

All Life is Problem Solving

K. Popper

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This is a collection of essays and talks written and delivered by Popper in old Age, commenting on some of his pet topics. It is strange though, to read him in the early 90s on political events, which although twenty years in the past, still strike me as very recent.

Knowledge is expectation. As such it can never be certain, only tentative. Expectations are a priori, and according to Popper it was Kant's great revolutionary insight to understand that our a priori expectations precede perceptions, which by necessity are a posteriori. We are not instructed by the world through our senses. Expectation is prior to perception and observation. By just being born we know a lot, knowing in the sense of having expectations. But our expectations can be frustrated, we can become surprised. Surprise involves a problem, and a problem has to be solved. The outside world does not solve our problems, we need to come up with tentative solutions. The only thing that the environment does is to accept or not accept our solution. The environment selects. The only answers we get to our questions put are yes or no.

Expectation does not have to be conscious, not even among humans. In fact most of our expectations are unconscious, just as most of our actions are more or less instinctual. We are only made aware of our unconscious expectations when they are frustrated. But not necessarily even then, because any organism has expectations. Every organism acts according to its expectations. When those are frustrated, it has to modify its expectations, if this is not possible, the organism perishes, and allows other organisms with different expectations to flourish.

Expectations are always put to the test. They may or not be compatible with the outside world, those which are not are eliminated. As noted in many cases elimination will also include the elimination of the organism itself, not just its expectation.

The key point of Darwinism is not design but trial and error. We, or organisms in general, are confronted with problems, and trials are attempts to solve them, the tentative solutions may be in error, if so they are eliminated. Elimination means that we need to produce new attempts at solutions, or from the point of knowledge, expectation has to be modified. The modified expectation does in general not differ very much from the previous expectation, thus there is a large degree of conservation. In fact the method of trial and error will only work if there is some expectation to build on, otherwise it becomes a random and inefficient procedure. Thus it will not work unless the environment is reasonably stable. If there is a catastrophic change in the environment, such as a collision with an asteroid, previous experience is not only inadequate it is irrelevant. In natural evolution expectations are preserved in the genetic material, and we are here talking about generic long-term expectation, which in itself provides a guide for specific short-term reactions. Thus as organisms we do not come naked into the world, we have by evolution been equipped with a multitude of dispositions. To use our senses and to interpret what they convey to us is a dispositional skill. Without knowing what to look for we cannot find it.

In fact the visual picture we are confronted with is something we have created ourselves, using our dispositions. It is not something that comes to us readymade.

In daily life we need to take action whether we want to or not. Not to take action is in fact an action by itself. Would we encounter a danger, we either flee, fight or stay put. The third alternative is as much of an alternative as the others. The kind of action we take is based on our expectation. Much of our expectations are beyond our control, it is part of our architecture as organisms. Consciously we may think of our expectation as based on previous experience, and thus our inclination to think of it as a manifestation of induction. What worked before we expect to work again. Yet, with expectation we cannot be sure it will be reliable, but as we have to act, we have to rely on it, there being no alternative. Thus Hume is wrong when he says that we are irrational acting on the principle of induction. The rationality in our act, is not so much on the basis of our expectation, as in our willingness to modify it, would it not be met. This is common sense, and that is the way we act.

Science is according to Popper, enlightened common sense. Instead of being involved in ordinary quotidian affairs that involve our organism as such, we transfer it to World Three, the virtual linguistic word, in which we can form hypotheses which we voluntarily put in dangerous situations, i.e. we provoke clashes with expectations (i.e. we try to falsify). An organism who makes a mistake in daily life may pay by its very life, but if a hypothesis is mistaken, it dies in our stead. Hence we are far more liable to put our hypotheses in jeopardy than our own lives. In fact we thrive on mistakes.

Popper sets up the cycle of starting with a problem, then putting on a tentative solution, which in science means an explanatory theory, then testing it, and if it fails we are presented with a new problem, and the process can start again. If the theory is not falsified, if our expectation is met, we try to think up of a new provocation. The formulation of the problem, the formulation of the trial, that is all our own work. What is not part of our work is the verdict. The verdict is the way we anchor our imaginative speculations empirically.

