

Friedrich G. Wallner and Gerhard Klünger (eds.)
Constructive Realism

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Constructive Realism

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Friedrich G. Wallner
and
Gerhard Klünger

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For my daughter,
joy of my life!

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Constructivism without a Constructor

How Constructive Realism Overcomes the Traditional Problems of Philosophy of Science

Friedrich Wallner (University of Vienna, Sigmund Freud University, Vienna, Austria)

“But I did not get my picture of the world by satisfying myself of its correctness; nor do I have it because I am satisfied of its correctness: No. It is the inherited background against which I distinguish between true and false.”

Ludwig Wittgenstein (On Certainty, § 94)

Dear friends, colleagues and students, today we are celebrating 25 years of Constructive Realism and we are lucky to have members of all three generations of Constructive Realist thought here with us. It is a fitting occasion to take a close look at the foundations of our movement again, to situate it in its historical context and review the necessities that sparked its birth, to explain how it solves the millennia-old puzzle of humanity’s relation to the (‘external’) world and once again highlight how our approach differs from traditional Philosophy of Science.

Accordingly, my talk is roughly divided into four parts:

I will first sketch the evolution of what I like to call the great metaphysical fictions of Western culture, from Parmenides to Kant. Secondly, I’m going to explain how the attempts of early 20th-century Philosophy of Science to overcome these fictions failed, because they succumbed to precisely the same metaphysical temptations they wanted to eradicate. Then, I’m going to show how a ‘Constructivism without a Constructor’, namely Constructive Realism, can indeed be free of metaphysical fictions by responding to two of its most prominent objections. Lastly, I’m going to explain the central method of Constructive Realism and how it can replace both the idea of verification and falsification as the central method of a Philosophy of Science.

ence, a Philosophy of Science that is fit to deal with the challenges of the inter-cultural world of the 21st- Century.

To begin with, a quick word of advice to those of you who are not philosophers by discipline: Any commencement of any lecture in philosophy faces the same problem: namely to find an adequate starting point; unfortunately, there is no such thing as the ideal starting point because, of course, if you begin just about anything in philosophy you must presuppose a lot of ideas. Otherwise, you could only claim trivialities. This necessity might cause difficulties to understand what follows for some of you that are not yet well versed in the history of philosophy. This is, I must say, an unfortunate side effect of Constructive Realism being both an interdisciplinary and intercultural movement, not that I would want it in any other way. So if you should at any moment experience difficulties to follow my talk, please know that this is in the nature of things and neither my ill will nor your lack of intelligence. I recommend that you do not get upset in those cases and just focus on those things that you resonate with and that you can connect with your own ideas. You should be able to get a fairly clear picture soon enough.

I From Parmenides to Kant -

The Evolution of the Great Metaphysical Fictions of Western Culture

The structure of my talk, as you might already have noticed is based on Western culture. The reason for this is that Western culture is undoubtedly the predominant culture of our shared world today. One might want to lament this fact, but what is important is that thus the origins of many of the fundamental challenges that our shared world has to face currently are found in the history of Western culture. Since Constructive Realism rose essentially to answer to these challenges, we need to understand their origins. In the later parts, I will show you how Constructive Realism actually resolves these problems.

The most probable point of origin for the problem that would haunt Western science for the millennia to come is the Greek philosopher Parmenides. The essence of Parmenides' philosophy could be summed up as, "*Einai kai noeîn tautón*", "For thinking and being are the same." A thought that has often been taken to shape the direction which European philosophy and science would take. Being for him is not what we perceive in the world, which is always changing, but what is the unchanging essence 'behind' our perceptions. Therefore, truth (gr. *Aletheia*) about the world, about what is,

and not merely appears, could only be revealed in thought. Everything we say about the ever-changing world of our perception is merely an opinion (gr. *Doxa*). In many ways, this was the introduction of metaphysical dualism to the world. And, as Heidegger remarked, 'it was the fundamental orientation for European culture'. This orientation would prove to be as remarkable as it was self-destructive.

