Arguments against Realism and the Transcendence of Science

Abstract

Realism is questioned from two sides, the philosophy of science and religion. First, the 'underdetermination of theories by data' and the revision of the 'miracle argument' make it necessary to revise scientific realism. Second, the claim that a realistic interpretation of belief contradicts its religious character questions the consistency of theological realism. Both discussion show that we have to further develop realism. I propose to consider truth, meaning, experience and transcendence as creative characteristics of a realistic thought. They enable us to make and receive meaning for facts.

Keywords

science, realism, miracle argument, Philosophy, Niebuhr, technology, constructivism, transcendence

No problem, to think realistic?

Constructive-critical realism was introduced as a concept giving cultural expressions knowledge-oriented quality. I agree to Andreas Losch who stated that realism "needs at least to be qualified further to avoid some sort of unwanted physicalist shortcomings."[1] My point is, that the extension of realism follows a scientific need apart from theological reasons. I will introduce two scientific and two religious arguments against realism and show, how we can understand a revised concept of realism.

The definition of truth as the correspondence between an assertion (*intellectus*) and related facts (*res*) was strongly questioned by Edmund Gettier.[2] Since 1963 we 'know' that justified true belief is different to knowledge. We can describe the argument like this: while reading the correct time on a broken watch at 8 pm a lady assumes that it is really 8 pm. But the only reason for this is that she was looking at the watch at the correct time by chance. In this case the correspondence of *intellectus* and *res* doesn't constitute proof, because the given justification fulfils the claim to truth only by accident. The coincidence of belief and justification is therefore no indicator for truth in a scientific sense.

However, until today scientists justify their propositions by the correspondence between intellectual theories and data. Either a series of data is drawn up into a theory or a theory is supplemented and improved by new data. But how do we actually know that we can infer the existence of ions from the measured conductivity of an electrolyte solution? This is not about the chemical problem, but about the general question: is the measurement credible for reality? Many scientific theories are about invisible phenomena. Although we can

1 Cf. Andreas Losch, "Appreciating Faith and Culture in an Age of Scientific Reasoning: On Constructive-Critical Realism," *Theology Today* 75 (2018): 154–166, 160.

2 Edmund Gettier, "Is Justified True Belief Knowledge?," *Analysis* 23 (1963): 121–123; cf. Adrian Heathcote, "Truthmaking and the Gettier problem," *Aspects of Knowing: Epistemological Essays*, ed. S. Hetherington (Amsterdam: Elsevier, 2006), 152–167 and Adrian Heathcote, "Gettier and the stopped clock," *Analysis 72 (*2012): 309–314, doi:10.1093/analys/ans047.

observe that a certain amount of water freezes at zero, we are interested in generalisation. How do we know that water freezes anytime under defined boundary conditions, which we cannot observe?

When engineers make use of natural scientific laws, they make them visible. Engineers know how to visualise the invisible empirically. We can therefore formulate the question like this: Beyond the successful application of a theory, is there any reason to assert its truth? It is common to interpret data as references to actual relations and to describe these relations as theories. We should never extinguish fire in high-voltage installations with water because water *always* has a low conductivity. We assume that ionic conduction occurs regularly. But at the same time we consider any argument for a realistic interpretation of measured conductivity to be unnecessary. Otherwise we need to discuss these arguments in fire protection regulations. But the scientific and engineering perspective corresponds with everyday perception, stating that there is no meaningful argument against realism that is worth discussing. With regard to the broken watch, this means: we will correct our view only if there is a contradiction in the data taken. Let's imagine, the lady would look at her watch exactly twelve hours later, after twelve hours again and so on. This would result in a series of correct data, but the basis would be an erroneous measurement. Collecting data twice a day, 8 am and 8 pm, she would then live in an illusion thinking it is real.

There are examples from physics that actually follow this scheme. The probably most prominent example is the existence of ether. Until 1905/1910, the assumption that waves need a carrier substance was state of the art. As waves have no material substance, they must be – strictly Aristotelian – properties. But properties are always properties of something. As a result, there had to be a substance that was elastic, non-frictional and super-fluid. James Maxwell described ether quite realistically to be the best postulate about invisible phenomena and considered its existence to be certain despite the lack of evidence.[3] However, as a result of the Michelson-Morley experiment in 1887, scientists accepted the view that waves do not require a carrier medium.[4] The field concept occurred, saying that waves and electromagnetic fields have substantial character itself.

