THE IDEAL AS REAL AND AS PURELY INTENTIONAL – INGARDEN BASED REFLECTIONS

by

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The paper takes its departure from Ingarden's distinctions between four different main modes of being: absolute, extratemporal, real, and purely intentional. It introduces a distinction between two kinds of ideal entities: impurely ideal and purely ideal. Of the former kind are universals, and of the latter numbers; Ingarden regards both as existing in the extratemporal mode. It is then discussed whether Ingarden, and many others, has fallen prey to a mode illusion; and that, in fact, the impurely ideal entities exist in the real mode and the purely ideal in the purely intentional mode of being. The answers are weakly affirmative. On these presuppositions a concept of 'mixed intentional object' is introduced. It seems to be of importance for how to understand numerical scales and the development of science.

1. Modes of being and mode illusions

Like Ingarden, I think that we cannot make ontological sense of the world in which we live without postulating more than one mode of being. There are in the world not only different kinds of entities; there are different ways of existence, too. In what follows, I will take my presentation of Ingarden's modes of being in my other paper in this issue for granted ("The Basic Distinctions in Ingarden's *Der Streit*"). Also, I will take it for granted that Ingarden can explain how it is possible for different persons to refer to one and the same purely intentional object; see (Johansson 2010).

Ingarden made his investigations of modes of being in the hope of elucidating, and thereby help to settle, what was at issue between his own external-world realism and Husserl's transcendental idealism, but he never completed this project (Johansson 2010). In the terminology of *Der Streit*, Husserl argued that what is normally called 'real entities' (material things and processes) does not exist in the mode of the temporal, but in the mode of the purely intentional; where the founding acts are not located in ordinary human beings but in transcendental egos. Ingarden seems to have had the suspicion that Husserl had no clear conception of what it means for an entity to exist in such a mode; be the founding subjects ordinary or transcendental egos. Probably, he thought that Husserl's transcendental idealism could not take care of one of the things he stressed, namely that purely intentional entities have spots of indeterminacy. Now, be this for this paper as it may. I only want to stress that if one accepts the idea of different modes of being, then one can start to speak about mode mistakes and mode illusions. A kind of entity that one at first thinks has a certain mode of being might — more carefully seen — in fact have another mode of being while still being of the same kind.

At the end of volume I of *Der Streit*, Ingarden has a footnote that relates to this possibility (1964a: 256 n9). Unfortunately, it has been badly translated (1964b: 157 n2); it should be rendered as follows:[1]

The *names* [emphasis mine] here used for the single modes of being do only for the time being express the assumption, that the concepts of the modes of being that we have constructed on the basis of what is given in direct experience, correspond to the single basic types of objective being. Whether or not this assumption is correct, can only be decided by a number of further formal-ontological investigations. Anyway, the construction of these concepts make up, I think, the first attempt to go beyond the *vague phrases* [emphasis mine] in which it is ordinarily spoken of modes of being, and replace these with rigorous concepts.

Ingarden seems to be sure that there are four main modes of being, and that they are constituted by existential moments more or less the way he describes, but he is not sure about their names. One can figure out, however, that it is only one part of the names that he is then thinking of. In the label 'B. Extratemporal Being, Ideal' it is the word 'ideal' that is questioned, and in 'C. Temporal Being, Real' it is 'real' that is questioned. This is clear from question marks that appear in the English and German editions of *Der Streit* (1964b: 157-162; 1964a: 256-262), but are not to be found in the original Polish edition.[2]

I think Ingarden wants us to see his introduction of his modes of being as the famous ladder one can throw away after having used it. That is, traditional talk about ideal and real entities are needed in order to understand what the modes of the extratemporal and the temporal represent; but when these modes have become defined by their existential moments, we can turn things around and ask where any entity rightly belongs. For instance, why should the temporal be called 'real' if Husserl is right and what we call 'real' does not have the temporal mode of being, but the mode of the purely intentional? The issue between Husserl and Ingarden should of course not be prejudged by the names chosen for the different modes. Similarly, one can ask if what Ingarden calls 'ideal entities' really have the extratemporal mode of being or some other. This is the problem I want to highlight in this paper.

