

Actual Existence and Factual Objectivation

or: anti-anti-realism with intuitionist negation -
or: why veracious objectivism with ontological adjustment can do better
than epistemologically infected would-be ontologies
or: what theories are and what they are not
or: why in the course of the matter truth will come to light

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First version, finished Frankfurt am Main, May 15th 2002
presented to anpa-list
(<http://groups.yahoo.com/group/anpa-list>)

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*Then we entered the Straits in great fear of mind, for
on the one hand was Scylla, and on the other dread
Charybdis kept sucking up the salt water.**

Preliminary Preliminaries

There is a certain unfair asymmetry in the world: anti-realists make some good points by attacking epistemological realism¹, because there they have a good point. Realists make far less good points by defending realism, because there they have no good point.

To make this very clear from the beginning this paper is not at all and in no instance whatsoever in the business of epistemology, some people might feel that it is sometimes somehow *about* epistemology which then might be due to their perceptions. But anyway being about something doesn't mean being in the business of that something.² Realism and (some sorts of) anti-realism are rightly seen as representing predominantly epistemological convictions apparently being opposed to each other. But then this opposition is essentially based on a very common ground or rather the very common fault of them both as will be shown in this paper. In the course of this paper we will introduce anti-anti-realism (with intuitionist negation) and whatever this might turn out to be it will definitely not turn out to be an epistemological position. The notion of 'anti-anti-realism with intuitionist negation' anyway is already by itself a paraphrase of (implicitly) proposing that realism and anti-realism show some equivalence under a certain aspect and that anti-anti-realism with intuitionist negation does not so.³

We are hopeful that in the course of the paper that aspect will come to light.

Thus a way to correct that certain unfair asymmetry might go as follows: anti-anti-realists should eventually start to attack anti-realism - from maybe unexpected directions and surely with a very unconventional strategy - because there they might have some good points to gain. And anti-realists then should start defending anti-realism (maybe after first having sorted out which one they lately prefer). Afterwards let's count the points or rather - the fallen.

1 As a further Preliminary: Introducing Actualism

1.1 We understand the term 'actualism' as a shortcut for the following proposition:

The actually existing world is made of actually existing entities and the actually existing interactions between them.⁴

1.1.1 For a better understanding of 1.1 one should note that 'interaction' here is not meant to be a theoretical or scientific term in any possible sense or to presuppose or to imply any objective (theoretical or scientific) knowledge. 'Interaction' instead has to be understood as something alike the

* Homer, *The Odyssey*, book XII, (transl. by Samuel Butler), <http://classics.mit.edu/Homer/Odyssey.12.xii.html>

¹ Epistemological realism as usually opposed to anti-realism is in principle quite a different thing than ontological realism as opposed to idealism, notwithstanding the fact that these both kinds of realism frequently go together. If from now on we speak of 'realism' we will always speak of epistemological realism if not explicitly the contrary is announced.

² For example there are probably hundreds of tutorial textbooks about epistemology the authors of which do not stand for any specific epistemological position, at least not in these textbooks. Of course such textbooks are only a very few of a legion of examples which corroborate that proposed distinction of 'being about something' and 'being in the business of something' as another graphic example may serve that there are quite a lot of today's books and papers which are about the historical controversy between the Ptolemaic and the Copernican system, yet the authors of those books or papers really only rarely turn out to take a side or to be proponents of one of the both positions, i.e. they write *about* that historical controversy but they are *not in the business* of that controversy.

³ That of course will be apparent to people somewhat familiar with intuitionist logic.

⁴ To elucidate my understanding of 'actually existing world' I will give the following as an illustration:

a) Actual physical existence is effected and warranted by actual physical interaction. In other words: only if an entity actually physically interacts then this entity also exists physically.

b) Therefore the actually existing world should be thought of as the totality of all actually existing entities, i.e. the totality of all actually (directly and indirectly) interacting entities together with the respective actually operating interactions.

But because these both statements a) and b) imply a reference to possible objective knowledge they must not be seen as a part of our preliminary introduction of actualism but only as an illustration - hors concours.

‘contact between an actually existing person and other actually existing persons or other actually existing things’. Therefore there is some overlapping of the meaning of ‘actually existing world’ with the meanings of ‘Lebenswelt’ (as introduced by Husserl) or ‘In-der-Welt-Sein’ (as introduced by Heidegger). Yet the scope of ‘actually existing world’ is not confined to the (social) world(s) of human beings or intelligent living beings in general.

1.1.2 As being actually existent also persons (or any observers) - directly or indirectly - do interact with all other actually existing entities (including such they may never have heard of, they don’t know anything about and even possibly including such neither they nor anyone else ever had a theory for).

1.2 The actually existing world, i.e. the actual existence of actually existing entities and the actually existing interactions between them, is a *crude given*.⁵

1.2.1 For a better understanding of 1.2 one should note that the actually existing world has strictly to be seen as not related to, not dependent on and not derivable from any objective factual knowledge (about the world), any theories, any science or any epistemological conceptual frames.

1.2.2 Just on the contrary the actually existing world has to be understood as an utmost radically pre-theoretical given as well as an extra-theoretical precondition for any possible existence of any objective knowledge (about the world), any theories, any science or even any epistemological conceptual frames.

1.2.3 Thus actual existence is utterly not in the scope and not an object of theoretically based factual knowledge.

1.2.3.1 Therefore it is nothing but missing the point to ask someone: “But how do you know about the actual existence of the actually existing world?”, because there is no question of knowing but a question of living (or subjectively existing).

1.3 Actualism as introduced here in the foregoing has no epistemological significance whatsoever.

1.3.1 Therefore actualism as such doesn’t provide any means to refuse either realism or anti-realism at large. Agreeing to it could make any reasonable ordinary anti-realists at the most feel a bit uncomfortable, but it wouldn’t mean any imminent threat to their position.

1.3.2 Not agreeing to actualism would obviously be the choice for some - perhaps less reasonable but as a compensation for that maybe more suspicious - anti-realists, in particular the solipsist breed. And by doing so they would not have to fear any inconsistency of their position so far.

1.4 To make this as clear as possible once more: no anti-realist of whatever kind has to agree to or admit any of the previous propositions, i.e. till now we didn’t start with an argument but simply tried - as a preliminary - to somewhat clarify our terminology and put some of our basic convictions on the table. Sooner or later we would have to do so anyway and there is no reason why not to do so at the beginning.

⁵ For reasons of readability I would have preferred to say ‘a crude fact’ instead of ‘a crude given’ but that would have been inconsistent with what I thoroughly want to make clear here, namely that the assumption of actual existence and the actually existing world in particular is neither dependent on nor in any other way due to reasoning, (learned) knowledge or even theoretical presumptions but that instead it stems from certitude. Thus it is not in any sense *made* (for example by means of our intellectual capacity) but instead it is given (for example as a precondition for our being as such as well as for any possible intellectual capacity of ours). Therefore it shouldn’t be referred to as ‘fact’.

2 Starting the Argument: Actualist Existentialism⁶

2.1 Your actual subjective existence is not an attribute, a property or an adjunct to yourself, yet your actual existence is just your actual existence. As such it is a radical presupposition or rather a radical given for having any attributes, properties or any adjuncts whatsoever.

2.1.1 You can not have or hold your actual subjective existence as you can have inner states like pain or hold beliefs, convictions or propositions.

2.2 You don't need a theory for your actual subjective existence, i.e. therefore that you (can or) do actually exist.

2.3 Your fundamental existential apprehension of your actual subjective existence is neither derivable from nor - in principle - dependent on theories, but it is founded in *your certitude* of actually being existent.⁷

2.4 Thus you must at first exist to possibly hold (or have⁸) a theory.

2.4.1 Actual subjective existence - as related to theories - is a radically pre-theoretical given as well as an extra-theoretical precondition for any possible existence of theories.

2.5 To make an explicit distinction between on the one hand actualism, which says that there is an actually existing world made of actually existing entities with actually existing interactions between these entities, and on the other hand the set of propositions which are based on the specific assertion that there is plain actual subjective existence we will call the later from now on 'actualist existentialism'.

2.6 Actualist existentialism as outlined above now in a way will allow us to finally neglect solipsism.

2.6.1 Actualist existentialism allows us to do so not primarily by arguing with the proponents of solipsism about their epistemological conceptions yet instead by regarding the holding of those conceptions to be an existential absurdity.

2.6.1.1 The basic assertion of a (radical) solipsist is *that his or her consciousness (or mind or mental state) is the only what exists*. The problem what he or she will get is with the '*his or her*' in that assertion. The reason for this is that we can challenge the solipsist by stating that when he or she is con-

⁶ Our argumentation in this section of this paper (as well as the terminological introduction of actualism in the previous one) must not be seen as an end in itself. But it is in its uncompromising setting also meant to do as a preparation to prevent a seemingly obvious (mis)understanding of what we will say in the 4th and in particular the 5th section, namely the misunderstanding that we then would propose an idealist view. Emphasizing certain aspects of theories easily tempts to commit a metabasis namely to feel somehow entitled then to forget about the *primogeniture* of actual existence. We shall not be tempted to commit such a metabasis.

