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Den hebräischen Text (oben) aus Sefer_Yetzirah_Kaplan.pdf, (Seite 3 von 25 (1:7)) kopieren

Hier auf **hebräisch**: Sefer ha-Yetzirah

Ten Sefiroth of Nothingness
Their end is imbedded in their beginning
and their beginning in their end
like a flame in a burning coal
For the Master is singular
He has no second
And before One, what do you count?

Sefer ha-Yetzirah*

* Cf. Sefer Yetzirah – The Book of Creation, (ed. Aryeh Kaplan), York Beach ME, Boston MA, 1997, p 57; the English translation is by Aryeh Kaplan.

The "Emergence" of Existence – from Pregeometry to Prephysics

by Dan Kurth

(version: draft, 24.08.2013)

Q: *'pourquoi donc y a-t-il quelque chose plutôt que rien?'*[1]
A: *' .. nam nulla est unquam quies vera .. , nec a quiete aliud nasci potest quam quies'*[2]

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1 Introduction

Already on the first pages of his most expository paper 'Über Gegenstandstheorie'[3] Meinong makes a clear distinction between the theory of objects on the one hand and traditional metaphysics and ontology on the other. This distinction doesn't relate only to the respective scopes of these different subjects but also to the traditionally implied preferences concerning the topic of universals. By intensively stressing his main point, namely that nonexistent objects are just this: not existing, Meinong not only emphasizes that as a defining difference to the objects of traditional metaphysics and ontology[4] but makes this in itself to become a statement of an implicit theory of universals. That it is for the very reason that Platonism and (Aristotelian) Realism albeit in different disguise state just this: universals *exist*, either above (or before) or within the single objects. And then again: the (nonexistent) objects of the theory of objects, some of which go by the same name as such alleged universals, just do *not exist*.
Thus in contrary to the common accusation of having infinitely extended the number and sorts of objects Meinong's theory of objects is inherently nominalistic[5] and suffices the decree of ontological parsimony or Occams razor: Entia non sunt multiplicanda praeter necessitatem.
For giving a better understanding and analysis of e.g. fictionals, the implied objects of general abstract terms and even allegedly self-contradictory objects or any other nonexistent objects

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[1] G.W.Leibniz, Principes de la nature et de la grâce; in: G.W.Leibniz ,1961, Die Philosophischen Schriften, (ed. C. J. Gerhardt, vol. VI,): pp. 598 – 606, p. 602. This is the so called 'fundamental question of metaphysics': "Why is there something rather than (just) nothing?"
[2] G.W.Leibniz, specimen dynamicum, pars II, in: G.W.Leibniz, Mathematische Schriften, (ed. C.J.Gerhardt), vol.VI, p 252. (… for there is not any real (state of) rest .., and from (a state of) rest not anything else can come up (alt.: *follow, emerge*, D.K.) than rest.)
[3] A.Meinong, "Über Gegenstandstheorie", in: "Untersuchungen zur Gegegenstandstheorie und Psychologie" ed. A.Meinong, Leipzig 1904, pp.1-50; pp.4-7
[4] Ibid. p.5
[5] Cf. ibid. p.6-8

doesn't mean at all to increase the number of ontological elements. It doesn't even mean to increase the number of the respective concepts or statements in the least; it is just an attempt to get a deeper insight into them.
Moreover the theory of objects equipped with a nominalist inclination, which I will argue for as well as suppose in this paper, allows even for a most parsimonious ontology, where 'ontology' – as in Meinong's view – is just that specific part of the theory of objects, which is occupied with such abstract and concrete objects (and their respective relations), which are presumed to exist.

Das Seiende ist wie die Schaumkrone einer Welle
auf dem Ozean des Nichtseienden.[6]

2 The theory of objects or objectology and the objects of science

I will introduce the neologism 'objectology' which just stands for an alternative translation of 'Gegenstandstheorie' as compared with the original 'theory of objects'. I do so for two reasons, the first one based on the fact that in the English language there is no equally proper and swift adjectival and adverbial use related to the expression 'theory of objects' possible, which could match the respective adjectival and adverbial expression 'gegenstandstheoretisch' in German. The second reason for introducing that neologism is that, despite it seemingly being the proper literal translation, 'theory of objects' has quite different connotations from that of 'Gegenstandstheorie' in Meinong's use.
Meinong's Gegenstandstheorie was not meant, designed or ever performed as a particular *theory* of whatever sorts of objects. Quite on the contrary it was from it's beginnings a *philosophical analysis* of an utmost fundamental and comprehensive concept of object, so fundamental and comprehensive that the entirety of what had in the philosophical traditions been labelled as ontology (with all of its various objects) made up just a minute part of that – objectology.

2.1 Meinongian semantics with nominalist flavor

b Looking for objects of science in Meinong's Jungle

Mereological underdetermination

Toposic constraints

The concept of 'object' in category and topos theory

[6] The existent (objects) is (are) alike the foam-crest of a wave in the ocean of the non-existent (objects).

Toposes in difference to Sets are literally made of or erected upon the functorial structure or 'dynamics' of their respective objects. Therefore other than sets toposes can be conceived as ontological innocent or at least neutral since their objects are just (nonexistent) individuals - albeit abstract ones.

2.2 Objects of science

All objects of science are nonexistent objects, since they are of a purely conceptual or – more precisely – theoretical nature. But of course they are intended to be pragmatically related to actually existing objects, i.e. objects, with which we can and do more or less directly interact.

