

Cosmos, World, and All that Is

At first sight, we need not know *what* the world is. The *how* is enough. It is sufficient for life, that we can distinguish situations and therein act successfully. Beyond a holistic perception of situations, we can, more or less systematically, discern details and inner structures of situations and, accordingly, carry out structured actions. The more sophisticated the contexts, contents, and options for action are structured, the better will we be able to recognize differences between situations and act adequately. Such structures are fundamental for our life. They constitute what we understand and what we can understandingly do or desist from, that is: what is familiar to us in our life. They are the contents of our individual world.

This our world has started very small: with the sensations, perceptions, and behaviour that we have been born with. And ever since we have learnt, and not ceased learning, something new: by protected experimenting in childhood, by imitating other children and adults, by the acquisition of our language, and then – much quicker through the use of language – by copying structures, that other humans have already tried and established in the present and in the past. In this way, we have, in the course of our life, expanded our world, and have grown to the same extent. And we can – and must – continue this as long as we live.

This already does not pass as the common world view. In the common world view, there is an objective world existing independent of us: the cosmos. Among others, we find therein our fellow humans, and therefore we cannot but classify ourselves in the same way as the other humans, objectively, as beings in this cosmos – that would, in principle, be the same cosmos without us. The structures of this cosmos can be discovered by research, and the results can be converted into technical devices, processes, and usages. In consequence, the structures of humans can be researched and discovered, too, and the prevalent view has been for a long time, that the human perception works in such a way that man constructs, stores, and maintains suitable mental models, and that, in a specific situation at hand, he retrieves from his repertoire a matching model and behaves according to it. In any case, this is what it looks like when we verbalize how we perceive and in which way we act.

Recently, even the more detailed view has been developed, that these models and processes are all effected by our brain, with its inner structures and its activities governed by the laws of nature. The brain can do this, so to speak, all on its own, while our perceptions are just side effects of brain activity. In this line of thinking, all our life is being displayed to us by our brain.

Whereas hardly anybody has a problem with the view of mental world-modelling, the view of world-modelling as pure brain-physiology is controversial, because it reduces man to physical object.

Critical Questions

Instantly, the question occurs, what the instance is to whom or which the brain is displaying life? Also one may ask, how anybody could know of an objective world, if one does only have what the brain is displaying. Finally, one might like to know, how a brain scientist could undertake to prove, in a brain, the representations of thought structures that he does not understand. One need not even think of a specialist that is understood by only 50 people in the world. Just imagine a person that thinks widely different from the brain scientist – that is: most people. In order to prove the isomorphism between specific thoughts and specific brain processes, the scientist will have to know what the person is thinking, most of which he does not understand. Possibly, the person may not even be able to formulate it. Hence the scientist can, on principle, try to prove the isomorphism only for thoughts that he himself understands. Why should such a constraint be acceptable?

What we are perceiving

Still, the view is very useful, that our perceptions are displayed to us by the brain: in any case, we do not have anything but what is – seemingly or really – displayed to us; nothing but the perception of this display. Within this display of our life we cannot perceive anything additional behind it. Neither do we perceive our brain – usually we do not see it in our life, and we never sense it – nor do we, bypassing the brain, perceive another, "objective" world that influences the brain in what it is going to display to us. Such a claimed background structure of our perception is fiction – possibly useful, but not universally dependable. Our perception is primordial and direct. What we encounter therein, comes like out of nothingness.

The primary given in our life is, that there is something and not nothing. Something stands out from nothingness – it "exists". In this sense, our life is perceptible, "articulated". That something is articulated still does not mean that it is a content, a variety, or a structure. Where is the origin of what we perceive?

We tend to think that, what we perceive is not only articulated but also carries its structure and meaning with it. But it doesn't. Let us take the following example:

εν αρχη ην ο λογοσ και ο λογοσ ην προσ τον θεον και θεοσ ην ο λογοσ.

To most people, this will occur as an unknown, foreign lettering; some will see a Greek piece of text; others will immediately see the beginning of the Gospel of Saint John.

