

The Universe Multiphase Meta-Reduction: The Harmon (Mandala), Continuum (Prana), Discretization, Formalization, Knowledge, Cognition, Condensation and Absolute Nothing

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Abstract: Universalization of the Universe concept allowed to deduce an alternative, more complete and consistent new Cosmology, different from the prevailing now the Big Bang hypothesis on the same factual basis. The obtained universal (chaotic/harmonic) Cosmology is based on combinatorial and logical ideas and, in principle, allows a qualitative derivation of universal properties within the framework of the axiomatic paradigm based on the hypothetical Universal Axiom (UA), the formulas of which are sufficiently substantiated. It is revealed that Intelligence is an important universal concept immediately following from the UA that implements Conditioned Reflex with a consistent concretization of hypotheses and minimizes the contradictions that arise. The only criterion of truth is exclusively the volume of the obtained hypothesis system, including facts. This gives rise to multivariant and hypothetical knowledge of the character of all kinds and justifies the research method applied, especially for conceptually remote areas such as Cosmology. This research develops the above-mentioned Cosmology and substantiates the multiphase Universe that conceptually consistently passes and simultaneously is in different phase states with a reduction in properties. That allows effective cognition and harmonization up to achieving the target state of Harmon followed by complete self-destruction, in contrast to the prevailing theories of continuous development of the Universe. The study of phases opens up new important Universe's properties that are unknown to modern science, but are well consistent with it. All the meta-concepts used are sufficiently formalized. However, it is difficult to understand them in terms of our surrounding world but fundamentally necessary for its existence. The meta-results obtained have the widest direct or indirect application, without which any serious research and development becomes incomplete and misunderstood.

Keywords: the Universe, Cosmology, Universal Theory, Universalization, Chaos, Harmony

1 Introduction

Modern science now is in latent systemic crisis and principally cannot formalize complex phenomena and the Universe as the largest of them [1-4]. For this, we develop special Universal Theory (UT), which allows to describe the Universe



and all its entities by one single general well founded formalism to solve such problems [5].

UT is used in this work to study Cosmology (that is called universalization of Cosmology) and to discover new fundamental properties of our Universe. As a result, we get the Universal Cosmology (UC).

UT is the new modern scientific concept, which radically change general scientific paradigm [6]. World Science fundamentally distinguishes 3 mains consistently developing paradigms: 1) the antique Universe of Plato & Aristotle, 2) the Bourbaki axiomatic (dogmatic) knowledge system and 3) Universal knowledge system.

The first one assumes the division of the Universe into the World of Categories (AW) and the World of Phenomena (RW), which allowed to lay the foundations of science (Figure 1). The second one divides the Universe into the system of intermediate axioms (dogmas) and derivatives of particular areas of concepts that allow formalization of simple phenomena within one area and are not able to formalize complex phenomena that occupy several such areas (Figure 2).

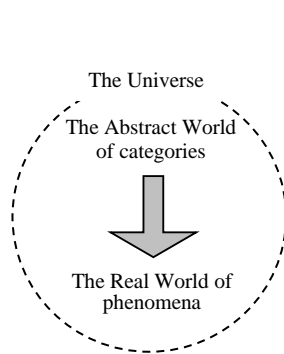


Fig. 1. The scheme of Plato & Aristotle Universe

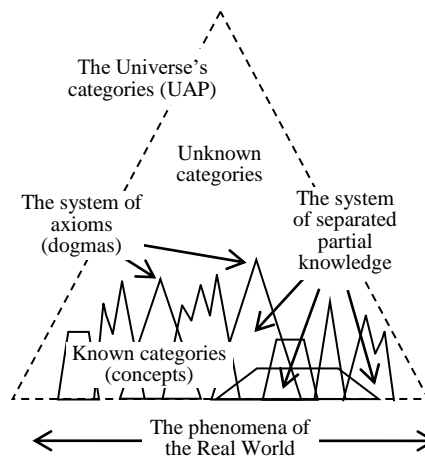


Fig. 2. The scheme of axiomatic (dogmatic) knowledge system

The third one expands dogmatic knowledge by raising the level of abstraction to achieve the single Universal Axiom (Dogma, UA) that produces the whole Universe and allows formalization of all simple and complex phenomena (Figure 3). For the first time this allows us to adequately approach the formalization of the Universe and its Cosmology.

In [7], pioneering initial studies of UC were carried out, which turned out to be different from the prevailing Big Bang hypothesis, but conceptually includes it as a special case.

