

## Language, Truth and Logic

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Philosophy means literally 'love of wisdom', and philosophers consequently are in love with thinking. There was originally no distinction between philosophers and scientists, in fact how could there have been one, as the notion of a scientist is of fairly recent vintage. Descartes and Leibniz are thought nowadays as philosophers, while their ambitions really were scientific. Newton, on the other hand is considered a scientist, but to a large extent his interest was philosophical, which incidentally did not necessarily have fortunate consequences<sup>1</sup>. Kant, now known almost exclusively as a philosopher, was also a competent Newtonian in his youth. This close relationship between physics and philosophy prevailed in the 19th century and into the 20th. The relativity theory of Einstein was to a large extent the fruit of purely philosophical considerations, and many physicists of that period did turn to philosophy as they got older<sup>2</sup>. The fundamental problem of philosophy is how to acquire secure knowledge, and to do so a mixture of *a priori* logical, analytic thinking, and empirical experience is needed, which has been understood from the very start. In human intellectual history, or maybe to be more precise, in Western philosophical thought there has been a rather well-defined core narrative, starting with Plato and ending up in the Anglo-Saxon tradition of analytic philosophy. Analytic philosophers will claim of course, that there is but one philosophy and that is the analytic one, anything else are just unfortunate digressions and dead-ends. The analytic philosophers claim to be the heirs of the great classical philosophers such as the above mentioned Descartes, Leibniz and Kant, as well as Locke and Hume, and in modern times represented by Frege, Moore, Russell and Wittgenstein. Such letter-day figures as Russell could not but observe the spectacular advances of science during the 18th and 19th century, and suffer a certain inferiority complex as a consequence. Russell regretted not becoming a physicist, and the tortured Wittgenstein thought with disdain upon philosophical activity and discouraged his students from pursuing it. It is symptomatic that Polya, thought himself too good for philosophy and not good enough for physics, thus settling on mathematics. Russell went so far as to suggest that the business of philosophy was to annihilate itself, through the process of successive amputation. Every time a branch of philosophy became well defined and solid, he explained, it was chopped off from the tree of philosophy, and in the process becoming a science on its own. In other words, the wiser we would become, the less need of philosophy. Thus in the beginning of the 20th century there was a movement to once and for all solve the remaining philosophical problems, which were thought of as rather trivial, and then close down the shop and auction out the remaining inventories. That ambition was epitomized by the so called Vienna Circle, led by Moritz Schlick, and with members

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<sup>1</sup> One is reminded of the rather recent discovery that a large part of his life and effort were wasted in sterile biblical speculations

<sup>2</sup> Many examples can be given, Mach may be the one that first comes to mind

such as Carnap, Hahn and Neurath with mathematical and physical backgrounds<sup>3</sup>. In particular they wanted to remove all traces of metaphysics which had played such an important part in its history and been the source of so many controversies. The movement has been known as that of Logical Positivism, and one can trace its roots back to the oft quoted passage by Hume by which he concludes his *Treatise on Human Nature* to the effect

*If we take in our hand any volume; of divinity or school metaphysics, for instance; let us ask, Does it contain any abstract reasoning concerning quantity or number? No. Does it contain any experimental reasoning concerning matter of fact and existence? No. Commit it then to the flames. For it can contain nothing but sophistry and illusion.*

Alfred Julius Ayer was a young brilliant philosopher in Britain who was commissioned to write a book and present the view of logical positivism, and the result was the book under review, and which has served since then as a canonical text. The book's main interest to me, is that it gives a splendid opportunity to compare the views of the positivists and that of Karl Popper, who although associated with the positivists, in particular maintaining friendly ties with Carnap<sup>4</sup>, bitterly resented being confused with them. The short answer is that there is not much difference.

Like a positivist Popper wants to anchor statements in reality, and point out that their veracity has to do with the possible attempts at verification. Statements which cannot in principle be tested are either analytic, when there is no need for any external exploration, their verification being intrinsic to themselves, or are meaningless. Popper rejects 'What' questions in favor of 'How' questions. Thus instead of inquiring as what is say length, we simply take an instrumental view and describe how we measure lengths. In the same way instead of pondering whether a statement is true or not we describe how we could in principle verify or reject it. What goes on beyond that is of no concern. It is the pragmatic attitude of the practical man who sees what works and wants to get things done. Ayer, as well as Popper, has read his Hume, and rejects any claim that we can once and for all inductively verify synthetic statements<sup>5</sup>. Ayer also refers to Popper, but claims that even falsifications can never be definite, there is no limit to what kinds of special pleading we can do to save appearances. This is criticism that Popper acknowledged, and he does in his work discuss the various ways there is of trying to avoid falsification by precisely special pleading. Now, one should not take philosophical statements too literally, unless of course when engaged in polemics, but see more to the spirit than the letter. Popper's main point is that there is an asymmetry between falsification and verification, that indeed one should distinguish between 'there is' and 'for all' statements. The problem is that in real life, statements tend to be a bit vague and contain elements of both often in hidden