We can easily see the history of ideas of Western culture as a history of its struggle to come to terms with the implications of Parmenides conviction. One of the first great thinkers to wrestle with the question of how to reconcile thinking and being was Plato, a great admirer of Parmenides. Plato had the idea that we could guarantee the identity of thinking and being by postulating a realm independent of our perceptions, the realm of 'eternal ideas'. The philosopher can grasp these ideas and thereby the truth, – of which the appearances of the world are merely a pale reflection, – in thought alone. So the 'eternal ideas' are not guiding our thinking but they also guiding the structure and development of the world. It was a beautiful idea, but it was also a fiction; a fiction created to close the gap between thinking and the world we experience. Plato had created the first great metaphysical fiction of Western culture.

Now, my critique of what I like to call the great metaphysical fictions of Western philosophy might lead you to believe that I was way closer to the Vienna Circle than I really am. This will become very evident at the end of this talk. So for now, I just like you to keep in mind that my critique of metaphysics is totally different from the one propagated by the Vienna Circle. In fact, I believe metaphysical inquiry can be of great merit. It offers the most intriguing fantasies, marvellous illusions and compelling advice to solve certain problems. But all of these are still just fictions. They are fantasies, sometimes very compelling fantasies; therefore, we should not use them as a means to legitimate our work, our ethics or our scientific research. They simply don't offer a rational basis for that kind of endeavour. And yet, nearly all of the great scientific disciplines and many of their most prominent ambassadors try or tried to legitimate their claim to truth by appeal to metaphysical fictions, be it the metaphysics of Plato or Aristotle, of Descartes or Kant, or, ultimately, the Vienna Circle. Ironically, – almost perversely so, – it was the Vienna Circle's zealous quest to eradicate all metaphysics from science that made it inherently dependent on metaphysics, doomed to failure from the very beginning. In stark contrast, Constructive Realism is the first Philosophy of Science that is truly independent of metaphysics.

If we focus back on the history of ideas, we find that Aristotle had already realized that Plato had merely created a beautiful fiction. Unsurprisingly, he set out to guarantee the unity of thinking and being in a different way. His solution lay in the concept of *Hypokeimenon*. *Hypokeimenon*, translated literally, means, „What offers the basis“, or, „What lies at the basis“. We cannot speak about *hypokeimenon*, because, as it is the basis, in order to ask what is at the basis, we would have to ask what is behind the basis. But then, clearly, what was presumed to be the *Hypokeimenon* would not really have been the basis. And at this basis, for Aristotle, our thought and being, the structure of the world, are connected. *Hypokeimenon* is the unity of thinking and being again and even if, according to Aristotle’s philosophy we can’t talk about the *Hypokeimenon* itself, it allowed us to make sensible statements about nature, the world as it appears to us, again.¹ So this was already a great progress for Western science in comparison to the philosophy of Parmenides.

Aristotle’s proposal to guarantee the unity of thinking and being through the concept of *Hypokeimenon* didn’t remain unchanged. A couple of centuries later it was translated into Latin by Boethius and *Hypokeimenon* became *subjectum* (lat. subiectum). That was more or less a literal translation and at that moment, this didn’t seem a particularly dangerous thing to do. Why, because back then, under the influence of a budding Christianity, subjectivity was metaphysically interwoven with being in community with god. So, for instance, for someone like Augustin, this didn’t present any challenge because if you are unified with god you cannot make any mistakes. Here the unity with god guaranteed the sameness of thinking and being. As long as you are with god you are on the right way. Being with god also, quite nicely guarantees that your science is correct. Unfortunately, that too was a metaphysical fiction, and we have no union with god that could legitimize our science. I’m sorry.