Does this story show, that we orient ourselves on well-established but still false theories? We cannot absolutely justify general statements about the invisible. The claim of truth is always problematic, because it is a conclusion from a finite number of cases to an infinite number of cases. Even though inductions do not provide sufficient justification for general contexts, there are not many voices against realism in the natural sciences.[5] But they are nevertheless weighty. One of the most prominent representative is Stephen Hawking:

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3 James Clerk Maxwell, "Ether", *Encyclopædia Britannica* 8 (9th ed.), ed. T. S. Baynes (New York: Charles Scribner's Sons, 1878): 568–572.
1.4 Loyd S. Swenson, "The Michelson–Morley–Miller Experiments before and after 1905." *Journal for the History of Astronomy* 1, no. 2(1970): 56–78; doi:10.1177/002182867000100108.

5 See Bertrand Russels inductivist turkey: Alan F. Chalmers, What Is This Thing Called Science? (Indianapolis: Hackett 2013, [1]1976), 41–42.

> "I don't demand that a theory correspond to reality because I don't know what it is. Reality is not a quality you can test with a litmus paper. All I'm concerned with is that the theory should predict the results of measurements."[6]

Hawking considers the predictive power to be what is actually decisive. The question is whether the meaning of prediction is more convincing than the assertion of truth. This is what the arguments against realism are about.

Scientific arguments against realism

I deal with two arguments against the realistic scope, but I will explain, why antirealists typically do not doubt the existence of observable objects when it comes to everyday affairs.

The underdetermination of theories by data

The main idea of this argument is that we can explain any amount of data by many different theories. For example, if we see a dead animal lying at the roadside, we soon suspect that it was accidentally run over. However, it can also have been killed deliberately, fallen victim to a predator or suffered a cardiac arrest. Thus, the most different theories can be derived from any observation. The change of theory speaks against pure realism. In addition, many theories whose principles turned out to be false are enormously successful. Although Newtonian physics is outdated, it is still successful for engineering. In principle, finite data do not permit any clear theory formation.

Coming back to the watch case, the wrong theory, even if it is apparently confirmed every twelve hours, will lead to a correct prediction for special cases. Even more data do not necessarily mean more truth. We can never rule out that there are alternatives to currently valid theories. For a limited amount of data, if we think about a coordinate system, there are even infinite possible functions that connect the individual data points with each other. However, scepticism is not the only way out. Rather, the consideration can also support realism, which leads to the second argument.

The miracle argument

Hilary Putnam considers the underdetermination of theories to be an argument for realism because of their predictive power.[7] In contrast to what has been said above, we experience that our current and always underdetermined theories are enormously successful. They do not only provide a justification for available data, but they also allow conclusive statements about further interrelations. But if we can make correct predictions out of an existing theory: is this then a miracle or does the correct prediction result from the truth of the theory? Putnam believes that theories that make right predictions must be true because there are no miracles in science. If a successfully applicable theory was not true, then false theories would lead to correct conclusions and that would be a miracle. Since science cannot accept miracles, we should assume that successfully applied theories are true. For example, we produce electricity by atomic fission, so it would be a miracle if the atoms didn't

6 Roger Penrose and Stephen Hawking, *The nature of space and time* (Princeton: Princeton University Press, 1996), 121.

7 Hilary Putnam, "What is the mathematical truth?," *Mathematics, Matter and Method. Philosophical Papers 1* (Cambridge: Cambridge University Press, 1975), 60–78.

exist exactly as the theory says. As long as we rule out miracles, we must be realists. According to scientific realism, an approximate truth is necessary to make novel predictions. Without truth, it would simply be incomprehensible that it is capable of making a novel prediction.

