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The Laplacian Ideal of Knowledge

2.1 Preface

In one of his works, Pierre-Simon de Laplace mentioned a super-intellect that, at any given moment, can grasp the place, velocity, and any other fundamental property of all of the objects in the universe. Since this super-intellect is also perfectly familiar with the laws of mechanics, it can deduce from these two factors all possible past and future states of the universe. Later, Laplace's super-intellect was renamed to Laplace's demon, but it is still used to define the real possessor of the ideal objective knowledge in almost every scientific discipline to this very day. At first sight, this can be seen as a harmless metaphor, but in fact, it is a perfect, almost artistic formulation of one of the most important tacit convictions of modern critical philosophy and science. By determining our concept of knowledge, Laplace's demon has severe consequences both on science and society.

First of all, it is essential to see that Laplace's vision of perfect knowledge is based on the logic of Newtonian mechanics—it can only be true if the Newtonian worldview is true. It has to be asked, then, whether the Newtonian worldview is really true. It ruled the scientific community in the nineteenth century, when Laplace defined his super-intellect, but after the rise of quantum mechanics and Albert Einstein's theory of relativity at the beginning of the twentieth century, can it still be regarded as true? At this point, the only sure thing is that Laplace's demon continues to be mentioned in science and philosophy as if Einstein, Bohr, Heisenberg, etc. never lived and the theory of relativity and quantum mechanics did not change any fundamental part of the Newtonian worldview. Is this really the case? This is the scientific face of the question.

The other one is philosophical, which also has two different sides. What are the epistemological preconditions of the ideal objective knowledge of Laplace's demon? In other words, what are the tacit presuppositions of Laplace

concerning the workings of knowing? How does the demon think and by what kind of logical and intellectual tools and methods is it able to reach this ideal knowledge? What is the nature of this ideal objective knowledge? This last question leads to the other side: what are the ontological preconditions of the ideal knowledge of Laplace's demon? That is, what are Laplace's tacit presuppositions concerning reality? What does the nature of the universe (including the nature of space, time, matter, etc.) have to be due to this ideal? And finally, what is the true nature of Laplace's demon?

The authority of Newton is enormous; every pupil learns in elementary school that he was the best of all scientists and his mechanics is the basis of numerous professions. The ideal objective knowledge of Laplace's demon is an integral part of an old, long-lived scientific tradition; however, by consistently answering these questions, we will see that Laplace's demon is not the possessor of the ideal knowledge, but, in fact, knows nothing which we would ever care about.

2.2 The Knowledge of the Demon According to Laplace

Here is the famous mention of the demon in Laplace's own words:

> We may regard the present state of the universe as the effect of its past and the cause of its future. An intellect which at a certain moment would know all forces that set nature in motion, and all positions of all items of which nature is composed, if this intellect were also vast enough to submit these data to analysis, it would embrace in a single formula the movements of the greatest bodies of the universe and those of the tiniest atom; for such an intellect, nothing would be uncertain, and the future, just like the past, would be present before its eyes.[1]

In his short first sentence, Laplace explicates his view that the universe is deterministic. According to the ruling, so-called Copenhagen interpretation of quantum mechanics, this statement can be strongly challenged, but for now let's assume that the universe is deterministic. This assumption is fundamental for the knowledge of Laplace's demon since if there were indeterministic events which happen without any causes, then the demon could not be able to predict any future states of the universe. However, this problem is not yet solved by adopting this assumption because even if the ruling Copenhagen interpretation of quantum mechanics is not acknowledged, the predictability of a deterministic universe can still be questioned.

1. Laplace, *Philosophical Essay*, 4.

Accordingly, the Copenhagen interpretation is an ontological concept about a fundamental feature of the world, while the latter problem concerns an epistemological concept, and the two are not the same at all. Perhaps the universe is entirely deterministic, contrary to the ruling Copenhagen interpretation, but we are still not able to predict its future states because the method by which science tries to achieve this goal does not comply with the nature of the determinism of the universe; the universe can be deterministic in different ways. I will return to this problem later (2.4) and again, in greater detail (9.7). For now, I have just wanted to emphasize that Laplace's concept of determinism is a particular kind of idea that corresponds, of course, to the principles of Newtonian mechanics.

In his long, second sentence, Laplace supposes an intellect, a demon that, at any given moment, knows all fundamental properties of all of the objects in the universe as well as all the fundamental forces that "set nature in motion." Then, he claims that if the demon has the capacity to handle this data, it will also be able to predict any future and past states of the universe. This ideal knowledge is, of course, neither available to us nor can science be identified with it in practice, but it presents a clear vision of how science should work. It defines, therefore, the nature of the suitable scientific method by showing an ideal. For example, it determines which natural phenomena are scientific and thus has to be examined (e.g., Higgs boson, hypnosis, or strings) and which have to be ignored (e.g., witches, animal magnetism, or human spirits). So the stated point of this ideal is to clarify the difference between *true*, *objective*, *scientific* knowledge and *false*, *subjective*, *naïve* beliefs. Laplace's demon is the perfect manifestation of the knower at the objective side of the subjective versus objective dichotomy.

Now, we need to ask what was tacitly presupposed by Laplace in his definition; that is, what both the *epistemological* and *ontological* preconditions of his ideal are. First, let's see what Laplace has already told us.

First of all, he explicitly claims that the demon's knowledge referring to the universe is a huge set of data that has to be substituted into a "single formula," by which the demon can calculate all the past and future states of the universe. In consequence, the demon's knowledge is perfectly *exact* and *explicit*. If it wants to be able to calculate all past and future states of the universe, then it will need such strictly exact and explicit data and formula from which all of its assertions will follow by a *logically coercive power*. Its knowledge cannot be the least bit unspecified or tacit; otherwise, it could know nothing with perfect certainty. To put it in other words, a few small mistakes in the current data or only one in the formula could cause total misrepresentations of any past or future state of the universe. Therefore, the demon's knowledge is

perfectly exact and explicit, and it needs nothing else in addition to calculate all the past and future states of the universe.

The ontological consequences are these: the universe is *nothing more than what the demon can describe with his knowledge*; otherwise, Laplace could not claim that "for such an intellect nothing would be uncertain," neither past nor future. Since if there were, for example, "dark matter"—I mean unknown things for the demon—these unknown things would influence the course of events in the universe and the demon's calculations would prove to be wrong. But according to Laplace, this is not the case. His demon possesses complete and perfect knowledge of the universe. The universe includes, therefore, merely such kind of objects that can be described in purely exact, explicit ways.