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<sup>3</sup> The logician Gödel was loosely associated with it, as was Wittgenstein

<sup>4</sup> Popper speaks with appreciation and respect of Carnap, and carried on a friendly correspondence with him. Martin Gardner, who was an assistant to Carnap at Chicago, wrote bitterly about Popper to me, claiming that he was a difficult person.

<sup>5</sup> Amusingly Ayer also sets up positivists as straw-men, making fun of their claims that synthetic statements can conclusively be verified.

ways. Just as Popper Ayer makes the point that it does not matter how a statement is being arrived at, what matters is how it can be tested. If you guess, appeal to intuition, or to divine inspiration, that is a private matter. The truth or not of a proposition is something objective and has nothing to do with its progeniture. Thus he fully endorses one of Popper's main tenets, that we are not passive learners, but that we instead actively put questions to nature.

So in what ways do Popper and the positivist such as Ayer differ? First, that there is, at least in Ayer, a tendency to associate to truth of a sentence too much its method of verification, so there is the danger of taking a Kuhnian perspective and introduce the notion of a paradigm, which potentially leads to fashionable pluralism and the denial of just one truth. But secondly, and more to the point, the difference lies, at least according to Popper, in their narrow focus, and in particular their rejection of metaphysics. Their project as such is metaphysical, and indeed as I will try to illustrate, in Ayer's attempt to once and for all dispose of metaphysics onto the rubbish heap of nonsense, he invariably stumbles into that heap himself. Popper's ambition was to put up a line of demarcation between science and pseudo-science, not between science and metaphysics. It is far from true that which escapes the testing criteria is useless or meaningless, on the contrary, much of metaphysics can in fact serve as proto-science. And besides the whole of art and morality fall outside science, but that does not mean that it is metaphysical, to say nothing of being nonsense. Thus the positivist approach did in the end reduce philosophy to a somewhat trivial game, in which the rather pedantic analysis of language ended up playing the major role. Ayer does indeed follow Russell and especially Wittgenstein in claiming that most of the problems of philosophy are pseudo-problems, caused by the way language seduces us into error, thus making philosophers outside the positivist fold look foolish, not to say stupid. Russell pointed out that there are abstract nouns as well as concrete, and grammatically they are indistinguishable, which leads to endless confusion. Ayer follows suit claiming, along with Kant, that 'exist' is not an attribute of something nor a predicate<sup>6</sup>, and that words such 'killed' is very different from 'being thought of'. Thus, following Moore, the real content of a preposition such as 'unicorns are thought of' has nothing to do with 'lions are killed'. The latter has meaning and involves acknowledging the fact that lions exist as physical entities as such, and thus can be subject to killing, while just thinking of a unicorn, does not entail automatically its existence.

What is left of philosophy when it becomes dry and factual? What is its point? This is the question Ayer addresses at the end of the book. The answer is rather short and limited. The point of philosophy versus science is to clarify the latter, in short to provide a detailed and conscientious analysis of the language and symbols the discipline employs. To point out contradictions as well as vagueness and ambiguity in definitions<sup>7</sup>. The philosopher

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<sup>6</sup> This of course goes to the heart of the so called ontological argument for the existence of God, an argument which has engaged philosophers. In the appendix, to be referred to below, Ayer quotes Moore's examples of 'All tame tigers exist' and 'Most tame tigers exist' as exemplary examples in their apparent silliness showing that the word 'exist' cannot be used in the same way as say 'growl'. On the other hand what about sentences such as 'Most creatures of our imagination actually exist'?