Ontological commitment implies the fragility of the assumed 'existence' of the objects of science

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Physica ergo ... desinit in geometriam, nec ante ullum phaenomenon penitus in corporibus intelligemus, quam ex primis figurae motusque ideis derivamus.[7]

3 Pregeometries for prephysics[8]

3.1 The paradox of reductionism – terminating

[7] G.W.Leibniz, Dissertatio exoterica de statu praesenti et incrementis novissimis deque usu geometriae, in: G.W.Leibniz, Mathematische Schriften, (ed. C.J.Gerhardt), Bd.VII p 325); (Physics namely ... fades away into geometry, and we won't know any phenomenon deeply in its corporeal construction as long as we haven't derived it from the first principles of (geometrical) figures and of motion.)

[8] By "prephysics" I will go further than Gabriele Veneziano and M Gasperini with the notion of pre big bang physics ***weiter ausführen!***

3.2 The quest for primordial emergence, and the indispensability of nonexistent objects

3.3 Pregeometry I: The original proposal and else

Examples of pregeometries: , Wheeler, Pregeometry, Sorkin, causal Sets, Combinatorial hierarchy, Finkelstein, Leibniz Code, Isham, Doering

(Quantum)Cellular Automata can not be seen as a model for a pregeometry since they already use a structured space as an indispensable background for their operations.

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Finkelstein, Leibniz Code

Wheeler, It from Bit

I strictly disagree with the subjectivist features of both of these approaches, namely the action based concept of physics in the case of Finkelstein, and the idea of a participatory observership in the case of Wheeler. And it is clear that these features are undoubtedly essential and defining for either of these proposals for another kind of pregeometry. Yet I still fully agree with another element in both approaches, an element, which would seem tightly intertwined with the subjectivist features of action based physics or participatory observership, namely with the view, that information is the real stuff a pregeometry has to be made of.

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Example of prephysics: TQFT, Spin network, Spin foam (cf. also Wolfram, A new Kind of Science (category <—> spin network)

3.4 Ethereal gunk

Gunk is seemingly of a continuous nature.

Therefore, since I hold with the most strong conviction that reductionism is the very apt and appropriate way of analyzing and exploring nature and beyond, yet at the same time I'm being not less convinced, that for coming nature – or anything at all – into existence a primordial emergence has to be presumed, one has to look for an appropriate kind of stuff, i.e. an appropriate kind of gunk, yet – then again – a not so 'greasy' one.

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Hier die hebräische Version einsetzen und in
FN zitieren als Sefer ... (Book of nonexistence (Google translater), ∃ x, iii, 14

That, what will be,
will be becoming for the effort
of something to become itself

'*CONATUS est exercitium virium seu virtutis.*'[9]

[9] (G.W.Leibniz, Opuscules et Fragments Inédits de Leibniz (ed. L.Couturat), Paris 1903/Hildesheim 1961, Table de Définitions, p 481) (The effort/impuls is the realization of the forces or the virtue/vigour).
Now, obviously that pun isn't precisely to our point.

4 The emergence of existence

4.1 Objects and Automorphisms

To set the stage for the following we at first will introduce the scope, i.e. the kinds of elements, we will deal with.
The only objects which are admitted on the elementary stratum of objectology, which is elementary gunk, are objects and morphisms, i.e. the objects of elementary gunk are objects and morphisms.
At a next emergent stratum of objectology the admitted objects then will be objects, morphisms, and emergent connectivity structures between objects.

Before we will have a closer look at ethereal gunk, i.e. elementary automorphic objects $eamOb_{n_i}$, we firstly have to reconsider, what ordinary automorphisms (of ordinary objects onto themselves) are.

Essentially an automorphism $f_{A\to A}$ of an object *A* is an isomorphism $g_{A\to A}$ from *A* as the source (domain) of $g_{A\to A}$ onto *A* as the target (codomain) of $g_{A\to A}$, with $A : \mathrm{id}_A$, i.e. *A* being the identical object, thus it may be imagined in the following form:

Equivalently an automorphism $f_{A\to A}$ can be defined as a bijective isomorphism of an object *A* onto itself, either in the form: $A \xleftarrow{f_{A\leftrightarrow A}} A$ or, in case that $f_{A\leftrightarrow \mathrm{A}}$ is a bijective isomorphism between an object *A* and its identical double A, as:

$$A \xleftarrow{f_{A\leftrightarrow \mathrm{A}}} \mathrm{A}.$$

An alternative definition is to say that a morphism $f_{A\to A}$ is called an automorphism, when there is a mutual inverse $g_{A\to A}$, with $f \circ g = \mathrm{id}_A$ and $g \circ f = \mathrm{id}_A$, or

---

Therefore a purposively arranged version more to the topic of 'elementary automorphic objects' and their rôle in the emergence of existence should perhaps go as follows: 'CONATUS INTELLEGIBILIS est exercitium actionis primordialis seu primi ordinis' (The conatus of a nonexistent object is the realization of the primordial action or the order of the beginning).

$$A \underset{g_{A\to A}}{\overset{f_{A\to A}}{\rightleftarrows}} A.$$

In all of these definitions a rather trivial condition is, that the object A – as the source or domain of the automorphism $f_{A\to A}$ and as well as the target or codomain of $f_{A\to A}$ – is the *identical object* (or at least an identical double or copy of A), and in particular, that it also *remains the same object* with respect to its automorphisms, i.e. it doesn't change or becomes changed by those automorphisms.

