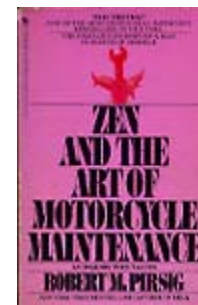


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The Dharma of Science

25 years after ZMM, G Prathap explains what the book means to him



It has been a quarter century since Robert M Pirsig's *Zen and the Art of Motorcycle Maintenance* (ZMM) was first published as a William Morrow edition in April 1974. It has been a little over twenty years since I first read it. It became a literary sensation, a cult book influencing an entire generation. And since 1990, we have even had an authoritative guidebook, DiSanto and Steele's *Guidebook to Zen and the Art of Motorcycle Maintenance* (GB-ZMM), which "serves as a metaphorical backpack of supplies for the reader's journey through the original work."

*"And what is good, Phaedrus,
And what is not good -
Need we ask anyone to tell us these things?"*

...is the Socratic (and Platonic) wisdom that serves as the motto that introduces Pirsig's book. But this romantic, intuitive, holistic appeal does not suffice for us. For, said Aristotle, man is a reasoning animal (even if he is not a reasonable one), and our classic, deductive, dissecting nature is to submit anything of Nature, or Art, or Life, to critical analysis. Hence, this belated appreciation of Pirsig's original book, and its backpack, a collection of essays and reviews about the book.

In many ways, ZMM significantly influenced the way I saw my own work (research in the area of computational structural mechanics) and my perceptions of the larger issues of science and technology and its dialectical tension within and their relationship to the values of society. I remember that when I was presenting my research work at the customary lecture that a newly elected Fellow (of the Indian Academy of Sciences) makes to the Academy, a spontaneous response from a learned Fellow in the audience was that my presentation sounded like ZMM. Was that faint but damning praise, or worse still, was it intended to be pejorative? This reflective essay serves as a belated apology to that learned detractor as to why ZMM appealed to me, and continues to influence the way I do and interpret my work.

ZMM is many things rolled into one - "an ungainly piece of do-it-yourself American Gothic, ... a novel, a travelogue, a quest, a set of lectures, and a secular confession, with some sketchy information on motorcycle maintenance thrown in for good measure," was Robert M Adams' assessment in his review in *The New York Review of Books* (June 13, 1974), pp. 22-23 (reprinted in GB-ZMM, pp. 240-245). To me, it was mainly an intellectual and spiritual autobiography, "an inquiry into values," as the often unremembered subtitle to the book forewarns. What else would one expect from a Buddha-seeker after truth, whose resumé reads - "studied chemistry and philosophy at the University of Minnesota (B.A.

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1950), ... [intended to be] a molecular biologist, ... [studied] oriental philosophy at the Benares Hindu University, [taught] English composition and rhetoric at the State University of Montana and did graduate work in ancient philosophy at the University of Chicago." (from George Basalla's review in *Science*, Vol. 187, Jan. 24, 1975, pp. 248-250; as reprinted in GB-ZMM, pp. 255-259.) At the time of writing the book, Robert Pirsig was a technical writer, employed in writing computer instruction manuals.

It is not surprising that the spiritual and intellectual framework on which the book is built shows neatly the divide between the main Eastern (Hinduism, Buddhism, Zen, Taoism, Confucianism) and Western (read, footnotes to Plato, and also Aristotle) philosophical traditions. Also, Pirsig wields a swiftly moving and sharp analytical knife that slices various dualisms: subjective-objective, realism-idealism, romantic- classical, inductive-deductive, holistic-reductionistic, technology-science dichotomies. "Ostensive definition, [where] a general principle appears to inductive reasoning with maximum elegance and clarity" is shown to be different from "tautological definitions, which are the foundation of deductive reasoning," (see GB-ZMM, p. 211, where it is indicated that this is from a section from the original draft which was cut when the book was published). These definitions reveal the dualistic aspect of the human mind in its sense-making and problem-solving roles. This is of a piece with the emerging split hemisphere paradigm of brain functioning, the tension between the right brain and left brain modes of working showing up as the heuristic and analytic patterns of thinking.