<sup>7</sup> Consequently Ayer sees a more urgent role for philosophy in disciplines such as psychology and psycho-analysis, than in physics.

is reduced to that of a dental hygienist. No wonder that logical positivism was resented, and that it eventually faded out in the philosophical community. Yes, Popper himself, associated with the movement, was thrown out with the bathwater, and is now mostly appreciated by non-academic philosophers as somewhat of a truth-sayer, a position he no doubt would have savored. I on the other hand like to describe philosophy as the poetry of science. It is meant as praise, but no doubt felt as disparagement by most philosophers. Ayer actually brings up the issue of the poetic element in metaphysical writing and rejects it. The poet at least strings words together in a pleasant matter, while the meta-physicist only talks nonsense, he explains. This reveals a lack of understanding what poetry really is all about. Poems are the fruits of a poetic temperament, and only occasionally pleasing in the prettying way Ayer is referring to. It is about a certain sensitivity to aspects of existence<sup>8</sup>. Ayer would no doubt have rejected such a statement as metaphysical drivel. To which I would say that the particular sensibility of a philosopher is the propensity for thinking, in particular carrying arguments to the extreme and damn the consequences<sup>9</sup>, a trait they share with mathematicians. This is the kind of statement, which may be not empirically verifiable, but yet of the type, which it would be hard to entirely avoid in any serious human intercourse.

Ayer agrees with Russell and Wittgenstein that mathematics is nothing but tautologies. Not even geometry, which originally was thought of as presenting synthetic truths about the nature of physical space, turn out to be analytic after all, in the sense of being mechanical consequences of conventionally assumed axioms, as non-Euclidean geometry conclusively illustrated<sup>10</sup>. A tautology has no factual content, it has no consequences that are not already baked into it. In short a tautology is uninteresting, it says nothing about the world, it only speaks about itself. Such an attitude is anathema to a mathematician, even disregarding the (assumed) applications of mathematics to the real world, in particular physics<sup>11</sup>, what about the incredible richness of pure mathematics, and the unending surprises it provides? Ayer acknowledges those, but dismisses them as artifacts of human cognitive limitations. To an infinite intellect, he pontificates, mathematics (and the truths of logic) would be totally uninteresting. Here, we have a metaphysical statement if there ever was one. How would you empirically go about to verifying it? We see that in order to argue with sufficient freedom you need a lot of elbow room and a metaphysical context

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<sup>8</sup> marveling at the mere existence of something is an example

<sup>9</sup> Russell lauds the philosophers who do just that without shirking.

<sup>10</sup> The idea that physical space would be non-Euclidean was held by Lobachevsky, who was concerned with measurements as to what the natural unit of length would be like. The absence of measured stellar parallaxes indicated that this natural unit would be very large indeed. Poincaré rejected this idea. A mathematical model is judged by its convenience, and its application is always based on some conventions. If we decide that light rays move in straight lines (which seems a reasonable assumption) physical space may be described hyperbolically say, but we may prefer to describe it in an Euclidean way, at the cost of having light rays bend. From a formal logical point of view, either geometry can be modeled in the other, lending further (formal) credence to Poincaré's attitude.

<sup>11</sup> Those can, in the spirit of Poincaré, be dismissed. Mathematics only serving the role of organizing facts, and by itself contributing nothing. An attitude apparently quite prevalent among practical physicists as opposed to theoretical ones.

is a necessity<sup>12</sup>. Furthermore much of the work of a philosopher, at least according to Ayer and the positivists, is to find contradictions in philosophical arguments and hence to weed out the unsustainable. Such purely cerebral activity is analytic, once the assumptions have been stated. However, by setting up a set of assumptions (a set of axioms if you prefer) the question of their consistency becomes a synthetic one, and cannot be settled by analytic arguments. This is essentially the content of Gödel's incompleteness theorem, which is an elaboration on the fact that a formal system becomes an entity of an independent existence, a machine so to speak, which along with all human inventions have unintended features. Thus one can ask whether the proposition that there is a proof of say the Riemann hypothesis is analytic or synthetic? Would the question be analytic were there a proof and synthetic otherwise? Naturally there is no reference to Gödel in the book, Ayer may not even have heard of him<sup>13</sup>. Furthermore there is no awareness of the coming digital revolution, which would enabling putting the mathematical spirit into flesh on a non-trivial scale.

The chapter on ethics and theology is the least interesting and the most outmoded. In it he simply states that propositions about morality and value are not factual. This hardly comes as a surprise to philosophically minded people, an idea that goes at least as far back as Hume, and constitutes one of the defining qualities of analytic philosophy<sup>14</sup>. When people argue about value and morality, it can of course involve factual statements as well as analytic reasoning, showing that the other entertains contradictory or non-factual views. But one those are ironed out, and disagreement still remain, further discussion is usually pointless, a situation most of us have experienced. One interesting issue, which he does not pursue, is the possibility of axiomatizing a particular theory of morality. Can one set down some fairly explicit principles or statements, out of which the rest may be derived by purely analytic reasoning? Most philosophers would probably disagree, morality somehow transcends the rules. It is clear that a closer exploration of this would not interest the author.

