LEITMOTIF CASES FOR DESIGN LEARNING

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Abstract. We have developed several deep cases based on actual and hypothetical built environments and have used these in a strongly student-centred instructional style. On reflection, our approach seems qualitatively different from norms in architecture schools and from other case-based learning practices. We introduce it here under the rubric of the Leitmotif Case, explain its structure and compare it with other approaches.

1. Introduction

Cases are a well-known structure for learning materials. They are widely used in professional education mostly with the aim of achieving deep and metacognitive learning. They have been around for a long, long time. Plato used the introduction of realistic schema to inject enthusiasm into his philosophical discussion groups. Medical schools use cases to describe potential life threatening situations to their students in order to instil, early on, a sense of deep responsibility. Law faculties have used cases in mock courts to test the students’ ability to reason a just decision. In the early part of the twentieth century the Harvard Business School introduced a Case Method to avert what it perceived to be a lack of deep reasoning ability among its graduates entering into a profession which relies heavily on logical reasoning.

In design schools of all kinds we tend to think of cases as self-evident. After all, our particular and peculiar type of case, the Design Project, is the foundation structure of all but a few schools worldwide.

Cases do little to restore certainty in the classroom, rather the students are asked what they think, what they would do, what problems they feel are important (McNair, 1954).

Not all cases are alike. They differ across discipline, school and teacher. Over the past several years, we found that we have been developing cases that we see as qualitatively different from those common in the Design Project tradition in which we usually work. They are so different that we find it useful to give them a new name: we call them Leitmotif Cases.
The term *Leitmotif* (or *Leitmotive*) describes a recurring theme or melodic passage “associated throughout the work with a particular person, situation or sentiment.” (Oxford, 1971, p. 1601) The term is firmly associated with and was coined to describe the construct as used in Wagnerian Opera. We play on both spellings of the word. Our *Leitmotif Cases* have a leading (*leit*) *motive* that is typically highly focused, and are situated in a *motif*, a theme of form, function or ideas.

In presenting *Leitmotif Cases*, or any learning cases, to the design computing field, we feel the need to differentiate the discussion from another use of the term: *case-based reasoning* in design. While there are clearly relations between the two domains, there is a main difference. Learning cases are cultural constructs aimed at fostering deep learning. Case-based design is simultaneously a hypothesis for a level of cognition and a metaphor for creating design support systems. Let us not conflate the two here, though we do make the occasional reference to case-based design.

**2. Approaches in Case-Based Learning**

A discernible common thread on the use of cases as a learning methodology is the emphasis on student participation in the educational process. According to Biggs, student participation in the self-learning process is needed to accommodate the increasingly diverse needs of our students (Biggs 1999; McNair, 1954).

We should no longer be attempting to teach truths, according to Biggs (1999), but to teach students how to ‘think’. Cases give a realistic frame to problems needing a solution. Any problem has many intelligent solutions—how the student thinks through these solutions determines the extent of their individual success (Biggs 1999; McNair, 1954).

Traditional university assessment can be decontextualised. Written exams and essays are mainly suitable for assessing declarative knowledge. Once appropriate, examinations may today actually prevent students in the contemporary broad cohort from achieving their own personal understandings of content. This kind of assessment system pre-empts the level of understanding that may otherwise be professionally relevant. Offering fewer topics within a subject by way of cases may facilitate a deeper learning experience. Cases more closely emulate professional life. The outcomes of which include better relational and extended abstract learning. Cases, in this sense, ‘contextualise’ assessment (Biggs, 1999).

This is a powerful encouragement to effort first recognised in the Harvard Business School Case Method, in receiving as well as in giving out ideas (McNair, 1954). The Harvard Business School adopted the case-based learning method early in the twentieth century in its continuing efforts to educate
students for executive positions of importance. In its use of case-based learning it recognised business education as “…directed to developing in students the qualities of understanding, judgement, and communication leading to action…. A principal object of professional education [at the Harvard Business School] is to accelerate the student’s ability to act in mature fashion under conditions of responsibility” (McNair, 1954, p. 8-9). Harvard Business School students are encouraged to engage in peer to peer assessment and debate. Whether or not it forms part of the formative or summative assessment, this assists students’ engagement at a social level. Business Management is a thoroughly social profession. What we can glean from the Harvard Business School experience in design education is as Biggs points out, “you learn through teaching” (Biggs, 1999, p. 78). Harvard Business School students are actively encouraged to learn through peer to peer teaching. We know students adopting a teaching role need to know their topic well. It follows then that deep learning takes place where students are actively engaged in peer revue and debate of topics of intense interest to them. 

