managing the complexity of relationships between pieces of research data [7]. Leavy (2013) explored the value of the visual arts from the human relations perspective, finding that it facilitates interaction and connects disparate disciplines [8]. In social studies, science and language arts, the use of drawing is recommended to direct the attention of students towards illustrations, to stimulate the use of images and of visualisation, and to increment knowledge within content areas [9, 10].

What if one cannot draw? Studies on drawing show that practice can be an ally for improvement [11]. The possibility that drawing generates an improvement in the plasticity of intermodal memory in the human brain has also been pointed out by Likova (2012) [12]. If drawing is explored as an everyday means to communicate, it can be learned.

A significant association can be found between the potential of drawing and the need to investigate improvements in its processes while a means to attain particular goals. Van Meter and Garner's meta-study on learner-generated drawing (2005), encountered multiple discrepancies between the applied literature and the empirical one. However, they also noted that in early stages of education¹ this practice proved to be a useful tool, namely in text comprehension, showing greater utility when dealing with higher-level assignments, and greater accuracy when including participatory work. They propose a theoretical framework where present discrepancies and inconsistencies in the involved research can be accounted for and suggest that strategic learner-generated drawings require very clear limits of application. They also found that most programs being reviewed did not address teachable strategies for learner-generated drawings, highlighting that "drawing has typically been treated like an adjunct aid" (p. 320) [9].

For Julia Midgley (2013), an archive in drawings can be a visual time capsule and a source of knowledge. Arguing that documenting through drawings can be a relevant complement of academic research, she claims that such practices increase comprehension of social and scientific matters, while they employ a universal visual and graphic language [13]. These concepts are useful tools for us: the project has the PhD researcher document literature review through learner-generated drawings, sharing these drawings with peers, and subsequently with students, inviting onlookers to give him feedback through active participation. Expecting to encounter further paths of research, he also exercises his ethical duty of sharing his knowledge, while opening his body of research to collective interpretation.

Weaving Ariadne's Thread: methodological approach

The mental labyrinth arising from an investigation requires constant notation, reshaping and revisitation, refining its initial perception and development from a temporal distance [1]. This very disciplined strategy can be put into place through drawing, allowing for a particular orientation and for recurrences. With the availability of a visual narrative documenting selected passages from reviewed literature in the form of illustrations, these can be reorganised by linking

the sheets of paper with a drawing line, which we will call our 'Ariadne's thread', a term borrowed from a method of problem solving which applies to real mazes, as it traces available paths of inquiry and evaluation.

Rui Barreira's personal approach to literature reviewing is conceptualised as a generative process towards acknowledgement. When he draws an author, he establishes a relationship that provides the ground for the subsequent events of discovery and reflection, akin to Schön's "conversation with the situation" in a "good process of design" [19, p.79].



Figure 4: Top left Donald Schön, bottom left Bryan Lawson

The build-up of narratives we create when interacting with objects, people and events is regarded in neuroscience as the basis for what constitutes conscience [15]. The brain engenders different layers of consciousness in the form of non-verbal narratives, from the simple stories guiding our interactions with everyday objects and events, to complex representations. Structured in a conventional way, these narratives presuppose the self as main character and a reliable sequence of events, from beginning to end. We draw on this storytelling non-verbal mechanism to frame drawing as an ideal translational tool for what constitutes an acknowledgement or a personal shaping of consciousness [16].

In our approach to literature review, visual narrative binds together the self (researcher), the subject (author) and the object under observation (reading comprehension), encompassing a sequence of events. A drawing, as it represents something, is the representation of this object and also the representation of thought as applied to the object. It derives meaning and interpretation from the process, which is reflected in itself. We argue that in design thinking drawing takes the stand of abductive logic, summarising the process of the designer's meaning creation as a phenomenological approach [17]. Moreover, drawing, due to the cycle of iteration and revisitation, seems to amplify perception and to increment the construction of knowledge [7, 18], working as a hermeneutical circle, as is peculiar to design. As with writing, sketching provides liberation of memory space [19], with the enhanced benefits of constituting a robust and reliable memory prop [20].

Viewing research as a labyrinth whose philosophical debates can be traced and shaped visually, Rui's method draws passages with an actual marker (or 'thread'), tracing all paths and iterations. Whether the maze is on paper or in his mind, the thread shapes the visual layout of the reviewed literature, exteriorising his thoughts while liberating memory space.

¹ Studies in higher education they considered in their analysis were rated insufficient, mainly due to erroneous conceptualisation, although the hypothesis of effectiveness at this level of teaching and learning was not dismissed.



Figure 5: from left to right, Schön, Dewey Eisner, Gadamer.

If these walls could talk: the project's design

Although the goal in appreciation is concerned with the documentation and communication through drawings, we are not concerned with virtuosity, merely the capacity to document. “The drawn line, our simple accessible window to history - is the artist’s strength, voice and communicator. The work of a documentary artist or graphic journalist travels freely across language barriers.” [17, p.175]. Despite their potential for insight there is also an associated risk, since alternative forms of data representation carry ambiguity [30].

