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CENTRE FOR THE STUDY OF HUMAN LEARNING

Experiential Projects: Learning to Perceive & Perceiving to Learn

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ABSTRACT

It is normal to consider learning as a behaviour testable by comparisons of a before and after performance of some tasks. This test requires that the subject matter to be learnt can be structured into defined and precise sub-sections, or topics. It is argued that not all subject areas can be so divided into parts, (using examples drawn from experiments in spatial perception among architecture students) since they are experienced as wholes. Consequently, traditional academic structurings, tests and methods of teaching are necessarily and formally inappropriate for such subject areas.

EXPERIENTIAL PROJECTS: LEARNING TO PERCIEVE AND PERCIEVING TO LEARN

I have a strange problem: I teach architecture. That may not sound so peculiar but actually it's more than peculiar, and I'd like to explain why.

I am interested that my students do, and should learn. If they don't I'm not much use as a teacher. But what should they learn?

Normally, we could define a field and test performance in the field before and after teaching. (If there was less error in performance after teaching, we would say the student had learnt.

We would probably want to check for retention over some time, before being categorical about it). Without going into pedantic elaborations of this simple description, it may be acceptable, and it has the advantages that being slightly mechanistic, it serves as an enstantiation in a behaviourist analysis as well as in a cognitive one. It is certainly the mechanism that is generally used when people examine learning.

But we still have a problem here. How do we evaluate performance? In general we would set up and describe some criteria, belonging to the field within which learning should take place and would ask a student to match them, in whichever way seemed appropriate. A good match would mean the student had a good performance, so that learning could be tested by comparing the now articulate, before and after performances

Hidden in here is my bugbear: I have to describe the characteristics. That means I have to isolate describable characteristics and then express them in some generally comprehensible language (e.g. English). The characteristics have to be parts from which I can elaborate more parts, or even something more like the whole.

This understanding is important. There has been a mass of research into learning, and it has affected the way we run our courses, from crèche right through the school system to university and beyond. It has taken various forms from Pavlovian dogs and Skinnerian rat mazes(*16) through Piagetian developmentalism(*1, *12) (foreshadowed by Froebel), the memorising and pattern forming experiments of Miller(*7) to the learning to learn approach of Thomas(*17) growing from the underlying reflexivity of Kelly's Theory of Personality(*6) and the cybernetic mechanisms of Scandura(*14) and Pask(*9), whose work on defining and mechanising fields of knowledge for individual learning, and whose testing techniques constitute the most sophisticated and articulate descriptions.

Pask goes as far as to define a human being as a system for learning.

In all the work coming from these approaches, learning and its assessment is possible because there is a task, which involves a (set of) means of approach and manoeuvre, a finishing point, and a clearly defined field constituted out of finitely and definedly connected topics to use Pask's term(*8). (In some cases, the connections are specified, in others the experiment concerns itself also with finding them - which assumes a field in which they can exist).

Architecture, however, doesn't have such topics (although some related subjects such as Engineering - do have, and disastrous attempts have been made to transfer their topic structures to architecture). So the question that came up was, could it have?

I do not want to go into elaborate detail here, on the experiments I conducted. While some of their results are relevant, their methodologies and many of their concerns aren't. Since I will cover them elsewhere (4*), I hope that I may be excused rehearsing them in detail.

Initially students carried out two experiments on understandings of the city: in one they were asked to establish the location of parts of London within the whole. In the other, carried out several times they were asked to draw London's structure - or how they felt London held together. In the first case, they failed so remarkably that one is surprised to find they are still alive. In the second, all succeeded, although their results are markedly different. Had I been sharper at the time (1973) I would have realised that these experiments were telling me that we don't understand urban space in lists, but in processes and structures(*5).

There followed a complex workshop experiment involving a group of a dozen dedicated and hard-working students who put in 3 hours a week each, over an academic year (that is, two working weeks!) Using techniques derived from Thomas's[(*18)] extensions of Kelly's Repertory Grids we developed social vocabulary of 15 verbal terms within which to describe their experience of space.