2. Two kinds of ideal entities

First some words about the relationship between the terms 'ideal' and 'abstract'. In contemporary analytic philosophy, the term 'abstract object' is sometimes made synonymous with that of 'non-spatiotemporal entity' (Rosen 2001: 1), and sometimes it is defined as 'non-spatiotemporal *and* causally inert entity' (Rodriguez-Pereyra 2008: Sect. 2.1). Ingarden regards entities such as universals, propositions, concepts, numbers, and sets as ideal entities, but because of his belief in purely intentional entities, he does neither regard all presumedly non-spatiotemporal nor all non-spatiotemporal and causally inert entities as ideal entities. However, keeping this in mind, readers unfamiliar with the notion of 'ideal entity' may well in what follows benefit from substituting 'ideal entity' by 'abstract entity'.

Ideal (abstract) entities can easily be divided into two fundamentally different kinds, even though I have never seen it being done in the way I will do; I will label them 'impurely ideal (abstract) entities' and 'purely ideal (abstract) entities', respectively.[3] Impurely ideal entities can have, but purely ideal always lack, a direct connection to spatiotemporal reality, be it a mind-independent physical such reality or a mind-dependent spatiotemporal perceptual field. Universals are impurely ideal; natural kinds (subatomic particles, molecules, etc.) and properties (roundness, a certain most specific color hue, etc.) can have instances or exemplifications in spatiotemporal reality. Mathematical numbers, on the other hand, are purely ideal. We can point at instances of properties, but it is impossible to point at numbers. We can though point at unities and quantities (one blue spot, two circles, etc.), i.e., a number plus an instance of some universal; therefore, unities and quantities should in contradistinction to

numbers be regarded as impurely ideal entities. In this way numbers can be indirectly related to spatiotemporal entities.

The distinction just made between numbers (purely ideal) and quantities (impurely ideal) has a counterpart in set theory; normally, sets are regarded as ideal (abstract) entities. The sets of pure set theory, i.e., sets in which also the members of the sets are sets, are purely ideal entities. But sets such as the set of the five chairs in my kitchen ought to be regarded as impurely ideal entities. Similarly, propositions and concepts ought to be regarded as impurely ideal entities. Why? Answer: they seem to be able to be instantiated in speech acts and reading acts.

In what follows, mainly universals and numbers will be discussed, but I think they are good representatives of all impurely ideal and purely ideal entities, respectively. I will also comment on how I think that an often tacit assumption to the effect that there is only one mode of being has repercussions on some ontological discussions (compare Sect. 2 of my other paper).

2.1 *Impurely ideal entities; the case of universals*
Since Platonic transcendent and extratemporal universals can have temporal instances, there is a possibility (not open to purely ideal entities) that they might be viewed as existing in the same mode as their instances. Already Aristotle found Plato's world of transcendent ideas incomprehensible, and claimed that universals in fact exist in mind-independent spatiotemporal things. Now (according to one interpretation), he thought that they can so exist only as potentialities, and that they exist actually only in minds. Nonetheless, Plato's world of transcendent universals was denied. In contemporary philosophy, David Armstrong, for one, has forcefully argued for a true immanent realism, i.e., a realism where the universals are assumed to exist *actually* in mind-independent spatiotemporal reality (Armstrong 1978, 1997; overview in Mumford 2007). In this section, I will from an Ingardenian perspective comment on this kind of realism.

According to Armstrong, a universal is directly and wholly located in each of all its instantiations. This means that universals are conceived of as entities with multiple spatiotemporal locations. A universal is numerically exactly the same in all its instantiations, and it does not exist anywhere else. In transcendent realism, the instances are said to participate in the universal; in immanent realism, it is rather the other way round. That is, the relata have shifted place, and the universal can be said to participate in its instantiations.

Accepting the existence of modes and sub-modes of being, it seems obvious that any kind of immanent realism has to bring with it two sub-modes of the temporal mode of being, since universals cannot possibly be identified with particulars. But Armstrong is a one-mode-of-being thinker, and he handles the problem as follows. He says: "Universals are nothing without particulars. Particulars are nothing without universals (Armstrong 1978a: 113)." The basic constituents of spatiotemporal reality are states of affairs that have two inseparable *aspects*: universality and (thin) particularity. Still, these two aspects seem to have different ways of existence. The universality aspect can be multiply located, but the particularity aspect cannot. Armstrong's trick, if I may call it so, is to introduce a principle called 'the victory of particularity': "particularity plus universality yields particularity (Armstrong 1978a: 113)." And so he claims that at bottom everything is particular. However, strictly speaking, the principle only says that a state of affairs constituted by particularity plus universality is a particular. It does not turn the universality aspect into a nothing. Therefore, it is still true that the universality aspect must exist in another way than particulars do.