Problem Based Learning is another case-based learning methodology. Well known in Medicine and other domains, Problem Based Learning opens with a problem or explicit issue to be addressed. Problem Based Learning requires students to question, to speculate, and to generate solutions using a deep understanding of the field (Biggs, 1999). Using cases framed in terms of Problem Based Learning methods helps learners build a knowledge base of relevant material. This knowledge is then elaborated and consolidated. It can then be applied. Teamwork is essential to the successful application of Problem Based Learning. Nothing, however, except experience can be exactly like experience. What a pre-professional university education allows students, that professional experience cannot, is an environment of relative irresponsibility in which to actively learn. This has great advantages over the responsibilities of practice—the student gets the essential background for responsible decisions without risk to self. Cases then initiate students into the ways of independent thought and responsible judgement which will most parallel their later professional experience (McNair, 1954).

Design Projects can be real projects, competitions, or a hypothetical commission (Anthony, 1991). They are often couched in terms of an architect’s brief with specific requirements and expected outcomes. The typical assessment pattern is for students to present their design investigations to a jury panel for critical appraisal. Project knowledge is demonstrated in a number of different ways: through discussions with colleagues, instructors/jurors, drawings, images, models and supporting documentation.
3. The Structure of Leitmotif Cases

Motivating cases is a desire to engage deep learning. To achieve this, cases situate learning in an authentic context, most often one very close to a real situation. They are typically highly crafted. Perhaps one of the reasons why there is such an extensive literature on learning cases is that case authors must necessarily be reflective—making good cases and good observations on them demands a high level of insight and of positioning oneself within the case. Like many social constructs cases elude crisp definition—radial descriptions such as the hermeneutical circle, thick description and constructive inquiry are the more useful devices here. We thus describe Leitmotif Cases by comparison and contrast with other case approaches.

A Leitmotif Case is a deep record of a real thing, event, or object. It comprises a collection of resources, each relating, in some way, to the overall case. Some of these resources interpret others. Depth serves two functions. The first is focus: a Leitmotif Case presents a pruned, yet rich issue, within which students work. Resource discovery does not cloud the direct address of learning (unless, of course, the particular Leitmotif Case aims at learning resource discovery). The second is shared ground: the harnessing of peer-to-peer communication in the learning process requires that there be much in common amongst the communicating peers.

Depth is crucial to the Harvard Business School and Problem Based Learning methods. Neither works without it. A Harvard Business School case uses depth to provide facts, to create an authentic context for a prickly dilemma to be resolved by a group of students. Peer-to-peer communication is seen as both as part of the business process being modelled and as a way of harnessing teaching as a learning activity in its own right. Problem Based Learning uses depth in a similar way, to provide authenticity in a complex artificial situation. Shared ground tends to be ground for discourse about the problem more than for negotiated action. The Design Project does not require depth, though many of its practitioners routinely build depth into projects.

Leitmotif Cases are recursive: they can contain other Leitmotif Cases. At the bottom of this hierarchy of interpretation are Simple Leitmotif Cases—focused learning exercises framed by the case material. A Leitmotif Case is thus like a cloud: it is made up out of particles (the contained cases) that collectively define the whole. There are two reasons for the recursion and one major implication. The first reason lies in encouraging reflection on complexity. By providing, over time, several different points of learning contact with a robust work, Leitmotif Cases aim to help students make otherwise elusive connections. The second reason is that Leitmotif Cases aim to support a living practice of learning and teaching. The recursive structure opens the door for additive contribution to a Leitmotif Case, from both teachers and students. The major implication is that, for practical purposes, Leitmotif
Cases are inherently digital. Recursive and open compositing of case material requires the zero cost digital copy, the pointer and an effective indexing scheme.

None of the other three comparative case methods necessarily have this structure, though the Design Project often makes extensive use of precedent. Perhaps it is peculiar (and therefore limited) to design learning where student work has a value beyond providing insight into a correct answer. A good record of student work can begin to flesh out the vast design space that surrounds any worthwhile design situation.