⁷ But it is a sad fact which can be concluded from an awful lot of philosophical writings - including such written by as prominent authors as Descartes, Berkeley and Fichte - that very many philosophers at least when considering their topics under the influence of epistemological obsessions simply lacked the sanity of having such certitude. This didn't take a turn for the better when it later under the flags of hermeneutics, theory loadness, social construction et. al. became increasingly popular to propose that everything had to be seen as being covered by a set of impenetrable pre-understandings (Vorverständnis) sometimes called 'interpretation'. This might or might not have its place in the humanities which are no topic of this paper. But one would have to expect that the proponents of that stuff would also so intensely lack reason as well as self-respect (I'm not sure in which sequential order) that they wouldn't shy away from uttering such sounds as 'Everything which can be proposed - including the proposition that someone's fundamental existential apprehension or awareness of his actual subjective existence is founded in certitude - has if it is proposed a mental representation so it is a part of someone's mental state or (as a proposition) his cognition and so it is a sort of knowledge and as such inseparably entangled with various pre-understandings.' Such inference would in my view even be in itself, namely its last step, be incorrect (because of an incorrect or at least severely ambiguous notion of knowledge) but that anyway doesn't matter much here. Because fortunately such display of self-stultification can already be defeated simply by examples, one of which may be the following: Imagine a child three to four years old living in a community which doesn't hold any proper (i.e. scientific) theories may it be because of social misery or because of belonging to a pre-theoretical culture. Now imagine someone coming to this community carrying with her some food and sweets or other little gifts and then start to give it to the children of that community as presents but deliberately leaving out the one we introduced above and even saying directed to that child or to the other children: 'No, don't hand any presents to that over there, because it doesn't exist.' (Dear readers, please calm down and skip your indignation, I anyway side with you and we will bring that case to UNICEF's attention together!) If she performs that cruel behaviour in a not too discouraging way thereby giving our child a chance to defend the actuality of its existence this one will start to do so may it be with whatever unskilled appeals or by being charming or daring and will be hopefully successful. Thus it will not only have proven that it has a fundamental existential apprehension of its own existence (founded in certitude) without possibly holding any theory from which this insight could have been derived but also that it has more sanity than all these philosophers together which tried and still try to do it the other way round. (*They* wouldn't get a single candy from me!)

⁸ 'Having' a theory of course is something different as having pain. Even if it sometimes may cause pain to oneself or others (the later being preferable, at least for me).

fronted with his or her own actual existence he or she by that then is confronted with a crude given which is not just a matter of his or her imagination or mind. The solipsist now can either agree and by that *begin* to cease to be a solipsist or disagree and claim instead that his or her so-called own actual existence would just *be an imagination or a mental state of him- or herself*.

2.6.1.2 But that exactly is something he cannot do. Because such a claim is equivalent to a statement that he as well as his mental states would *not* exist.⁹ Despite the fact that this could very well be desirable for other people than that solipsist he still simply wouldn't be entitled to assert such an existential absurdity apparently based on an implicit logical contradiction.

2.6.2 Yet this indeed was not all the task to be done. This rather comes up with the question if a less radical solipsist would after having admitted actualist existentialism also have to admit the far more general propositions of proper actualism itself. And this doesn't seem to be the case. That less radical solipsist must not admit actualism. But this is not the (dead) end of the argument and not an easy escape for more or less radical solipsists. *Because the question is not what she must admit or must not admit but what she cannot propose.*

2.6.2.1 For example she cannot deny actualism by saying that she admits her actual subjective existence but at the same time claiming that her actual subjective existence would be the only actual subjective existence which exists and thereby somehow mutate from a solipsist to - so to speak - a holipsist¹⁰. A position very similar to that which is frequently thought to be the proper solipsism yet isn't. A less radical solipsist cannot propose this or any other alternative to actualism because he in any of such cases then would not only cease to be a solipsist but even also cease to be a sceptic because he would have stated to have objective factual knowledge of (the making up of) the world (external to his consciousness).

2.6.3 Therefore the only thing a solipsist confronted by his own actual subjective existence can do is either to admit his actual subjective existence and by that to stay in the discourse or to deny it and then to become a case of existential absurdity. Yet if he admits his own actual subjective existence he cannot propose to have or to be able to have any objective factual knowledge about the external world. Just to the contrary he would have to propose that he has not and cannot have any objective factual knowledge about the external world. And that's exactly what we want him to confess.

2.6.4 A reasonable former solipsist would then eventually have transformed to become a sceptic.

2.7 As far as scepticism is concerned proponents of this position again have three choices: they can either agree to actualist existentialism as outlined above and then happily live on to be sceptics - at least for a while - or they can refuse actualist existentialism and thereby turn out to have become genuine solipsists and then should not wonder if being treated as such. The most appropriate attitude of a sceptic relating to the question of agreeing to or refusing actualist existentialism of course would be making no decision at all and to remain sceptical instead. But this would be no escape because actually being sceptical about one's own actual existence is not less an existential absurdity as the respective solipsist position and just being as completely meaningless as that.

2.8 So we might conclude this in a more traditional manner: *Nisi sum non cogito*. Or to put this in a more classical Latin and in a one with more notional rigour as the one a particular continental philosopher preferred to apply: *Nisi sum existens prius tum ne cogitans ero quidem*. (If I do not exist at first I then will not be thinking too.)

3 The interface of theories and actual existence: evidence

3.1 Theories do not refer to the actually existing world or to any actual existence.

3.1.1 The actually existing world is not in the scope of theories.

3.1.2 The actually existing world doesn't directly or immediately interact with theories.

3.1.2.1 This is of course is just trivial not at last due to the fact that theories do not act at all.

3.1.2.2 For a better understanding of 3.1.2 please note: The actually existing world has no direct or immediate significance for theories, except for the fact that theories usually are hold by actually subjectively existent entities, which indeed is an important 'fact' (yet not of theories but of life).

⁹ The reason for this is of course that a mental state cannot exist by itself. Yet there would probably be found proponents for that as well. Even if these proponents could no more be regarded as proper solipsists (because they already would have lost that 'ipse' and would perhaps better be called 'mentesolists') there also is an argument of the same sort as the previous one available against such people: At least that mental state must somehow exist. And that existence (or at least some existence which would come up in a possible seeming infinite regress) must be something different than just an attribute of the mental state of which it is supposed to be its existence.

¹⁰ To add insult to injury I have to confess that such a mutation then would seem to me to be a kind of Graeco-Roman style transformation.

3.2 The holders of theories - apparently inspired by that holding - often show a particular attitude towards a presumed relation of theories to the actually existing world, which is: they test them.

3.2.1 Yet testing a theory does not at all imply or yield the possibility of gaining any so called empirical (insight or) knowledge about the actually existing world.

3.3 Testing a theory is essentially nothing but a sometimes quite complicated way of making a very special betting on the outcomes of predictions possible. The result of such bets itself then is sometimes called 'evidence'.

3.3.1 The betting - of what we are speaking here - can be as well a bet between different proponents having opposing expectations concerning the possible outcomes of that testing of a theory as a bet with oneself about the validity of opposing hypotheses one weighs against each other.

3.3.2 Evidence is gained by the results of the betting on the outcomes of predictions. There are mainly three kinds of predictions a) predictions of the outcomes of actions possibly combined with events. Such actions combined with events are normally called experiments, b) another kind of prediction is rather a then still not observed postulate of the theory like for example - at their time - the existence of the neutrino or the aberration of the mercury orbit have been. The observation of the postulated occurrence (i.e. the corroboration of the respective postulate) then has the same significance as the outcome of a proper experiment and - in a sense - is an experiment (with less action and more event).

c) The third kind are the implicit or rather tacit predictions which underlie as well as diffuse into all the applications of theories, i.e. all applied science and thereon based technology. These latest are the ones with the least philosophical relevance because there the basic validity and significance of the respective theories themselves is hardly ever at stake or disputed, but then these also are the bets by winning which one can really make the money.

3.3.3 The particular predictions as related to actual tests or experiments are not a proper part of the respective theories, that is because theories do not specify individual cases and events but predictions must do.

3.3.4 Yet this is not so obvious in the case b) of 3.3.2 i.e. the one of the mentioned postulates.

3.3.4.1 Even though for example in the case of the aberration of the mercury orbit there *had* been indeed still alternative explanations around (even after that prediction of GR had been confirmed), and the mercury orbit after all is quite an individual case.

3.3.4.2 In such other cases - as the neutrino case is one - this can no longer be reasonably proposed, even though absolutely any observation presupposes an extra-theoretical interpretation requiring specifications and even acts of pointing to something for ascribing that something the property of being an instance of a model of a respective theory. But this is just a further explanation of the fact that theories do not refer. It does not provide the means to play down or lower the significance of such kind of postulates which stem from the very entrails of a theory (in the case of Pauli's prediction of the existence of the neutrino from the role of symmetries in QM) and then become confirmed by observation. Thus we have clearly to admit the fact that in such cases a particular evidence appears to come into very close contact with the adjunctive ontology of the respective theory.

3.3.4.3 But even then presumably actually existing neutrinos are not in any sense more a part or an element of QM (or any other theory) than actually existing electrons, the presumed existence of which had not been postulated by QM but rather been - loosely spoken - a dowry by preceding theoretical models (as e.g. Rutherford's model of the atom), i.e. neither neutrinos nor electrons nor any presumably actually existing entities are proper parts or elements of any theory. Simply because of that stubborn fact that theories are made of propositions or models and not of entities.