The elementary automorphic objects $eamOb_{n_i}$, which we will introduce in the following, however change or become changed by their respective (partial) automorphisms $g_{eamOb_{n_x}\to eamOb_{n'_x}}$ and $h_{eamOb_{n'_x}\to eamOb_{n_{x+1}}}$, i.e. the real target (or codomain) object $eamOb_{n_{x+1}}$ of the unique automorphism $f_{eamOb_{n_x}\to eamOb_{n_{x+1}}}$ will *not* be the *same* object as the source (or domain) object $eamOb_{n_x}$ (of $f_{eamOb_{n_x}\to eamOb_{n_{x+1}}}$).

4.2 Ethereal[10] Gunk[11]: Elementary Automorphic Objects

Existence is a feature essentially attached to objects. Thus the emergence of existence has to be seen as the emergence of existing objects, i.e. objects having the feature to exist, up from (a state being made of) nonexisting objects, i.e. objects *not* having the feature to exist. There is no existence not being embodied in the existence of an object (or of objects).

We have recourse to toposes as means of providing the indispensable dynamics for the mereological and mereotopological (structure of the) emergent objects of the pregeometry we will expose in the immediate following. Furthermore it is just such dynamics which will restrain the infinities of mereological composability to the pluralities of the possible ontologies which can be assumed as being made of some kinds of automorphic objects as proposed in the following.

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[10] ...and even pure and clean as well ...

[11] The term'Gunk' relates to such kind of 'mereological stuff', where all parts of a (gunky) whole have further proper parts. Gunk then is infinitely divisible, since every part of it itself again has proper parts. I.e. a gunky object is not made of and does not dissolve in indivisible mereological atoms. The term'Gunk' has been introduced by David Lewis. Cf. David Lewis, Nominalistic Set Theory, Nous, 4 (1970); and David Lewis, Parts of Classes, Oxford 1991, pp 20-21, 88-89

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For showing, that elementary automorphic objects are the proper stuff gunk is made of, we will have a closer look on the 'mathematical' structure of elementary automorphic objects.

there are countable infinite elementary automorphic objects of the described kind and any one of these is iteratively 'composed' of again a countable infinite succession of elementary automorphic objects, – with no lower or upper limit, i.e. there is no initial or terminal elementary automorphic object in any of these iterative or successive generations.

there is no highest (ranking) or terminal automorphic object since by definition any elementary automorphic object becomes instantaniously itself the object of its automorphism (or perhaps better: in its automorphic action) and by this automorphic action the next (higher ranking) elementary automorphic object is generated and so on ad infinitum.

Therefore an elementary automorphic object *eamOb* (here informally seen as an element of the set **eamOB)** fits the following condition

(1) $\forall x_{eamOb} \exists x_{eamOb} : x_{eamOb} \in \mathbf{eamOb}\left\{ eamOb_{n_i} \right\}$

with $n \in \mathbf{\{N\}}$ and $n \neq 0$ for any $eamOb_n$;
and with $i \in \{\{\mathbf{N}\} + \mathbf{N}\}$ for any $eamOb_{n_i}$

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Elementary automorphic objects $eamOb_{n_i}$ suffices the categorical structure of a respective commutative diagramm, even with a smack (but not more than that) of a topos since they have:

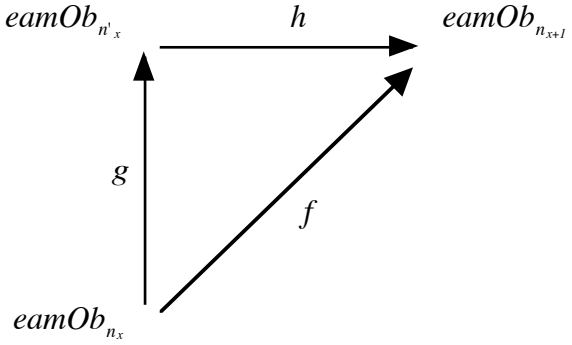
a) a source (or domain) object $eamOb_{n_x}$,
b) a target (or codomain) object $eamOb_{n_{x+1}}$, which is – so to say – the *real target* of the automorphic action(s) in question,
c) an intermediary object $eamOb_{n'_x}$ which is – so to say – the 'same' as the initial object $eamOb_{n_x}$. Here $eamOb_{n_x}$ is the *source* of the

respective automorphism $g_{eamOb_{n_x} \to eamOb_{n'_x}}$, whereas $eamOb_{n'_x}$ is the 'same' object, now however as the *intermediary target* that automorphism $g_{eamOb_{n_x} \to eamOb_{n'_x}}$ is directed to.

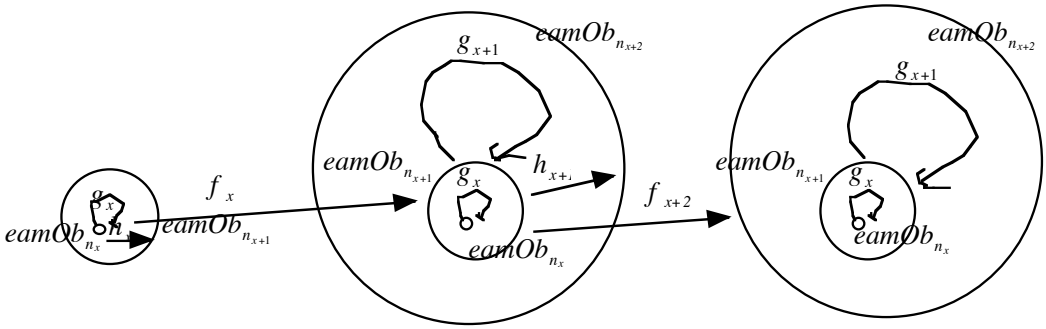
d) (partial) automorphisms $g_{eamOb_{n_x} \to eamOb_{n'_x}}$ and $h_{eamOb_{n'_x} \to eamOb_{n_{x+1}}}$ with $g: eamOb_{n_x} \xrightarrow{g} eamOb_{n'_x}$, and $h: eamOb_{n'_x} \xrightarrow{h} eamOb_{n_{x+1}}$

e) the unique automorphism $f_{eamOb_{n_x} \to eamOb_{n_{x+1}}}$ with $f: eamOb_{n_x} \xrightarrow{f} eamOb_{n_{x+1}}$, and thus $f = g \circ h$

as can be seen in that commuting diagramm:



A graphic fragment of the recursive structure of (the potentially infinite succession of) the $eamOb_{n_i}$ can be seen in the following figure:



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An encouraging and important byproduct of this inner design of the infinite depth of the composition of elementary automorphic objects $eamOb_{n_i}$ is that it dissolves the distinction of mereological atoms (or simples) on the one hand and gunk on the other. Undoubtedly elementary automorphic objects $eamOb_{n_i}$ have proper parts, namely automorphic objects $eamOb_{n_{i-j}}$ (with $j,i \in \{\{\mathbf{N}\}+\mathbf{N}\}$ and $j<i$), where any of them are equipped with their respective automorphisms $g_{\ eamOb_{n_x} \to eamOb_{n'_x}}$ and $h_{\ eamOb_{n'_x} \to eamOb_{n_{x+1}}}$ – and that even in an infinite succession – as it is required for *gunk*.
Yet as elements of a class of objects (namely the set **eamOB**) the single elementary automorphic objects $eamOb_{n_i}$ serve equally well as the *mereological atoms* of an utmost elementary or primordial layer of everything that exists – and even of that, which not exists.
The reason for this of course is that – according to its definition – any single elementary automorphic object $eamOb_{n_x}$ is properly distinct from any other single automorphic object $eamOb_{n_y}$ (with $y \neq x$), which again follows from the fact, that the ensemble of the elementary automorphic objects $eamOb_{n_i}$ is as discrete and countable as the elements of the set (of the Natural Numbers) $\mathbf{N}$.

Now let us resume what we've achieved so far. With the introduction of ethereal gunk, i.e. the elementary automorphic objects $eamOb_{n_i}$, we solved the seeming paradox of a terminating reductionism. We solved that paradox not by bringing the reductionist paradigm to rest, but by letting it proceed harmlessly, so to speak by letting it come to itself – infinitely. And we did so with a most parsimonious use of power – no more than the power of $\mathbf{N}$.

The entirely nonmaterial nature (or substance) of elementary automorphic objects may not be in line with David Lewis' intended use for gunk and also not with the normal use of mereological atoms, yet elementary automorphic objects fit perfectly for both rôles.

4.3 Toposes of emergence built on higher dimensional gunk: weak 2-categories ($2\text{-}amOb_{tor}, 2\text{-}amOb_{tub}$) [12]

Objects in mereological toposes are mereological parts, mereological sums, the morphisms are not only all mereological and mereotopological operations in any admitted composition, but also any other admittable morphism between the respective objects.

'meros' stands for an abbreviation of 'mereOlgical Space', therefore the plural should go as 'meroses' (for '**mereo**logical **s**pac**es**'). As in the case of 'topos', where topos originally wasn't meant to stand for the Greek term for 'place' or 'location', also in the case of 'meros' meros doesn't stand for the Greek word for 'part'. A meros is meant to be a mereolgically based analogon of a topos. A topos can be seen as a categorical version of a set or a categorised set, a meros then should be seen as a categorical version of mereology or a categorised mereology, with mereological parts and mereological sums or mereological compositions as characteristic objects. In a meros then a mereological part may very well be a mereological sum itself and a mereological sum may be a mereological part in another setting or if seen from another viewpoint. The morphisms between the objects in a meros are not only the admitted mereological operations but all admitted dynamical relations between the respective mereological parts and mereological sums as well.

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The fact of (the) 'matter': Toposic foundations of existence

As we've seen in the preceeding paragraph elementary automorphic objects $eamOb_{n_i}$ serve perfectly well as gunk, or more precisely, as ethereal gunk on the one hand and as mereological atoms equally well on the other. That makes them to be an ideal stuff for a pregeometry, but it still not makes them to be a proper pregeometry after all.
The entirety of the $eamOb_{n_i}$ as ethereal gunk or as a class of mereological atoms just lacks what structure ever to carry any pregeometry. And also stressing the sound mereological nature of this entirety of the $eamOb_{n_i}$ doesn't help for now with respect to that lack of structure in the least.

[12] For a strictly mereological version see Appendices

It is rather the categorical nature of the single elementary automorphic objects $eamOb_{n_i}$ that helps. We've seen that the $eamOb_{n_i}$ are generated by the described iterative succession of automorphic actions, represented by the automorphisms $g_{eamOb_{n_x} \to eamOb_{n'_x}}$ and $h_{eamOb_{n'_x} \to eamOb_{n_{x+1}}}$ on an elementary automorphic object $eamOb_{n_x}$ (or respectively automorphisms g_i and h_i on elementary automorphic objects $eamOb_{n_i}$). And we are of course rigorously restricted to that means. But only having $eamOb_{n_i}$ and automorphisms g_i and h_i at our disposal doesn't preclude a somewhat peculiar performance of these automorphisms.

