A memo on Meno

Plato considers kinds of knowledge. Thus Plato’s dialogue Meno, written shortly before the Republic, explores theories of knowledge and the nature of perception. Plato sees learning as recollection, from experiences of past lives. How this knowledge was gained is not made clear—surely it could not be recollections—though now we might make a shrewd guess, by following Darwin. Along the lines of the previous editorial, [“Neuro-archeology”, Perception 29(5) 505-508], we might translate Plato’s theory of learning as recapitulating knowledge from previous life-experiences, to genetically coded knowledge gained by natural selection. For, reflexes, inherited behaviour patterns, instinctive fears, and indeed attraction to flowers and even the essentials of aesthetics, might come from phylogenetic learning stored in the genetic code. If so, we see by knowledge of lost worlds.

Plato sees the teacher as midwife, delivering already present but implicit unrecognised knowledge. To demonstrate this, he (or rather Socrates) carries out an experiment on Meno’s slave boy, on understanding geometry. But first, Meno is asked to consider shape and colour, and how sight works.

Socrates. Well now, let’s try to tell you what shape is. See if you accept this definition. Let us define it as the only thing which always accompanies colour ...

Meno. But that’s a naive sort of definition, Socrates.

Socrates. How?

Meno. Shape, if I understand you, is what always accompanies colour. Well and good— but if somebody says that he doesn’t know what colour is, but is no better off with it than he is with shape, what sort of answer have you given him, do you think?

Socrates. A true one; and if my questioner were one of the clever, disputatious and quarrelsome kind, I should say to him: “You have heard my answer. If it is wrong, it is up to you to take up the argument and refute it.” However, when friendly people, like you and me, want to converse with each other, one’s reply must be milder and more conducive to discussion. By that I mean that it must not only be true, but must employ terms with which the questioner admits he is familiar ... I assume you speak of something being bounded or coming to an end. That is all I mean, nothing subtle.

Meno. I admit the notion, and believe I understand your meaning.

Socrates. And again, you recognise ‘surface’ and ‘solid’, as they are used in geometry?

Meno says “yes”, and is led to an account of the nature of light and vision.

Socrates. You believe in Empedocles’ theory of effluences, do you not?

Meno. Whole-heartedly.

Socrates. And passages through which effluences make their way?

Meno. Yes.

Socrates. Some of the effluences fit into some of the passages, whereas others are too coarse or too fine.

Meno. That is right.

Socrates. Now you recognise the term ‘sight’?

Meno. Yes

Socrates. From these notions, then, you grasp what I would tell ... Colour is an effluence from shapes commensurate with sight and perceptible by it.

Meno. This seems to me an excellent answer.

Socrates. No doubt it is the sort you are used to. And you probably see that it provides a way to define sound and smell and many similar things.

Meno. So it does.

Socrates. Yes, it’s a high-sounding answer, so you like it better than the one on shape, ...

Nevertheless I am convinced that the other is better.
It is well known that for Plato the senses give only trivial knowledge, the verities being timeless and below appearances. Hence, the fascination of mathematics. This fascination is generally shared, though, for most of us, numbers numb the mind. (Is this why they are called numbers?)

The experiment

Socrates gets Meno to call over a slave boy to see how he deals with a geometrical problem. How (figure 1) is the area of the internal square related to the area of the larger external square?

Socrates draws the figure roughly with a stick in sand, yet the answer appears at once with the construction:

Each small square is clearly divided in half by its diagonal—so the inner square must be half the area of the outer square (figure 2). This, the slave boy sees. But why does Plato think he remembers it? Surely it is inferred—‘seen’ by deduction.
It is seen as true, though the drawing is inaccurate. But how inaccurate can it be? Sander’s parallelogram (figure 3) is interesting here and surely would have delighted Plato:

![Figure 3](image)

Figure 3

Here the two obliques are the same lengths ($AB = BC$), though the left ($AB$) appears considerably longer than the right ($BC$). Could this visual distortion illusion upset ‘seeing’ of a geometrical proof? Surely it could. Indeed, science has advanced since Plato’s time by ensuring accurate observations and inferring counter-intuitive truths from them.

Plato suggests that appropriate behaviour (especially virtue) is guided by experiences from past lives. This may well be so for genetic learning of survival strategies, by natural selection. This, indeed, is a message of Darwin’s (1873) *Expression of the Emotions in Man and Animals*.

Now we can see back in phylogenetic time, to origins not only of species but also of inherited knowledge linking species. The ethologist Konrad Lorenz (1960), says of patterns of behaviour:

> “Many of these patterns have proved to be reliable clues to the relationship of large groups of animals ... In the higher animals such traits tend to be masked by learned behaviour, but in such creatures as fishes and birds they reveal themselves with great clarity. These patterns of behaviour must somehow be rooted in common physiological inheritance of the species that display them. Whatever their physiological cause, they undoubtedly form a natural unit of heredity. The majority of them change but slowly with evolution in the species and stubbornly resist learning in the individual; they have a considerable independence of immediate sensory stimuli. Because of their stability, they rank with the more slowly evolving skeletal structure of animals as ideal subjects for the comparative studies which aim to unravel the history of species.”

Present-day mathematicians of ‘Platonist’ conviction see their truths as independent of sensory knowledge, and also independent of genetically inherited knowledge. Presumably they would not follow Plato’s *Meno* experiment? However this may be, Plato was clearly right to think of many kinds of knowledge, with many kinds of origins. I, for one, realise that I am quite confused by so many senses of ‘seeing’. I need a session with Socrates, after he reads Darwin.

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**References**

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