3.4 Evidence doesn't consist of or lead to (empirical) knowledge of the actually existing world. Evidence rather contributes positively or (in the case of lost bets or lack of evidence) negatively to the degree of conviction which potential (rational and not too old) holders can muster up for their support of a particular theory.

3.5 *Evidence selects.*

3.5.1 To try to provide a better understanding of that selective function of evidence I will - for a moment - transgress to a seemingly unrelated topic being well aware that by this transgression I will hardly make more friends.

3.5.1.1 Saying that theories do not refer implies - in my view - a very strong analogy to saying that biological species do not adapt. I tend to hold both these propositions for similar reasons. Explaining the reasons for holding the proposition related to evolutionary biology may help (or not) to understand the proposition related to the philosophy of science.

3.5.1.2 Adaptation is an utterly Lamarckian concept (despite the fact that Darwin used it at the core of his work). Adaptation implies and demands a possible minute change and variation of the built-in construction of an organism caused by comparably minute interactions with a so called environment which the organism must be somehow enabled to actively grasp or even screen as such. And then to be effective that minute change and variation had to be adjusted to a rather invariant structure of the so called environment and not just to the ever varying appearances of it. But for the organism such an

invariant structure of the so called environment simply doesn't actually exist. If anything at all would exist in that sense then it would have to be the mentioned ever varying appearances and there strictly would be no adaptation or active assimilation possible to that, because an organism impossibly ever could minutely change or vary its built-in construction in any therefore required way as we know from genetic biology.

3.5.1.3 The environment is rather a black box for the organism. And the changes and transformations which the subsequent organisms are subject to in the course of biological evolution are - so to speak - caused by the unpredictable boons or strikes effected by the unaccountable forces in that black box. 'Adaptation' should - in my view - be regarded as to be nothing than a synonym for 'fine tuned selection', but then selection anyway is always fine tuned (i.e. as fine tuned as necessary to be effective).

3.5.1.4 What adaptation implies and demands, namely minute change and variation of a built-in perceptive construction of an organism, can only be accomplished and performed by a learning system. After all adaptation is an utterly Lamarckian concept.

3.5.2 Now let's see if we could have learned (since at least we should be supposed to be somehow learning systems) anything for the sake of the philosophy of science by that transgression to evolutionary biology?¹¹

3.5.2.1 If that proposed analogy holds than the actually existing world should be the same for theories what the environment has been said to be for the organisms, namely a black box. But because that doesn't sound as philosophical speech is supposed to sound, we rather would translate this: For theories the actually existing world is - a sort of - thing in itself.^{12 13}

3.5.3 And evidence (or the lack of it) should be seen as analogous to the unpredictable boons or strikes which - in the case of evidence - now are effected by the unaccountable making of the actually existing world. That these boons or strikes are unpredictable is in no contradiction to the proposition that evidence is gained by the results of the betting on the outcomes of predictions. Because if we would be able to predict these boons or strikes this would mean that we would be able to make a (kind of meta)prediction about the possible success or failure of our original predictions, i.e. we would always win, i.e. we would actually have (total) factual objective knowledge about the entire making of the actually existing world. Which would correspond to an assertion refused in this paper and which - to put it mildly - also doesn't seem to be the case.

3.6 Ceterum censeo: For a theory the actually existing world is a black box or a sort of thing in itself.

3.7 Evidence doesn't provide either falsification or verification of theories.

3.7.1 Evidence instead rather increases or diminishes the strength of the adherence to (or the convictions concerning) particular theories, namely the respective strength (of convictions or adherence) which the holder of these theories can muster. Thereby the insufficiency or lack of evidence might sometimes even induce these holders to give up respective theories.

¹¹ But then there also a note of caution has to be expressed, especially addressed to those which might admit the significance of the analogy mentioned in 3.5.1.1. Despite this analogy of adaptation (of organisms) and reference (of theories) in respect to the fact that both do not exist, I don't view the development of theories in the history of science bearing any relevant similarity to biological evolution. Just to the contrary: there are overwhelmingly differences between these both kinds of development.

¹² The sort of this 'thing in itself' at least is one which is neither derived nor presupposed by any epistemological consideration, i.e. it is not of the Kantian sort.

To address another aspect of our topic in this section, namely the 'interface' of theories and actual existence, might perhaps help a bit to sort out: In the view of so much windowlessness as we ascribed to theories some people might somehow feel reminded of the monads of Leibniz and perhaps such feeling is not completely misleading.

¹³ To carry that proposed analogy between the selection of theories in the course of the history of science and the selection of species in the course of biological evolution to the extreme of a statement analogous to that telling semi-tautology at the core of the theory of natural selection, i.e. the one concerning the 'survival of the fittest' one could state that in the history of science theories become selected by evidence to the result of the 'confirmation of the best-fitting'. Yet as fitness in biological evolution shouldn't imply adaptation but just the ability to survive (at a particular stage of evolution) so 'fitting best' in the philosophy of science shouldn't imply representation but just the ability of a theory to relatively better conceive, elucidate and explicate a theoretical problem or question (at a particular stage of the history of science) than its competitors at that time could do. This could include as well a fitness for successful predictions (or winning bets) as - in particular in somewhat earlier stages of the history of science - a fitness for withstanding being examined in the light of even completely arbitrary authoritative extra-theoretical dogmas. Of course neither the evidence mustered for the predictions nor the ability to successfully pass (or *survive*) the examinations based on those extra-theoretical dogmas ever had anything to do with the proper internal *truth* of the respective theories. (Cf. the sentences 5.6 to 5.17 in this paper.)

Thus the fitness in both cases (the biological and the one related to the historical development of theories) is a *fitness for* (a qualification, a capability or a state of being enabled) and *not a fitting in, a fitting into, a fitting to* or a *fitting with* which all are characterized by connotations implicating adaptation or some kind of a possible mapping or representation.

3.7.2 Theories cannot be falsified but instead become either meaningless (as - very generally spoken - for example the phlogiston theory), defunct (as for example the Ptolemaic system) or a restricted if not transmogrified model (often called: a special case) of another theory (as for example the Keplerian theory in relation to the Newtonian or the Newtonian in relation to GR). After having become meaningless or defunct theories then sometimes even have been given up. But even if theories are given up this is not because of falsification yet because of selection which becomes effected by the relative amount of supporting or debilitating evidence which can be gathered or must be admitted by their agents, i.e. their proponents.

3.8 Theories do not *actually* exist.¹⁴

3.8.1 To spend a little soothing to them which may need it, I am prepared to give a maybe little less shocking *interpretation* of 3.8: Theories strictly are no elements of the Lebenswelt.

3.8.2 It is - to say the very least - reasonable to assume that manuscripts, textbooks, CD-ROMs, writings, sentences, formulas, graphics, illustrations as well as lessons, acoustic occurrences in universities, demonstrations and experiments do exist. Yet theories do not actually exist.

3.8.3 Theories cannot interact, therefore theories cannot actually exist. This seems to lead us to the rather unpleasant conclusion that there are ‘somethings’ which do not actually exist, an assumption which frequently can be found having close ties with weird ideas. To somewhat avoid such unwelcome alliances we say that theories exist not *actually* yet merely *intelligibly*¹⁵, but we agree that such terminological subtlety alone doesn’t effectively fend off weird ideas.

3.8.4 Theories do not act or perform anyhow in the history of science, but theories become selected by potential holders or dismissers¹⁶ according to the respective evidence (or the lack of it).

3.8.4.1 Theories as such do not act upon the actually existing world, i.e. theories as such do not influence, change or alter any actually existing entity or any of the interactions amongst these actually existing entities. Especially also a change of theories (i.e. rather a change of preferences by one or more scientists towards holding another theory instead of the one she or they did hold earlier) doesn’t influence, change or alter any actually existing entity or any of the interactions amongst these actually existing entities.

3.8.4.2 Yet the *holding* of theories might perhaps *motivate* the respective holders to either act in a specific way or to perceive or observe things in a specific way and thereby that holding would perhaps somehow influence their so-called perceptions of the actually existing world. Holding a theory may motivate scientists even to do extreme things. But theories as such never do anything, never act upon anything, never interact with anything. This of course is a mere triviality but shifting the focus to that triviality might help against the tendency of anthropofying theories or else suddenly think of them as actually existing entities.

3.8.5 The actual subjective existence of the potential holders of a theory - including their motivations and convictions - has no relevance whatsoever for the truth and meaning of the propositions of the theory.

3.8.5.1 Any social or cultural context or any psychological or emotional disposition of the potential holders of theories doesn’t affect the truth and meaning of the propositions of the theory in any possible way. Obviously such contexts or dispositions will affect the actual utterances of holders of theories in the same way as such contexts or dispositions affect the utterances of anyone who make any utterance. But the utterances of holders of theories are as such not the same as the propositions of a theory, not even the propositional content of such utterances is by itself necessarily equivalent to the propositions of a theory. To find out if there would be any sort of correspondence between these different kinds of propositions one at first would have to understand the theory and from that perspective judge the propositional content of the respective utterances. This of course is a mere triviality but shifting the focus ... (see above).