In transcendent realism, there is a clear difference between the extratemporal universals and their temporal instances. Armstrong wants to get rid of such a distinction; he speaks of *instantiations* of universals but never of instances. His official view is that if immanent universals are postulated there is no need for instances, and vice versa (1989: 17), but since he offers no arguments, I suspect that a tacit assumption to the effect that there can only be one

mode of being plays a role, too. Otherwise, it wouldn't change much in his system if he regarded a universal plus a thin particular as a special instance entity that is distinct from the universal. An immanent realist such as E. J. Lowe, who accepts some Platonic entities, has no qualms in accepting both universals and instances of universals, even though he never explicitly discusses modes of being (Lowe 2006).

As I have argued in detail elsewhere (Johansson 2009), I am also of the opinion that an immanent realism, just like a transcendent realism, has to postulate both universals and instances of universals. The former can from a spatiotemporal point of view be multiply located, the latter cannot. According to such an immanent realism universals and particulars have different ways of existing. Can this view be related to Ingarden? Answer: yes, but then Ingarden has to be developed a little.

Ingarden never tried to put forward a completeness proof for either his list of existential moments or his list of modes of being. In fact, he played with the possibility of introducing new moments in order to account for moral facts (Półtawski 2005: 211). And in order to get a better understanding of the ways immanent universals and instances can be claimed to exist, I have in the paper mentioned taken the liberty of adding a new pair of existential moments to his list: *monadicity* and *multiplicity* (Johansson 2009: Sect. 4); Ingarden uses the term monadicity (*monadisch*) a couple of times when he discusses the essence of individual objects (1965a: 419).

With the help of these moments two new *sub-modes* of the temporal mode of being can be defined. In one of the sub-modes, the temporal entities have the moment of monadicity, and in the other that of multiplicity. Things and property instances have the moment of monadicity, and universals have that of multiplicity; the former are so to speak once-and-for-all occurring entities, whereas the latter can enter, leave, and re-enter the spatiotemporal realm. The existential moments, however, can be found in other modes, too. Extratemporal entities such as Plato's ideas and Frege's thoughts have the existential moment of monadicity. In the extratemporal mode of being, neither space nor time can distinguish two ideas or thoughts that are qualitatively identical.

The main point of this subsection is simple to state. Mostly, in non-nominalist contemporary philosophy, universals are regarded either as Platonic extratemporal entities or as spatiotemporal entities among other spatiotemporal entities. In the latter case, the distinction between universals and particulars is on the surface accepted but at bottom denied. Accepting modes and sub-modes of being widens the picture, and makes a new kind of immanent realism visible and worthy of discussion.

2.2 *Purely ideal entities; the case of numbers*

During the last decades, constructivism has become a very popular philosophical position in many disciplines; especially within the humanities and the social sciences. I guess there is a similar trend even within mathematics. In earlier centuries, though, the mainstream ontology of numbers among mathematicians was Platonic; spontaneously, mathematicians ascribed numbers an extratemporal mode of being. Among those really concerned with the foundations of mathematics, the Platonic position was reflectively endorsed by for instance Gottlob Frege and Kurt Gödel. Famously, however, the mathematician Leopold Kronecker was of the opinion that everything in mathematics is a construction. The natural numbers are God's constructions, but everything else is constructions made by human beings. That is, outside of time God created 1 and 2, but before someone first constructed the number ½, there was no such number.