But we can see here, how in virtue of this seemingly harmless translation a personal relation got introduced into European thought. The same

¹ The sameness of thinking and being as conceived by Aristotle might even remind us of the idea of the unity of image and imagining from classical China; especially if you are familiar with the works of Prof. Shen or Dr. Sattanawham. This concept, though, of image and imagining being identical, it is so alien to Western thinkers, it’s fascinating. And yet it lies at the heart of understanding Chinese medicine.

function which erstwhile, for example for Aristotle, was fulfilled by *Hypokeimenon*, now became fulfilled by *subjectivity*, a representation of the ego. However, the *ego* represented by *subjectivity* didn't refer to our individual egos, the kind of egos each and everyone of us carries around, our individual personalities, but rather to a general form of ego, referring to man, as in mankind.

It should take a couple of centuries until René Descartes would finalize the introduction of subjectivity into European culture. A process that should bare again the essential dichotomy that secretly defined its (the European culture's) character since Parmenides. A character that makes our culture very different from classical Chinese or Buddhist cultures and which is also inescapable, to those born into this culture. I can't emphasize this often enough, because this character, this dichotomy in our case, also determines the end of our cultural resources to solve certain problems. In other word certain problems, for instance in physics, will remain unsolvable for us, because of the essential dichotomy of our culture.

Now, what Descartes did to fully realize the dualistic cultural potential he had inherited was to question the unity of subjectivity and god. He found that there was no self-evident connection between the ego, subjectivity, and god. We all know his famous proof for the existence of his mind. "Cogito, ergo sum." – "I think, therefore, I am." Thinking guarantees existence, but not necessarily the existence of god². Nowadays, we know, of course, that he was wrong. As Analytical Philosophy has shown, what he should have rather said is, „Cogito ergo sum cogitans.“³ None the less, he was quite successful in further opening the gap between thinking and being. Not the least because, as part of this proof, he invented what eventually became the most infamous and seemingly immortal bad guy of occidental philosophy: the *genius malignus*, also known as the *evil demon*, or *evil neuroscientist* in contemporary philosophy. This too, the afore unbeknown possibility to be deceived about everything we take ourselves to know, is a symptom of the essential dichotomy of our culture. Descartes's radicalization of the gulf between subject and object, between thinking and being, between what we

² As the good Christian that he was, had to give a different proof fort hat in the end.

³ Of course, it is always easy to feel smarter regarding these matter a couple of hundred years later.

perceive and what really is, has been the central turning point for what we now know as modern Western science and also its inevitable crisis.

Another important figure in the here-described historical process was David Hume. David Hume was one of those philosophers, who have been so consequent in their thinking that in the end they destroyed everything they commended in the beginning⁴. Hume was an empiricist and so, naturally, when he wondered, „What is the ego“, he investigated the question empirically. The ego, he thought, must be the bundle of all our sensations. And this seems agreeable enough on a first look. After all, what else could the ego be? But, – from his empiricist point of view, – the problem was that then the ‚flesh‘ would have to be a sensation, too. And we cannot understand why we have sensations if we literally *are* the bundle of sensations itself. Therefore, in the end, Hume had to contend that sensations are impossible and thus that the ego, too, was an impossibility. For him, this signified the end of Philosophy.

It is, however, not at all surprising that his contemporaries did not wholeheartedly embrace Hume’s philosophy, despite its clarity and integrity. After all, if they had concurred with his ‘sceptical conclusions’, it would not have made much sense to keep pursuing natural science. But that was the time that was highly influenced by the likes of Isaac Newton, of Francis Bacon and Galileo Galilee, a time, in which the idea that we could (and should) decipher the inner-workings of God’s universe through science was just becoming increasingly popular. Clearly, it wasn’t a time during which anyone wanted to hear that the quest for scientific knowledge was fruitless. However, this little anecdote can serve us, today, as a reminder that philosophy cannot operate too far away from its respective cultural situation without risking to lose relevance and meaning for its contemporaries.

At any rate, because of the general dissatisfaction with Hume’s ‘*sceptical solution*’ many people tried to solve our problem in different ways. One man especially should then play a pivotal role in this crucial time for Western philosophy: Immanuel Kant. Kant was highly influenced by the debacle of Hume’s empiricism. In order to evade the self-destructive consequences of Hume’s reasoning, he proposed to distinguish two kinds of ego:

⁴ If this is, as I hold, a sign of good philosophy than David Hume surely was a great philosopher.