Now, the question is what the nature of this kind of objects is. Or, in other words, which scientific discipline theorizes and examines this kind of objects? The answer is, of course, *fundamental physics*. It is important to emphasize that it is *fundamental* physics and not physics as such because physics in general can examine any comprehensive phenomenon which cannot be specified perfectly at all (5.3). Comprehensive phenomena (e.g., a planet, a frog, or a human person) are individual, always changing, complex objects and only some of their characteristics can be described by exact, numeric parameters and mathematically formulated exact principles (laws)—that is, by physics. However, the objects of fundamental physics, at least in principle, are perfectly universal, constant, point-like entities that possess merely such so-called primary properties that can be described and defined by exact, explicit laws and parameters. Of course, it needs to be examined later what fundamental physics—that is, quantum mechanics—really is, in practice, compared to this ideal (2.4), but for now, let's remain at the philosophical problems.

The next question we should ask is this: what about the case of comprehensive phenomena which cannot be specified by exact, numeric parameters? What is supposed about these phenomena by Laplace? He does not say anything explicitly, but he handles them in the same way as fundamental particles. He apparently thinks that the demon can easily treat both of "the movements of the greatest bodies of the universe and those of the tiniest atom." However, different comprehensive phenomena not only have many different kinds of movement (even in the case of lifeless gas giants), but also, in the case of the Earth, there are a lot of these various movements—for example, the movements of frogs, machines, human beings, etc., as well as other comprehensive characteristics, for example, feelings, thoughts, moral values, and beliefs of living beings—which cannot be specified precisely at all. It follows that Laplace can claim that his demon can treat all the

movements of the universe *if and only if* he tacitly supposes that the specific characteristics and movements of these comprehensive phenomena, which cannot be specified precisely, *are not real*.

In consequence, comprehensive phenomena are real only to the extent that their movements and characteristics can be described in exact, explicit ways—that is, to the extent that the descriptions of their specific characteristics and movements can be identified with the purely exact and explicit descriptions of the parts from which they are built up. This is the problem of *reduction*. Reduction is a scientific method by which it can be shown that a comprehensive phenomenon is only a set of lower-level parts and nothing more (2.5, 5.3). For the demon, these parts are "tiny atoms"—that is, the theorized entities of fundamental physics, which, according to the ruling ontological interpretation, are purely material. It seems that this ontological hypothesis complies with Laplace's intents perfectly. Therefore, from the ideal objective knowledge of Laplace's demon follows a *materialist ontology* that claims that there exists only such kind of fundamental material parts which can be specified precisely and only such kind of comprehensive phenomena the exact descriptions of which can be identified with the exact descriptions of their parts by which the demon calculates the past and future states of the universe.

The last question that has to be answered at this point is where the movements and characteristics of the comprehensive phenomena come from which cannot be specified exactly. In other words: what are these movements and characteristics, according to the ideal knowledge of the demon if, in reality, they do not exist? The answer is simple: they are *illusions*, just as, for example, it is merely our subjective illusion (impression) that the Earth is standing motionless under our feet while the Sun is orbiting it by mad pace. It means that these phenomena are *purely epistemological*, only the consequences of our limited human knowing; we falsely perceive what is moving and what is motionless, what is real and what is not. And this, "of course," is just one example that natural human knowing is subjective, thus, we should follow the ideal knowledge of the demon that never would have made such a mistake. The question is why it never would have made such a mistake.

2.3 The Knowledge of the Demon According to Polanyi

In contrast to Laplace, Polanyi describes the knowledge of the demon as follows:

> Assume, for the sake of argument, that we posses a complete atomic theory of inanimate matter. We can then envisage the operations of a Universal Mind in the sense of Laplace. The initial positions and velocities of all the atoms of the world being given for one moment of time, and all the forces acting between the atoms being known, the Laplacean Mind could compute all future configurations of all atoms throughout the world, and from this result, we could read off the exact physical and chemical typography of the world at any future point of time. But we now know that there is a great and varied class of objects which cannot be identified, and still less understood, by establishing their complete physical and chemical topography, for they are constructed with a view to a purpose which physics and chemistry cannot define. So it follows that the Laplacean Mind would be subject to the same limitation: it could not identify any machine nor tell us how it works. Indeed, the Laplacean Mind could identify no object or process, the meaning of which consists in serving purpose. It would ignore therefore the existence not only of machines but also of any kind of tools, foodstuffs, houses, roads, and any written records or spoken messages.[2]

First of all, Polanyi summarizes the knowledge of the demon which we have already seen by Laplace's own words. Then, he emphasizes that the demon's knowledge does not refer to the whole world—as Laplace claims—but rather only to the fundamental particles of the universe; only this kind of objects can be specified by exact, perfectly explicit parameters. It follows that it also refers to those comprehensive objects which can be identified by a set of these fundamental particles or, to put it into Polanyi's words, which can be identified "by establishing their complete physical and chemical topography." Perhaps it is a little bit surprising at this point, but Polanyi can also speak about physics and chemistry (and not just about fundamental physics) because, according to him, the comprehensive objects of physics and chemistry can be specified exactly and their descriptions can be identified perfectly with that of the material particles of fundamental physics (5.6).[3]

Finally, Polanyi claims that the demon's knowledge means nothing concerning higher-level, comprehensive phenomena. The ontological side of the claim is that there are such comprehensive phenomena in the universe which, although they have a material basis, are not material at all. Polanyi is an emergentist, he consistently believes in the existence of souls and persons. The epistemological side of the claim is that based solely on

2. Polanyi, *Study of Man*, 48–49.
3. Polanyi, *Personal Knowledge*, 391.

its ideal knowledge, the demon *cannot even identify* higher-level, comprehensive phenomena.

Polanyi's first example is a machine that is, of course, the object of engineering, not of physics or chemistry. Then, he emphasizes the role of-purposes which, according to him, are the main reasons why the demon cannot identify the comprehensive phenomena in question. This is the most trivial example for understanding the problem because in the Laplacian universe, due to Newtonian mechanics, there are no purposes at all. Therefore, if there are objects with a purpose in the real universe, as it can easily be argued, then the demon will have no concepts or intellectual tools to describe and identify these purposes. Nonetheless, it is only the surface of the problem which could lead to several misunderstandings, too; the point itself is much more concerning.

Consider Polanyi's words: "A complete physical and chemical topography of a frog would tell us nothing about it as a frog, unless we knew it previously *as a frog*."[4] To understand this assertion, we have to examine the real nature of the demon because therein hides the reason why "a complete physical and chemical topography" in itself—that is, the ideal fundamental knowledge of the demon—means nothing concerning any comprehensive phenomena, both emergent and material ones.