Checking showed that even with the same elementary experiences, from which these terms had been devised, each student used them in quite different and un-correlated way; and also used them with very different degrees of precision. Not having access to a computer or a programmer, I have not been able to analyse the results statistically, but the evidence is incontrovertible.

In order to overcome my hardware limitations we ran another test, a sort of inversion of Pask's Entailment Structure[(*8)], to check the internal consistency of the terms. This involved arranging the terms to show derivations, with the implication that similar derivations indicate similar meanings. This too failed to show any similarities. The terms, socially derived in an environment of common elements, were understood quite differently. Words weren't working.

To wind up, I asked the students to draw diagrams explaining the terms. Suddenly they all looked similar. It occurred to me that the real problem I had was in trying to use words to label visual experiences - or, to use Pask's term, in trying to get students to isolate topics.

Since then I have changed my approach and carried out two types of experiment. I have taken part in some of the experiments myself, and I can confirm the results from personal experience.

What I was looking for was the cognitive model we use in getting to grips with (and experiencing) space. If I could find out what qualities we model, I could tag them as topics and find what were the controlling factors in our experience of space. A large part of that experience is, we believe, visual. I reasoned that, if I didn't allow people to see a space, but let them feel and listen in order to draw it, they would build a specific image more-or-less according to their cognitive model, searching for the qualities they needed. So I turned yet more hard-working and faithful students loose in unlikely places, only this time they were blindfolded.

I noted how they searched, I have drawings, I have attempts to carry out non-verbal conversations with students modelling others' understandings of the spaces. But the remarkable results are not these.

Having spent several hours in and out of the space, the students put together their final images. About a month later, I asked them to re-draw the space. The drawings were dis-spirited and feeble. One of them bore the legend 'I can't remember, and I could if I'd seen it'. On being taken to see the space, there has been (on each of the four occasions I've tried this) complete astonishment. My own experience as a subject has been that, try as hard as I could, I could not really visualise even a part of the room, and the visual reality was completely different to my disjointed image.

Wrong again! Why? The reason that occurred to me may still be wrong, but I am optimistically inclined to believe that it isn't. Much of the evidence for this lies outside psychology and education in cybernetics and philosophy: but that is by-the by in this discussion.

What if there is something basically to do with perceiving wholes as opposed to perceiving parts? Pask argues that attempts to perceive from wholes (holism) are distinct from attempts to perceive from parts, (serialism), as learning strategies(*10). Means of communication seem to be better suited to discussing either wholes or parts (Miller is reported by Simon(*15) to note that drawings of faces start with the enclosing outline - an observation all the more telling for Miller's pre-occupation with serial, verbal language). What occurred to me was that the perception of space was 'holist', not 'serialist' - that it had little to do with qualities and a lot to do with instantaneity.

I put some students in a different room, again blind-folded and they were allowed to take their blindfolds off for controlled but different times: 2 seconds, 10 seconds, 1 minute, 5 minutes, as long as they wanted. Afterwards, they were asked to draw the room. Their drawings were put up (anonymously) and shown to each other, but they couldn't guess with any accuracy, how long a viewing each picture represented. Ten days later they were asked to re-draw the room - no problem this time - there was still no recognisable correlation between time period of observation and assessment of viewing time.

So it would appear that the overall understanding of space and the retention of such understanding is not dependent on time: 2 seconds will do (whereas 3 hours blindfolded will not). When we see space we see it whole; when we're blindfold, we search piece by piece, trying (in my opinion, failing) to produce an overview, an image. The difference is between a holist and a serialist perception.

Which brings us back to topics. Because what I am saying is this: there are things (such as space) which we perceive as being constituted of wholes, not of parts and for which parts (without at least, whole) seem to have no experiential meaning. Consequently, we cannot hope easily, to describe our experience of space in a serial manner. Listen to how we describe a room: 'It's a large white room, more or less square, with a fireplace on the right as you go in, and…..' We do it trying to give an overall view then going into detail rather in the way Miller describes the drawing of a face, even when we are using an archetypically serial language. (I'm not suggesting that such attempts succeed very well, but they are the best we can do and they can give some impression).