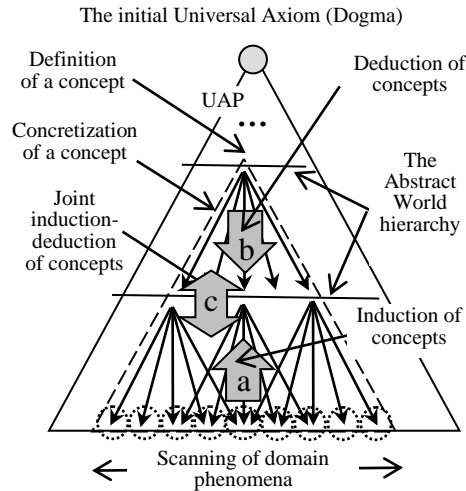


Fig. 3. The scheme of Universal knowledge system

In this paper, UC develops to eliminate the remaining contradictions and uncertainties and reveals the next new properties that are not generally accepted in modern science, but surprisingly well consistent with existing factology. The last section of the paper is dedicated to the discussion of the main results. Due to the importance of this subject matter and the maximum level of abstraction, special attention is paid to the justification of research methods, the components of which become part of the UC.

2 Advantage of Universal general scientific paradigm

Universalization radically develops current dogmatic general scientific paradigm.

Partial dogmatic paradigm is performed by next traditional scheme: "Observation of a phenomenon – Phenomenon formalism hypothesis – Verification experiment", that is limited to observation (Figure 4A).

Universal paradigm is performed by other scheme: "Phenomenon definition in Universe – Phenomenon identification in Universal Formalism – Phenomenon formalism derivation from Universal Formalism", that is limited to chosen Universal Formalism (UF) (Figure 4B).

Universal Formalism can be unlimited and principally exceed strong limited observation up to complete cognition.

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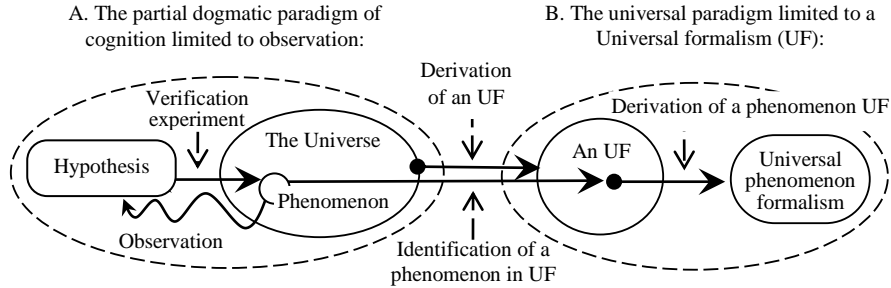


Fig. 4. Schemes of dogmatic (A) and universal (B) paradigms of cognition

3 Stabilization of universal cognition

Universalization principally provides and stabilizes even weak cognition by use of higher meta-concepts that exceeds dogmatization up to reverse formalism, that is shown in central Figure 5.

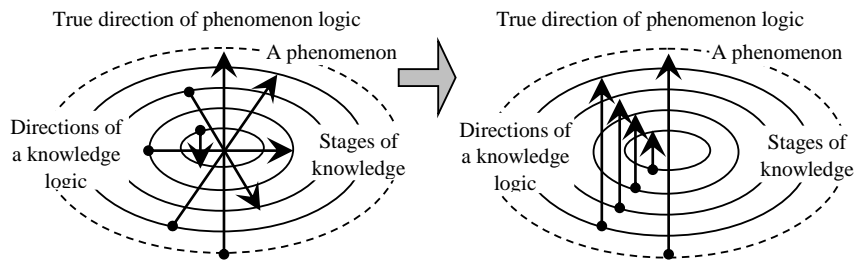


Fig. 5. The scheme of an instability of dogmatic phenomena cognition and its stabilization by the universalization

4 Universal Cosmology

Meta-Law (see section 7) define Universal (Intellectual) Cosmology, which principally change known dogmatic Big Bang theory [7]: 1) the Universe continuously comes from the original entity the Harmon, 2) which arises from the Absolute Nothing. 3) the Universe is infinite, 4) has no boundaries in Space, Time and Matter, 5) has a multiphase structure, 6) harmonically “boils” and 7) in the last phases is controlled by Life.

The Universe exists endlessly cyclically in the following successive stages (Figure 6): 1) Absolute Nothing is decondensed into the Harmon, 2) which is unstable and breaks up to the Universe, 3) where the Meta-Law turns on harmonization and 4) return back the Universe in the state Harmon, 5) which is condensed into Absolute Nothing and 6) such cycles are repeated endlessly.