Thus theories in World Three grow and evolve similarly to the case of natural evolution. The theories which turn out to be compatible with the factual circumstances, are the best adapted ones. And just as in natural selection, there is memory, conservation and stability. Theories are not the fruits of fashion, new theories explain what old theories have explained as well, but if they are good improvements they explain so much more, and can thus be said to be an improvement over the old theory, not just an alternative. In this way by elimination theories can penetrate deeper into the configuration space. The forming of theories, in spite of the terminology trial an error, are not the result of pure chance, but of directed piecemeal improvement. Theories that have stand up to severe tests prove their mettle and are to be considered as very well adapted. But just as with species, which may have survived for millions of year, the record of their past success is no guarantee of future, even the best tested scientific theories may turn out to be wrong in the end. In short to provoke expectations which simply are not met.

Ultimately falsification is a creative act. Its purpose is to weed out and thus enable us to formulate more and more probing questions. If organisms were not weeded out there would not be space for development. If all options are perennially kept open, any finite

space would quickly be overcrowded.

Popper makes a distinction between the truth content of a theory and its falsity content. A better theory has both a higher truth content and falsity content than a theory it replaces. Logically the truth content is all the true facts that can be derived from the theory, while the falsity content are the facts which will conflict with it. From a weak theory we cannot derive very many facts, nor can we find many facts which will conflict. The theory will assert little and permit a lot, while a strong theory will assert a lot and permit few things. Thus a strong theory is a bold theory, its acceptance will involve a major advance. On the other hand a strong theory is vulnerable, there are so many things that can conflict with it. It can more easily be falsified. In short a strong theory is much less probable than a weak theory. Hence if you are averse to risk you tend to propose weak theories as they are by nature more plausible. Hence it would be tempting to assume that evolution in World Three is much faster than in World One, we are more liable to take risks. On the other hand organisms have in general no sense of risk, and the hypotheses presented by natural selection are through mutations. Bold mutations, to use a metaphor, may hence if successful create real jumps in the evolution, especially if directed at a basic trait.

Popper claims that he never intended to become a professional philosopher. He only gradually found himself in that position. He strikes a curious mixture of the ambitious and the modest, although his ambitions are never modest, his modesty on the other hand is not without ambition. He studied to become a teacher, in an age and a culture, when a teacher was respected and motivated by the subject. It was mathematics and the natural sciences which excited him the most, but on the other hand he did not think he had the capacity to make original contribution to either mathematics or physics, and instead wrote a doctoral thesis on a topic in psychology. He does drop hints that he was rather precocious as a child and young man. At the age of seven or so he was captivated by a book by Nansen, retelling his exploits in the Arctics, which instilled in him a passion for discovery, not just geographical. In his teens he was drawn to Socialism and Marxism, but was more and more turned off by what he felt was intellectual dishonesty and dogmatism. Was Marxism even true? At the time it had a reputation for being a science, and that carried with it a high degree of prestige. A scientific theory was considered true by virtue of being scientific and it was not to be criticized, except possibly by experts. At the tender age of seventeen, he decided to study marxism thoroughly in order to determine whether it was true or not. This led to the more congenial problem of deciding what was science or not, which was to become the project of his life. His study of Marxism eventually bore fruit with the publication of his 'The Open Society' a quarter of a century later. He claims that he has never been able to study things systematically, what attracts him is a problem. A problem that engages him is what he craves. Most of the things he worked on was never published, maybe occasionally lectured on, or told to students, or expounded on in a series of letters, but often laid aside and if not forgotten for ever only worked out years later. A method he definitely does not recommend, and I guess a method of academic work-habit which is now an impossibility. But nevertheless it served him well.

Popper saw the end of Communism, and he was old enough to have vivid memories of how it all started, the initial excitement of the popular revolt against the Czarist dynasty,

the Trotsky propaganda as Communists being the Party of the Peace back in 1917. He was initially taken in, but then severely disappointed. Of course Marxism had an emotional appeal, apart from its claims of being scientific. Many of his scientific colleagues swore by it, one Viennese physicist he could not even dissuade from his enthusiasm, despite years spent in Stalinist prisons. Communism was the very opposite of the Open Society he treasured, and he consequently saw its collapse as a blessing and an occasion to celebrate. The world had been ridden of one of its scourges, but of course the legacy still remained of the Cold War and the unfortunate polarization between Left and Right which Lenin had been so instrumental in provoking. The legacy of a nuclear arsenal, threatening to become traded on by terrorists on the black market. Hence in an interview with Spiegel he recommends wars in order to make peace, in particular to attack Saddam Hussein and his ilk.

Life is problem solving, you can never avoid mistakes, the point of mistakes is to learn from them, and hence you should never be afraid of making them, the more you make the merrier, simply more opportunities to learn.

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