Topics, however, are precisely such parts. True, they are intended to have an authority somewhat greater than personal opinion: they are the parts from which the whole (subject) can be built, and inherent in them is the idea that this is how they are used so they are not of great importance to gaining an understanding of space, the nominal main concern of the architect.

The acquisition of such an understanding and an ability to use it is one of the main things that the education of architects aims at, and which the teacher is looking for. Yet this field would seem to resist division into, and handling through, topics, and consequently to resist both the formation of a precise and specifying syllabus, and articulate testing.

This is what is so strange about my problem. I do not denigrate topics. But I think we must realise that there are subjects for which we have no topics, and thus no tests and syllabuses, not because we haven't found them but because the way we understand and experience their subject matter excludes such formulation. There are non-academic subjects and we should accept this and not try to force them to be academic.

How, then, does one become familiar with these sorts of fields? Does one have to wait for a revelation, going through some mystic experience, or can it be worked at?

One of the first things one learns when trying to teach architecture is that it doesn't help to try to explain what it is in a piece of work; that is insensitive. The more one talks, the less clear things become, working at a drawing board can help: However given the argument about topics, this is not surprising (although it used to surprise me). One is in the position of the pianist David Tudor, who answered a question by saying 'If you don't know, why ask?'[(*2)] A student who has to ask what is wrong and how he should proceed will be unable to proceed as long as he asks such questions, because he is searching in the wrong way.

The situation seems to be similar to that holding between a Zen master and his student[(*13)] just as the Zen master knows, I can recognise good space: my student, as his, will become a master when he can recognise, or knows.

The Zen master teaches rather as I do. He cannot say what is required or what is involved but he can place his student in a situation from which he may be able to learn, and he can show (but not explain to) him how he might learn by 'walking with him part of the way'.

How then must one 'walk' if one wants to learn. If there are no topics, one cannot use the rational and elaborative/inductive approach one would use for many subjects, just as one cannot test in the normal manner, for there are no things about which to be rational and no ways to be rational. This method is the 'problem solving' method, and is characterised by there being a known goal, a known starting point, a known set of routes, and a known collection of operations that can get one through. (I am not saying that all learning in topic structures is of this sort: that debate is too much of an aside to be followed up here).

There is another way of 'walking' which needs no topics, and that is wandering. The analogy as a way of doing things is good. The characteristics of wandering are that one starts out, maybe with a vague intention, and as things catch the eye, one changes one's route, one arrives, but one does not know what the end state, the goal, will be until one arrives there, when, the purpose of the trip also becomes clear. This is the design process, and is necessarily iterative. Not having topics, it cannot be predicted or prescribed, and what has been learnt will get into a topicless whole on arrival.

A good example of this was provided by one of my students yesterday. He had an idea to allow people to see the Medway area (starting point), perhaps by building a hostel and/or a car park (intention). We spent four and a half hours wandering from this start, filling in reams of sheets with ideas of this and that. Finally, when we had produced the scheme, we knew what we had been looking for: a processional walkway going into a hill and going upwards through a series of spaces concerned with the idea of viewing until surrounding a Camera Obscura, a Palladian glazed box surfaced from the hill overlooking the view, from which you could go out into the reality as now perceived. It is an astonishing thing that this 'solution' designed itself, and made such sense of the starting point. There were few topics on the route,

however: rather, there were repeating and altering wholes, which shaped themselves into a firm result.

This is the method of ‘design’. For centuries we have valued it. The craftsman showing an apprentice how to get a feel for a piece of wood, the frontier scientist adjusting his experiments until suddenly he sees it! All this knowledge is inarticulate and is, I maintain, inarticulable. It is in this silence that its strength lies. Let us not ruin it by insisting that it should suit the form of the articulate, which it can only do if it loses all its qualities. And let us only test for such learning in sympathetic manner, which will not oblige the student to destroy what he is learning. No topics where there are none to be had. Architecture (among other subject areas of this kind) is not Zen: the reality of the nothing is not its intention. The reality of the inarticulable is. But the test for knowing is the test of Zen - recognition by one who is enlightened - and the learning is also the same. In architecture, there is no cause for celebration.

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