One is the expression of the individual, the kind of ego we all think of when we say ‚I‘ and ‚you‘. The other kind of ego is the *transcendental ego*, which is common to all the individual egos; which all the individual egos are taking part in because it is the *condition of their possibility*.

One might want to say that the *transcendental ego* was really ‚just‘ a clever fiction, but we can understand why Kant assumed this fiction to be true when we realize how much he admired Newton’s work on classical mechanics. The guiding question that was driving Newton’s investigations was: “How are physics possible as a science?” It was this question that majorly inspired Kant to the ambitious project of *The Critique of Pure Reason*. Never before had the question of legitimization been asked as radically. But his work, for all its depth and philosophical rigor, came with a principal flaw: It depended on a successful demonstration that only Newtonian physics are possible, that indeed it would be impossible ‚to do‘ physics as a science in any non-Newtonian way. This was the foundation for his whole argument. But, two hundred years later, we have seen that actually *there are* other, very different kinds of physics possible. Obviously, Kant couldn’t have foreseen that. In order for his argument to work, he had to presuppose that his *transcendental ego* guaranteed that he was looking at the right conception, that he was looking for the correct connections and for the right laws. He needed to be sure that the laws of physics weren’t just the inventions of the scientist, but rather, as he thought, the representations of the structure of the transcendental ego. Thus, Kant’s account of the ego was actually highly religious in nature⁵.

So once again, we have had a shiny solution to our problem, which ultimately turned out to depend on a metaphysical fiction again. And it’s interesting to see what kind of consequences this may have: For instance, a hundred years later Henry Poincaré, the famous physicist had become a great admirer of Kant’s work. Indeed, he considered himself a Kantian. Because of his Kantian convictions, he also believed or, rather, had to believe that only Newtonian physics were possible. Consequently, he never developed any of his ideas that could have led him to something like Einstein’s Theory of Relativity. He believed that this was impossible, so he never bothered to pursue any indications that could have brought him to these theories.

⁵ Of course, he would have fervently denied this accusation, but it is easy to see for us today.

As Einstein would later admit, he (Poincaré) had already had everything he would have needed to develop the Theory of Relativity. The only thing that stopped him was his Kantian philosophy.

As you see, philosophy, especially great philosophy, like the one developed by Kant, can be a great liberator for the mind, but it may just as much become an imprisonment.

But let's try to comprehend the metaphysical fiction that lured Kant into its trap: as I had said, before, Kant, too, wanted to explain how it could be that we can actually make true judgements about the world. He was maybe, – and that is something that should have us sympathise with him even more, – the first real constructivist, as he was trying to construct a coherent model of the human mind and its relation to the world that would *guarantee* our ability to make true empirical claims about the world. But, as Hume had shown him, empiricism alone surely could not explain how this was supposed to be possible.

So he came up with this method of thought that he believed, if applied correctly, would always give the correct results: And this method was the *transcendental argument*, an argument that goes from the empirical observations to the conditions that must be fulfilled in order for it to be as it is. His idea, roughly spoken, was that the world appears to us in the way it does because our experience is pre-structured in such a way through the famous *forms of intuitions* (*Anschauungen*) and categories. We perceive an object as an object with mass and extension, because of how we are structured. Reality, in other words, is a product of the mind, but also of something called the *Ding an sich*, the world, how it is without being perceived by us through the forms of intuitions. And while we can't really say anything about the '*thing in itself*'⁶, we also don't need to. We don't need to say anything about 'thing in itself' because we can make judgements that are true or false about the world we actually experience, which is also the world that matters to us.

On the subjective side, the '*transcendental ego*' corresponds to the '*thing in itself*'. The *transcendental ego* is the ego that we share in with all other humans, and which is equally unavailable to introspection as the thing in itself is to empirical observation. But the beauty of this argument is that since the *transcendental ego* is like the processing machine in the background that translates the thing in itself into the reality we experience, Kant reunited

⁶ At least nothing empirical.

thinking and being. Our thinking and the being of the world share the same transcendental structure.