As far as I know, Kronecker never bothered about the epistemological problem of how human beings can come in contact with God's constructions, and the semantic problem of how different mathematicians can refer to the very same mathematical entity if it is only a mental construction in each mathematician's mind. This lack of any attempt to square ontology with epistemology and semantics is also part and parcel of dominant contemporary characterizations

of mathematical constructivism in general (Bridges 2009) and the most famous variety, intuitionism, in particular (Iemhoff 2008). Here is a quotation from Stanford's online encyclopedia: "Intuitionism is based on the idea that mathematics is a creation of the mind. The truth of a mathematical statement can only be conceived via a mental construction that proves it to be true, and the communication between mathematicians only serves as a means to create the same mental process in different minds (Iemhoff 2008)." That is, intuitionism is here taken to imply the kind of psychologism that Frege, Gödel, and Ingarden's teacher Husserl combated.

Let me continue with my little overview by making, for the very purpose of this paper, a temporary distinction between *fictionalism* and *fictionism* with respect to numbers. The former term will be delineated according to Mark Balaguer's use of it in his Stanford online entry "Fictionalism in the Philosophy of Mathematics," the latter according to Mario Bunge's use. In the quotation below, 'abstract objects' refer to objects that are wholly nonphysical, nonmental, nonspatial, nontemporal, and noncausal.

> Fictionalism, on the other hand, is the view that (a) our mathematical sentences and theories do purport to be about abstract mathematical objects, as platonism suggests, but (b) there are no such things as abstract objects, and so (c) our mathematical theories are not true. Thus, the idea is that sentences like '3 is prime' are false, or untrue, for the same reason that, say, 'The tooth fairy is generous' is false or untrue—because just as there is no such person as the tooth fairy, so too there is no such thing as the number 3. It is important to note, however, that despite the name of the view, fictionalism does not involve any very strong claims about the analogy between mathematics and fiction. […] Finally, it should also be noted at the start that fictionalism is a version of *mathematical nominalism*, the view that there are no such things as mathematical objects. (Balaguer 2008: 1)

Both Stanford's constructivism entry and its fictionalism entry define the respective positions as being denials of the existence of mathematical objects, but the only existence alternative they can see is the Platonic extratemporal one. Between Platonism on the one hand and nominalism-psychologism on the other, there is no third alternative visible to the authors. And it is here that I will put forward for discussion the following question:

– Isn't the best ontological view of numbers to regard them as constructs that exist in what Ingarden calls 'the purely intentional mode of being'?

Kronecker notwithstanding, I have left God and other possible entities in the absolute mode of being aside. Also, I take it for granted that the subjects of the intentional acts that ground the numbers in question are mathematicians of flesh and blood, not any Husserlian transcendental egos. My proposal is not completely new. It aligns with Piotr Blaszczyk's (2005); even though we differ somewhat in our presentations of Ingarden's existential moments. Earlier, Barry Smith has proposed that *some* mathematical objects should be considered as purely intentional objects in Ingarden's sense (1975, 1976). But before proceeding, I will deliver my remarks on Bunge's fictionism. He does not subscribe to Platonism, psychologism, or nominalism; and he makes a clear distinction between symbols (e.g., numerals) and human constructs (e.g., numbers):

> In other words, symbols are of course physical objects, but also more than this, since they represent other objects. And a construct cannot be identified with any of its symbols because, by definition, a symbol names something other than itself. (Bunge 2006: 188)

This being said let me quote him on fictionism:

> Still, I submit that fictionism, while utterly false regarding factual science, is quite true concerning pure mathematics. [...] In short, mathematicians, like abstract painters, writers of fantastic literature, "abstract" (or rather uniconic) painters, and creators of animated cartoons deal in fictions. To put into blasphemeous terms: ontologically, Donald Duck is the equal of the most sophisticated nonlinear differential equations, for both exist exclusively in some minds. (Bunge 2006: 192)

Read in isolation with Ingarden in mind, and being aware of Bunge's anti-nominalism and anti-psychologism, one may easily from these quotations think that Bunge regards mathematical objects as some kind of purely intentional objects. But this is false. I have accused defenders of constructivism, intuitionism, and fictionalism in mathematics for not trying to tell how their ontology of numbers can be made consistent with a reasonable epistemology and semantics. Such an accusation can by no means be leveled at Bunge. If there is any still living philosopher that has produced a whole metaphysical system, it is Bunge; see his eight volume work *Treatise on Basic Philosophy* (1974-89). This monumental work, however, has no place for something like a Brentano-Husserl-Ingardenian category of intentionality. Symbols, Bunge says, are about something, but this "aboutness" of his is not anchored in any idea of intentionality and real spatiotemporal intentional acts. Instead, it is introduced by means of two *reference functions*, one for predicates and one for statements (Bunge 2006: 196).