A topos is a multifaceted 'creature' – somewhat alike an elephant perhaps. (FN: cf. P.Johnstone, Sketches of an Elephant, vol. 1 –3. Having seen these sketches one must wonder how an eventually finished painting of this creature might look like.) To stress only the two most elementary facets a topos can be seen as a categorical version of a set, i.e. a category with the universality of sets yet with a categorical structure substituting the set theoretical notions of elements and membership by those of objects and morphisms. So one has to keep in mind that a topos is *primarily* a category, namely a categorical version of a set and therefore had originally been introduced by analyzing the category of sets. (FN: Lawvere, ETCS)

Definition v Topos nach McLarty

The local (or internal) universe made of the objects and morphisms of a topos (FN. J.L.Bell, Toposes and local set theories) then can also be seen as a topological space spanned by these morphisms and objects. That aspect originally lead to the term topos (as an abbreviation of '***topo***logical ***s***pace', with the respective plural form 'toposes' – from '***topo***logical ***s***pac***es***' – instead of the also frequently used graecism topoi).

For the purpose of this paper most important is the fact that the categorical structure of a topos perfectly fits for representing a 'categorical dynamics' in a respective universe of objects and the morphisms between them. Providing a proper frame for such 'categorical dynamics' was not only one of the primary motivations which) originally lead to the first introduction of topos theory, (FN.: Lawvere, ETCS. (FN.: Lambek, Heraclitus) but it is also something, that makes topos theory even more indispensible for finding the setting for an emergence of existence than it already is for its singular blend of universality and locality.

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In the foregoing we've introduced elementary automorphic objects $eamOb_{n_i}$, which together with the morphisms $am_a: eamOb_{n_x} \xrightarrow{am_a} eamOb_{n'_x}$ and $am_b: eamOb_{n'_x} \xrightarrow{am_b} eamOb_{n_{x+1}}$ build the category ***eamOb***.

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Yet single elementary automorphic objects $eamOb_{n_i}$, despite their categorical structure, don't build a topos, simply for the reason that a single elementary automorphic object isn't a proper set. And their sufficiently universal entirety, i.e. the set **eamOb** of all elementary automorphic objects doesn't also make it for a topos of emergence, namely due to the obvious lack of – at least – a respective terminal object.

Therefore we can only claim that for their categorical structure elementary automorphic objects $eamOb_{n_i}$ fit or belong to a category ***eamOb*** as its instantiations.
This claim is also corroborated by the fact that any $eamOb_{n_i}$ can be seen as an automaton in the category theoretical description, since it satifies all required conditions. (FN. Eilenberg, …, Ehrig, Universal theory of Automata)

But then single elementary automorphic objects $eamOb_{n_i}$ still do not constitute such toposes of emergence, which could carry the intrinsical categorical dynamics of a topos to propagate the structural increase required for the emergence of the existence of possibly existing objects (up from a state of nonexistent objects).

Yet our quest for such toposes of emergence will not end here.

Let us again come back and consider what we have gained and what we are allowed to do with that.

elementary automorphic objects $eamOb_{n_i}$, which together with the morphisms $am_a: eamOb_{n_x} \xrightarrow{am_a} eamOb_{n'_x}$ and $am_b: eamOb_{n'_x} \xrightarrow{am_b} eamOb_{n_{x+1}}$

morphism 2-am_b which leads to higher dimensional automorphic objects $amOb_{2-dim}$

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higher dimensional automorphic objects ($amOb_{tor}$, $amOb_{tub}$) in weak 2-categories ($\boldsymbol{2\text{–}amOb_{tor}}$, $\boldsymbol{2\text{–}amOb_{tub}}$),

$amOb_{tor}$ is of a toroidal shape, therefore we will call it the 'toroidal automorphic object' and $amOb_{tub}$ is of a tubular (or hose or any topologically equivalent, e.g. spherical) shape, therefore we call it the 'tubular automorphic object'

$amOb_{tor}$, $amOb_{tub}$ are homotopically *not* eqivalent.

These higher dimensional automorphic objects $amOb_{tor}$ and $amOb_{tub}$ given we instantaneously will also get the looked for toposes of emergence $\mathbf{Top}amOb_{tor}$ and $\mathbf{Top}amOb_{tub}$ (or more generally a topos of emergence $\mathbf{Top}amOb_{2-dim}$).

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4.4 The emergence of existence 2.0

Existence is together with nonexistence one of the only two attributes of the underlying substance.
Therefore existence doesn't just emerge in the course of pregeometric complexifications. These pregeometric complexifications provide a necessary, yet by far not sufficient condition for (the emergence of) existence. Existence cannot emerge, if the structure, it would become attached to, would not suffice to carry existence, which here means actual (pre)physicality. If however the level of complexity, prerequisited for carrying existence, eventually is given, then existence or actual (pre)physicality is just another form or way of encoding the ineffable underlying substance, namely information.
Again, let me point that out most forcefully: the emergence of existence is not a result, a consequence or subsequence of the structural complexification, which led us from elementary automorphic objects to mereotopological automata or perhaps spinnetworks, but it is immediate to the ineffable substance, of which elementary automorphic objects or mereotopolgical automata or spin networks as well as any physical, biological, social etc. entities are just other instantiations or encodings. I.e. all nonexistent objects as well as all existent objects are instantiations or encodings of the ineffable underlying substance, and the emergence of existence

must not be seen as the emergence of any existent objects up from a level of any nonexistent objects. Existence is an attribute immediate to substance.