So what is the demon? First of all, it is *not a person* but rather a *bodiless spirit* (intellect) that at any given moment possesses the exact descriptions of all the fundamental material parts of the universe. From this data, it can deduce all the past and future fundamental states of the universe. According to the Laplacian ideal of objective knowledge, the demon knows everything and his knowledge is purely explicit. It follows that, in turn, he does not and most importantly *cannot possess any tacit or personal knowledge*.

What would happen if the demon possessed personal knowledge, that is, the demon's knowledge was based on tacit evolutionary roots just as much as the knowledge of real human persons in the evolutionary system of Earth? Then, the demon could not be a bodiless spirit; its knowledge would become limited by bodily skills and perceptions, anchored to a certain point of space and time. Therefore, it would suffer from exactly the same "subjective illusions" as the knowledge of human persons. The main point of personal knowledge is that we cannot see the whole universe at a given moment as the demon does but rather, *inevitably, only from a certain point of view* (center), based on our evolutionary heritage—that is, from our body, here and now. We also have no pure, deductive power to calculate the past and future states of the universe; rather, our knowing is limited by and based

4. Polanyi, *Personal Knowledge*, 342.

on tacit bodily skills and senses. Polanyi definitely explicates this already on the first page of the main text of *Personal Knowledge*:

> For, as human beings, we must inevitably see the universe from a center, lying within ourselves, and speak about it in terms of a human language shaped by the exigencies of human intercourse. Any attempt rigorously to eliminate our human perspective from our picture of the world must lead to absurdity.[5]

This means that our *center*, which is our inevitable *point of reference*, is necessary lying within and works by our body. Our body simply cannot be "vast enough"—as Laplace puts it—to process all the data of the whole universe. As a matter of fact, according to the rules of formal logic, we can only process a few datum, deductively speaking. We do not infer from exactly defined (focal) parts to other exactly defined (focal) parts but rather tacitly integrate from (subsidiary) parts to (focal) comprehensive wholes, then orient ourselves in the world by these orderly comprehensive wholes (3.3). It follows that, contrary to the demon, we do not see fundamental material parts at all. Nobody has ever seen, for example, an up quark by which the demon calculates due to "the complete physical and chemical topography" of the universe; rather, we see machines, frogs, planets, peoples, etc.—that is, according to the Laplacian ideal of objective knowledge, different kinds of comprehensive, orderly wholes in an utterly illusory way. To be honest, it is absolutely true that we are not perfect; sometimes we are clearly wrong, failing to identify what is moving and what is motionless under our feet (as the great Copernicus found out). However, we will soon see that the demon is, in fact, wrong in *every* case (2.4).

So the demon's knowledge, contrary to our knowing, could be "perfect" and ideal just because *it is not rooted in a kind of tacit evolutionary heritage*. Something or somebody cannot be at the same time a bright and perfect super-intellect—that is, a bodiless spirit over and above the whole universe—and a fallible person with limited bodily skills at a given point in space-time. As a matter of fact, when Laplace says that if his demon were "also vast enough" to process all the data of the whole universe, it is completely misleading that he could then conclude all the past and future states of the universe since by this claim, he tacitly supposes that the center of the demon is also in a body—only in a huge body. But if this were the case, then his demon could not be able to do what Laplace wants it to be able to do. It is much more telling when he says "for such an intellect, nothing would be uncertain and the future, just like the past, would be present

5. Polanyi, *Personal Knowledge*, 3.

before its eyes." The demon, of course, has no eyes; this is only figurative speech, but it is literally true that if it finished his calculations, then, according to the ideal, it would know everything that could be known and all states of the universe, past, present, and future, could be seen *as present* before its perfect intellect. The demon is, in fact, a beast *outside of space and time*. He is simply not part of the very material universe that he observes. And if it "did" what it had to do, according to Laplace's intentions, then it would never be able to do anything else. I will examine the consequences of this problem in the next subchapter.

My point is only the consequence of the fact that although the demon possesses a perfect, completely explicit knowledge of all fundamental material parts of the whole universe, it *solely possesses this kind of knowledge*—and not the limited, personal knowledge of human beings. At this point, the question should be asked: how could it recognize any comprehensive object of the universe if it did not possess the tacit skills and senses of human beings by which the parts—e.g., the individual photons coming from the different parts—can be integrated into comprehensive, orderly wholes? The "complete physical and chemical topography" of a comprehensive object (that is, the Laplacian ideal of objective knowledge) is by definition *not the same* as the tacit recognition of a comprehensive object (that is, the personal knowledge of human beings), even if we assume that the content or reference of the two types of knowledge is exactly the same. Nobody can learn from a quantum mechanical textbook how to recognize a frog—even if a frog is, in fact, nothing more than a pile of quarks and electrons—and nobody can learn from Newton's *Principia Mathematica* how to build a machine—even if engineering is based on the principles of Newtonian mechanics. We recognize a frog by our tacit bodily senses and skills which were acquired as we grew up (ontogeny) based on the evolutionary heritage of our phylogeny, and we can build a machine based on our cultural heritage of craftsmanship and engineering as, for example, James Watt did. The demon does not possess these kinds of knowledge by definition. Therefore, *it cannot recognize or identify any comprehensive wholes of the universe*, neither frogs nor machines, neither planets nor stars; its knowledge concerns only the fundamental parts. In consequence, it knows nothing that ever would interest us in real life—not including nuclear physicists, of course.

So concentrating on purpose, Polanyi is, in fact, not really harsh on the demon because he tacitly enables it to recognize higher-level but material—that is, physical and chemical—phenomena. However, the point is that without the previous tacit recognition of an object, the perfect and "complete physical and chemical topography" means nothing, even in the case of lifeless planets and stars. Cosmology is not fundamental physics (7.4). Tacit

knowledge always has to come before the explicit topography—that is, before any explicit knowledge; otherwise, there is no meaning at all. I will illustrate this crucial consequence of personal knowledge with a detailed example in subchapter 2.5 and detail the whole phenomenon in subchapters 3.3 and 3.4, but for now, let's see the ontological side of Polanyi's claim.