From our perspective today, of course, the transcendental argument is clearly a metaphysical argument. There is no *transcendental ego* and there is no *thing in itself*. It is pure fiction to believe that our thoughts are identified with the world.

Now that we have seen a little bit of the different directions of metaphysical indulgence that Western philosophy has been pulled towards by Parmenides's original proposal, we can ask ourselves how this relates to the Vienna circle and, of course, to Constructive Realism.

II The Confusion of Philosophy of Science and the Metaphysical Heritage of the Vienna Circle

It was the same lure of the metaphysical that would still haunt and then doom the Vienna Circle over a hundred fifty years later. But before I come back to the Vienna Circle let me jump forward another semi-century to recapitulate for a moment the situation we found ourselves in 25 years ago as philosophers of science. Those were dark times indeed for Philosophy of Science.

At the beginning of the nineteen-eighties it had become a widespread but unuttered agreement among my peers that Philosophy of Science was a rapidly sinking ship, that, as an idea, it outlived its stay. It had been a beautiful idea, but like the idea of communism failed to live up to its promise once confronted with the realities of human psychology, it didn't have anything real to offer to science.

And the reason for this pervasive feeling that had Philosophy of Science in its grips was that it had become more and more clear that there wasn't any way to measure or even see progress in science, especially no linear progress, the way we like to imagine it when we look backwards in times. Science changes, of course, it even changes a lot, but to call these changes progress, at least as long as progress is thought of as advancement on towards the or an (absolute) truth about the world, would be to give voice to a lie. History of Science especially the one forwarded by Thomas Kuhn taught us that science rather 'advances' in jumps or revolutions from paradigm to paradigm, but each new paradigm does change what is considered the realm of possible truths, it does not approximate an ultimate truth. Many of my colleagues at that time decided that Philosophy of Science was a fruitless pur-

suit and left to more secure parts of philosophy, like the history of Science or the History of Ideas. It is much harder to fail if you are logician or write History of Science. On the other hand if you try to do Philosophy of Science you can fail terribly. If you read what Paul Feyerabend wrote about his teacher Karl Popper you will learn how badly you can fail, even if you struggle so hard to get to the truth of things.

What became the all-determining question for me at that time was: ‘How can we, how can Philosophy of Science be a genuinely helpful guide to the actual sciences?’ And the more I researched and thought about this question the clearer it became that it *cannot be the duty of a Philosophy of Science to legitimate scientific concepts*. However, freeing Philosophy of Science from the idea of legitimation would mean to throw away the most central idea of the Vienna Circle. And that was a decision that did not come easy to me. As a young man I had always wanted to contribute to the great project of legitimizing science. But then again, I had had to squash a lot of dreams even before that.

But why throw away legitimation? This question will bring us right back to where we left off with the Vienna Circle. And it is a legitimate question to ask because: Wasn’t that what science was supposed to be about after all?

The answer, from the vantage point of our late birth, is also not terribly complicated: in order to legitimate any system of thought, like a science, you always need to refer to something that lies outside of that system. In mathematics Kurt Gödel famously proved that you cannot prove the consistency of mathematical systems from inside the system. You need to get to the next level. Now this, apparently, holds true as well for non-mathematical systems.

In science, generally speaking, there are two ways to find legitimation from outside the system: either you refer to another science, which supposedly legitimates your science, or you refer to a metaphysical fiction.

Now the Vienna Circle in his fight against metaphysics made both of these mistakes. Undoubtedly, the metaphysical fictions of the Vienna Circle were vastly different from the Kantian metaphysics we had seen before, but their consequences weren’t less dire. One of the most self-evident metaphysical fictions they endorsed unknowingly was the idea of the *pure observer*. *The pure observer* they imagined was like a person without qualities, without perspective or standpoint, without a will or a history. Obviously, there is no such thing as a pure observer.

And if they had tried instead to point to findings from psychology or sociology in order to legitimate their concept of the pure observer, this would have been mere reference to another science again and they would still have had to face the question of how to legitimate *these* sciences. So no ground would have been gained.