Thus, although existence 'emerges'[13] at a level of sufficient minimal structural stability, existence doesn't at all originate from that level of nonexistent objects (and their structures) equipped with sufficient minimal structural stability, but existence originates as an attribute immediate to substance.
But, even though existence is an attribute immediate to substance, a minimum degree of structural stability, i.e. complexity of its informational equivalent (or mathematical structure) is still required for *actually effecting* existence. Thus existence emerges at a level of a certain complexity of objects, but it doesn't emerge by or through or for that complexity. Existence (or actuality) emerges for the reason, that it is one of the only two attributes of substance, and for the implied reason, that it is immediate to substance. The required complexity of the objects for becoming existent is merely a necessary condition or constraint. It is neither sufficient nor the very cause for the emergence of existence.
Since however a minimal structural stability or complexity is the necessary condition for actually effecting existence, and since existence is the same as actuality, then existence still emerges firstly at a that level of a minimal structural stability or complexity, despite the fact, that it is by no means caused by that minimal structural stability or complexity. So one might say, that only at that level of a minimal structural stability or complexity existence appears, since without that minimal structural stability or complexity existence couldn't sustain.
To mark a distinction between existence as one of the two attributes of substance on the one hand and the appearance of existence at a level of a required minimal complexity on the other one might somewhat loosely call the latter 'existence 2.0'.

No Vorrang of physicality

Relative state interpretation which is no many world interpretation.

5 Pregeometry II: It from Bit and more

5.1 It from Bit

[13] In the sense, that it becomes manifest.

5.2 It from Qbit

5.3 Relative states, recursiveness, and categorical dynamics of eamObs and amObs

EamObs are already by their definition recursive, actually they are hardly much more than just being recursive. Yet looked at any single eamOb its recursiveness seems not to yield much more than some eternal recurrence, i.e an endless iteration of mostly the same, at best distinguished by the numbers of the iterations.
But that does not take into account the possibilities of (mis)happenings or copying failures or creations, if only enough possibility for that exists. And that possibilty exists, if the eamObs already are objects of Quantum Mechanics. Than the superposed relative states of all eamObs are respectively and become increasingly connected.
Now the question arises, how the eamObs and amObs can be objects of Quantum Mechanics. First of all they are no physical objects at all. But there have been already many other theoretical models, which apply quantum mechanical features to non physical entities, one of these attempts we've just encountered in the previous paragraph. The orthodox view which centers QM at measurement acts (or the Meßprozeß) as the cornerstone and embodiment of a solely physicalist view of QM has already for a long time lost its prevalence. And since eamObs and amObs are also certainly no observables any observership will also play no role.
The quantum mechanical approach, which best will fit for such a pregeometrical sphere as that of eamObs and amObs is in my view the relative state interpretation of QM introduced by Hugh Everett.[14] This interpretation of QM is commonly known under the label 'Many World interpretation of QM' coined by Bryce de Witt.
I've already earlier objected the common understanding, that the Many World interpretation of QM is entirely the same as the relative state interpretation, albeit that understanding apparently was shared by Hugh Everett himself.[15]
The Many world interpretation is obviously a legitimate possible model of the original relative state interpretation, but it is only so long such a compelling model of the relative state interpretation as a certain tacit presupposition holds, namely that the fundamental objects (of the universes or multiverses) to which it relates are of a proper physicalist nature. If this presupposition or assumption doesn't hold

[14] The relative state interpretation of QM essentially says, that all quantum mechanically admissible states of a quantum mechanical object are equally and equivalently realized, and that this statement relates to all quantum mechanically describable objects, including the respective observers and the universes occupied by these observers. Thus the relative state interpretation of QM avoids the notion of a collapse (of the wave function) as well as any anthropocentric overvaluation of an observer, which are features to be appraised.
[15] Private communication by David Deutsch.

anymore, then a completely different model of the original relative state interpretation becomes at least as legitimate, and probably better applicable.
This would be a Quantum Information Interpretation of QM, where physicality would be just one particular mode of information being encoded, with no primacy or preeminence over any other mode (of information being encoded) attached to it.
That Quantum Informatiom Interpretation of QM then would allow, that all relative states not actualized in the universe indicated by the presence of a respective observer could perfectly be encoded either in other equally physical universes than the index universe or in other alternatively physical universes or rather parsimoniously in nonexistent, i.e. certainly non physical, and consequently purely informational universes.
To put it in other words: the Many World interpretation of QM is only as long a compelling model of the original relative state interpretation of QM as the presupposition is made, that the nature of the substance of everything is physical.
In information monism that presupposition is inadmissible and is strictly rejected.
Yet if it is assumed, that the all pervasive and all encompassing substance is of an essentially informational nature, then the relative states immediately have to be of the same nature, namely of an informational making, even, if in some cases that informational making should eventually be of that particular kind of encoded information, which is known as 'physical'.
In the case of the eamObs and amObs that particular physical encoding of their information plays no role at all, since the eamObs and amObs are nonexistent objects anyway, and any particular physicality is just and only a mode of existent objects.

5.4 A cascade of emergent Abstract Automata

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Edward Fredkin
(http://www.digitalphilosophy.org/Home/tabid/57/Default.aspx)

5.5 QuIA

Abstract quantum information automaton

Any elementary automorphic object $eamOb$ of the elementary automorphic objects $eamOb_{n_i}$ can – already due to its particular categorical structure – itself be seen as an automaton, i.e. it undoubtedly has an input state or object $eamOb_{n_x}$, an intermediary state or object $eamOb_{n'_x}$, i.e. quite literally the respective 'black box', and a target state or object $eamOb_{n_{x+1}}$. The abstract quantum information automaton QuIA then is just the entire ensemble of these elemantary quantum information automata states $eamOb_{n_i}$.