3.9 Now, what’s really going on in that development of somethings (called ‘theories’) which allegedly do not actually exist but then somehow seem to have a history of their own?

3.9.1 For a first provisional answer the following must do:

3.9.1.1 It seems as if there would be a beauty contest going on for the relative splendor of being more right than the others at which the competing claims are supported (or not) by evidence (or the lack of it). As the jury in that contest act respective subgroups of (or entangled with) the scientific community having their judgements more or less based on evidence. But even if this comes very close to what there is actually going on it only shows us half the picture.

¹⁴ We understand the term ‘actually exist’ as used in 3.8 in the sense of ‘actual existence’ as introduced in the foregoing sections of this paper.

¹⁵ Saying that theories do not *actually* exist is of course just a special version of saying that propositions or meanings (or ideas) do not *actually* exist; this being a point of view which often led to Platonism. In this paper we will certainly not follow this lead.

¹⁶ Sorry, but sometimes (?) a little Germanism happens.

3.10 There namely are rather two different struggles going on delicately interlocked.

3.10.1 The already mentioned contest is between the proponents of the theories and it is done by the mentioned betting and it is primarily about to be right, i.e. to get the higher score for example in right predictions or consistency.

3.10.2 The other struggle is much harder to understand. It is somehow in between the theories themselves and it is no more a contest at all and in particular it is no more for the relative splendor of being more right than others. Here instead everything is about the ultimate splendor of - oh yeah - truth.¹⁷

3.11 That later struggle will be the main topic of the last section of this paper where we will try our best to somewhat elucidate it. But by now the time has come to look for what we have achieved in this section in relation to our campaign against anti-realism.

3.11.1 And there we have to face a sobering result.

3.11.1.1 If theories do not interact with anything, i.e. do not influence, change or alter any actually existing entity and above all if theories do not even refer then realism(s) of all sorts they may be meta-physical, naive, scientific, internal, moderate, modest or any meaningful combination of these predicates has (have) to be refused.

3.11.1.2 Thus in our rigid campaign against anti-realism of all sorts we just have - it may be admitted - not even exactly by accident killed off realism of all sorts. A strategy which - at the first glimpse - would not appear to be the most target-seeking thinkable or to be overly inspired at all therefore calling it 'very unconventional' as we did at the beginning of that paper seems to be an euphemism as well as an understatement of sorts. So the only thing we can do in that unpleasant situation is to hope - for a second chance to come which then hopefully will show us a more pleasing picture.

4 Theories in themselves: Ontological Relativity

4.1 There is no ontology beyond the ontology/ies of (the) science(s)¹⁸.

4.1.1 An ontology is just an adjunct¹⁹ to a theory.

4.1.1.1 An ontology just should be thought of as a (formally structured) set of all potentially comprehended and acknowledged objects stated by a respective (e.g. physical) theory plus all interaction structures presupposed or implied by the assumption of these objects (the explication of these interactions then being a part of the formal structure of the mentioned set).

4.1.1.2 An ontology - as just defined - therefore is inherently relative to the respective theory which implicates that ontology.

4.1.1.3 As an explication of that ontological relativity we describe it as the *inherent adjunctiveness of any ontology to a respective theory*.

4.2 Actual existence (including of course the actual existence of the actually existing world) is not an element of any ontology²⁰, and that above all because it is not an object of any theory.

4.2.1 A theory cannot have any actually existing entity as a possible object of itself, because theories do not refer.

4.2.2 That actual existence is not an element of any ontology should already become obvious to anyone (somewhat informed) merely by the notion of ontology itself. Ontology means and equally meant to its first practitioners like Parmenides²¹ and Plato²² a logos (i.e. a teaching or a doctrine) of the being.

4.2.2.1 But actual existence in distinctive difference to such a 'the being' is not a subject of any teaching or doctrines because it is not related to, not dependent on and not derivable from (any theses or axioms of) any teachings or any doctrines or any immature theories or science.

¹⁷ That will be the topic of this paper following sentence 5.6.

¹⁸ Please note that the slash in 'ontology/ies' has not the same scope as the brackets in '(the) science(s)', therefore it follows that there are four different yet equally justified possible combinations signified.

¹⁹ By using the term 'adjunct' we try to emphasize on the one hand the (projective) generation of an ontology from the base of a respective theory (where the ontology then could be seen as something like an ontified dual of the theory) and on the other hand the prevalence of the theory with respect to its ontology.

²⁰ The proposition that actual existence is not an element or part of *any* ontology relates also in particular to such chimeras as so-called 'fundamental' or 'existential' ontologies.

²¹ Please note: Parmenides of course incontestably not just intensely pursued ontological questions but even was the primary founder of that subject of ontology as such, *despite the fact* that he didn't use the *term* 'ontology' (which eventually had not been introduced before the early 17th century).

²² Cf. the preceding footnote, exchange 'Plato' for 'Parmenides' and adapt accordingly (i.e. there is usually only one primary founder but possibly more than one primary scholar of a subject).

4.2.3 Therefore (*not* just as a gentle(?) reminder): Actual existence is an utmost radically pre-theoretical crude given the inner sense for which is ultimately and entirely founded in one's own certitude of being actually existent.

4.2.3.1 The preceding statements 4.2.2.1 and 4.2.3 (following the colon) claim an entirely different status than the similar sounding sentences 1.2.1 or 1.2.2 because these then had just been terminological preliminaries whereas 4.2.2.1 and 4.2.3 follow (*ex negativo*) from our foregoing arguments about the inherent adjunctiveness of ontologies to the respective theories.

4.3 A theory by no means ever can produce, create, designate, impart or bestow (the) actual existence for, of, to or on the potentially comprehended and acknowledged objects which that theory states to be its objects. In other words: *a theory doesn't ever yield actual existence*. From that follows

4.3.1 that the notion of 'ontological commitment' is - as the tacit proposition it was designated to be - completely meaningless because as it implies that one who holds a theory should feel (or be) committed also to hold the adjunctive ontology it proves to be nothing but a mere triviality. Anyone who seriously holds a theory cannot ever help also holding its adjunctive ontology. As a term then 'ontological commitment' turns out to be a sort of pleonasm;

4.3.2 that theories do not refer (on - what is often called - an 'outside world', i.e. on an extra-theoretical actually existing world). From that follows

4.3.2.1 again that (scientific) realism(s) of all sorts has(have) to be refused. From that usually is derived

4.3.2.2 a pile of ... - at least in so far as science is concerned - utterly unreasonable, unjustified and unwarranted - allegedly (implicitly) epistemologically founded - (mis)conceptions known as relativism, contextualism, deconstructivism et al. which all have in common that they are (at least implicitly) varieties of anti-realism.

4.4 Now again comes that nasty question up of what we have achieved in this section in our campaign against anti-realism.

4.4.1 And being deeply patient and humble²³ we remorsefully admit that even justified invectives (see 4.3.2.2) are not the best possible substitute for a striking argument. And we also have to admit that the picture we are now confronted with - if at all - changed for the worse since we looked at it the last time at the end of the previous section.

4.4.2 So we hear the triumphant joy of all these anti-realists and with our heart full of mercy we won't envy them their enjoyment - since we know the old wisdom: the end is - sort of - near.

4.4.3 To give - as it is good custom with such prophecies - a more exact date: the end is a little less remote than the length of the next - which also happens to be the last - section of this paper.²⁴

5 Intertheoretical relations: ontological adjustment

5.1 But whatever could then be accomplished by theories, if theories do not refer?

5.2 To start answering with the very least: *theories implicate or postulate objects, i.e. theories essentially objectivate*.

5.2.1 Operating with theories then as a matter of course strictly necessitates operating with the objects of the respective theories. And exactly by doing so anyone who appropriately operates a theory inevitably performs a reasonable approach towards its implicated adjunctive ontology, i.e. its objects or objectivations.

5.2.1.1 Such a reasonable approach could - severely overdetermined - also be called 'ontological commitment' (but better shouldn't, see 4.3.1).

5.2.1.2 But pretending that those objects of a theory would ever be in any sense related to or even be identical with actually existing entities²⁵ would be nothing else than ontological superstition.²⁶

²³ Or what's that synonym for artful?

²⁴ If however it would be *exactly* as far remote as the length of the next section this indeed would not only be a very cheap prophecy but also a very devastating - at least for the prospect of our campaign. By the way that next section is unmannerly long.

²⁵ Thus here for the first time 'objects which are no entities' came across. They might be worth to retain.

²⁶ Unfortunately it was rather something of that sort what we just called 'ontological superstition' what Quine originally meant by 'ontological commitment'. Even though Quine would also have denied that theories possibly could ever refer (in a proper sense of that word), his respective denial was based on thoroughly different reasons above all on his concept of the underdetermination of the theory of nature (by so-called data). This famous concept despite being a philosophical icon revered by many could - perhaps a bit sketchy - be illustrated as pointing out some veil of fuzziness somehow wrapping up the so-called data in some opaqueness (which couldn't ever be completely overcome) and by that diffusing any definite relation from any particular theory to those 'data' thus effectively preventing the positive precision required for any (proper) reference. This then - so to

5.3 Ceterum censeo: There is no ontology beyond the ontology/ies of science.

5.3.1 But the ontology/ies of science is/are not yet completely discovered nor is/are it/they neither comprehensively nor with exceeding depth understood, because for that being the case the ontology/ies of science would at first has/have to be founded in the ontology of the ultimate theory.