But can we really say with certainty that a prediction actually comes from a true or a false theory? The existence of ether was successfully assumed for centuries, however it was wrong. The Philosopher Paul Hoyningen-Huehne points out that even successfully applied theories are more likely to be wrong than right.[8] If a successful theory is confirmed by further data, then not only the significance of this theory increases. Rather, the number of possible other theories increases at the same time. The more data we have, the greater the number of possible theories and thus the possibility of theory change. The point is, that most of all the number of false theories increases with the increase of data. In other words: if a successful, novel prediction was made based on a known theory, then the realist will see this as a confirmation. But how do he know that this isn't just another stroke of luck in a long series of lucky events? Mathematically, there are more wrong derivations that make correct predictions possible than true theories doing the same. Predictive success is therefore not at all an indicator of truth:

> "However, the realist conclusions are overhasty because the observed properties of the theory or theories, respectively, could equally well be due to an underlying fundamentally false theory, i.e., a theory that cannot be realistically interpreted in the pertinent respect. The highly idealized model that I presented suggests the following hypothesis. Certain astonishing properties of theories that prompt their realist interpretation are in fact due to a theory in the background that may be fundamentally false in the critical respects. Though in general, it is indeed very unlikely that a series of given theories has a false theory in the background that is responsible for their realism-suggesting properties, it is even more unlikely that these properties are due to a (approximately) true theory in the background."[9]

This view suggests that even theories that lead to correct predictions may be wrong. While it is likely that a good theory makes correct predictions, it is unlikely that a good theory is true. This is because we ask for the truth of a successful theory only within the unlikely cases of successful theories. The astonishing conclusion is that among the successful theories, there are more wrong theories that lead to the right result than right theories leading to the same. We can summarise the considerations of Hoyningen-Huehne also in this way: (1) It is more likely that correct predictions are derived from false theories than that these predictions are derived from a correct theory. (2) A theory that makes a correct prediction *is probably wrong*.

Realism as background assumption

Does this result abolish scientific realism? In view of the deceptive implications of Putnam's ultimate argument for realism, scientific realism is strongly questioned, because it makes the successful application of a theory

8 Paul Hoyningen-Huene, "Reconsidering the miracle argument on the supposition of transient underdetermination," *Synthese* 180 (2011), 173–187; Paul Hoyningen-Huene, "Are There Good Arguments Against Scientific Realism?," *Philosophy of Science. Between the Natural Sciences, the Social Sciences, and the Humanities,* ed. Alexander Christian, David Hommen, Nina Retzlaff, and Gerhard Schurz (Heidelberg: Springer, 2018), 3–22, doi: 10.1007/978-3-319-72577-2_1.

9 Hoyningen-Huene, "Are There Good Arguments Against Scientific Realism?," 20.

the truth criterion. The main question is whether it is necessary to consider realism itself to be provable. The underdetermination of theories and the inadequacy of the miracle argument show that the realistic assumption is not compelling. There is no *ultimate* argument for realism. But there is also none that ultimately abolishes it. As long as a wrong theory makes correct predictions, it remains conclusive *for us*.

The realist assumes that conclusiveness is based on truth. In fact, it is possible that success and truth go hand in hand. The restriction consists only in the fact that success can occur independently of truth. Thus, a scientific statement seems to be practical valuable regardless of the truth content. Realism therefore represents a background assumption that is superfluous for abstract science. But *for scientists* it may be necessary, because it guarantees that the success of the best scientific theories is reasonable. Just remember, that Putnam wanted to repel miracles, but now realism seems to rationalize the really miraculous situation, that we can derive the right from the wrong. I suggest to regard realism itself as the creative link that we need to make naked facts, which are meaningless in themselves, appear meaningful to us.

In this respect a realistic worldview veils and reveals how we invest trust in scientific theories when they are able to produce convictions. Especially engineering means to produce successful images of the world while using under-determined laws. The realistic perspective of technology is not characterized by the truth of theories, but by the meaning we give them. Engineers assume that theories influence their actions. But they know that practical action and its theoretical foundations are not identical. Rather, it is quite possible to base one and the same practice on very different theories. One doesn't have to become antirealistic to combine science and experience. We just have to think about the communication between the invisible and the visible and distinguish between the truth itself and the truth for us.