The term ‘drawing’, as applied in this self-study, deserves clarification: what are these pictorial representations aiming a learning outcome when documenting the literature review? The literature is, as usual, all that is pertinent to the themes, scope, and perspectives of the investigation (in this case, literature relevant to drawing as an interface for research). To determine the subjects of drawings within the literature, a personal choice of relevant passages is rendered in illustrations, ranging from figurative drawings or storyboards to non-figurative schemas, diagrams, and mappings. As any specific form of representation will affect what we see, this choice is balanced by the notion that perception is selective and that the motives for selection are influenced by the tools one is skilled in using: “We tend to seek what we know how to find” [21]. The narrative that came out of the sketchbook onto the office walls is intended to move further, to faculty walls where crowds pass or gather, as Rui hypothesised there may be other researchers and students for whom his methodology could prove efficient and that we might encounter intersecting threads from distinct areas of knowledge. Due to the pandemic, he has not yet been able to verify whether opening his drawings to intervention by peers (other lecturers) and students will be as profitable in input and suggestion as he expects. When the faculty reopens, he will mount on the corridors’ walls large format drawings, replicating the method ‘Graffiti Walls’ [1] by having available markers that passers-by can use to comment in writing or drawing.

After the results of this experiment have been analysed, it will be replicated at other institutions for higher education. This will expectedly bring the possibility to observe any significant social questions concerning qualitative differences between sharers of the experience.

Conclusion

This self-study allowed us to contend that drawing can function as an interface to involve a community in a research project, by enacting a process of creative communication. Although the empirical work has thus far been restricted to an office and a few peers, up to this point the experiment has proved to be appealing to others, to generate curiosity and to encounter receptivity to interact.

The collection of future input and the exploration of new external connections might generate reflection by activating the hermeneutical circuit and revisitation, plasticising the phenomenological temporal conscience that guides an investigation.

The exploration of possible public intervention by people who ‘cannot draw’ may also provide material for one of the most problematic issues in the PhD project of which this paper is only a part of. The latter concerns the transmissibility of this methodology as a strategy to collect data and to transfer knowledge in a teaching and learning environment.

References

- Martin B, Hanington B (2012) *Universal Methods of Design. 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions.* Rockport Publishers
- Kantrowitz A, Fava M, Brew A (2017) Drawing Together Research and Pedagogy. *Art Educ* 70:50–60
- Noorafshan A, Hoseini L, Amini M, et al (2014) Simultaneous anatomical sketching as learning by doing method of teaching human anatomy. *J Educ Heal Promot* 3:50
- Suwa M, Tversky B (2016) Constructive Perception: A metacognitive skill for coordinating perception and conception constructive perception. Stanford University
- Van Meter P (2001) Drawing construction as a strategy for learning from text. *J Educ Psychol* 93:129–140
- Van der Lugt R (2002) Brainsketching and how it differs from brainstorming. *Creat Innov Manag* 11:43–54
- Kolko J (2020) Modernist Studio. In: Draw. doesn’t Present knowledge. It Creat. it. <https://moderniststudio.com/2020/02/18/drawing-doesnt-present-knowledge-it-creates-it/>. Accessed 6 Aug 2020
- Leavy P (2013) *Method meets art: Arts-based research practice*, 3rd Editio. The Guilford Press
- Van Meter P, Garner J (2005) The Promise and Practice of Learner-Generated Drawing: Literature Review and Synthesis. *Educ Psychol Rev* 17:285–325. <https://doi.org/10.1007/s10648-005-8136-3>
- Didi-Huberman G (2017) *Critical Image/Imaging Critique.* Oxford Arte J 40.2:248–261
- Chamberlain R, Mcmanus IC, Brunswick N, Rankin Q (2015) Scratching the surface: Practice, personality, approaches to learning and the acquisition of high level representational drawing ability. *Psychol Aesthetics, Creat Arts May*: <https://doi.org/DOI:10.1037/aca0000011>
- Likova LT (2012) Drawing enhances cross-modal memory plasticity in the human brain: a case study in a totally blind adult. *Front Hum Neurosci* 6:01–15. <https://doi.org/10.3389/fnhum.2012.00044>
- Midgley J (2013) Drawing Conclusions on Location. In: Almeida PL, Duarte MB, Barbosa JT (eds) *Drawing in the University Today.* Research Institute in Art, Design and Society (I2ADS), Porto, pp 175–182
- Schön DA (1983) *The Reflective Practitioner.* Basic Books
- Ramachandran VS (2011) *The Tell-tale Brain. Unlocking the mystery of human nature.* London
- Campos S (2012) *Operações no Silêncio: Intuição e Desenho - Processos Gráficos Intuitivos para a Ideação em Arquitetura*
- Kantrowitz A, Tversky B (2017) What artists do when they draw. In: J. Zacks & H. A. Taylor (ed) *Representations in Mind and World.* Routledge, p 228
- Gagnier KM, Atit K, Ormand CJ, Shipley TF (2017) Comprehending 3D Diagrams: Sketching to Support Spatial Reasoning. *Top Cogn Sci* 9:883–901
- Fish J, Scrivener S (2018) *Amplifying the Mind’s Eye: Sketching and Visual Cognition.* MIT Press 23:117–126
- Wammes JD, Meade ME, Fernandes MA (2016) The drawing effect: Evidence for reliable and robust memory benefits in free recall. *Q J Exp Psychol* 69:1752–1776
- Eisner EW (1997) The Promise and Perils of Alternative Forms of Data Representation. *Educ Res* 26:04–10