The second metaphysical fiction the Vienna Circle indulged in was the fascinating idea of the *unified science*. The idea that all sciences could and would eventually merge into a unified science that offered a complete and truthful explanation of the world. If you look at the discussion they had at that time you will realize how fascinated and enamoured they were with this idea. But you will also realize that they made the second kind of mistake of looking to another science, namely physics, which was supposed to serve both as a model and as a source of legitimation for the unified science. Any good science, including philosophy, if it had any inclination to be more than nonsense in their eyes, would have to be like physics. Accordingly, the unified science had to be like physics.

Nowadays, for the aforementioned reasons, it has come become pretty clear to us that this was a misplaced hope. I need not mention, hopefully, that I say all of this with the greatest respect for the Vienna Circle or any of the other great thinkers I criticized in this talk. They are the giants on whose shoulders Constructive Realism is standing. Furthermore, a lot of them realized the structural impossibility of their quest still in their lifetime. Especially Rudolf Carnap who, as consequent and rigid in his arguments as David Hume, in the end came to adopt views which were already very close to Constructive Realism.

III Answering to History:

two common misconceptions about Constructive Realism

It was from this disordered and confused array of frustrated hopes and broken promises, of a none the less faithfully luring meander to absolute truth and the seemingly pitch black abyss of abandoning all Philosophy of Science that Constructive Realism would emerge. If you are already familiar with its teachings, then, especially considering the background of what we just discussed, the obvious questions must be: How is Constructive Realism not metaphysics?

This is a returning question that revolves around two common misconceptions about Constructive Realism:

The first misconception refers to my concept of *Wirklichkeit*. Many people who start out reading my books are quickly convinced that what I must be talking about is really something like the Kantian *thing in itself*. But that was actually the first metaphysical fiction we threw right out of the window, right in the beginning. One reason so many people tend to fall into this trap is because they look up the German word *Wirklichkeit* in the dictionary and the closest translation to English they find is *reality*. Unfortunately, *reality* is a very metaphysically loaded term and it is also not an adequate translation. I don't think there even is an accurate translation.

Even if you had a more accurate translation or read it in German, if you have a Kantian background, which is very natural for many physicists, for instance, you will have a tendency to interpret *Wirklichkeit* as *thing in itself* regardless. This misconception will put an almost insurmountable blockage into your path to understanding Constructive Realism. A good (or rather bad) example for this, is my good friend Herbert Pietschmann, a physicist among whose greatest influences was the Kantian physicist Wolfgang Pauli. Because of his inability to *not* understand *Wirklichkeit* in the sense of the *thing in itself*, Pietschmann would never comprehend the Constructive Realism.

The thing about the *thing in itself* is that it is completely unnecessary. It restricts the scientific research to specific area without giving clear reasons for what must be avoided or what can be done. It is also somewhat disturbing because no one *can* really believe that the world we experience is really completely unrelated, to what it (the world) *really* is, something allegedly unfathomable 'behind' the world we see, the *real* reality. This is not the message of Constructive Realism.

Now the second misunderstanding, once it is understood that *Wirklichkeit* does not refer to the *thing in itself*, is to believe that Constructive Realism must be some sort of *Idealism*. Obviously, if there is no transcendental 'thing in itself', then what is left of Transcendental Idealism is the Idealism. Thus, Constructive Realism must be Idealism. Yet, whoever truly believes this did not read carefully enough: our idea of how we, as human beings, relate to *Wirklichkeit* has little to do with Idealism. Rather we hold that our relation to *Wirklichkeit* is realized by the living processes of human beings. *Wirklichkeit* is our destiny, but it is not something that we grapple with intellectually or that we even could investigate. Granted, *Wirklichkeit* does resemble a little bit the *thing in itself*, but, unlike Kant, we do not pretend that we could say anything about it. *That* would be engaging in metaphysical

speculation. There is nothing we can say about it, nothing about whether it is pre-structured or not. And so we don't. We also don't need to. There is no need for us to say anything about the 'true nature' of *Wirklichkeit* because we never have to deal with it anyway. *Wirklichkeit* is just the necessarily presupposed world in which our *Lebenswelt* (*environment*) and the manifold *Realitäten* (realities) produced by different sciences are situated.