Realism opens up a space for experiential reality, for different forms of dealing with collected data and for pragmatic use of transcendent ideas. From a realistic perspective practice is linked to theory, but it does not define it. But can we verify, that success is reasonable? If successful theories are probably wrong, then there must be something else that allows the application to remain reasonable. The realistic background assumption, that the successful theory might be true, can achieve this. But this theory in the background fitting many empirical facts to a high accuracy "is not by itself a sign for its verisimilitude".[10] So the assumption is a creative act, providing the meaning we need. The meaning – the sense of the facts – is not given with the data themselves. But the declaration of truth makes it possible to anchor success rationally. However, this declaration is a transcendent anchor of reason. Success represents a form of subjective truth. But we can deal with subjective truth only when we consider that truth is *not only* a subjective matter. The constructive role of the subject must be accompanied by a non-subjectivist understanding of the construction.[11] Even if we don't know the truth, we must presuppose it in order to successfully apply theories. We already know from religion, how this works.

10 Ibid., 20.

11 Also see Andreas Losch, "Our World is More Than Physics: A Constructive-critical Comment on the Current Science and Theology Debate," *Theology and Science* 3, no. 3 (2005), 275–290, doi: 10.1080/14746700500317271.

Religious arguments against realism

Theological realism is associated with the names Paul Tillich and Hanns Lilje. Both of them place the faith in the midst of rapidly changing reality. The reality of God is in the concrete reality that surrounds us.[12] In Tillich's theory of science knowledge is determined by two particular moments, thinking and being.[13] Tillich and Lilje follow the idea that we can separate immanence and transcendence only in relation to the manifestations of God, not in relation to his being. The place of revelation is everyday life.[14] Natural laws correspond to the order of creation.[15] Technology as a form of rationalization is "the expression of a will to order".[16] For theological realism the religious character of a doctrine does not result from its contradiction to a scientific statement on the ontological level. Rather, the difference is that abstract natural science as well as idealistic theologies hide the level of experience. In difference to this theological realism doesn't presuppose the existence of God abstractly, but always in relation to human life. There are two common ideas of theological and scientific realism:

1. We try to reveal how the world we live in really is. Whoever speaks of "eternity" or "black holes" doesn't mean that it is good and helpful if we take their existence for granted. Realists mean that they actually exist, even if we cannot fully think of them.

2. Statements can be rated as true or false. Truth is a question of validity, not of our anticipation of facts. The realist assumes that what we claim is also true independently of us.

Later theological realism was mainly discussed in political ethics. In the middle of the 20th century and again at the beginning of the 21st century the question was how we can deal with the tension between ideal and reality.[17] The political realism of Reinhold Niebuhr had a lasting effect on Christianity and ethics.[18] The central point for Niebuhr is the anthropological idea that the good doesn't prevail because social life fundamentally promotes the egoism of man. Niebuhr speaks about the "brutal character of the behaviour of all human collectives".[19] Cognition is therefore distorted by sin. Man can still recognize the good, but he can never fully convert his sense of duty into moral action:

12 Wessel Stoker, "Paul Tillich and the Academic Culture of Modernity," *Paul Tillichs Theologie der Kultur. Aspekte – Probleme – Perspektiven* (= Tillich Research/ Tillich-Forschungen/Recherches sur Tillich) ed. C. Danz/ M. Dumas/ W. Schüßler/M. A. Stenger/ E. Sturm, Vol. 1 (Berlin/New York: de gruyter, 2011), 293–310.

13 Paul Tillich, *Gesammelte Werke,* ed. R. Albrecht, I (=GW I, Stuttgart: Ev. Verl.-Werk, 1971), 109–293.

14 Hanns Lilje, *Das technische Zeitalter. Grundlinien einer christlichen Deutung*, (Berlin: Furche, ^{3}1932), 88.

15 Christian Schwarke, *Technik und Religion. Religiöse Deutungen und theologische Rezeption der Zweiten Industrialisierung in den USA und in Deutschland* (Stuttgart: Kohlhammer, 2014), 233.

16 Lilje, *Das technische Zeitalter,* 149, transl. A.S.

17 Friedericke van Oorschot, "Realismus als Kategorie theologischer Friedensethik?," *Proceedings from The Ethics of War and Peace. 51st Annual Conference of the Societas Ethica, August 21-24, 2014, Maribor, Slovenia, No. 117* (Linköping: Linköping University Electronic Press, 2015), 45–63.

18 Alberto R. Coll, "The Relevance of Christian Realism to the Twenty-First Century," *Christianity and Power Politics Today: Christian Realism and Contemporary Political Dilemmas*, ed. Eric Patterson (New York: Palgrave 2008), 21–52; Paul Elie, "A Man for All Reasons," *The Atlantic Monthly* 300 (2007), 82–96; Stephen Okey, "Responsibility, Humility, and Intervention. A Niebuhrian Assessment of 'The responsibility to protect'," *Political Theology* 6.14 (2013), 699–720.

