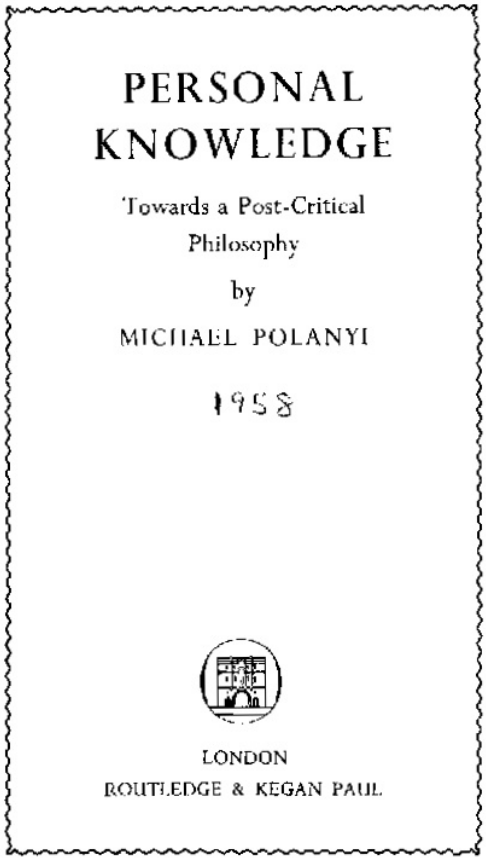

PERSONAL
KNOWLEDGE

Towards a Post-Critical
Philosophy

by

MICHAEL POLANYI

1958

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the corresponding distinction between bodies in absolute motion and bodies at absolute rest, were abandoned and a framework set up in which only the relative motion of bodies could be expressed.

But the historical facts are different. Einstein had speculated already as a schoolboy, at the age of sixteen, on the curious consequences that would occur if an observer pursued and kept pace with a light signal sent out by him. His autobiography reveals that he discovered relativity

> after ten years' reflection . . . from a paradox upon which I had already hit at the age of sixteen: If I pursue a beam of light with the velocity *c* (velocity of light in a vacuum), I should observe such a beam of light as a spatially oscillatory electromagnetic field at rest. However, there seems to be no such thing, whether on the basis of experience or according to Maxwell's equations. From the very beginning it appeared to me intuitively clear that, judged from the standpoint of such an observer, everything would have to happen according to the same laws as for an observer who, relative to the earth, was at rest.[1]

There is no mention here of the Michelson-Morley experiment. Its

My 1967 article at http://www.ivorcatt.co.uk/x0305.htm shows real live photographs of what Einstein dismissed as absurd. Go to Figure 6 of http://www.ivorcatt.org/x0315.jpg . A single very narrow pulse (admittedly not Einstein's sine wave, but it could have been), third trace of Figure 7, was delivered to the outside end of the 234 inch long conductor above a ground plane. You then see this "stationary oscillation in space" after it has travelled 120 inches (second trace) and 234 inches (first trace). Figure 5 of http://www.ivorcatt.org/x0314.jpg gives details. The presence of the second conductor does not affect the argument. ***I*** was the observer who "pursued and kept pace with a light signal". It was an "electromagnetic field at rest". – Ivor Catt, 1 February 2014

signal was sent out. That was surprising, for one would have expected that the observer would catch up to some extent with signals sent out in the direction in which the earth was moving, so that the speed would appear slower in this direction, while the observer would move away from the signal sent out in the opposite direction, so that the speed would then appear faster. The situation is easily understood if we imagine the extreme case that we are moving in the direction of the signal exactly at the speed of light. Light would appear to remain in a fixed position, its speed being zero, while of course at the same time a signal sent out in the opposite direction would move away from us at twice the speed of light.

The experiment is supposed to have shown no trace of such an effect due to terrestrial motion, and so—the textbook story goes on—Einstein undertook to account for this by a new conception of space and time, according to which we could expect invariably to observe the same value for the speed of light, whether we are at rest or in motion. So Newtonian space, which is 'necessarily at rest without reference to any external object', and the corresponding distinction between bodies in absolute motion and bodies at absolute rest, were abandoned and a framework set up in which only the relative motion of bodies could be expressed.

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There is no mention here of the Michelson-Morley experiment. Its findings were, on the basis of pure speculation, rationally intuited by Einstein before he had ever heard about it. To make sure of this, I addressed an enquiry to the late Professor Einstein, who confirmed the fact that 'the Michelson-Morley experiment had a negligible effect on the discovery of relativity'.[2]

[1] *Albert Einstein: Philosopher-Scientist*, Evanston, 1949, p. 53.

[2] This statement was approved for publication by Einstein early in 1954. Dr. N. Balazs, who was working with Einstein in Princeton in Summer 1953, introduced my questions to him and reported his replies. The result of his first interview with Einstein was described by Mr. Balazs in a letter of July 8th, 1953, as follows:

'Today I discussed with Einstein the basic ideas which have led to the foundation of the special theory of relativity.

The result is about the following:

There were basically two problems whose contemplation was of fundamental im-

When a child confuses homonyms or fuses the meanings of similar-sounding words, or when it is perplexed by verbally formulated problems the answer to which it has long known how to find in practice, its use of language is obscuring what had previously been clear to its tacit understanding. Such childish sophistication can be cured by teaching children to understand and use speech in accordance with their anterior inarticulate understanding of the subject-matter. Modern analytic philosophy has demonstrated that this may hold also in philosophy. Philosophic problems may sometimes be dissolved by defining the meaning of their terms in accordance with our unsophisticated understanding of their subject matter.

But purely speculative problems are not always so fruitless. Speculations about lifting oneself by one's own shoelaces, for example, coincide essentially with speculations on mechanical devices of perpetual motion, which were resolved only by the discovery of mechanics, to which they effectively contributed. The paradox raised by Einstein as a schoolboy about the behaviour of light in a laboratory moving with the speed of light, was resolved only by Einstein's reform of the concept of simultaneity, and his conjoint establishment of special relativity. The fundamental part played by various logical and semantic paradoxes in stimulating the recent conceptual development in logic is equally notorious. I believe that the solution of philosophic puzzles, like that raised by the question whether we can predict our own actions, may also lead to important conceptual discoveries.[1] In fact, my present book rests on precisely these grounds; I am attempting to resolve by conceptual reform the apparent self-contradiction entailed in believing what I might conceivably doubt.

I have suggested before (p. 95) that when text and meaning fall apart we must choose whether to

(1) (*a*) Correct the meaning of the text.
(*b*) Re-interpret the text.
(2) Re-interpret experience.
(3) Dismiss the text as meaningless.

Case (1*a*) is now seen to cover both the receptive process by which we improve our knowledge of a language, and the elimination of verbal puzzles by a stricter control of language, as practised by modern philosophy. Combinations of (1*b*) and (2) are exemplified by conceptual discoveries in science; analogous discoveries, not referring to experience, are possible in mathematics, to which I shall yet return. The dismissal of a text as meaningless, and of the problem raised by it as a pseudo-problem (Case (3)), may result from the philosophic clarification of its terms (Case (1*a*)).

Every one of these choices involves the shaping of meaning in the

[1] See M. Cranston, *Freedom: A new Analysis*, London, 1953, p. 163.



This error of Einstein's links closely with his false version of the TEM wave.
http://www.ivorcatt.co.uk/x0102em.htm . See http://www.ivorcatt.co.uk/2604.htm , "The Rolling Wave".

Einstein at 16; http://www.pitt.edu/~jdnorton/Goodies/Chasing_the_light/index.html