What occurs differently to different people cannot originate from the same articulation

but must be contributed individually by people. Another example: Some sound comes from a speaker. One person hears some classic music, to the second it sounds abhorrent, the third is directly in Brahms' violin concerto, the fourth equally quickly in a famous recording of this concerto by Menuhin and Furtwängler. The first one tries to ignore it, the second swears and leaves, the third one concentrates on it, and the fourth one is being reminded that he had already planned to digitize his old gramophone record of this very performance and now makes up his mind to do it. Relevance for action, too, does not originate in the articulated phenomena that occur to us but in our corresponding connotations, and in what we are currently having in mind.

We notice what is occurring to us, but what we recognize in it depends on the concepts that we are associating with the phenomena. The concepts and their structures are developed and confirmed through successful action – especially through learning and practicing – and they determine our perception. Every human has therefore an *individual* world, that is the compound structure of all concepts that [s]he can associate, in short: all that [s]he can individually grasp and live.

The world can then be abstractly defined as the superstructure of all possible individual worlds that humans can, in principle, conceptually grasp and live. This definition of "world" may appear relatively formal and abstract here, but the corresponding sub-worlds are familiar to us, for example, the everyday world, the world of work, the children's world, the world of fashion, the financial world, the world of art, the world of physics, the world of traffic, the world of crime, the world of animals, and many more. All such worlds comprise their objects, their know-how, their roles, their written and unwritten rules, their institutions, their careers, their economy, their history, their media, and many others – each of them being sub-worlds of their own.

Primordial Sub-Worlds

More primordial than the sub-worlds above, however, is a different subdivision of the world. Actually, we do not only perceive external situations and structures but – in the same associative way and equally effective – also inner ones: our thoughts, our recollections and imaginations, our body status, our feelings, our inner drivers, our inner speech. In our world, inner and outer phenomena occur likewise and in parallel, and classifying them in this way is the first fundamental structure we give to our world.

Our world has started small and, in the course of our life, grown to an extent that cannot be overlooked. We do all the time acquire new knowledge and new repertoire of action. With respect to the world of our thoughts we rather speak of "understanding" than of "perceiving". It is permanently growing in that we are having more and more thoughts that we understand – those that we have devised ourselves, and those that other humans have devised and communicated, and that we have then learnt. Understanding is constructive. Even when we fancy that we were proceeding

analytically and into the details of sub-structures, the sub-structures must first have been constructed and added to our world of thoughts.

With the newly grasped world contents – and correspondingly with our forgetting and unlearning – our associations change, for example, from some "abhorrent sounds" to "Brahms' violin concerto" and thereby they may also switch between our inner sub-worlds. First, what occurs to us are sounds from the outer world, later possibly the musical thought object "Brahms' violin concerto" plus the feeling of musical enjoyment. The more world we explore for us, the more it occurs to us in this way: shaped by our associations – "shaped", because we do no longer care about our previous perceptions of phenomena of the outer world (for example, the sounds) and because, as a result, they do no longer occur to us. In the end, we fancy that the thought objects constitute the outer world.

Language and Culture

The communication of phenomena makes a big leap forward in that we learn symbol systems, first and foremost: spoken and written language. A young human practices to always associate with language expressions the same as her fellow humans, for example, with "8+9" to always associate "17". In this way, she adopts proven "pieces" of world, and need not explore them newly on her own.

This constitutes the base of culture and of the objective world. One's own, individual world is best enhanced in the way that ancestors and fellow humans have shown and are showing to succeed, that is, by building a copy of their proven world. One seeks to expand one's capabilities of living, and the most direct method is, to imitate the capabilities of others.