19 Reinhold Niebuhr, *Moral Man and Immoral Society. A Study in Ethics and Politics* (Louisville: Westminster John Knox Press, 2001), xx.

”This sense of obligation is, in fact, the claim which the essential nature of man makes upon him in his present sinful state. The virtue which corresponds to the true nature of man therefore appears to sinful man in the form of law.”[20]

Niebuhr distinguishes between an absolute and a relative moral law. A realistic ethics shall consistently take into account the reality of sin. Thus, reason is dialectical, it can never be a pure instrument of justice.[21] The epistemological background of this anthropology is an onto-theological realism. Niebuhr contrasts Christian Realism with the empirical method of the Natural Sciences. He believes that modern culture, based on science, ignores people’s experience. In the essay "Faith and the Empirical Method in Modern Realism" he describes the scientific method as nominalistic.[22] There is no room for concrete experience by generalizing the specific. Theology, however, associates the reality of God with the realities of our own experience.[23] The recognition of the good finds its justification in the reality of God, more precisely in the reality of God’s love. The duty of moral action for the believer arises because he is confronted with the reality (of the love) of God. Being aware that he cannot realize the ideal, he orients himself on it because he presupposes the reality of the ideal. Therefore, a genuine orientation towards action through faith is only conceivable if God’s love really exists. Again, I consider two arguments that criticize realism.

The contingency of facts

This argument is like this: If one treats religious statements as facts, then they need to be contingent. However, contingent facts are never absolute, so religious statements cannot be based on them. Especially the existence of God as a fact would have to fit into the order of all facts. It would be real, but not necessary. As an unnecessary existence of God cannot be the basis of faith, ‘existence’ in relation to God must have a different meaning. In this perspective, we destroy belief if we treat the existence of God as a fact. In addition religious belief cannot be doubted, scientific hypotheses can.[24]

The last claim is wide spread, but wrong. Belief is doubted by believers and non-believers as well. But it is right, that according to Christian understanding God doesn’t depend on our fact findings. According to Rudolf Bultmann, God is the all-dominant existence.[25] From the perspective of faith it is not even possible to observe him from the outside. But this supports realism rather than disproving it. From the viewpoint of a believer, contingency simply doesn’t necessarily go in hand with existence. Of course, a realist will accept that God exists in a different way than a bat. But bats also exist in different ways than gravitational waves. The conclusion we have to draw from this is that we need different methods. We deal physically with gravitational waves and biologically with bats. And for dealing with God we need methods beyond physics and biology. Different properties require different approaches. But we do not need to use the attribute ‘existence’ in different

20 Reinhold Niebuhr, *The Nature and Destiny of Man. I. Human Nature* (New York: Charles Scribner’s Sons 1941), 272.
21 Reinhold Niebuhr, *The Children of Light and the Children of Darkness. A Vindication of Democracy and a Critique of its traditional Defenders (*Chicago: University of Chicago Press, 2011, 1st publ. London: Nisbet, 1945), 54.
22 Reinhold Niebuhr, “Faith and the Empirical Method in Modern Realism”, *Christian Realism and Political Problems*, ed. R. Niebuhr (New York: Charles Scribner’s Sons, 1953), 1–14, 9.
23 Robin W. Lovin, *Reinhold Niebuhr and Christian Realism* (Cambridge: Cambridge University Press, 21997).
24 Dewi Z. Phillips, *Faith and Philosophical Enquiry* (London: Routledge, 1970).
25 Rudolf Bultmann, “Welchen Sinn hat es, von Gott zu reden?,” *Theologische Blätter* IV (1925), 129–135.

ways. The realist will fully agree that God's existence is to be fathomed and thought differently than the existence of any other object.

Antirealists like Dewi Z. Phillips and Mikel Burley claim that the knowledge of God contributes nothing to our factual knowledge.[26] They just equate facts with scientific facts. But theological realism doesn't assume that objects of faith are scientifically verifiable facts. It's enough that they are facts. The characteristics of these religious facts differ from political, economic or scientific facts. But this doesn't mean that their existence is no matter for the believer. The contingency argument against realism fails, because the realist can simply share its preconditions. The second argument introduced against realism is the religious meaning of faith itself.