Bunge has not reflected enough on the question whether his system is reflectively self-consistent or not. Where Ingarden posits real spatiotemporal intentional acts in order to explain why we can think and talk about entities that are distinct from us, Bunge posits reference functions. But since he regards functions as mathematical entities, and mathematical entities as fictions, his reference functions must on reflection be considered fictions. And I cannot understand how a fiction can relate us either to the spatiotemporal world or to numbers; be the latter either Platonic entities or fictions. In order to explain real reference, something real is needed. Conclusion: Bunge's fictionism does no more than Balaguer's fictionalism explain how there can be numbers that are distinct from purely mental entities; but I think that Ingarden might help us to solve this problem.

Ingarden says that intentional objects have a certain duality or two-sided nature, a structure and a content (1965a, §47a), but I will here (as in my other paper) for the sake of a brief presentation write as if an intentional object can be identified with its content. If numbers are (the contents of) purely intentional objects in Ingarden's sense, they share with other such objects the existential moments of derivation, non-actuality, and heteronomy, but in order to fit the label 'heteronomous' one thing has to be made very clear. In my other paper I explain this moment by means of the notions of 'existential inertia' and 'spots of indeterminacy'. The first characterization is no problem: if one day numbers are completely forgotten, then they simply go out of being without any resistance at all. But with respect to spots of indeterminacy, it must be stressed that this feature is something that some purely intentional objects *can* have, not something that they necessarily have. Literary fictions normally have such spots, but it seems possible to invent fictions that lack them; for instance, this one in a science fiction novel: 'in outer space, in the spatiotemporal point (x_n, y_n, z_n, t_n), there existed for just a moment a thing that was a complete qualitative copy of the kilogram prototype in Paris'. But be this as it may. Surely, the natural numbers do not have any Ingardenian spots of indeterminacy. As there are many different kinds of being that exist in the real mode, there can in principle be many different kinds of being that exist in the purely intentional mode. Bunge, let it be added, does of course regard mathematical fictions and literary fictions as quite distinct species of fictions.

As a last comment on this issue, I would like to point out that if numbers are regarded as constructs in the sense of purely intentional objects, this fact does not make mathematicians as free as novel authors to invent *relations* between already made constructs. Constructs that lack spots of indeterminacy have just as much an essence as universals have; therefore, this kind of constructivism does not imply conventionalism. In order to make this point clear, let me for a moment return to Armstrong and some of his views on relations; for Ingarden on relations, see (1965a: Ch. XII).

Armstrong extends the concept of 'entailment' from propositions to universals, and makes a distinction between internal and external relation in the following way: in internal relations the relata *collectively* entail the relation, in external they do not. If a names the size of this black spot ● , and b names the size of this one • , then the relation *larger than* referred to in the sentence 'a is larger than b' is an internal relation, since the relation is entailed by the nature of the relata taken together (1997: Ch. 6.2). In other words, and bringing in modes of being: the relation R in aRb is internal if and only if, necessarily, if both a and b exists (temporally, extratemporally, or purely intentionally), then R exists (correspondingly: temporally, extratemporally, or purely intentionally). On such an account, even though the numbers and operations on them are human inventions that only exist in the purely intentional mode of being, there are relations between them that are entailed, not invented, and that therefore can literally be discovered. When the numbers 5, 7, and 12 have been constructed, it is entailed that 12 is larger than 7, and 7 larger than 5. Constructivism with respect to objects implies discoverability with respect to internal relations. When also the addition operation has been constructed, it is entailed that $5+7 = 12$.

The main point of this subsection is, like the former one, simple to state. Philosophers of mathematics who are both anti-Platonists and anti-nominalists have good reasons to take a close look at what can be gathered from Ingarden's notion of 'purely intentional object'.

3. Mixed intentional object

Let me start this section with mentioning three brute facts about our language capabilities; capabilities that each and every complete philosophy of language has to take account of in some way or other.