At the end of the book Ayer sets out to iron out some of the remaining controversies in philosophy, commendably committed to the conviction that there should not be different philosophical schools, but just one. Just as there is only one truth (if many opinions), as illustrated by monotheistic religions<sup>15</sup>. He is in particular concerned with the controversies concerning Rationalism/Empiricism, Realism/Idealism and Monism/Pluralism. He natu-

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<sup>12</sup> Metaphysical assumptions are not only legion but also inescapable in any non-trivial discussion. The problem with the grand metaphysical philosophers such as Hegel, was their tendency to manipulate metaphysical concepts, as if they were ordinary ones. Metaphysics plays the role of unacknowledged assumptions, such as the context of a discourse. It is not surprising that the Jews did not want to utter the name of (or maybe even name) their God, doing so would entail manipulation with a metaphysical entity.

<sup>13</sup> And Russell and Wittgenstein never understood what he actually accomplished, much to the surprise of Gödel himself, who wondered whether they really were stupid or only pretended to be so.

<sup>14</sup> Collingwood opposed the prevailing analytic philosophy mainly on those grounds, arguing that the study of philosophy by young minds should act as a moral guide. He also of course deplored its subsequent trivialization in its analysis of language use

<sup>15</sup> There is a cheap joke to the effect that progress in religion is measured by the reduction of deities.

rally inveighs against rationalism as being the sole source of knowledge. There are after all synthetic statements. If we could learn everything about the world through thought alone, all propositions would be analytic. There would be no need for an outside world. The world would be inside us, we would never need to leave our armchair. Of course such a statement is metaphysical, which hardly needs to be pointed out. On the other hand, as we have already pointed out, rationalism is inescapable in any serious philosophical inquiry. Our arguments have to comply with the constraints furnished by rational thought. In fact philosophical arguments carry their conviction by their appeal to our rationality, and are seldom of a synthetic nature, which incidentally shows that philosophy itself is metaphysical, even so when its sole purpose is to reject metaphysics. Also empirical arguments have to be properly interpreted, and here rationality is a necessary aid. In fact it is very striking that we have been given rationality, yet another metaphysical comment<sup>16</sup>.

When it comes to realism carrying the arguments of empiricism to their logical extreme lands us in a strange territory. Ultimately the positivist criteria of verification reduces to that of sense-experiences. How do we out of our sense-experiences create an outside world? How do we even know that such a one exists? Considerations like that led me to conclude the summer I was sixteen, that I had no logical reassurance that there existed an outside world, in particular that there were other minds? Was everything just a phantom in my imagination? The idea was extremely distressing and made me feel very lonely and cut off from the world. I envied those phantoms of my imagination that somehow happily existed together in my imagination, while I myself as the generator of the same, could not be part of it<sup>17</sup>. I gradually decided that I deep down did not believe in it, that the idea was just a psychological projection of feelings of deep loneliness, and that I was merely going insane, a thought that normally had haunted and scared me, but which I now felt as strangely comforting. So great is the fear of loneliness in man. It also shows that philosophical ideas do not always dwell in a disembodied academic environment, but could if taken seriously, deeply affect you. It had lasting consequences, and may have once and for all made me turn away from sustained philosophical thought out of fear of the abyss to which it may lead, and instead embrace mathematics, as I consequently did. It also made me realize that rationalism is not enough, the discovery of which coincided with my encounter with deductive Euclidean geometry two years earlier<sup>18</sup>. The most precious things we take on faith, and hence we should have respect for people with religious faith, because our most basic assumptions go deeper than where mere rational access may reach. Also, one

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Monotheistic religions hence are the most advanced, only one step from the ultimate, the one without a God at all. In the same way would scientific progress eventually lead to the abolition of any truths whatsoever? Only social constructions?

<sup>16</sup> There is of course a very 'rational' and nowadays traditional explanation for that, via natural selection, but that is of course something of a circular reasoning.

<sup>17</sup> Would God creating the world in a similar way feel excluded from it?