5.4 *An ultimate theory is anticipated and foreshadowed in the course of the history of science.*

5.5. *Such a kind of parousia of an ultimate theory anticipated in the course of the history of science comes to light by intertheoretical relations.*

5.5.1 The preceding statements 5.4 and 5.5 could easily be perceived as at best a rather fanciful version of pragmatism or worse than that as a severely chiliastic vision, but they are not meant to be either.

5.5.1.1 The second of these both dismal interpretations is not only the one which is the even more dismal but also the one which unfortunately will at this stage of our argumentation probably by many be seen as the more fitting as well. But soon it anyway will casually become obsolete.

5.5.1.2 There is much more about a certain seeming accordance with an imaginable somewhat teleological version of pragmatism.

5.5.1.3 What could - though in the end rather unjustifiably - be seen as the element of such a seeming accordance would simply be some partial similarity in the respective concepts of truth (which related to this paper still lurks behind the scene).²⁷

5.5.2 Such partial similarity in the respective concepts of truth would be based on only one partly common feature, namely the stand against representation theory of truth²⁸.

5.5.2.1 But as we later will see that stand against representation theory of truth comes in the case of pragmatism from entirely other reasons²⁹ than in the case of *veracious objectivism*³⁰ with ontological

speak - by 'retroaction' leads to the conclusion that potentially infinitely many theories - including mutually incommensurable ones - could be equally consistent with those data. The shortcut for this is called 'underdetermination of the theory of nature'. But there is more about underdetermination than just this 'linguistic' aspect. There is also an epistemological background of this concept from which it even originated. 'Underdetermination' as argued for by Quine in 'Word and Object' (cf. W.v.O.Quine, *Word and Object*, Cambridge (Mass.) 1960, 21ff, 26-35, 40-46, 78) is inseparably connected with a so-called stimulus meaning (cf. *ibid.* 31ff) which again is a home-bred concept of Quine based on a rather indefensible behaviorism.

But all these obstacles and impediments to a relation of theories and 'data' do (at least for Quine) not preclude that relation as such. Quite on the contrary the concept of underdetermination itself strictly implies and requires such a - however diffused - relation somehow to exist. And it is exactly here where ontological commitment comes along as a call not to give up the loyalty to your theory just because of underdetermination.

In sharp contrast to such - except for (post)empiricism - baseless worries we would neither take any 'data' (in the mentioned sense) for granted (nor admit that such a concept has any significance) yet we would consequently deny that that claimed relation (as well as any reference of a theory to any actual existing entities, which of course are something distinctively different from 'data') exists at all.

²⁷ But then also made a step forward lately.

²⁸ A representation theory of truth shall be defined in this paper as a theory of truth which states that a claim of truth (i.e. a claim of being true) of a theory or a claim of truth of a sentence (or a statement) of a theory is justified (or warranted or confirmed) if that theory (or respectively that sentence or that statement) corresponds to an extra-theoretical (or extra-linguistic) fact (of the so-called real world). The expression 'corresponds to' in the previous sentence means 'refers to in the way of an one-to-one mapping (or a bijective mapping or an isomorphism)'. Thus by substitution: a representation theory of truth states that a claim of truth of a theory (or a sentence etc.) is justified (or etc., see above) if that theory (or etc., see above) refers to an extra-theoretical (or extra-linguistic) fact (of the so-called real world) in the way of an one-to-one mapping (or etc., see above). A historical example of a representation theory of truth is the Thomistic adequation theory of truth (*adaequatio intellectus et rei*). The 'correspondence theory of truth' of A.Tarski - which had been very unfortunately named this way - has been sometimes unjustifiably misinterpreted as a kind of representation theory of truth.

²⁹ And is as well conceived there under the premises of an entirely different conceptual scheme, namely a watered-down epistemological one.

³⁰ I would have preferred to call that kind of 'objectivism' - which will be clearly presented in the following - 'veritative objectivism' but for not to overdo the introduction of neologisms I then decided to better drop that intention. Most important in the characteristic of the objectivism we will present is that it essentially has to do with truth, but that it is not at all in the common sense 'verificationist'. I.e. it is not about any justification or verification of sentences or the methodological reflection of how possibly to do so and it is also not about criteria, standards and measures relevant for such purposes. I.e. it is not about any potential *practice of verifying* but about something completely different and perhaps strange, namely about a certain self-contained process of the increase of truth. 'Verification' on the contrary suggests a *method or practice* of gaining truth or making something true and this is not implied in veracious objectivism.

Yet verificationism might be a effective if not the only way to accurately point out a reasonable notion of 'truth' for the ordinary language, but actually to do that would - in my view - be indeed a much harder task than for example just defeating anti-realism. One reason for the intricate difficulties of such a task would be the lack of the relatively invariant anchor of theories in ordinary language and the excess of arbitrary context-dependent belief systems instead.

adjustment as we - admittedly a bit long-windedly - like to name our position. Obviously such difference in the respective reasons should not come as a surprise since pragmatism after all is a species of anti-realism which is something veracious objectivism with ontological adjustment of course shouldn't be.

5.5.3 Thus the distinctive difference between pragmatism and veracious objectivism with ontological adjustment now comes up exactly in respect to the same matter at which the seeming accordance of them both could have been found before, i.e. in respect to their concepts of truth. And this again should really not come as a surprise since - up from the beginning of this paper - we bluntly announced it as *anti-anti-realism with intuitionist negation*.³¹

5.5.4 The concept of truth as proposed in veracious objectivism with ontological adjustment is - in sharp contrast to that of pragmatism - not at all dependent on any practice or utility and no pragmatic aspect of operating or propagating theories matters at all for the validity of truth as related to veracious objectivism with ontological adjustment.

5.5.5 Pragmatism of course is merely a special case of anti-realism in general. Therefore more generally speaking we say that the concept of truth as proposed in veracious objectivism with ontological adjustment is - in sharp contrast to that of anti-realism - not at all dependent on any extra-theoretical context be it pragmatic, social, cultural, psychological or epistemic in whatever disguise.

5.5.6 The concept of truth as proposed in veracious objectivism with ontological adjustment instead is found as well as founded in particular intertheoretical relations between certain successive theories.

5.6 We will call that kind of intertheoretical relations the *intertheoretical truth-relation*.³²

5.6.1 In the following we will show that the intertheoretical truth-relation is designed as to be an application of the correspondence theory of truth which had been originally proposed by Alfred Tarski.³³

5.6.1.1 The 'correspondence theory of truth' had been sometimes misinterpreted by philosophers as a somehow formalized version of the Thomistic adequation theory of truth (*adaequatio intellectus et rei*), but it never was meant to be that, it never was that and it even never could have been that.³⁴

5.6.1.2 The correspondence theory of truth was introduced by Tarski for purely (meta)mathematical reasons namely to explicate the *semantic* concept of truth³⁵ which is inherent in model theory of which Tarski was the primary founder.

5.6.1.3 The criterion of truth in Tarski's semantic theory of truth goes as follows

$$\text{"p" is true iff p} \quad (1)$$

(1) simply says that a statement "p" of an object-language OL is true in a meta-language ML, in which also the predicate "true" is used, if and only if it is satisfiable in ML. Thus (1) first of all is a statement of ML. 'Satisfiable in ML' means that there must be a possible consistent and meaningful interpretation of "p" in ML. Such consistent and meaningful interpretations here are usually called 'models'. Then (1) actually says that "p" is true in ML if and only if there is a model p of "p" in ML. Which could also - a bit shorter - be expressed by (1*)

$$\text{"p" is true in ML iff there is a model p of "p" in ML} \quad (1^*)$$

³¹ For a more detailed explanation of what is meant by anti-anti-realism with intuitionist negation see the footnote of 5.16.

³² For more details about the intertheoretical truth-relation cf. D.Kurth, *Der Weg der Wahrheit*, in: P.Eisenhardt, F.Linhard, K.Petanides (eds.), *Der Weg der Wahrheit*, Hildesheim 1999

³³ Cf. A.Tarski, *Der Wahrheitsbegriff in den formalisierten Sprachen*, *Studia Philosophica* 1, Leopoli 1935 (repr. in: Alfred Tarski *Collected Papers* vol. 2, Basel Boston Stuttgart 1986, pp 51-198). A further explanation of Tarski's concept of truth where he also deals with the philosophical interpretation of his theory can be found in: A.Tarski, *The Semantic Conception of Truth and the Foundations of Semantics*, *Philosophy and Phenomenological Research*, vol. 4, 1944 (repr. in: Alfred Tarski *Collected Papers* vol. 2, Basel Boston Stuttgart 1986, pp 661-699).