Evidence or experience?

Does realism destroy the religious character of faith?[27] The philosopher Hans Julius Schneider formulated it this way: A religious faith, similar to a fairy tale, would have two levels, the level of facts and the level of meaning.[28] Realism would concentrate on the first level and he demands to regard belief exclusively as statements about the significance of experience. Actually, we have to interpret all hypotheses and therefore we must accept a second level beyond all facts. Nevertheless, the realist will agree with Schneider's demand to the extent that religious statements are about meaning and significance. But they are *not only* about this. Theological realism says that the meaning of doctrines doesn't depend on the factual level.[29] The practical value of a creed is quite independent from the level of facts. Realism again represents a background assumption that is not necessary to define religion, but for the character of the believer. If the rumour that Jesus has risen from the dead has led to the worldwide spread of Christianity, then the success of the assumption is thoroughly possible without the fact of resurrection. But the religious character of the creed will in no way be diminished by the assertion that the resurrection is a fact. And this assertion was widespread in Christianity.

We find this argument also at Ludwig Wittgenstein: "The point is that if there were evidence this would in fact destroy the whole business."[30] In this view the notion of evidence is linked to the form of life, but limited through the language-game.[31] It is true that proven beliefs lose their character as belief in opposite to knowledge. But the search for evidence remains part of a religious life. Belief does not mean to ward off knowledge. In fact, if the conviction arises that certain beliefs are not linked to reality, then this would by no means strengthen their religious character. Christian faith as a form of real life is in opposite to Hinduism linked to hypotheses about the quality of this life. But it is not limited to being merely hypotheses. It considers the unity of truth and interpretation to be relevant and therefore claims that the objects of faith also exist independently of faith itself. Realism describes the field of possible interpretations, but doesn't give a specific

26 Dewi Z. Phillips, "On Really Believing," *Is God Real? ed. Joseph Runzo (*New York: St. Martin's Press, 1993), 85–108; Mikel Burley, "Phillips and realists on religious belief and the fruits thereof," *International Journal for Philosophy of Religion* 64 (2008), 141–153.

27 Cf. Gäb, Sebastian, "Religious Arguments against Realism," *Analytic Theology Summer School* (Mainz, 2013); https://www.academia.edu/4449357/Religious_Arguments_against_Realism (2.5.2019).

28 Hans Julius Schneider, *Religion* (Berlin: De Gruyter, 2008).

29 Gäb 2013, 3.

30 Ludwig Wittgenstein, *Lectures & Conversations on Aesthetics, Psychology, and Religious Belief* (Berkeley: University of California Press, 1966), 56.

31 Brian Haymes, *The Concept of the Knowledge of God* (Houndmills et al.: Macmillan, 1988), 159.

interpretation for postulated facts. Those who believe that resurrection is a fact can still associate it with an ethical, dogmatic, political or ecclesiological meaning. Fact oriented realism doesn't limit the (religious) character of belief.

Truth, meaning, experience, and transcendence

The presented scientific and religious arguments against realism are contrary. Religious arguments claim a difference between factual and religious truth. They show that belief systems have an intrinsic value independently of an assumed reality, but this doesn't abolish the realistic attempt. Scientific arguments show the inadequate provability of realism. The critics turn 'true' theories into probability statements covertly linked to the claim of real validity. The religious arguments separate belief from practice. They fail once we include experiences as part of understanding. The scientific arguments make it possible to justify a realistic interpretation of facts because of experiences, such as success. Out of these findings I suggest four remarks of scientific and theological realism showing its constructive-critical character:

(1) Realism constructs truth. It claims a reality beyond perception. The link between this reality and belief makes faith meaningful, but we cannot deduce this sense-making link from reality. Faith follows the assumption of a fundamental consistency with reality, but this remains unprovable. In the same way the realist links the success of a theory to a 'higher truth' apart from truth in scientific sense. He must imagine that the data are in tune with reality. This *reasonable imagination* merges success, facts and truth to a narrative. On this basis Putnam was a truth constructor. Until today the miracle argument is a convincing imagination. Arguments can refute its logic, but not its practical persuasiveness.