What would be the consequence of the demon's knowledge concerning reality if its knowledge were real and true? Since without personal knowledge, it would not be able to recognize any higher-level comprehensive phenomena, *none* of these phenomena could be part of the real universe. Not just those that cannot be specified precisely, as we have seen at the end of the previous subchapter, but also, in fact, all of the higher-level, comprehensive phenomena. It follows that these phenomena would have to be regarded *as mere illusion*s of imperfect human knowing—as would our every other subjective impression—all starting with the fact that we once naïvely believed that the Earth was standing still under our feet. Yes, it literally means that *every* comprehensive, orderly phenomenon is merely an illusion: every machine, every frog, every planet, every star, and every human person. The *consistent* ontological claim of the materialist Laplacian ideal is that we are only our own subjective illusions. Yes, you are your own illusion, too. This is the reason that Polanyi finished his thread of thought with these words: "Any attempt rigorously to eliminate our human perspective from our picture of the world must lead to absurdity." Contrary to the materialism of the Laplacian ideal, Polanyi's ontological claim is simple: we are what we seem to be: *comprehensive, orderly wholes composed of matter*. This whole book is about to reveal the most profound meanings of this simple fact.

Perhaps it is still hard to believe, but now we can see that the ideal objective knowledge of the demon leads to absurdity. The question is why this simple truth is not so obvious for us, why is it so hard to believe, and most of all, why do scientists and philosophers still tend to follow the Laplacian ideal of objective knowledge? First, they conceal this fact by *deceptive substitutions* (2.5), and if they, at least partially, notice it, they will still never choose the one alternative they generally see: naïve, subjective, and unscientific beliefs coming from superstitions and religion. In the next chapter, through Polanyi's *Personal Knowledge*, I will show that subjectivity versus objectivity—as well as knowledge versus belief—is a false dichotomy and there is a third option, which, in fact, is the real fundament of science, philosophy, and human knowledge. Before I unfold the meaning of deceptive substitutions in detail, let us see the physics of the demon that has always been put aside to this very point.

2.4 The Physics of the Demon

I noted in the Preface that the Laplacian ideal of objective knowledge is based on the worldview of Newtonian mechanics and that Laplace's demon is used in science and philosophy as if the rise of Albert Einstein's theory of relativity and the rise of quantum mechanics at the beginning of the twentieth century did not produce any significant change to the Newtonian worldview. In the second subchapter, concerning the fact that the knowledge of the demon refers to the theorized entities of fundamental physics—which is, of course, quantum mechanics and its successors today—we stated that we will have to examine this problem later. Accordingly, the question is this: although quantum mechanics was initially developed due to the Laplacian ideal, does it still comply with the strict requirements of this ideal?

Not at all. As a matter of fact, quantum mechanics is not even a classical scientific theory in the sense that it might tell us what the exact parameters of the fundamental material parts are and by which the demon could then calculate its answers. It does not even tell us, for example, that the fundamental parts are particles or waves. This strange, contradictory claim of quantum mechanics can, of course, be accepted from a practical point of view, but not from a philosophical one: if the fundamental parts are both waves and particles at the same time, then the ontological reasons of this strange fact must be explained in detail, which has not yet happened. Moreover, quantum mechanics (or, at least, the ruling Copenhagen interpretation of quantum mechanics) has left behind these theoretical problems; instead, it has become a set of practical, operational principles by which experiments can be set up and the *probabilities* of different expected results can be predicted more precisely. In this sense, quantum mechanics is a highly successful intellectual tool, but as a theory, it never really tells us what factually happens in the real universe. This philosophical deficiency was the main reason why Einstein never fully accepted the Copenhagen interpretation of quantum mechanics.

Our actual fundamental physics is highly successful in practice, but it does not comply with the Laplacian ideal because it does not provide any unambiguous data by which the demon could precisely calculate the past and future states of the universe. Yet, this fact did not question the ideal. The reason is twofold.

First, quantum mechanics has left behind this ideal only partially. The methods of quantum mechanics still comply with the Laplacian ideal since it uses exactly defined data and explicit formal equations by which it calculates any future states of quantum systems. The only main difference is that it uses *probability statements* concerning the events and not unambiguous

ones (3.4). Of course, the indeterministic interpretation of quantum mechanics is tightly connected to this fact, which I will discuss a little bit later at the end of this subchapter.

Quantum mechanics has left behind only the ontological part of the Laplacian ideal—at least partially—and not its epistemological vision, especially its scientific methodology. This change happened mostly due to the influence of Ernst Mach's positivism, which tried to reject every ontological claim in science at the end of the nineteenth century and the beginning of the twentieth century (3.2). This kind of philosophical thinking was desirable for many physicists at that time because of the particular practical problems of experimentation with which early quantum mechanics had to face. Then, in the twenties and thirties, the ruling Copenhagen interpretation of quantum mechanics and the new, most successful third wave of positivism were born shoulder to shoulder in the same German-speaking scientific community.

Positivism is a kind of Laplacian critical philosophy that denies the ontological side of the Laplacian ideal to be able to embrace its epistemological side more easily (3.2). At the same time, it is just as tacitly materialist as the Copenhagen interpretation of quantum mechanics because, in the name of science, it usually rejects non-material phenomena, stigmatizes only metaphysical and non-materialist theories as unscientific, and, most importantly, it tries to *reduce* the descriptions of every comprehensive phenomenon to exact, fundamental scientific statements. From this intention, the idea was born in the mind of Rudolf Carnap, perhaps the most influential figure in third wave positivism, to call their ontological position *physicalism*. But this explicit word is only a deceptive substitution for their real and tacit ontological conviction: materialism. The term physicalism conceals this fact, suggesting that physics and science would necessarily be at their side (5.3). At the start of the twenty-first century, positivism is still the ruling philosophy in the natural sciences and physicalism is the ruling ontological conviction in Anglo-Saxon analytical philosophy.

The second reason that the Laplacian ideal is not questioned in physics is that since the eighties, despite the practical and theoretical problems of twentieth-century physics—that is, the existing contradictions between the two fundamental theories of general relativity and quantum mechanics—most theoretical physicists have chosen not to abandon their ideals but rather to fully return to the Laplacian ideal, hoping to find a cure for these problems by the more consequent application of the ideal itself. I refer here to the rise of "string theories." According to string theories, everything is composed of tiny, oscillating, multi-dimensional strings which can be described in perfectly exact, explicit ways; therefore, at least in principle, by

substituting this data into the formulas of string theories, all past and future states of the universe can be perfectly calculated after all. If this project were successful, then twenty-first-century physics could fully return to the Laplacian vision of the world in the ontological sense as well. However, in spite of three decades of intense work by many excellent physicists, string theories still cannot make any meaningful new predictions based on the concept of their nine- and ten-dimensional small strings, still suffering from several significant methodological and philosophical problems. It is not random that, in practice, everybody still uses the equations of quantum mechanics. After so much effort, time, and money spent on string theories, this result is a serious concern.[6] Nonetheless, if the Laplacian ideal of objective knowledge is false, then string theories will never be successful (4.6). I mean this strictly in terms of truthfulness; in the sense of institutional or academic results, they are indeed highly successful.