The portfolio of all such capabilities of living, world building-blocks, and -recipes in our social environment can be understood as our culture. That we are copying from one and the same source of capabilities has the effect, that most humans whom we usually meet show the same basic repertoire of all-day modes of life – "that's the way to view and think and feel and act" –, and that there are large and small groups of fellow humans with identical special repertoires, respectively, for example, all women, all truckers, all photographers, all soccer players, or all porcelain collectors. At the outset, what occurs to people will not be the same throughout, but their worlds overlap in many instances, and those parts that overlap among many people are collective. This kind of collective-ness is easily recognized, when other people behave in the same way we ourselves would behave, or, when we find agreement in communication about behaviour. In this context, objectiveness is a special case of collective-ness, with additional – collective – criteria for universal confirmation.

We are now well equipped to review our prevalent world view.

The Objective World

Let us first put the question whether the cosmos can be the objective world. We have already established that, what occurs to us, is all that we perceive; that it is single-layer. Something possibly more real behind it, an independent, non-illusionary, primary world of facts cannot logically occur to us in addition. We perceive only one – our – world, and there is no doubt about what occurs to us.

What then is the cosmos, what the objective world? First of all, our external world objects that, according to our experience, occur – or would occur or would have occurred – to all humans in the same way. A supermarket is a supermarket, a child is a child, a cloud is a cloud, coldness is coldness, now, in the past, and in the future.

The major part of the cosmos, however, is part of our internal world of thoughts and consists of mental objects. An electron does not occur to us in the external world, but rather as a mental object, and likewise the theories of electrostatics, -dynamics, and -mechanics, of solid-state physics, etc., are all mental objects and relate mental objects that do not occur in our external world. What we can perceive in the external world are the experiments, by which we assess whether the theories are good for predicting occurrences in the external world; furthermore the occurrences which can be explained with the theories; and finally, the devices which can be build according to the theories.

The same is true about the astronomic cosmos. In the external world, we perceive sun, moon, and stars as lightish, varying, moving forms in the sky. Astronomic bodies, fireballs, radio sources occur to us only in their theories. Even when we see them in a telescope, they do not really occur to us, but we perceive pictures displayed to us by an image-generating device based on a theory of optics, which we trust – on grounds of collective criteria of universal confirmation.

Likewise, the world of microbiology is predominantly mental. The features of living beings occur to us, but their cell structures, physiology, and genetics are purely mental contents of theories.

All these theoretical objects are usually viewed as external objects constituting a reality, the cosmos, that exists independent of us. Actually, the cosmos does not at all occur to us in the external world, but exists purely mentally. Not just fictitious but objective, and thereby independent of us, it can only be because humans can communicate about it, and do agree that its theories are by and large reliable.

This does not mean that we had to dismiss in practice our prevalent view of the cosmos as objective external world. It continues to be useful as a practical, also figurative, notion but we must not overstress it as if it were an absolute truth. A theory is only valid as long as nothing in our external world contradicts it. The cosmos can change, that is, when a theory is replaced by a new one. Laws of nature are theories. They cannot enforce facts, but depend on facts.

Brain and World

The brain is a largely mental object, its function is pure theory. What it cannot is, to model an independent, objective, cosmos-like world, because such a world does not exist. The cosmos is almost completely mental, and it does not make sense to conceive it as once more mapped mentally, that is, upon our mental model of the cosmos. What we can do is to associate, with our perceptions in the external world, other objects in our internal sub-worlds – with the tree: the beech, the beechnuts, their taste, the forest, the cool air in its shadows, the destination of the forest walk, etc. We can associate and are doing it all along, and that fact should probably play the main part in a theory of the brain.

Least of all can the brain model *the* world. The cosmos is not everything, by no means, but only a small part of the world that humans have acquired so far. The world of natural science is one, certainly not a particularly big one, among the sub-worlds that we have above started to enumerate. There are further examples: the worlds of economy, finance, sports, gastronomy, architecture, psychology, medicine, mathematics, religion, trade, politics, philately, communications, media, computers, the internet, shipbuilding, circus, tourism, and many more. Each of them is a giant sub-world that contains the plenty of respective capabilities that many humans have – in life-long efforts and through many generations, building on top of one another – explored and passed on.