(2) Realism enriches facts with meaning. This is regularly done in religion, but we do it in science similarly. Scientific realism doesn't refer to scientific truth, it refers to success as the realistic criterion. But this shift immediately establishes an aspect of meaning. As the construction of meaning ('*Sinnkonstruktion*') through engineering is widely in use today, we can assume this to be a defining aspect of our time. Realism claims the meaningfulness of the contingent. The claim of truth in sciences and the claim of the reality of God's love in religion give meaning to contingent findings.

(3) Realism gives right to the reality of experience. As long as science and religion deal with two perspectives on one reality, it is necessary to draw a conclusion that interlinks both. I propose to regard the reality of experience as a place of mutual reference. The possibility that even repeated novel predictions can lead to erroneous conclusions has been played out in the history of science.[32] The replacement of the successful Newtonian mechanics by special and general relativity or quantum mechanics represents a collective experience for the susceptibility of realism. But this doesn't establish scepticism, because the experiences of success and failure motivate a reasonable imagination.

(4) Realism is based in transcendence. Theological realism anchors our action in the transcendent being of God. Similarly, scientific realism relies on the assumption that contingent theories are true. But success doesn't define truth. For the verification of truth we need something beyond that makes our application plausible.

32 Hoyningen-Huene, "Are There Good Arguments Against Scientific Realism?," 14.

Success in itself is not reasonable, but we must imagine a guarantee for the application. The realistic background assumption of truth is such an imagination. It is a transcendent concept of reason. The transcendent idea of truth provides the sense we need to accept success as an indicator for reality. The facts alone cannot deliver the realistic meaning. Therefore, our interpretation of experiences and data refers to a reality of a higher order (God, truth) which we consider to be true.

Make and receive meaning

If science and theology ask how our world really is, they deal with construction of truth, giving meaning to facts, the attention to experience and the relation to transcendence. These characteristics of realism form our thoughts about reality. Thoughts and practical life belong together, but we can't transfer them into each other. Even though an aircraft presupposes thermodynamics, it doesn't necessarily result from it. Similarly, a particular prayer presupposes any form of belief, but doesn't necessarily have to follow a specific faith. Practical experiences are based on successfully applicable theories about how the world really is. But this is no truth, it's just that we are able to give meaning to its propositions. Faith also doesn't rely on true doctrines ('law'), but it allows the creed to become meaningful because of the transcendent idea of truth. A religious faith is therefore not diminished and scientific knowledge is not revaluated by realism.

Our practical actions require assumptions about the world, but they do not define its reality. Whether we call successful applications 'epistemic luck' or 'optimal justification' depends on the way we receive meaning for pure facts. There seems to be a dialectic of scientific reason, so that we cannot use it as a pure instrument of truth. When Karl Rahner spoke about the concupiscence of knowledge, he was trying to interlink the ambiguity of true belief and facts.[33] The truth of our knowledge is no guarantee for goodness. Also Philip Hefner made the "moral experience" to be the critical point of realism. In his view the difference between biology and theology is marked by what one regards as "ultimate reality": selection or creation. Creation, however, is the broader horizon. Sociobiology is therefore ultimately surpassed, not because it is wrong, but because it cannot integrate experience.34 Meaning and experience become the constructive aspect of realism.

Finally, what is the difference between the scientific and the religious understanding of realism? Scientists give meaning to the facts while referring to the transcendent truth. The perspective of faith is that believers receive meaning from the transcendent. Religion deals with active doing and passive reception. The future task of Theology is to explore, how construction and reception join together in sciences. This might be a next step to explore God's reality in today's world. In science and religion we need *reasonable* imaginations about reality, that determine our verdicts of truth. I suggest to treat these images as transcendent ideas which justify research as well as faith. In this respect a realist verdict is a judgment about the application of probabilities, rooted in transcendent notions of truth.

33 Karl Rahner, "Zum theologischen Begriff der Konkupiszenz", *Schriften zur Theologie (SzTh) I* (Einsiedeln et al., 1954), 377–414.

34 Philip Hefner, "Theological Perspective on Morality and Human Evolution," *Religion and Science. History, Method, Dialogue,* ed. W. M. Richardson/ W. J. Wildman (New York/ London: Routledge, 1996), 401–423.