First, we have no problems at all in reading novels that contain a mix of factual and fictional descriptions. Most modern novels seem to be about fictional persons in a partly real setting of cities, nations, landscapes, etc. Let me call this capability the *fact-fiction mix ability*.

Second, we can read a novel and regard it as a complete fiction, but later be told that it is a factually true story; also, we can read something as if it is a true story but later be told that it is meant as a novel. In both cases, we can immediately switch and see the story in the new light. Let me call this capability the *fact-fiction switch ability*.

Third, we can read something and believe it to be true, but later be told that it is false; and vice versa. In both cases, we can immediately revise the truth-value of our beliefs. Let me call this capability the *truth-falsity switch ability*.

3.1 *Ingarden and the mix and switch abilities*

Ingarden distinguishes between two kinds of intentional objects: also-intentional objects (hyphenation added) and purely intentional objects. Also-intentional objects can exist independently of all intentional acts, but can *also* be the target of intentional acts. Material things and their properties that we speak of are such objects; and the same goes for Platonic entities, if such there are. Ingarden is of the opinion that the intentional object of an act is always distinct from the act. Purely intentional objects appear in fictional discourse, but are nonetheless not to be identified with classes of speech acts and reading acts. As I have earlier argued (Johansson 2010; and my other paper in this issue), Ingarden's dichotomy of intentional objects

has to be expanded into a tri-partition, since false assertions do not belong to fictional discourse but are nonetheless not acts that have an also-intentional object. What is needed is a distinction between necessarily and contingently purely intentional objects. Then we can correlate kinds of assertions and kinds of intentional objects in this way:

- true factual assertions → also-intentional objects
- false factual assertions → contingently purely intentional objects
- fictional assertions → necessarily purely intentional objects.

If this is accepted, the switch and mix abilities that I have listed can be characterized in the following way. The fact-fiction switch ability is an ability to switch from the disjunction 'either also-intentional or contingently purely intentional objects' to necessarily purely intentional objects; and the truth-falsity switch ability is an ability to switch from also-intentional objects to contingently purely intentional objects. The fact-fiction mix ability, finally, is an ability to take in as one Gestalt a number of intentional objects where some are also-intentional and some necessarily purely intentional objects.

With respect to such mixes, however, Ingarden tries to defend an impossible position, namely that scientific works have only also-intentional objects and literary work only purely intentional ones. The impossibility of such a strict demarcation is pointed out in (Colomb 1976). Ingarden explicitly discusses the distinction between scientific and literary works first in *The Literary Work of Art* ([1931] 1973a: §§25&60) and then in *The Cognition of the Literary Work of Art* ([1968] 1973b: §§20-21). In the latter work, however, he makes an admittance that, to my mind, shows at least some awareness of the impossibility of the strong view put forward in his early work. He writes:

> But if we want to apprehend a literary work of art faithfully, then knowledge of certain objects existing outside the work which are in some way similar to the objectivities portrayed in the work or which are supposed to be somehow "depicted" by the work are of no help in the effort to understand fully and correctly the sentences of the work […] To be sure, our prior knowledge of the objects existing in reality and similar to the objects portrayed in the work cannot be completely without significance. (1973b: 162)

Anyone familiar with physics knows that through its history it has made ample use of fictions (idealizations) such as frictionless surfaces and perfectly elastic bodies; and, to take just one literary example, Sherlock Holmes without the real London is not Sherlock Holmes. To me, the only way to explain Ingarden's remarkable view is to say, that he must all the time have meant perfect scientific and perfect literary works, respectively.

Now, having recourse to the distinction between contingently and necessarily purely intentional objects, I would like to add a thing about numbers. If numbers are regarded as Platonic entities, then mathematical assertions are a kind of factual assertions, and true such assertions have also-intentional objects. If, however, numbers are regarded as purely intentional objects, then mathematical assertions must be regarded as having intentional objects that are necessarily purely intentional. The fact that numbers and literary fictions are quite different kinds of entities is no problem; in principle, many different kinds of entities can have the necessarily purely intentional mode of being. A third kind of such entities arises when one reads a text with, to take a term from Husserl, a neutrality modification (Husserl 1982: §§109-112). There is a fourth brute language fact that can be added to the three ones earlier mentioned: the *neutrality switch ability*.