5.6 QuCnctA

Abstract quantum connection automaton

5.7 QuctgA

Abstract quantum contiguent automaton is emergent of QuCnctA

5.8 QCellA

Quantum Cellular Automaton

An abstract quantum contiguent automaton QuctgA has as its proper models/instantiations Quantum cellular Automata, since being contiguent is as well a necessary as a sufficient condition for being a cellular automaton.

5.9 The emergence of existence 2.1

Spin networks as physically interpreted quantum cellular automata.

A quantum cellular automaton then provides as well a sufficient structural stability or complexity as also a sufficient interaction resp. propagation matrix to serve as an appropriate fixative for existence (i.e. the other of the only two attributes of substance), which, untill the stage of the emergent nonexistent objects 'quantum

cellular automata' had been reached, could not persevere in the emergent mode of (or as) existent objects.

6 The emergence of higher complexity: categorification of the subvenient levels: automorphic structures, recursiveness, and categorifaction

Elementary automorphic objects, categorified eamobs cellular automata spin networks

Autocatalytic cycles biological systems

Mirror thesis M. Arbib P. Grice recursive (circular interactive propagation) creation of meaning (and thus language and thought)

7 Toposes in mereologies

7.1 mereotopological connectedness, composition and contiguity

Argumentation: mereologies with toposically generated parts as means of restricting composability i.e. reducing the infinities of universally compositional mereological ontologies to the plurality of 'dynamically' consistent ones.

Lit.: Gideon Rosen & Cian Dorr, **COMPOSITION AS A FICTION**
Jonathan Schaffer, Is there a fundamental Level?
Ben Caplan , Chris Tillman & Patrick Reeder, parts of singletons

bb) … to prephysics

aaa) Mereotopological contiguity with emergent QCoA as a matrix of …
bbb) Spin networks

I use ‘contiguity’ as the notion of a topological property of ‘densely ordered discrete elements’ and c-contiguity as the notion of a topological property of ‘connected discrete elements’ i.e. as in contrast to continuity with respect to the power of the continuum on the one hand and also in contrast to the disjointness or separation (including ordinary neighborhood or nearness) of discrete elements on the other. A paradigmatic case for ‘c-contiguent or connected discrete elements’ would be a chainlike structure, e.g. linked toroidal elements.

Def.: QCoA = quantum contiguent automaton resp. quantum contiguent automata.

Against (quantum) cellular automata , a (quantum) cellular automaton implies at least a weak metric, i.e. a metric with relative distances defined, for the contiguent ordering of its elements.

The proposed pregeometry then is an countably infinite topol.space, i.e. a contiguous topol. space with the density of $\mathbb{Q}$.

c A topos of emergence – continued: by mereotopological dynamics to computing pregeometry

Lit.:Th. Mormann, Updating Classical mereology
Th.Mormann, Structural Universals as Structural Parts
(Th.Mormann, Topological Representations of Mereological Systems)

1 Philosophical impact

a The substance of objects: Information Monism

b Objects and (what’s instead of) universals: essentialist nominalism

c The polite version of ontological opportunism in science: ontological commitment.
One is so long ontological committed to one’s objects as long one ***believes*** in their existence.

d Objectology’s or ‘The theory of objects’ apparent expansion of the objectological versus the usually discussed ontological universe(s) brings to light the fact that regarding the question of distinguishing and accepting

something as ontological qualified is not in the first row question of ontological commitment but rather a question of ontological admittance. Ontologies are ever changing, rather fluid and/or blurred ensembles of objects and beliefs varying, altering and moving in the all-encompassing environment of objectology, the elements of them always gaining or loosing their distinguished status as ontologicals more or less easily and by that entering or leaving the ontological zone from or to the encompassing sphere of otherwise seemingly rather nonexistent objects.

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3 basic ideas:

- The concept of pregeometry used in Combinatorial Geometry and Model Theory i.e. the matroid might perfectly fit the proposed structure again independently called 'pregeometry' by J.A.Wheeler. He looked for 'pregeometry' as a matrix for geometry i.e. he looked for it as a structure of which geometry eventually emerges.
  The matroid now suffices the main conditions laid out by Wheeler for the purpose he requested:
  a A matroid is a very scarce structure.
  b In particular a matroid doesn't carry any topology.
  c By closure matroids give rise to respective geometries.
- The elements of such a pregeometry for prephysics then cannot consist of common mathematical structures and objects entirely. The relational structures will be the same as in respective matroids. Yet the objects of these relations can not be the usual points, locales, numbers or even fields. None of these can ever be thought of as being such utmost fundamental as it is required for the intended purpose.
- 'Closure by itself' i.e. closure by (emerging) connectivity.

Terminology:
nonexistent objects : e.g fictionals, paraconsistentials like 'dead living cats' (aka Schrödinger's pet) incl. transconsistentials e.g. 'round square', (cf. G.Priest), consistentials (= objects of science) incl. such which are intended to be existentials,
existent objects or existentials = actually existing objects, i.e. objects, with which one can actually interact directly or indirectly.

ThoOb on properties/attributes: properties or attributes of existentials have for themselves no autonomous or self-sufficient existence, i.e. no actual existence independent of the existentials

they are properties/attributes of.[16] Therefore the appearances/occurrences of any such attributes are no independent instantiations of the nonexistent objects, which are designated (and somehow created) by the substantival use of their respective denotations. Such nonexistent objects, like for example witchcraft, levitation, redness, weight, isoscelesness etc., which are made of objectified attributes then can be of any kind of nonexistent objects: fictionals, paraconsistentials or consistentials.