³⁴ Tarski's correspondence theory of truth is on no account about a correspondence between a sentence or proposition on the one hand and an (extra-linguistic) fact on the other. On the utmost contrary it states a correspondence between two sentences or propositions of which one is a sentence of a (formalized) object-language quoted in quotation-marks in Tarski's famous truth-matrix (see 5.6.1.3 of this paper) and the other is a respective version of that truth-matrix (or criterion of truth) itself which of course is a sentence of a respective (formalized) meta-language. Furthermore Tarski's correspondence theory of truth doesn't apply to ordinary languages anyway because an ordinary language is not a formalized *semantically closed* language; but - by the way - theories are.

³⁵ In contrast to *syntactic* concepts of truth (as provability or derivability) which are characteristic for e.g. proof theory and most mathematical practice.

and of course (1*) has to be a proper sentence of ML, therefore than the expressions ‘in ML’ and ‘there is a model .. of "p" in ML’ turn out to be fully redundant and (1*) turns out to be a redundant version of (1).

5.7 Applying the semantic concept of truth in the field of intertheoretical relations for the purpose of establishing an intertheoretical truth-relation is definitely a bit more complicated as applying it in (meta)mathematical model theory.

5.7.1 The main objection against trying to do so would probably run under the title of incommensurability.

5.7.1.1 But that objection stands and falls with the (rather unreasonable) measure of commensurability it usually presupposes.

5.7.1.2 At least there are enough historical cases available which by a minute reconstruction could be shown to be proper examples for the applicability of that proposed intertheoretical truth-relation. Such amongst others are in particular the Newtonian revolution for which it can be shown that for Newton’s theory of gravitation models - which indeed had to be slightly altered compared with the respective proper Newtonian models - could be constructed effectively matching Galilei’s theory of gravity, Kepler’s theory of planetary motion and Huygens’ theory of the motion of the pendulum. And the same applies to Einstein’s theory of general relativity with respect to Newtonian gravitation, Einstein’s own special relativity and by that of course also Maxwell’s electrodynamics.³⁶

5.7.2 Of course the crux of that matter has to do with the mentioned ‘slight alteration’. But then this is altogether a technical question concerning actual reconstructions of such stages of scientific progress, and there are no a priori arguments against the possibility of an appropriate minute reconstruction of respective cases. I.e. reconstruction as such by no means implies incommensurability.

5.7.2.1 And for now that must do as a preparation for introducing the intertheoretical truth-relation.

5.8 As an application of the semantic concept of truth the intertheoretical truth-relation goes as follows

$$T_2: "p_{T_1}" \text{ is true iff } M^* p_{T_1} \quad (2)$$

(2) says that a statement " p_{T_1} " of a preceding theory T_1 is true in a succeeding theory T_2 if and only if there is a *peculiar* model $M^* p_{T_1}$ of " p_{T_1} " in T_2 .

5.8.1 What we have done here obviously is to take a succeeding theory T_2 as a kind of meta-language related to a preceding theory T_1 as the respective object-language.

5.8.2 The *peculiarity* of $M^* p_{T_1}$ (expressed by the asterisk) is altogether due to the crux concerning the mentioned ‘slight alteration’. Obviously in many cases in which the intertheoretical truth-relation might be applicable and then especially in the more interesting ones there will be no proper model of a statement of a preceding theory T_1 found as well to be a proper model of a respectively succeeding theory T_2 . Instead in T_2 there must at first be a new model constructed only for the purpose to satisfy for " p_{T_1} ". Such a new model then would probably differ significantly from the proper models of T_2 . It would probably be characterized by restrictions compared with the respective proper models of T_2 , i.e. important features of T_2 would become meaningless in the particular context of that peculiar model $M^* p_{T_1}$ and - somehow as a ‘substitute’ - different theoretical terms would probably ad hoc be introduced which would be seen as meaningless in T_2 . Altogether $M^* p_{T_1}$ of course would be quite trans-

³⁶ But then immediately a note of caution must be made. There are of course also - more or less - directly succeeding theories to which such an intertheoretical truth-relation is not or only in a drastically altered way applicable. The later are for examples cases in which the succeeding theory would not be inherently improved, i.e. for example a case where there would be no amplification of the original scope (or extension of the preceding theory) be found in the succeeding, i.e. relatively new theory.

A good example for that is the intertheoretical relation of the Ptolemaic and the Copernican system despite the fact that this so-called revolution is usually rated as one of the outstanding popular examples of scientific progress. Yet in fact it was mainly a transformation of coordinates. Both theories are purely phoronomic theories, i.e. they contain and imply no relation whatsoever to any dynamical concept or aspect. By calling these theories ‘phoronomic’ it is also meant that they are not even just kinematic theories, since being a kinematic theory implies by the historical introduction of kinematics well enough a relation to dynamics, namely a relation of methodically skipping the nevertheless strictly presupposed and recognized dynamical causes of the considered motion. But such causes haven’t been at all considered in either the Ptolemaic or the Copernican theory.

And as just a phoronomic theory the Ptolemaic was the better one, i.e. it significantly better matched the observations. The main reason for that has to do with a technical aspect, namely the punctum aequans which comes surprisingly near to the empty focus of Kepler’s ellipses. Therefore the planetary motion if represented as seen from that punctum aequans as well would surprisingly resemble that which is known from Kepler’s theory. And - by the way - the Ptolemaic theory could do with fewer epicycles than the Copernican.

The true revolution initiated by the Copernican theory was of course in regard of its consequences for respective doctrines of the church and by that for the entire weltbild of that time in history.

mogrified compared with the proper models of T_2 , i.e. it would only be a very partial model of T_2 and even as such it would look rather bizarre.

5.8.3 But such features or theoretical terms becoming or being *meaningless* would as long be of no relevance for a possible reconstruction of " p_{T1} " under the auspices of T_2 as long as such a reconstructed model $M^*_{p_{T1}}$ would not be *inconsistent* with T_2 .³⁷ And in the eyes of some looking bizarre might even be fashionable.

5.8.4 Now we hope to somewhat have elucidated the rôle that uncommon 'veracious' has been designated for to play in veracious objectivism with ontological adjustment, but what's about the other elements of that long-winded expression?

5.9 *Objectivism and ontological adjustment will eventually go together.*

5.9.1 Objectivism could easily be explained as a position standing for the argument that there are possible statements or sentences the asserted truth of which is valid utterly independent on any direct or indirect subjective motives, contexts or pre-understandings. The subjectivity in question must not be confined to an individual but could also be incarnated in social or cultural contexts, influences or traditions. But there is essentially more about objectivism than such an ordinary definition could bring out.

5.9.1.1 Objectivity as pointed out in 5.9.1 could obviously be only found in theories. And that is so not primarily for the incorruptibility by which theories come to their judgements since theories do not come to any judgements anyway.³⁸

5.9.2 But it is so for the fact that *theories objectivate*.

5.9.2.1 Now, 'objectivation' is admittedly a neologism but then it is also nothing really new, at least not in this paper. 'Objectivation' is just the term we use to describe the fact that a theory implicates the totality of its objects (including all relations between them)³⁹, i.e. its ontology (cf. 5.2.1), which again is the ontology of the stated facts of the theory.

5.9.3 So we should better say: that *theories objectivate factually*. Factuality now is - so to speak - the meta-ontological counterpart of actuality, namely the way the *intelligible objects* of theories *intelligibly meta-exist*.⁴⁰

5.9.3.1 And to say that a theory implicates the ontology of its stated facts is again rather a further explanation of the statement that any theory has its ontology just as an adjunct (cf. 4.1.1.3 and 4.3.1). But when we dwelled the question of an ontology merely being adjunctive to a respective theory then these ontologies had been quite relative. And that was a bit 'bad'.⁴¹ Therefore time has come to put that overdone relativity of the ontologies in order, i.e. *to adjust the ontologies*.

5.10 *Ontological adjustment means that the ontologies of respectively appropriate theories become adjusted in the course of the history of science by means of the intertheoretical truth-relation.*

5.10.1 Truth as increasingly revealed or discovered by subsequently succeeding theories is then an *entailment* of these theories which are linked by the intertheoretical truth-relation in the history of science.

5.10.1.1 Already the truth of the first theory - which satisfies the required standard of formalization, namely the 'theory of planetary motion'⁴² by Hipparchos of Nicaea⁴³ - as *revealed or brought into*

³⁷ Could it possibly be the case that some anti-realists should get a creeping feeling as if some of the stuff they usually like to throw at others comes flying back?

³⁸ This was a bit unfair, but actually theories also do not come to *conclusions*, but only scientist do so by using theories. Theories *as such* contain no conclusions but - at best - just implications. This - by the way - marks an important difference of the works of scientists and detectives.

³⁹ Of course this includes as well all relations of higher order like functions, functionals etc. and by that in the end the network of the entire formal structure of which the primitive objects merely mark some crossings of the ties.

⁴⁰ For pointing out the distinctive difference of the status of theoretical objects on the one hand and actual existing entities on the other we have to use some telling predicates. But by using 'intelligible' in contrast to 'actual' (see also 3.8.3 of this paper) or 'meta-exist' in contrast to 'exist' we do not want to imply, indicate, insinuate in any way that we tend to a dualist or Platonist position either in 'ontology' (as it is traditionally understood) or in the theory of universals. On the contrary: we oppose dualism and Platonism vigorously in any of its appearances. But all these subjects are not the topic of that paper so we only can assure you if there would be more time we could bring forward the required arguments to show why we do so justifiably. Just to give a hint: such arguments would probably have to do with an *appropriate* kind of neutral monism and - by the way - with the fact that 'meta-existence' obviously does *not* imply 'pre-existence'.