It is quite possible to read a story or a presentation of a scientific theory while consciously abstaining from taking either a factual or a fictional stance. Both these common stances can simultaneously be neutralized, whereby a specific reality neutral attitude is achieved. Ingarden talks in this respect of pure affirmative propositions ("reine Aussagesätze"). In my opinion, and as far as I can see also Ingarden's, intentional acts with such a neutral attitude of merely entertaining ideas and contents must have intentional objects that are necessarily purely intentional. If I may turn the verb 'entertain' into a noun, then in contradistinction to the labels 'fictions' and 'purely ideal entities', such objects might be called 'entertainings'. Using this term, I think that:

- assertions about fictions → necessarily purely intentional objects
- assertions about purely ideal entities → necessarily purely intentional objects
- assertions about entertainings → necessarily purely intentional objects.

That is, I think there are at least three different kinds of necessarily purely intentional objects. I will next apply this view to two issues within the philosophy of science; both issues are related to the question of the modes of being of universals and numbers.

3.2 *Quantities and scales*

In Sect. 2, I briefly argued that universals (being impurely ideal entities) have the temporal mode of being, whereas numbers (being purely ideal entities) have the purely intentional mode. But how ought we to regard quantities? Quantities, e.g., five H_2O molecules, are unities of numbers and universals. In the example given, there is a unity of the number 5 and the natural kind universal H_2O molecule. When it comes to quantities such as five meters, the universal is not nature given, but a conventionally chosen determinate length universal. For a long time it was picked out by one of its instances, the standard meter in Paris, but since 1983 it is picked out by a theoretical definition that states the length of the paths travelled by any light beam in vacuum during a certain specified time interval.

I have earlier classified quantities as impurely ideal entities, which means that there is to start with a logical possibility of trying to work out an immanent realism for quantities. What tells against such an attempt is that it seems very implausible that all possible quantities have instances or exemplifications. The implausibility becomes obvious when one considers numerical scales, i.e., linear orders of determinate quantities.

Think for instance of the following three basic scales in physics: the kilogram scale for mass, the kelvin scale for temperature, and the ampere scale for electric current. All three contain an infinite number of quantities, and (whatever philosophers claim) there is nothing in physics that says that in some spatiotemporal point or region in the past, present, or future history of the universe each such quantity has to have an instance. Rather, the contrary seems to be the case. All three have an absolute zero point, but none have been given an upper limit, which means that a philosophically imposed instance requirement implies that the world has to contain instances of infinitely high masses, temperatures, and currents. Therefore, let me as a thought experiment (confining myself to the mass scale) assume that during the whole past, present, and future history of the universe there is no particle or thing-like entity that has had, has, or will have a mass of 0.472945878880002 kg, and then see what follows.

On the assumption stated, it becomes impossible to think of the *whole* mass scale as if all of its constitutive determinate quantities have a real referent (an also-intentional object); there is at least a gap for 0.472945878880002 kg. Equally impossible, it is to regard the whole scale as a fiction, since very many determinate quantities have real referents. Does this mean that it is impossible to think of the scale as one single entity? No, it does not. There are two possibilities left: the scale as a whole can be regarded either as (i) an entertaining or as (ii) a mixed

intentional object, i.e., that most of the constitutive quantities probably have real referents but that 0.472945878880002 kg surely is a fiction. Here, a new question seems to arise: what is the most reasonable option? But, interestingly enough, no general choice is needed. Our neutrality switch ability makes it easy for us to switch between these two alternatives. And both are needed. Theoreticians sometimes need to discuss the scale as an entertaining, but experimentalists must regard it as a mixed intentional object.

Upshot: my thought experiment shows that it is impossible to make sense of numerical scales without bringing in the notion of 'mixed intentional object'. At every point in time, it is the case that some masses have been instantiated and that, in all probability, some have not.

3.3 *The development of science*
At the end of the nineteenth century many physicists thought that there is a light-bearing ether in which the electromagnetic waves are propagated; during the eighteenth century many chemists thought that there is substance, phlogiston, that leaves burning material; and once upon a time physicians thought with Galen that the arterial system contains pneuma or spirits. According to today's knowledge, there are electromagnetic waves but no ether, burning materials but no phlogiston, and an arterial system but no pneuma.