The good thing news (or the bad news, depending on whom you ask) is that because of our inability to say anything substantive about *Wirklichkeit* is that we will never solve all problem of science. And that is because science never deals with *Wirklichkeit* but rather 'only' with very limited aspects of our *Lebenswelt*. And because *Lebenswelt* is constantly evolving and changing, not that we would even take note of that most of the times, the areas of possible scientific investigations are structurally unlimited. It is structurally impossible that we could ever give a coherent scientific explanation for every single aspect of the ever-evolving *Lebenswelt* that we can investigate. Irrespective of any ideas one might have about the possibilities of uniting all of these explanations under the roof of just one science.

We will never solve all problems of science, because that is structurally impossible. And we can see how big of a difference this in regards to the philosophy of science of the Vienna Circle.

Lebenswelt is the constructive realist concept for the world we are embedded in in our ordinary lives, the world we are familiar with. Or better, it is the wholeness of all the presuppositions that, – mostly unquestioned and often unbeknown to ourselves govern our lives. It is the world we know without thinking about it. It is the way we relate to our environment before we even can engage in any scientific investigation. It is only from living inside *Lebenswelt* that we can pick certain highly specific aspects of it, for instance, the biological nature of my beating heart and shine the spotlight of scientific research onto it. Thus, *Lebenswelt* always precedes scientific 'reality'.

The short, but significant main point I wanted to make in this talk was that *Lebenswelt* is the product of culture. Our *Lebenswelt* is *constructed* by culture. This is why this talk is called *Constructivism without a Constructor*. Our *Lebenswelt* is constructed more or less randomly by our culture. And it is only inside the *Lebenswelt* that science finds the ideas for its research. This means that science, whether it wants to do so or not, is always investigating the structure of a construction which itself has no constructor.

While *Lebenswelt* has no constructor in the sense of an intentional entity, the scientific micro worlds of what I called *Realität* (in contrast to *Wirklichkeit*) of course have constructors, namely the individual scientist. *Realität* is the sum of all the scientifically structured aspects of our *Lebenswelt*. *Any science produces Realität, whether it is physics or psychology, whether its biology or Chinese medicine*. Although of course, in the case of Chinese medicine things are even more interesting, because it was sparked by a culture which has a very different understanding of *Realität*.

IV The Fine Difference: Understanding Science from Inside

Now that we have dealt with the two most frequent misconceptions about Constructive Realism and after having been introduced to its central concepts, it is time to have a look at its methodology. This will, furthermore, allow us to point out how different Constructive Realism really is from the traditional Philosophies of Science.

That methodology is called strangification and it has been inspired by Hermeneutics. There have been various philosophers, especially in the phenomenological tradition of Heidegger, Husserl and Gadamer and others who have employed the German term for strangification, *Verfremdung*, long before the birth of Constructive Realism. But this does not mean that strangification is the same as hermeneutical methods. Yet, it is influenced by hermeneutics.

Strangification is the technique of intentionally taking an accepted proposition from one scientific system and putting it into a completely different context. Then, as the second step, one has to look what happens to the sentence in the different context. This method will reveal all the presupposition that governed the ‘truth’ of the proposition in the original system.

It’s such a simple, but effective method. I have always been fascinated by how much resistance it had to face. To me it was such a natural move to bring hermeneutics into Philosophy of Science, – I’m not even proud of having come up with the idea, – but many natural scientists have a lot of trouble to understand it or see its value. Even very clever colleagues, like my friend Peter Janich, were always alarmingly puzzled by strangification. The reason for their bafflement, I believe, lies in their tendency to put the emphasis on ‘strange’, when they should really emphasise the ‘coming together’ of strange ideas. When strange ideas are coming together interesting things happen. It allows us to gauge the limits of our proposition system, of our