The other leading fundamental theory of physics has some major consequences concerning the Laplacian ideal as well. According to Albert Einstein's theory of relativity, simultaneity is always in question (6.3). Different observers from a different time, place, and velocity could also find the time sequence of events different. For one observer, an event (A) that occurs before another (B) could also take place after the same event (B) for a different observer. Furthermore, neither time nor space is absolute but rather depends on the situation of the given observer—that is, what his or her point of reference is in the universe. For example, as the famous twin paradox pictures it: time on Earth and time observed from a fast spaceship will go differently. Moreover, observation itself is highly limited, not only because of human imperfections but also because it can only be carried out at the maximum speed in the universe—that is, at the speed of light. Anybody who looks up at the nightly sky does not see how Sirius is doing at the moment but rather how it appeared eight years ago.

Laplace, however, claims that his demon can "see" all the objects in the universe at a given moment and can calculate from this data all the past and future states of the universe. According to Einstein, there is no simultaneity of the present, the concepts of past and future are relative, and every observation is limited to the speed of light. If these facts had no consequence for the ideal knowledge of Laplace's demon, it would mean that the facts of the theory of relativity are just as illusory as the impression that the Earth is standing motionless under our feet. Yet, among physicists, the Laplacian ideal of objective knowledge still keeps itself above water.

6. See, for example, Lee Smolin's excellent work on the problem (Smolin, *Trouble With Physics*).

I believe that the reason for this strange, contradictory situation is that it is not clear what the philosophical meaning of Einstein's theory of relativity is (6.7). According to positivism, the ontological explanation of scientific theories has to be avoided. Furthermore, this practical approach can solve the problem that, at the ontological level, Einstein's theory is in complete contradiction with Newton's. As a fundamental institution of Western civilization, science wants to avoid facing the fact (especially before the eyes of the public) that twentieth-century physics replaced Newtonian physics just as Copernicus, Galilei, and Newton replaced the physics of the so-called "dark" and superstitious Middle Ages in the seventeenth century. If we do not understand the philosophical meanings of the so-called Copernican and Einsteinian Revolutions, then the detailed, critical analysis of these historic events could quickly lead to relativism, which, at the beginning of the third millennia, now questions even the most essential fundaments of science itself (11.2). Although physicists and other scientists try to defend science, their old arguments—based on the Laplacian ideal of objective knowledge—are useless against the new and rigorous arguments of the relativists, which are, in fact, based on the more coherent application of the same ideal on the history and social structure of science (11.5). Of course, in a practical sense, it is true that general relativity is the extension of Newtonian mechanics, solving some extreme situations where speed, mass, or both are huge, but this is true only in a practical sense and when we set aside what Newton and Einstein claimed about the nature of space, time, light, and matter—that is, when we hush up the ontological meanings and consequences of these theories and let in the relativist approach, which takes any practical definition of science into pieces by its detailed analyses of the practical working of science itself as a social and historical institution. Instead, we should face the fact that Laplace's demon is a Newtonian beast, not an Einsteinian one.

In the previous subchapter, we have seen that Laplace's demon is a beast outside space and time, and now we can understand the real meaning of this conclusion. It can "see" the whole universe at a given moment because there is simultaneity of the present—that is, the concept of the present is absolute. At any given moment, everything in the universe has the same date. This is true, of course, to all past and future moments too. Time is absolute and the objects in the universe do not influence its flow. The demon can "see" the whole universe at a given moment because there is no speed limit to its observations. In the seventeenth century, no one knew that the speed of light is finite, and, according to Newton, the speed of light certainly does not limit the "spread" of gravity—which is infinite. Since space is also absolute, distances that, according to Einstein's theory,

can be different for different observers do not distort the demon's "vision" as peculiar "gravitation lenses."

Laplace said, "For such an intellect, nothing would be uncertain, and the future, just like the past, would be present before its eyes." If I ask—but not in relation to Laplace's demon—who is that being to whom nothing is uncertain, and the future, just like the past, is present before his eyes? The answer is simple: God. He is the only one who can exist outside the universe. It is quite fascinating to me that scientists, who easily can declare any claim that questions the dogma that everything in the universe is material to be "obscure" and "unscientific" and who proclaim that Einstein was the brightest mind of all, tend to follow a Newtonian beast that is, in fact, a grotesque picture of God. I think Steven Hawking's famous words perfectly describe this strange and inconsistent situation: "If we do discover a complete theory . . . it would be the ultimate triumph of human reason—for then we would truly know the mind of God."[7] I could also paraphrase Richard Dawkins in that it seems physics is taught as though Darwin never existed.

The "complete theory," or with other popular term, the "theory of everything," is, of course, nothing else but the "single formula" of Laplace's demon—that is, a certain name for the Laplacian ideal of objective knowledge by which everything can be described exactly and by which all past and future states of the universe can be calculated perfectly—to finally "know the mind of God." However, remember Laplace's words: "If this intellect were also vast enough to submit these data to analysis, it would embrace in a single formula the movements of the greatest bodies of the universe and those of the tiniest atom." In reality, he describes a super-computer that can calculate everything and does nothing else rather than God; at most, only the instantaneous observational "skills" of the demon are divine, so it is a strange, mythical computer-God. Nevertheless, it follows that later we also have to examine the real meaning of the knowledge of machines and computers to see the essential difference between the knowledge of living beings and machines (8.5).

The Laplacian vision of the universe has another severe consequence that I would like to introduce with an example before I finish this subchapter with the problem of determinism. I mentioned a few pages earlier that the central historic event which grounded the birth of the Laplacian ideal is called by historians of science the Copernican Revolution. I will examine its meaning in the next chapter (3.2), but its main scientific message is usually presented like this: if we rely on our subjective, bodily perceptions, then we will naïvely believe that the Earth is standing motionless at the center of the

7. Hawking, *Brief History of Time*, 193.

universe; however, if we follow the critical scientific thinking of Copernicus, we can recognize that the Earth is not in the center of the world at all, but in reality, it revolves around the Sun (and the latter is motionless). Set aside the fact that the Sun is not the center of the universe and moves just as much as the Earth does (in this literal sense, Copernicus's theory is just as false as Aristotle's old one); the main point here is that, according to the Laplacian ideal, in fact, *neither* the Sun *nor* the Earth *is moving*.