As a simplified common story, we might describe these three cases as follows. First the truth-falsity switch ability was used and all presumed truths about the ether, the phlogiston, and the pneuma became regarded as false. Then, when this had become common wisdom, the fact-fiction switch ability was used, and historians of science started to talk about the ether, the phlogiston, and the pneuma as fictional entities. False factual assertions and fictional assertions are in one respect different and in another similar. The difference is the way they are asserted; the similarity of course that none of them corresponds exactly to anything in reality. A false factual assertion lacks a truthmaker, and a fictional assertion cannot possibly have one. This is what makes the move from falsity to fiction a very small step.

This being said, however, I want just as much to fasten attention to the fact that we do not regard everything that the physicists, the chemists and the physicians in question talked about as being fictitious. When historians of science describe experiments and observations around the fictional entities in question, we read them the way we read novel authors that mix real places with fictional persons. We are looking at a Gestalt that is a mixed intentional object. Some constitutive intentional objects are also-intentional and some are purely intentional, but we have no problems in letting them mix with each other and create a unified whole. If we regard such a whole Gestalt as a state of affairs, then we can say that the description in question is absolutely seen false but partly true. And since this 'partly' takes degrees we may speak of degrees of truth or truthlikeness; more details in (Johansson and Lynöe 2008: Ch. 3.5).

If the notion of 'mixed intentional object' is accepted, talk about progress in science, i.e., of increase of truthlikeness, has at least been given a semantic foundation. Whatever the epistemological problems are, it makes good sense to speak about theories as being more or less true.

4. Brief words of conclusion
Ingarden's voice ought to be heard again. As shown, it can give a new twist to ontological discussions about immanent realism with respect to universals and constructivism in mathematics; as well as to discussions about how to look at numerical scales and progress in science.[4]

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Notes

[1] In German it says: "Die hier angegebenen Namen der einzelnen Seinsweisen sollen nur vorläufig die Vermutung ausdrücken, dass die von uns konstruierten Begriffe den in unmittelbarer Erfahrung gegebenen Seinsweisen der einzelnen Grundtypen des gegenständliches Seins entsprechen. Ob aber diese Vermutung richtig ist, dazu bedarf es mancher weiterer formal-ontologischen Forschungen. Die Konstruktion dieser Begriffe bildet jedenfalls den, wie mir scheint, ersten Versuch, über die vagen Redewendungen, in denen über die verschiedenen Seinsweisen gewöhnlich gesprochen wird, hinauszugehen und sie durch strenge Begriffe zu ersetzen."

[2] This is the way it looks in the English and German edition, respectively: A: (Absolute, Timeless Being)?; Das absolute überzeitliche Sein. B: (Extratemporal Being, Ideal?); Das ausserzeitliche – ideale? – Sein. C: (Temporal Being, Real?); Das zeitlich bestimmte (reale?) Sein. D: (Purely Intentional Being); Das rein intentionale Sein (das Möglichsein?).

The German edition makes it quite clear that the question marks relate only to the words 'real' and 'ideal'. Note that the English and German editions differ with respect to the question marks in A and D. I think that, in conformity with B and C, A should be read '(Absolute, Timeless Being?)', i.e., Ingarden is not sure that all possible absolute entities can be regarded as being timeless. The question mark in D might indicate thoughts on Ingarden's part whether or not everything that exists in the purely intentional mode can be regarded as being empirically possible. I will not touch upon these A- and D-issues.

[3] Gonzalo Rodriguez-Pereyra (2008: Sect. 2) makes a distinction between *abstract objects* and *universals* that comes close to mine between purely and impurely ideal (abstract) entities. However, he never tells whether universals should be regarded as a certain kind of abstract object or as something quite distinct. Furthermore, he seems to classify propositions as abstract objects, whereas I regard them not as purely, but as impurely ideal entities; the reason is given in the next paragraph.

[4] For a number of comments I would like to thank the participants at the mini-symposia in Aarhus in fall 2009. In particular, I would like to thank Frederik Stjernfelt for some after-symposia emailing around the issue of ideal entities. For comments on an earlier version of the paper, I would like to thank Jan Almäng, Javier Cumpa, Christer Svennerlind, and Nikolaj Zeuthen.

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