<sup>18</sup> I recall the summer I was turning fifteen that I divided the Euclidean approach into three parts. One was the axioms, that I associated with religion, and did not think very interesting. The other was the actual results and applications, which I associated with technology and found vulgar. It was the rational way of getting the results from the given premises, that truly excited me, and I was unable to think of any nobler pursuit.

wonders what one really deep down believes. Are we not all solipsists, and at the time of death we will have a brutal awakening<sup>19</sup>? Also our perceptual worlds cannot be directly compared with each other, and thus the direct world of impressions within which we dwell are inaccessible to anyone else, and thus solipsistic in nature.

This leads to Ayer's argument for the existence of other minds. He does acknowledge that there is a serious problem here. We all have sense experiences which occur (he is careful not to use the word 'exist'), and those are partitioned into equivalence classes<sup>20</sup>. In particular we share no sense experiences with other minds, how could we then conclude that they exist? The explanations of Ayer are rather common-sensical and thus in my opinion not up to par with the seriousness of the issue, as I experienced it as a teenager. He basically argues that other people act in similar ways as we do, and hence it is reasonable to assume that their inner lives exists as do ours<sup>21</sup>. We may not share the same qualia (he does not use that convenient if elusive term) but the very structure of our experiences may be the same, as opposed to contents. In other words he claims that there is an isomorphism, that rather abstract concept, between our experiences. This is of course a very reasonable assumption with which I agree, but it is hardly one to be verified by the empiricist strategies on which the logical positivist project rests.

Berkeley, the most distinguished of all classical idealists, claimed that material objects did not exist<sup>22</sup>. The attitude was of course eminently rational, based on the principle of Occam, to which most hard-core positivists hanker back. Why assume something beyond the sense perceptions themselves? The attitude of Ayer is not really clear. As with the case of people above, he divides sense-experiences once again into equivalence classes, each associated to a material object, as an originator. He counters the argument that an object only exists when perceived, by perception as such is not necessary, only the potential to induce perception. We are on rather unsteady ground now, all of a sudden. Maybe it is only in mathematics where it is profitable to carry arguments to the bitter end, in real life (including philosophy) one does well to hold off before absurdities take over. Anyway, the arguments become more and more metaphysical, which should not come as a surprise. As is well known, with the advance of physical science during the 20th century, the concept of a material body has lost much of its solidity, and the illogical universe of quantum mechanics, seem to trump all the fantasies philosophical speculation had engendered up to

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<sup>19</sup> It is also hard, and thus sobering, to realize, that we are, in the eyes of other people, just like any material out there. On a trivial level it can be unsettling to see ourselves in a picture or in a mirror. The mathematician Hardy is reported to have had a horror of encountering his face in a mirror, not because he found himself ugly, as most people would naturally assume, but seeing himself as an object out there was eerie. I have had that experience myself.

<sup>20</sup> This is a reference to Hume's famous 'bundle of perceptions' which when I encountered it in philosophy class in high-school, interpreted as he too had shared in my solipsistic night-mare, maybe even carried it further, and I felt reassured and decided that Hume was my favorite philosopher, a somewhat childish reaction, which nevertheless has colored my subsequent philosophical attitudes.

<sup>21</sup> What about simulations of humans, such as clever robots? They can fool us all, at least at first.

<sup>22</sup> But characteristically he did not deny the existence of other minds, only that they were materially embodied. In fact Mind takes precedence, and to make the whole theory logical and coherent, he needs to propose a higher Mind, the Mind that is God. Logical journeys can carry you anywhere.

then. After all, empirical pursuits have much to say for them, when it comes to go beyond our imaginative constraints.

Finally Ayer disposes of monism, which he claims rests on the mistaken idea that all true sentences are somehow connected with each other, something which he implicitly assumes when it comes to mathematics and tautologies. The first monist idea I encountered was Parmenides at high-school. The teacher laughed at the absurdity of it, I was, (hardly surprising?) moved by the poetic content, and thought it was stupid to take it so literally.

To the book there is added an appendix by the author written some ten years after the initial publication. He writes that the book was written with a youthful passion that normally is not present in a book of philosophical argument. Passionate it does not appear to me, but maybe a bit harsh and over-confident at times, the typical hallmark of youth not yet chastened by frustrating experience. In the appendix he addresses in a rather pedantic manner, some of the finer technical points in his presentation, which have met with some mild criticism by his professional colleagues. The most interesting one being whether there are synthetic proposition that can be verified at once, just as analytic statements being seen as tautological? The closest he can come up with is immediate sense-experience, although he is conveniently vague about what kind he really means, after all any sense-experience is interpreted, as Popper points out.

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