Even in case a human acquires for herself just sections of a limited number of sub-worlds of this kind, she will not be able during a lifetime to detail all the contents thus available to her disposition. It is hardly imaginable how somebody could fit such a human world into a formal representation and then prove a corresponding structure in a human brain. And it can hardly be seen, why the world, as it occurs to us, should once more be constructed into a mental object, the brain, where it would then, theoretically, in the best case, occur to us once more in the way it already does.

The World of Science and the Marvels of Creation

Above, we have already made some statements about theories, for example, that they are mental objects aimed at making predictions. There are everyday-life theories, for example, about the mindset of a dialogue partner; and there are scientific theories. With the former, we are used to expect that we may occasionally be wrong; for scientific theories there are agreed methods of reproducible confirmation, for example, experiments regarding the predictions, that will guarantee to some extent, that we can rely upon a thus confirmed theory.

A key trait of scientific theories is therefore that they are formal, that is, that they consist of assertions about defined objects, relations, and transformations, often in

mathematical form, and that they have parameters and are open to falsification through measurements of these parameters. Though theories cannot be verified but only tested in finite numbers of cases, there are a plenty of reliable theories that are frequently and routinely being applied.

They are then directly considered as laws, the predictions of which are inescapable, and that do not only explain but rather enforce the course of things – including the past. Of course, they do not enforce anything, their confirmation is always finite, and that, time and again, outcomes differ from predictions is no surprise – and in no case a miracle. Miracles are not at all special. After all, we cannot destine what occurs to us in the world, and we can deal with that only by relying upon our everyday-life and scientific theories, and by judging to which extent we can trust them. And so we trust that the ground beneath our feet does not disappear in the next moment, and that we will not, in the next second, be without air to breathe.

By the way, we can practically use theories only if they are not too complex. Something that occurs regularly – think, for example, of cloud forms – can be so widely varying that the shortest possible theory for it would have to describe individually every configuration it is aimed to cover. There is no law of nature ensuring that laws of nature be simple.

Many people consider theories about the origin of the cosmos as extraordinarily important because they hope to thereby fundamentally understand the world. There are some such theories, but even the best ones are still insufficiently confirmed. A prominent one – insufficiently confirmed, too – is the big-bang theory. Basically it says that our universe is the result of an explosion starting from one point 14 billion years ago. That event is then understood as the beginning of the world, the creation of the world, more precisely, of the cosmos, that is: of the outer world that is independent of us and that we more or less inadequately perceive.

But we have already shown that *this* world is purely fictitious. It occurs to us solely in the theories of our mental world. In our individual external world, no expansion of the universe occurs to us, nor any background radiation, gravitation, dark matter, dark energy. Their creators are the humans who have, in the course of time, designed the corresponding theories.

The conceived beginning in time of the conceived cosmos is not a creation in the sense of the origin of our world. Our world is being created "live" in the way that something articulated occurs to us that we understand; it is – as we have seen above – a giant structure of related sub-worlds that sum up to our life, each of them so large and complex that a single person can hardly master it fully anymore. And this world is really like – if you so wish – created from the extra-worldly, that is, articulated out of nothing in the world. It constitutes our life, it begins and it ends with our life.

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"Man shall not live by bread alone, but by every word that proceedeth out of the mouth of God". One need not be Christian to understand here that, already two thousand

years ago, humans have seen what the world is and how Dasein is functioning: namely as the continued perception of articulated phenomena that occur to us as if they were coming from the extra-worldly.

Today, rather nobody has a view on his or her Dasein, and therefore some scientists can easily make the public believe, that they were modelling the world; that the world were the cosmos; that everything therein could be explained on the basis of elementary forces and particles; that the cosmos were existing independent of us, independent to an extent that our brain could truly or falsely display our life therein, even fake our self. To uncritically accept this, is analogous to the behaviour that scientists often criticize: that people believe religious statements just because authorities have always asserted them.

Natural science claims to be particularly exact and critical, and that is what it should also be with regard to itself. Natural science should indubitably know which existential givens enable its operation, and what it can actually assert on this basis.

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