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3 concurrent concepts of 'object':

- meinongian objects as introduced in the 'theory of objects'
- the concept of object as introduced by Irving Stein in his 'The concept of object as the foundation of physics'
- the concept of object of topos theory. The general concept of object as introduced in category- and topos theory differs from the conventional meaning of 'mathematical object' namely being (eqivalent to) a mathematical model. Any particular objects in categories and topses are of course the respective models of the mathematical structures involved. Yet the idea or general concept of a category- or toposttheoretical object as such is rather a generalization or meta-model where all these mathematical structures and models are mere possible instantiations of.

Topos of Emergence TopEm:

- initial object: a matroid of Automorphic Objects
- terminal object: TQFT

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§ 2 b Extensionalism – baseless

The extensionalist dogma reaching from Kant's statement that 'existence is not a real predicate' "Being is evidently not a real predicate" . I. Kant, ??? to Quine's slogan that 'To be is the value of a bound variable.' imposed a serious and perhaps harmful confinement on the range of logical analysis and the prolific power of scientific exploratory advance.

[16] In a more profound analysis such 'ordinary' existentials as well as the respective nonexistent objects they are instantiations of might however turn out to be objectified complexes of attributes of deeper sited structures.

H.Putnam, 'Models and Reality' this model theoretically refined version of Quine's 'underdetermination of the theory of nature' thesis exposes the 'failure of extensionalism' most impressively. Yet that failure of extensionalism is indeed just selfinflicted.
Since the disillusioning result that by not referring *definitely* a theory by means of its models eventually isn't referring properly *at all* is just due to the unwarranted claim that theories and models as such had to refer to some extratheoretical actuality at all.
Yet theories and their models do not refer for the very reason that they cannot refer. They are made of definitions, theoretical terms and a vast amount of various mathematical (including logical) tools. And the way they are related to an extratheoretical actuality is by by practical means[17] only and ultimately by acts of designation.
Putnam's approach in 'Models and Reality' must however not be brought down to such a simplistic question of if (and if 'yes', how) theories or their models refer to an extratheoretical world. It is rather about the question if the resp. models (of a theory) are unambigously satisfied by definite sets.

Definition: existentials in difference to non existing objects must at least possibly be able to interact with the environment, i.e. existentials are objects, which (actually) exist.

Most scientists won't probably ever care about the statement that the objects of science are (at least: actually) nonexistent, let alone that they would agree. And in nearly all of their work the various sorts of more or less naive (sometimes perhaps: fictional) realism they seem to maintain works perfectly well for all their different purposes.
Yet that could impossibly hold in one important case, namely in the case if or when a sort of rather normal (nonexistent) objects of science i.e. objects of physics would come into their peculiar state of ascribed 'existence' by emergence of a sphere of even more radically nonexistent objects, namly ones which are non- respectively pre-physical ones.
And that's the very point for what Meinong's theory of objects matters not just for science yet in particular for (any proper Theory of) Everything (ToE). Any such ToE has to give an answer to the fundamental question of metaphysics: "Why there is something rather than nothing?" And the best way to find this answer seems to be to explore *how something i.e. a primordial structure of physics came into being up from a stage of non-being*. Or – to give a shorter yet more confusing version of that: *how existence came into existence*. Probably it could be helpful if such primordial emergence could be partially described as a transition from one kind of nonexistent objects to another (so to say: enriched) one.

The 'fundamental physical object' is obviously (contained in) the structure which consists of the total energy and total momentum of the universe at the stage of its initial emergence.

The primordial emergence of the most elementary structures of physics i.e. the primordial emergence of physics itself from radical prephysics then has to be seen as the emergence of

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[17] E.g. in the preparation and execution of experiments or in 'successful applications' of the theory. possibly directly or indirectly

nonexistent objects which are intended to be entities from (a sphere of) nonexistent objects which are not and - more importantly - which cannot be proper entities at all.

Entities are supposed to – at least possibly – actually exist, i.e. it is supposed that one can actually or at least interact with such entities.

Appendices

7.2 Elementary Meroses (i.e. severely restrained Toposes) of emergence built on higher dimensional gunk: weak 2-categories ($2\text{-}amOb_{tor}$, $2\text{-}amOb_{tub}$)

A meros is meant to be a category of mereologies. In particular a meros should carry a categorical dynamic like the one once proposed by F.W.Lawvere. Therefore a meros has inevitably very closely to mimic (the structure of) a topos, yet purified of its set theoretical innards, and by that also purified of the Platonic presumptions of empty abstractedness, which are inseparably adjunct with that set theoretical characteristic.

Meroses would gain a great deal of naturality and by that also of nominalistic rigour in comparison to a topos of mereologies, but then they would only do so for the very cost of universality compared with toposes.

'meros' stands for an abbreviation of 'mer**e**o**l**gical **s**pac**es**', therefore the plural should go as 'meroses' (for '**mer**e**o**logical **s**pac**es**'). As in the case of 'topos', where topos originally wasn't meant to stand for the Greek term for 'place' or 'location', also in the case of 'meros' meros doesn't stand for the Greek word for 'part'. A meros is meant to be a mereolgically based analogon of a topos. A topos can be seen as a categorical version of a set or a categorised set, a meros then should be seen as a categorical version of mereology or a categorised mereology, with mereological parts and mereological sums or mereological compositions as characteristic objects. In a meros then a mereological part may very well be a mereological sum itself and a mereological sum may be a mereological part in another setting or if seen from another viewpoint. The morphisms between the objects in a meros are

not only the admitted mereological operations but all admitted dynamical relations between the respective mereological parts and mereological sums as well.

The fact of (the) ‘matter’: Merosic foundations of existence