⁴¹ I.e. it is 'bad' in our view, not only because it is so fine in the anti-realists view but also for that reason.

⁴² To be a bit stubborn: 'Theory of planetary motion' is of course just a name because there is no, there never was and there never will be a theory of planetary motion, if one understands by 'planetary motion' an actual happening going on in the actual existing world. This of course doesn't relate specifically to a theory of planetary motion but equally to all theories. Yet it might become more evident in a case like Hipparchos' theory since today hardly anyone anymore would believe that planets run on epicycles which themselves run on a deferent.

*appearance or discovered*⁴⁴ by its actual successor theory (which could in fact be as far remote as the theory of Tycho Brahe⁴⁵) is an *entailment* of all succeeding theories eventually up to the ultimate theory.

5.10.2 But it is of course not the *proper ontology* of the theory of Hipparchos or the quite equivalent one of the Ptolemaic system which will eventually become a proper part of the proper ontology of the ultimate theory. It didn't even become a proper part of the proper (and of course mutually distinct) ontologies of Tycho Brahe's, Kepler's or Newton's respective theories.

5.10. 2.1 The proper ontologies of the different theories in the history of science still remain to be relative.⁴⁶ But they are linked by the reconstructed, i.e. 'slightly altered' models⁴⁷ as outlined related to the intertheoretical truth-relation.

5.10.2.2 And it is by the chain of subsequent intertheoretical truth-relations how the true substance⁴⁸ of these relative adjunctive ontologies becomes refined. Refinement then means that only these elements, parts or aspects of the adjunctive ontologies of preceding theories maintain significance (i.e. are regarded as being true in the context of an appropriate reconstruction) in the course of the history of science which can be linked by the intertheoretical truth-relation with appropriately altered models of a succeeding theory (at which these models could also be accounted for as potentially meaningful).

5.11 Thus ontological adjustment is exactly this process of refinement, i.e. the subsequent pointing out of appropriately altered models of theories in subsequent applications of the intertheoretical truth-relation.

5.11.1 Since the adjunctive ontology of a theory is nothing but the entirety of the models of that theory we are entitled to speak of ontological adjustment despite the fact that the proper ontologies of the original theories still remain relative.⁴⁹

5.11.2 Now, what's still left to do? Oh yeah, there was that 'severely chiliastic vision'. Now, I suppose that no one at least a bit reasonable could mistake veracious objectivism with ontological adjustment or that process of refinement of the ontological substance (sometimes simply called: truth) by the means of iterated applications of the intertheoretical truth-relation for a severely chiliastic vision.

5.11.2.1 But then there was also that reference to an ultimate theory, supposed to be anticipated and foreshadowed in the course of the history of science.

5.12 That science has an inherent tendency towards unification and thereby an increase of the internal complexity of the succeeding rather more unified theories compared with their respective less unified predecessors should be evident to anyone who ever looked a bit deeper at the history of science, not at least at the rather later stages of it.

5.12.1 Therefore the presumption of an ultimate theory to come is nothing more than a simple extrapolation of that inherent tendency severely enforced by the implications of veracious objectivism with ontological adjustment, in particular of course by the intertheoretical truth-relation.

5.12.2 An ultimate theory should not be thought of as being something mysterious. An ultimate theory will not refer more to the extra-theoretical actually existing world than any other theory ever did, i.e. it will not refer to that at all. And by that an ultimate theory consequently has ever to be regarded to be just a provisional ultimate theory.

5.12.2.1 No actual theory ever could be rated as the ultimate theory beyond any possible doubt, i.e. any apparently ultimate theory could turn out only to be - so to speak a little bit seemingly paradoxical - a provisional ultimate theory. But this of course would not devalue the significance of the concept

⁴³ We don't say or want to imply that Hipparchos' theory was actually the first theory in the history of mankind's endeavours of theorizing, but it is - to our knowledge - the first one of which we have enough hard information for the purpose of reconstructibility and a respective degree of formalization on the one hand and for which a clear link to succeeding theories can be shown on the other. Yet any other possibly more ancient theory be it of Babylonian, Egyptian, Indian, Greek or whatever origin which would meet a comparable standard could of course turn out to be the 'true' first theory. The link to succeeding theories wouldn't even have to be to the same type of theories, namely an astronomical or phronomic one, as it is the case for Hipparchos' theory.

⁴⁴ I am not at all interested in the meaningless discussion if theories 'discover' or 'invent' their assertions. Such a discussion would only make any sense at all under the assumption that a representation theory of truth applies. But there is a meaningful interpretation of 'discovery' which doesn't imply such epistemologically contaminated connotations. It goes in the direction of the meanings of for example 'making something apparent', 'bringing something into appearance' or 'reveal something'.

⁴⁵ Since the Ptolemaic system was merely a strictly conservative extended application of Hipparchos' theory and the Copernican system was mainly a transformation of the coordinates of the Ptolemaic system But there are also arguments for the usually hold opinion that the Copernican theory would be an appropriate candidate.

⁴⁶ But from now on that relativity shouldn't be anymore so much overstated as it has been frequently done.

⁴⁷ Yet sometimes a rather *hefty slighness* (sorry) might have to be applied.

⁴⁸ Which stands for a dynamically increasing core or generative invariant of reconstructible claims of truth in the history of theories.

⁴⁹ It sometimes helps to think about intuitionist logic, i.e. intuitionist negation in particular.

of an ultimate theory since that turn from the status of an ultimate theory actually recognized as such to a status of a merely former ultimate theory could only take place by the actual establishment of a then newly accepted ultimate theory thoroughly encompassing its predecessor (as always in the history of science).

5.12.3 Therefore it must be said, that the concept of an ultimate theory is sort of a very modest one. I.e. it only implies that the ontology of the ultimate theory provides the utmost true factual objectivation corroborated by a maximum of evidence and validated by the greatest possible coherence, i.e. the maximally attainable truth. But that's already the main point of it.⁵⁰

5.13 And now the time eventually has come to make good for our prophecy in 4.4.3, since that last section of that paper meanwhile became a bit lengthy.

5.13.1 In the beginning of this paper we proposed that realism and anti-realism would show some equivalence under a certain aspect and that anti-anti-realism with intuitionist negation would not do so. And we were hopeful that in the course of the paper that aspect would come to light. And so it did.

5.14 That certain aspect is the underlying theory or standard of truth, namely a common fixation of anti-realism as well as realism to a representation theory of truth.⁵¹

5.14.1 Thus that's the gist of the matter both realists as well as anti-realists deeply believe in the representation theory of truth as the natural and only possible standard of truth. One difference however lies in the fact that poor realists honestly believe in that bogus, but some tricky anti-realists don't even believe in their beliefs.⁵² Various realists believe in representation theory of truth in the sense that they in different degrees of intensity believe that its promises are more or less redeemable. Various anti-realists instead believe⁵⁴ in representation theory of truth in the sense that they in different degrees of intensity do *not* believe that its promises are redeemable. And based on this then they say that *for that reason* there would be no relevant notion of truth in science (or at least that in principle truth would not be attainable in science).

5.15 All the trick of that argument is concealed in that '*for that reason*'. That's the place where they hide the tell tale trace which leads to the evidence that they inconsistently adhere to the representation theory of truth and refuse it *at once*.

5.16 Anti-anti-realists with intuitionist negation⁵⁵ instead hold that the representation theory of truth is at best an obstinate illusion or worse an utterly meaningless and severely misleading fixed idea.

5.17. Truth instead emerges together with the emergence of proper scientific theories and increases in the course of the history of science.

ADDENDUM: Now the end of this paper comes really somewhat nearer and therefore the day of judgement not just for the sceptics but even for all the remaining anti-realists has come.⁵⁶ That might turn out to be a bit boring or redundant since all the basic arguments have been already presented but as a matter of fact we planned our campaign methodically and we will also bring it to an end this way.⁵⁷

⁵⁰ Fortunately there can be found various other types of modesty too.

⁵¹ More than 10 years ago Peter Eisenhardt several times energetically used to stress that theories would not be something like window glasses or spectacles. At that time I wondered what he wanted to say in particular because I knew that he was not in favour of externalism (in the philosophy of science) or instrumentalism. Now I tend to think that it then was his way to show his reservation relating to a representation theory of meaning (with respect of theories).

⁵² Yet in the case of some anti-realists not to believe in their own beliefs then could be rated as a first indication of becoming reasonable, so maybe they believe in their beliefs indeed.

⁵³ Just another try to bring the message out: most realists view theories as if they would be something like (slightly abstracted and remarkably clear-sighted) persons, some anti-realists (for example radical constructivists) tend to view persons as if they would be something like (slightly animated and severely handicapped) theories; both views are mistaken.

⁵⁴ I.e. accept it as a relevant measure which can be matched or not be matched or - in an extreme version - even never actually be matched, but even for that extreme version then still serve as the tacit measure.