Remember Laplace's words once again. They are telling now, too: "The future, just like the past, would be present before its eyes." The demon is outside the universe. He is not part of space or time and both time and space are absolute. It means that the space and time relations of objects in the universe can be described by exact parameters due to a four-dimensional, Cartesian coordinate system. Consequently, the calculations of the demon concerning any past or future state of the universe are nothing more than to define the new space parameters depending on the new time parameter, which is simultaneous, all over the universe, at any given moment. Of course, all other fundamental parameters can be defined in this way as well. Therefore, when the demon has finished his calculations—which are, by the way, done in zero time because the demon is outside of time—then all past and future states of the universe "would be *present* before its eyes." This is the way in which time loses its real unique characteristics (e.g., irreversibility) and becomes a simple *fourth dimension of space*. There is no past and no future for the demon, only presents, existing beside each other—just as the points of space are beside each other—in one simultaneous moment.

This result is also the consequence of Newtonian mechanics, which treats time as a vacant, space-like, and *reversible* factor (6.2). Moreover, for the demon, even the sequence of time parameters lost its original meaning because it can calculate any state of the universe from any other state due to different time parameters: everything is "present." In consequence, time becomes space-like, even in this originally unique characteristic, and instants of time do not build on each other anymore, as one peculiar instant after the next (as anybody can experience this fact), but instead, time instants become as distinct as space points in a dimension. They are not gradually built on but rather simply beside each other. This means that our natural experience of a person—at first as a baby, then a little child, after that an adolescent, then a young adult, before they finally become a grown-up—is just as illusory as our impression that the Earth is standing still under our feet. According to the Laplacian ideal of objective knowledge, the flow of time is only an illusion. *Nothing is moving*. Everything is a "present" part of the four-dimensional block of the universe. This timeless concept of the universe is the reason that the concept of evolution has also lost its real

meaning (1.2). Without time, there is neither real ontogeny nor real phylogeny. Contrary to Newton's vision, an always present fourth dimension of space is not time at all. If someone ignores the philosophical meaning of Einstein's theory of relativity, particularly concerning the nature of space and time, regarding it as mere mathematical expansion or precision of the Newtonian theory, then the four-dimensional universe can easily be kept—we only need to use a "little bit" more complicated, non-Euclidian mathematics to accurately describe its parameters due to the invisible and strange curvatures of space and time (6.5).

When we speak about the motions of Earth or the growing up of a child—since these processes are not part of the Laplacian ideal of objective knowledge—if we still think this ideal could tell us anything about the real meanings of these processes, we, in fact, secretly substitute meanings from our personal knowledge in the place of the exact parameters of the calculations of the demon, thereby misleading ourselves. This phenomenon is called a "deceptive substitution" by Polanyi. But before that, let's see to our last problem in this subchapter: the question of determinism.

At the beginning of the second subchapter (concerning the Copenhagen interpretation of quantum mechanics), I said that the universe could be deterministic in different ways. I will return to this problem in detail later, focusing on its relationship to the concept of evolution (9.7), but the main point already can be seen. According to the Laplacian ideal, due to the *nature of space*, the determinism of the universe is a purely *mechanical* determinism, as everything has its own, precisely-defined place in the four-dimensional space-"time" of the block universe. There are no free acts and there is no free will—both of them are purely subjective illusions. This concept is, as we have seen, the consequence of Galilei and Newton, as they started to measure time as a strange fourth dimension of space, so that time is nothing more than a physical correlation between a given distance and the speed of the object that covered that distance. In some case, this interpretation is, of course, entirely legitimate, but the Laplacian ideal of objective knowledge regards *everything* in this way. The Copenhagen interpretation of quantum mechanics thinks in this kind of determinism, too, only it denies it.

The other kind of determinism comes from the *nature of time*. If time is real and not just a space-like, measured correlation between different states of material objects in the block universe, then time will determine what comes next. This determination, however, cannot be measured and calculated exactly—that is, future events cannot be predicted in the same way as the demon calculates the nature of space; rather, this determination is due to the unique nature of time. In consequence, in the mechanical

sense, it is *not* determinism at all. It is *not* indeterminism either. Of course, the mechanical, physical state of the universe influences the future but does not determine it because there is real time too. Time determines, in the actual mechanical and physical (material) conditions, the future, that is, its own, active flow. *Future in its fundament is time, nothing else*. Therefore, it is true that a person's present and past determine his future, but, first of all, it is not a mechanical-material determination, and if time is not absolute—as Einstein's theory of relativity suggests—but everybody has their own past and present, then everybody can determine, based on his own time (past) and due to the given (present material) conditions, his or her own future. The way that a person does this is called free will.

My claim is that there is real freedom in the universe. It is not just an illusion, the determinism versus free will dichotomy is *false*. At this point, I cannot go into more detail, but I want to shed light on an important connection. Polanyi says: "As human beings, we must inevitably see the universe from a center lying within ourselves." This is the main point of personal knowledge. So when Einstein speaks about the fact that there is no absolute space and no absolute time—every point of reference has its own space and time, and from that point of reference, every other time and space seems to be different—they both, in fact, speak about the same thing. *There is no absolute point of reference*: the demon is not real. The Laplacian ideal of objective knowledge is false.

Nevertheless, according to Einstein, the speed of light is the same *for everybody*. Why, if there is no absolute point of reference? I will explain this strange characteristic of the universe in subchapter 6.4 by the nature of time.

2.5 Laplacian Faults or Deceptive Substitutions

Perhaps, or at least I dare to hope, it is now clear, to some degree, what a deceptive substitution is. But since it is one of the central concepts of personal knowledge, I am going to detail it in this subchapter. Since it is usually quite neglected, I am going to do it at a really slow pace, explaining the concept to its very core. The main point of this notion, I believe, is connected to the concept of reduction and thus to the correlation between comprehensive, orderly wholes and their parts. Nonetheless, I will now focus on the concept of deceptive substitutions or Laplacian faults and will not discuss the problem of reduction in detail until chapter 5 (especially subchapters 5.3 and 5.4), only after I have thoroughly established the concept of personal knowledge in Part One.

We have seen that, according to the Laplacian ideal, comprehensive phenomena are real only to the extent that their movements and characteristics can be described exactly, that is, to the extent that their descriptions can be identified with the purely exact and explicit descriptions of the parts from which they are built up. This is the fundamental meaning of the method of reduction by which it can be shown that a comprehensive phenomenon—for example, a bright emerald from South Africa—in spite of its significantly different appearance, is, in fact, as material as an electron.

Materialism claims that by reduction, it can be shown that *every* real, comprehensive phenomenon is material. This includes human persons, too, because, of course, nobody wants to regard human beings (and thus, him or herself) as unreal. Therefore, since only the perfectly exact descriptions of material parts comply with the Laplacian ideal of objective knowledge, solely these material parts—and those comprehensive phenomena which can be identified with them by reduction—can be regarded as real. This is the goal of the materialist project.