We use the recursive structure of Leitmotif Cases to focus on specific parts of the cloud of the case. We build sub-cases that have both motive and motif. We aim at particular understandings in architecture and typically do so with specific examples or themes. Our motivation is depth: we want students to be able to engage in a rich play with ideas as they design. One example is the course now called Composing Architecture and Landscapes in which students engage in design work around very specific form-making ideas and a dominant criterion of success, the quality of experiential journeys through their work. They are supported in their work by numerous precedents of these form-making ideas in the world.

Of the three methods in this comparison, Problem Based Learning is inherently closest to our use of motif and motive. It typically aims at understanding particular complex cases in and of themselves and at modelling complex professional processes in the process. We have no doubt that there are similar individual practices in practitioners of Harvard-like cases and in the Design Project, but neither of these relies on such tight focus.

Leitmotif Cases engage peer-to-peer learning. So do the Harvard Business School method and Problem Based Learning. What we have found to be different is the variety of role-playing situations that suggest themselves in aiming at particular aspects in particular ways. Like business, most architectural practice is a thoroughly social undertaking (Cuff, 1989). We seek to engage students in a variety of roles in their work. One of these is the raconteur in which a student is charged with recounting the presentation of another student culminating in the asking of what we call “a thoroughly curly question.” This is not peer-assessment; it is a critical account of the work of the other. Its goal is to spark student debate during presentations. We encourage the raconteur and presenter to collaborate beforehand, to practice presentation, recounting and question. Raconteuring is a part of a student’s assessed work.
4. The Richards House Leitmotif Case

The Richards House is a small “modernist” house sited on a rural block near Adelaide. It was designed by Max Pritchard and features in the recent Australian Lightweight House Exhibition now touring Australia and overseas. We have built a *Leitmotiv Case* around the Richards House that covers a broad range of issues including learning CAD skills, composition, construction, architectural practice and sustainability. One sub-case, *From Lincoln Cathedral to a Bike Shed*, addresses the issue of making a small addition to an extant work of architecture.

In this case there are three key players: the client, the architect and the architect's assistant. The student is at some stage expected to assume all three roles. Conversely three different members of a group could play the roles. We enter when the architect has been approached by one of his former clients to complete a design problem they have started themselves. It is not uncommon in an architect's practice to be approached by a former client to make additions to an existing development. In this case the addition is for a bike shed.

This architect, as do most architects, has a distinct style that is not easily simulated. The clients have attempted to construct a bike shed to house their bicycles and sundry gardening equipment. So far a concrete slab has been laid with four steel columns fixed in the corners. Here the architect hands over the completion of the design to the assistant where the student assumes the role of assistant. The design must meet the client's requirement of a sympathetic style with that of the existing house. A CAD model containing the original house plus the concrete slab and columns for the bike shed is given. The CAD model also contains, as blocks, all the materials necessary to finish the job. The case notes provide hyperlinks to relevant standards, product information, and other relevant cases. Figure 1 shows some of the material from the case.
5. Where to from here?

Several years of experience in several subjects and nationally funded projects have brought us to the point where we need to name the conceptual structure in which we have developed and now work. We call this structure the Leitmotif Case. Its hallmarks are depth, situatedness, recursion, revisiting, communal contribution, sharp focus and engagement of peer-to-peer learning. At this point we know that learning structured around these ideas is popular with
students, can win university\(^1\) and national awards (Woodbury and Jones, 1999), and can increase confidence and competence in students (Woodbury et al., 2001). We are building digital tools informed by what we now call the *Leitmotif Case*, for instance, the Virtual Gallery (Woodbury et al., 2000) and the Online Treasury (Burry et al., 2001).

What we aim for is greater student abilities in such generic skills as self-reflection, deep learning and in the ability to integrate complexity. We want students to have greater overall mastery of specific bodies of knowledge, both for the value of the knowledge itself and models of mastery acquisition. We are thus ourselves engaged in constructing, learning with and evaluating a *Leitmotif Case* focused on design teaching. Traditionally architectural educators are better at proposing and delivering education ideas than they are at evaluating the effectiveness of their efforts. There are many reasons for this, including the very serious issue of the pressure of time in an academic life. Perhaps more serious though is the absence of a tradition of social research in architectural academia. There exists a body of methodology that can inform our teaching and learning practice.Broadly called qualitative research, it seeks robust interpretations of social situations. Using computers in design is, increasingly, just such a social situation. Indeed qualitative research methodologies are becoming important in the area of human-computer interaction. As a field we would do well to engage with these productive methods of inquiry.

References


\(^{1}\) Stephen Cole the Elder Prize for Excellence in University Teaching awarded to Woodbury in 2000.