⁵⁵ OK, now then the definition: anti-anti-realism with intuitionist negation states *similar* to anti-realism that the common prevailing standard of truth as set by realism is unwarranted. Yet anti-anti-realism says so for an entirely different reason than anti-realism. Anti-anti-realism holds that standard as being *meaningless*, anti-realism holds that standard as being irredeemable. Then anti-anti-realism with intuitionist negation as presented in this paper provides an alternative standard of truth whereas anti-realism laments or rejoices at the seeming fact that there would no (claim of) truth be redeemable in scientific theories. I.e. anti-anti-realism with intuitionist negation negates anti-realism obviously without becoming realism again. This also will provide us the means to then finally dismiss any of such expectable arguments claiming that veracious objectivism with ontological adjustment enforced by the intertheoretical truth-relation would in the end just be a special sort of anti-realism.

⁵⁶ The end announced in 4.4.3 already came in 5.15.

⁵⁷ And to be honest now *we* want to have some enjoyment to *our* taste.

Our very unconventional strategy - announced in the beginning of this paper - of course was to at first build up the most conclusive and - as in particular the many readers which are partial to realism will agree - even quite

But let's proceed step by step and start with the steadfast sceptics. For the sceptics namely the day of judgement is rather - literally - the moment of truth.

Let's at first recapitulate the sceptics' argument or rather his two arguments linked by a peculiar and unwarranted implication. The sceptics (in various versions and with various qualifications) essentially say

(1) that there is no reliable⁵⁸ objective knowledge of the outside world⁵⁹ attainable and

(!) *for that reason*

(2) that there is no 'truth' ascribable to theories.⁶⁰

Now, we are *not* in any discussion of (1) since we hold (1) for being a meaningless play of words⁶¹, and - what's most important - we, i.e. the proponents of veracious objectivism with ontological adjustment enforced by the intertheoretical truth-relation⁶² are *in no way obliged* to be in a discussion of (1) to defeat the claims of the sceptics as stated in (2). The reason for this of course is that we explicitly presented a concept of truth that in no way relies on epistemological presuppositions as stated in (1) and which will be valid independently of the fact which of the following cases applies to the assertion (1) of the sceptics namely if it would turn out either to be justified or to be unjustified or - what it is in fact - to be utterly meaningless.

But now let's change sides and have a look how the sceptics or any anti-realist might try to defend their conviction.

How then could a sceptic or any anti-realist try to defy veracious objectivism as outlined before in that paper? In the first instance such defiance doesn't seem to be a task too hard. The sceptic simply could assert that veracious objectivism as outlined in that paper is unwarranted, i.e. false. Which would be the same as saying that veracious objectivism doesn't give the right picture of the history of science, in particular that the proposal of an intertheoretical truth (or correspondence) relation is unwarranted. But as being a proper sceptic a sceptic is not entitled to do so, because scepticism is an essentially epistemological position defined by - rather ridiculous yet nevertheless purely - epistemological convictions.⁶³

Therefore by raising such objections (as mentioned before) against veracious objectivism the sceptic already has ceased to be a sceptic. Because even if he would be right, such objections would be no epistemological objections at all but purely factual objections decided upon by arguments concerning the philosophy and history of science. The sceptic anyway would then have transformed into a sort of relativist or contextualist or social constructivist, and would as such also be obliged to bring some respectively relevant arguments forward.

A sceptic of course could be more intelligent than doing so (especially considering the appalling consequences). He could either say he wouldn't care at all about veracious objectivism or that even if veracious objectivism would provide an appropriate picture of the history of science (with some inherent function of progress) he still would not care because an appropriate picture of the history of sci-

radical anti-realist position. In the course of that build-up we then sorted out the not so conclusive varieties and after having admitted the genuine conclusiveness we showed that it eventually cannot stand firm against the exposure of that not so little (and even not so secret) dirty secret of anti-realism namely sharing the same attitude towards truth with realism. This secret being nothing than the enshrined idol of epistemology.

⁵⁸ The difference between the various kinds of sceptics reaching from radical to moderate ones is mainly about the degree of reliability.

⁵⁹ I.e. of course the world outside of the consciousness of a respective subject.

⁶⁰ That ascribability might be qualified as 'legitimately', 'justifiably' etc., but that makes no difference.

⁶¹ And we did thoroughly justify that standpoint by the argumentation in that paper concerning the misconception of possibly having objective, i.e. theory-based knowledge of the actually existing world. The real problem is of course with the notion of 'knowledge'. Realists as well as anti-realists use this term as if it could be taken as an unspecified comprehension of practical, so-called empirical and theoretical knowledge. But practical skill - even very generalized and methodically organized versions of this - belonging to the realm of actual existence on the one hand and theoretical knowledge on the other are entirely different things whereas so-called *empirical* knowledge is a misconceived mongrel brought up by erroneous epistemologies. (Don't worry about that 'realm' we still maintain our rigorous anti-Platonist stance.)

⁶² From now on we refer to 'veracious objectivism with ontological adjustment enforced by the intertheoretical truth-relation' a bit shorter as just 'veracious objectivism'.

⁶³ But note: that sword doesn't cut at all at both sides. We, i.e. the veracious objectivists (as alluded to in this paper), didn't ever use any epistemological arguments. Just to the contrary veracious objectivism implies that epistemological arguments are of no avail whatsoever concerning the question how the scope of scientific theories in the course of the history of science widens or how the set of true propositions (or models) of the theories increases in the course of the history of science.

ence by no means would yield or guarantee an appropriate picture of the real world. Especially that later argument seems to make a hit. But then it also indicates a fatal inconsistency (which applies as well to the simple denial to care at all about veracious objectivism) in the sceptics seeming argument. By denying veracious objectivism any relevance for the question concerning the true picture of the real world the sceptic sets a *standard* for what such a picture would have to be. And it is no wonder that the standard he must set is simply the standard of realism.⁶⁴ To defend that standard of truth he then inevitably would have to recur to a sort of representation theory of truth like for example the Thomistic adequation theory of truth (*adaequatio intellectus et rei*) and that of course is what he cannot do as a sceptic. The only thing what is left to the sceptic then is to say that a representation theory of truth is utterly irredeemable (by his defining presupposition for being a sceptic) on the one hand but that it is also his strictly presupposed standard of truth on the other. *And thereby the inherent inconsistency which is as well the principal trick of scepticism became apparent.*⁶⁵

Thus *nothing* helps him out against veracious objectivism because this position is in no way whatsoever related to a representation theory of truth, and so we are not obliged either to join his lamentations or - as realists would be - to try to convince him of the opposite concerning his view of the redeemability of the representation theory of truth. Yet the sceptic would still be obliged to argue against the assertions of veracious objectivism in case he would intend to stay in the discussion at all. And by doing so he would cease to be a sceptic and this time even finally. By refusing to do so he would be out of the discussion exclusively by his own fault.

But what's about the other remaining anti-realists - the relativists, contextualists and social constructivists - for they at least seem not to argue based as exclusively and specifically as sceptics must do on epistemological convictions. I.e. they seem to skip the argument (1) of the sceptic and just to hold on to the second argument (2). This is also the position the sceptic's one would have turned to by him seriously trying to stay in the discussion with veracious objectivism after having been defeated, i.e. proven to be inconsistent relating to his first argument (1).

But one has to note that meanwhile something important has changed concerning the possible effectiveness of the usual tactics of such remaining anti-realists. The exit to the usual escape route of these relativists, contextualists and social constructivists et al. has been finally locked up. I.e. if challenged on the field of the history or philosophy of science most of them sooner or later often try to retreat to a rather unspecified scepticism, which at least is a revelation of the fact that that actually is their tacit presupposition providing the base of their argument. Yet this escape route now is no more available for them. Therefore it all boils down to an argument about the proper history and philosophy of science.⁶⁶ There are of course no a priori arguments concerning that matter. But there is the challenge of an internalist reconstructional ansatz based on the intertheoretical truth relation (or an implicated entailment theory of scientific truth) to the externalist (mis)conception of the history of scientific theories as the narrations of its various (social, cultural, biographic etc.) contexts.

Then there is a comparably sober kind of anti-realism left namely instrumentalism which wouldn't deny that there is truth gainable by theories and that this truth could even increase in the history of science. But instrumentalism would put a certain reservation forward relating to a presumed distinction between different asserted qualifications and consequently varieties of truth itself. This asserted difference would be seen by instrumentalists as being between the attainable truth provided by the fitness or capability of steadily improved theories on the one hand and the unattainable ideal of an authentic truth thought of as representing the entire real facts. And already claiming such a distinction between those two kinds of truth is just the same as claiming that a representation theory of truth could be justified and valid. But we have tried to show for the philosophy and history of science that such validity or even any possible applicability of a representation theory of truth with respect to either theories as such or the history of science should better be precluded. There is no meaningful difference justifiably conceivable between a maximal and a maximal attainable truth, and asserting such a difference reveals again just a fatal inclination to the representation theory of truth and by that the inherent inconsistency of anti-realism becomes apparent once more.

⁶⁴ This might seduce us to the innuendo that a sceptic - or for that any anti-realist - is in fact just an offended realist.

⁶⁵ Cf. sentence 5.15 of that paper.

⁶⁶ And this evidently holds as well for the cases in which the respective anti-realists are *not* (explicitly or tacitly) affiliated to a proper epistemological position.