The claim that there are such comprehensive phenomena, which can be described exactly, and that these descriptions, due to the method of reduction, can be identified with the descriptions of fundamental material parts is perfectly acceptable from an emergentist point of view. Emergentism is a much more moderate ontological conviction than materialism. It does not assert that every comprehensive phenomenon is emergent compared to matter. Materialism claims that everything is material and thus has to be reduced to material parts. Emergentism only claims that there are both material and emergent phenomena.

Now, let's forget for a moment what we have seen so far and try to complete this project. How can someone identify material comprehensive phenomena *solely* by the one real, scientific knowledge of Laplace's demon? This question refers only to the epistemological side of the problem. A bright emerald, for example, is apparently a material object, but it is also a comprehensive, orderly whole; therefore, if we want to show s*cientifically* that it is indeed material and not just naïvely believe that it is so, then we will have to reduce its description to the exact, scientific description of its parts. But if we cannot identify it solely on the basis of the ideal Laplacian knowledge, then we can*not* reduce it since, according to materialism, there is only one kind of true, objective, and scientific knowledge, while the tacit skills and personal knowledge of human beings are just false, subjective, and naïve beliefs, or, at most, practical experiences that should not play any role in real scientific knowing and the verification of scientific concepts and theories. Therefore, if someone is *consistent* with his materialist ontology

and his ideal of objective knowledge, then personal knowledge *cannot play any role in the scientific method of reduction either*.

We have seen numerous times that the demon, according to Laplace's intention, can perfectly describe every fundamental material part in the universe by exact numeric parameters, but now, let us ponder how it could know from this and *only* this tremendous amount of explicit numerical data which one refers to the electron of a rock versus the electron of a tree? The exact data are like these:

1. x_1=266,456,345; x_2=342,958,324; x_3=150,121,564; x_4=343,333,543; i=376,780
2. x_1=266,456,345; x_2=370,629,547; x_3=583,098,270; x_4=343,289,564; i=361,086
3. x_1=266,456,346; x_2=452,287,453; x_3=493,408,607; x_4=374,432,128; i=889,301
4. x_1=266,456,346; x_2=271,560,288; x_3=390,487,078; x_4=373,845,548; i=901,564
5. x_1=266,456,346; x_2=292,282,924; x_3=180,739,223; x_4=374,459,441; i=900,031
6. x_1=266,456,347; x_2=564,294,403; x_3=110,317,066; x_4=377,572,463; i=880,037
7. . . .

Does x_1=266,456,345; x_2=342,958,324; x_3=150,121,564; x_4=343,333,543; i=376,780 or x_1=266,456,345; x_2=370,629,547; x_3=583,098,270; x_4=343,289,564; i=361,086 refer to the electron of a rock? While you can ponder on these numbers until the end of time, you still will never know the answer because without the comprehensive concept of the rock and the personal experiences of the given rock as a comprehensive phenomenon, this question simply can*not* be answered. It also means that the concept and knowledge of the rock cannot be constructed from solely the knowledge of the exact parameters of the parts. Rocks (and any other material or emergent comprehensive phenomena) can be recognized and such concepts can be constructed *solely by natural human skills, senses, and personal knowledge*. The demon, by definition, does not possess this kind of knowledge. In Polanyi's words: "This ideal of universal knowledge is mistaken since it substitutes for the subjects in which we are interested a set of data which tell us nothing that we want to know."[8]

8. Polanyi, *Personal Knowledge*, 140.

So, if a self-proclaimed materialist were consistent (at least to a minimum degree) and he did indeed only use such ideal Laplacian knowledge that complies with the perfect and exact description of the material world during his scientific work, then he would never reduce anything—that is, *he would never scientifically prove about anything that it is indeed material in nature*.

The fact that they are not at all consistent means that they *substitute* their personal knowledge of comprehensive wholes in the place of the Laplacian knowledge *unnoticed*, then pretend as if they could ignore their natural tacit skills and personal knowledge, solving the problem solely on the basis of exact and perfectly explicit Laplacian knowledge. In the case of a rock, this means that they successfully reduce the higher-level description of the rock to the lower-level, exact, and numerical parameters of its fundamental material parts but "forget" the fact that they first identified the rock by their own natural human skills and senses (and cached it by their own hands). It is solely due to this knowledge that they even have any concept about rocks as comprehensive, orderly wholes in the first place. Therefore, natural tacit skills and personal knowledge are the *preconditions* of any exact and objective Laplacian knowledge. The evolution of human knowledge did not start with nuclear physics:

> The tremendous intellectual feat conjured up by Laplace's imagination has diverted attention (in a manner commonly practiced by conjurers) from the decisive sleight of hand by which he substitutes a knowledge of all experience for a knowledge of all atomic data. Once you refuse this deceptive substitution, you immediately see that the Laplacean mind understands precisely nothing and that whatever it knows means precisely nothing.[9]

A Laplacian Fault or deceptive substitution is a kind of magic trick *by which exact, perfectly explicit data and formulas get into the places of tacit experiences and concepts* (which are, in fact, based on personal knowledge), but we pretend as if the two kinds of knowledge perfectly correspond to each other. In consequence, there is no need for tacit skills and personal knowledge for real scientific knowledge, and our knowledge could be separated into two distinct, contradictory parts due to the objective versus subjective dichotomy.

When Polanyi introduced the concept of deceptive substitutions in the first chapter of his *Personal Knowledge*, his more detailed example for the concept was the *principle of simplicity*, in which a scientific theory is preferred in contrast to another one. According to Polanyi, however, the real

9. Polanyi, *Personal Knowledge*, 141.

meaning of simplicity cannot be defined and understood by explicit, objective criteria (as we like to pretend) if we do not also refer to the concealed *rationality of reality* behind the theories which, in fact, guides our choice and cannot be specified objectively. The theory of relativity and quantum mechanics will not be simple at the exact and objective level of their mathematics at all if we do not tacitly refer to their implicit, scientific rationality and philosophical meaning concerning reality.[10]

Perhaps it is worth mentioning that Polanyi introduces the notion of personal knowledge in explicit form through the concept of deceptive substitutions when he speaks about simplicity in the case of Albert Einstein's theory of relativity. He emphasizes that *scientific beauty* was mentioned by Einstein's followers several times as the reason why they chose Einstein's special relativity over H. Lorentz's dynamic ether theory (which complied with the experimental data as much as Einstein's one) or later, why they chose Einstein's general relativity over D. C. Miller's experimental results (when, of course, the latter also complied with the experimental data). According to him, the concept of beauty refers to that *inherent rationality of nature* which was revealed by Einstein's theory. This is exactly what we mean by using the term "scientific beauty." By using another term instead of it, however, we conceal this fact as though it were only about some incidental, aesthetic point; thus, we do not have to contradict the positivist dogma that there is no profound, inherent rationality in nature beyond the strict and exact data of fundamental material particles. But I will discuss the historical meaning of Copernicus's and Einstein's revolutions in detail at the beginning of the next chapter (3.2) and the philosophical meaning of the theory of relativity concerning the inherent rationality of nature in chapter 6.