Pirsig shows (in a post-modern way?) that much of the dissonance of modern post-industrial living is due to the uncritical acceptance of only one side of this divide. There are two voices in ZMM, the narrator (the main voice, and not to be confused with the author) and the narrator's alter ego and ghost, Phaedrus. To this we must add the voice of the author too. It is this unifying, integrating (but not necessarily transcendent) voice that believes that this need not be. These dichotomies are seen as being absorbed into a supreme quality which embodies "excellence", "worth", "goodness", in the sense of the True, the Good, the Beautiful. It is in this way that Pirsig is inspired to revive forgotten words and meanings. The Greek word, "arete", meaning "virtue" or "excellence", or the Sanskrit "dharma" the transcendental "oneness", which has been absorbed into the mainstream of Hindu and Buddhist thought as a holistic cosmic order that implies all natural laws (for the purpose of this essay, its extended meaning of "duty to self" and the laws of moral and personal obligations, is not invoked), serves to lead to the enlightenment: "Quality! Virtue! Dharma!", that dawns on Pirsig, as the narrator is emotionally integrated with his lost self, Phaedrus, at the end of the book. The whole book has been a record of this quest.

This was the message that informed my own outlook on science, technology, philosophy and epistemology. Science, is about quality, about a search for stable patterns of values, whatever be the object of enquiry, the search for the laws of nature, or the laws of social organisation. Quality, is used with a capital Q, to indicate a transcendental sense of union arrived at when the loop of knowledge is closed from the inductive - heuristic - empirical side (detecting patterns and relationships that show meaningful values) and from the deductive - analytical - dogmatic derivations of these patterns a priori from first principles, paradigms,

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conceptual frameworks, and so on.

It is for this over-riding sense of 'quality intellectual understanding' that science stands apart from any other cultural tradition of the knowledge seeking process, such as the arts, humanities, religion, mysticism, etc. It is the only one governed by this "dharma" of righteousness, that the truths it seeks out, even if never reachable or absolute, would always attain closer degrees of convergence as the knowledge loops are closed, pincer-like, with one pincer being the romantic grasp and the other the classical grasp.

"Quality is the continuous stimulus which our environment puts upon us to create the world in which we live" (p. 225 of the Bantam paperback edition of ZMM). Which is precisely what science is, and technology is, in the sense of evolutionary epistemology, as our response to the need to increase our fitness to survive in a hostile environment by creating ideas (science) and artefacts (technology) and continuously refining these. With this transcendental view of science and technology, one need not be threatened by a view where science and reason were seen as tyrannical constructs, "an inhuman, mechanical, lifeless and blind force, a death force giving rise to science and technology and which somehow makes you a stranger in your own land." Quality, to Pirsig's mind, is the source of reason. "Value is the predecessor of structure." Precisely the lesson that evolutionary theory has taught us - form evolves to perform function.

Of particular interest to me, ever since I read ZMM more than twenty years ago, and all the while I devoted half a lifetime to the pursuit of scientific knowledge, is how Pirsig's view of quality, as the generator of all intellectual activity, actually informs us as to how a scientist should conduct her life. Una Allis' review from *Critical Quarterly*, Vol. 20 (Autumn 1978), pp. 33-41, and reprinted in GB-ZMM, pp. 260-270 summarises this aptly. "Quality [informs] the scientist's selection of facts from the infinite number available to him. Quality, beauty and harmony are the centre of scientific endeavour." But it would be wrong to conclude from this that "quality is the search for permanent, enduring hierarchies and structures." There is a very old Chinese belief, that the truth cannot be proved; it can only be suggested. I know few who have expressed this better than Allis. Quoting from the same review, one understands:

"... For in fact the scientist's task is never completed. Once a theory or paradigm has established itself beyond doubt, the facts in conformity with it become dull, because they no longer teach us anything new. Then, it is the exception, which cannot be accommodated by the theory, that becomes important. These little facts which ` tug at the line, nagging for attention, asking if we'll be interested in them,' turn out to be the growth points. Gradually they accumulate evidence, amass support, intimating our paradigm is too narrow and needs reconsideration. This eventually effects a scientific revolution. What was an anomaly becomes the focal point of the developing analogue."

In his book, Pirsig directly interweaves a narrative of a man in search of himself, with philosophical speculation. But in this retrospective review, I have narrowed the concern to the method of science alone. I hope it has conveyed much of what Pirsig's ZMM meant to me, of how the search for quality, for stable patterns of values, informs the way a scientist should

conduct her life - a sense of duty to "oneness" that is precisely the *dharma* our ancient sages preached. In this view, science transcends mere reductionistic use of logic, in a step-by-step approach to problem solving. Problem solving is on the other hand also holistic, having creative and aesthetic aspects as well. This is a more meaningful understanding of the whole church of reason that science embodies.

What I have attempted to communicate in this essay has been described as "the high country of the mind", by Pirsig in ZMM, drawing an analogy to the high country of mountain climbing. "It takes a lot of effort when you arrive, but unless you can make the journey you are confined to one valley of thought all your life." I hope this "dharmic" interpretation of philosophy of science conveys the "oneness" and true-to-selfness" of the natural law or order of the mode and method of scientific enquiry.

Gangan Prathap

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