Deceptive substitution is also when we acknowledge the fact that there is no real, objective viewpoint—as the Laplacian ideal of knowledge supposes it—and we still prefer one theory over another on the basis of, so to speak, which is "closer" or a major step "toward" the (non-existent) objective ideal. With this false openness, we are just flaunting our bright self-reflection to conceal that the basis of our scientific choices still remain the same absurd, objectivist ideal. It becomes absurd because we explicitly state that it is false and non-existent, yet we still follow it. Nonetheless, the real reason that this is also a deceptive substitution is that the real purpose of such scientific talk is to conceal the personal skills and intellectual passions by which we, in fact, make our scientific choices.

It is also a deceptive substitution when Laplace says that "the future, just like the past, would be present before its eyes," because, as we have seen

10. Polanyi, *Personal Knowledge*, 16.

in the previous subchapter, for the demon, there is neither future nor past—everything is at an infinite present, "before its eyes." Only Laplace himself knows from his natural experiences as a human person what time is, and he substitutes his personal knowledge in place of the demon's abstract, purely explicit knowledge to make sense to its knowledge.

From what we have seen in the first chapter, the case of neo-Darwinism is also a deceptive substitution. The neo-Darwinian theory is only the theory of change, but in their actual wording, they substitute the concept of evolution, thus concealing the truth before the public—and sometimes even before themselves. To substitute a logical possibility in the place of a real possibility of reality concerning the creation of life, as we have seen in the case of Dawkins's Boeing 747, is a deceptive substitution as well.

At first sight, perhaps these deceptive substitutions could be seen as white lies, but they are not. They conceal and sometimes even question the real tacit and personal fundaments of human knowledge and science. More importantly, they lead to the different forms of moral inversion which, in the context of society, had terrible consequences in the twentieth century. This problem will be discussed in chapter 12, after the detailed establishing of the concepts of emergence and evolution in Parts Two and Three.

I would like to finish this chapter with an explanation of a phrase that was used several times in this chapter. Perhaps everyone can recognize the meaning of this phrase with ease. In connection with it, I have said that, contrary to the materialism of the Laplacian ideal, the emergentist ontological claim is simple: we are what we seem to be—comprehensive, orderly wholes composed of matter. This whole book is about to reveal the most profound meaning of this simple fact.

The meaning of this "simple fact," however, is already highly problematic at the surface. Both a materialist and an emergentist can say that we are comprehensive, orderly wholes composed of matter, and in both cases, the claim seems to be true. But the only reason both of them can affirm this claim is that the explicit sentence—"we are comprehensive, orderly wholes composed of matter"—means nothing in itself. An explicit sentence becomes meaningful only by the tacit act of commitment based on our personal beliefs. I will discuss this in detail in subchapter 3.4. Someone can tacitly commit himself to something and thus affirm something based, of course, solely on his own personal beliefs. In the case of a committed materialist, this naturally means his *personal* materialist ontological conviction.

Therefore, if a materialist affirms this explicit sentence—"we are comprehensive, orderly wholes composed of matter"—he, in fact, means that *we are only a set of fundamental material parts and nothing more*. While an emergentist like Polanyi, for example, means that we are *more*

than a set of fundamental material parts: *we are non-material, emergent wholes*. Based on the results of this chapter and to reveal one level of the complex meaning of this assertion, I should say that we are more than piles of spatially-arranged, fundamental material parts: we are emergent wholes, constructed by time, our evolutionary past, our present conditions and opportunities, and our future goals.

The committed materialist's conviction is based on a critical philosophy that, due to the subjective versus objective dichotomy, only regards that which complies with the Laplacian ideal of objective knowledge as knowledge—that is, exact, explicit, and formal or, in one word, *impersonal*. This approach leads to the rejection of the reality of personal knowledge and personal reality. Polanyi's conviction, on the other hand, is based on his post-critical philosophy that acknowledges the reality of personal knowledge and personal reality *by trust* because it recognizes that there is no consistent, critical method or objective knowledge of the Laplacian ideal. We have to trust our tacit senses, intellectual skills, passions, and natural beliefs; they are not just naïve, illusory superstitions, they are our evolutionary heritage.

2.6 Conclusion

At the beginning of the modern era, a conceptual dichotomy was formed that separated objective, scientific knowledge from any so-called subjective or personal beliefs. The ideal knower of objective scientific knowledge is a God-like being, outside space and time, who, according to a "single formula," calculates all past and future states of the universe from the perfectly exact data of the actual state of its fundamental material parts. This picture of perfect knowing (famously explicated by Laplace) is based on Newtonian mechanics, and if we leave out the God-like demon, it easily leads to the ontological concept of materialism because only the descriptions of fundamental material parts comply perfectly with this ideal, objective knowledge.

However, if we reconsider what the demon really knows, it will quickly turn out that it does not have any knowledge of comprehensive, orderly wholes at all—including machines, planets, frogs, and human beings—because it has no body, no tacit senses and skills, and no personal knowledge by which these kinds of comprehensive objects could be recognized. This materialist picture of the universe and this objectivist picture of knowledge are solely appealing to us because we are not consistent at all, unknowingly substituting our real, personal knowledge of the wholes in place of meaningless, explicit data. This invisible magic trick allows us to not have to face the real foundations of scientific and human knowledge.

It also means that we do not have to face our natural, personal beliefs, passions, and motivations, which are deeply rooted in our body and our evolutionary heritage. In consequence, for the sake of a false ideal, philosophy gradually loses its original aim and becomes a vacant albeit detailed analysis of the explicit surface (especially of language and arguments) or worse, it is distorted into moral inversion.

Personal knowledge is all about facing the real foundations of our scientific and cultural knowledge. Its main point is that there is no objective point of reference; we are not bodiless demons but rather human persons in a palpable body, and we can see and understand the universe only from our personal point of reference (center), based on our tacit bodily senses and skills. This fact of our personal reality, however, does not break the concept of truth and real scientific knowledge. Although the conceptual dichotomy of subjective versus objective is false, we have the natural, personal power to search for the truth and reach reality thanks to our billions of years of evolutionary heritage.