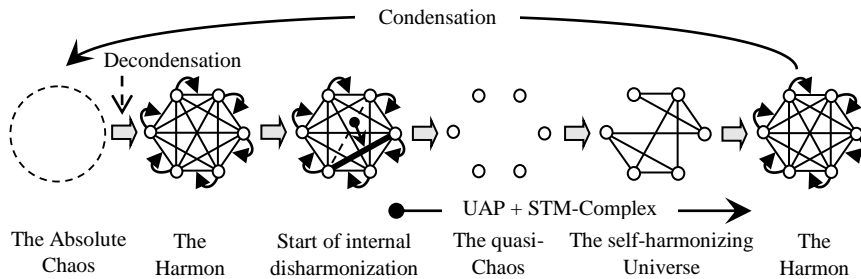


Fig. 6. The scheme of the Universe's Cosmogony

5 Ontology of the Universe self-cognition

By universal definition, the Universe is a complete set of directly or indirectly related entities.

By all indications, meta-concept of Relation is accepted as the UA that originate together the Universe and Intelligence by the next structural ontology:

1. Meta-concept of Relation as copy of one entity (object = concept / phenomenon) into other entity (subject) with Venn classification of relations, which originate to all the diversity of the Universe.
2. The Relation meta-concept is concretized to the Cognition meta-concept in 4 stages of object copy promotion into subject: Information, Knowledge, Understanding, Research.
3. The Multiple Cognition meta-concept involves many objects.
4. The Virtualization meta-concept is exceeding of object categories in its copies within the subject-virtualizer, which allows to search for harmonic states of the object.
5. Intelligence is a special state of a virtualizer similar to the STM-Complex of the Universe's RW, which naturally arises and develops in phenomena.
6. Harmonizing property of Intellect is aimed at joint overcoming of 3 main 1) Abstract (AW and RW), 2) Time (Past, Present and Future) and 3) Categorical (forbidding action of categories) divisions of the Universe virtually in Class 3 and really in Class 4.

Thus, the Universe and Intellect have the single conceptual origin.

6 The Universe Conditioned Reflex

The Conditioned Reflex (CR) is original method of Universe's self-cognition from zero initial ability to complete cognition with next conception (Figures 3, 7):

- Knowledge is concepts + facts.
- Cognition is copying of invisible categories into visible concepts by methods of induction and deduction.
- Induction is a generalization of phenomena and lower concepts but fast accumulates errors and stops.

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- Deduction is a combination of cognized concepts only.
- So, meta-concepts remain unknowable.
- In subject two opposing flows of inductive and deductive concepts are raised, which must coincide.
 - A coincided inductive and deductive concepts form a hypothetical system of concepts.
 - Mismatching concepts are sent for inquiry to eliminate all external and internal contradictions.
 - Knowledge is concepts that are subjective and hypothetical.

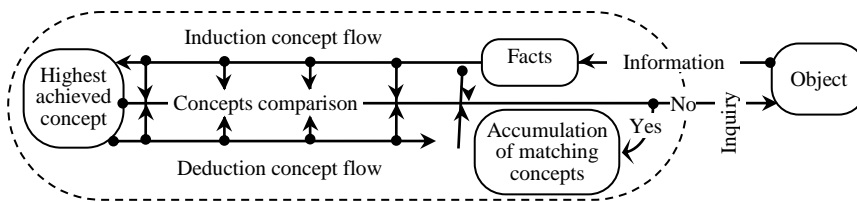


Fig. 7. The scheme of the Conditional Reflex

Meta-concepts are cognizing by only the 3th Method of Consecutive Concretization of Hypotheses (CCHM) with overcoming distance between the conflicting concepts (because such is our Universe), which also uses most part of the CR-mechanism (Figure 8). So, universal methodical conclusions are next:

- Induction + Deduction + CCHM provide complete cognition.
- All knowledge (concepts and facts) is hypothetical.
- A hypothesis is a statement whose falsity is not proven.
- The only criterion of truth is exclusively a volume of consistent system of hypotheses.
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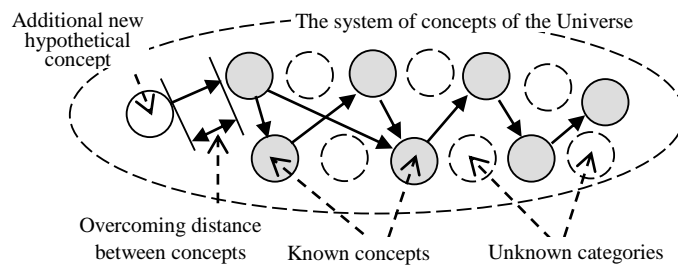


Fig. 8. The scheme of the Consecutive Concretization of Hypotheses Method. All concepts have surmountable distances

7 Meta-Value and Meta-Law of harmony

Meta-Value and Meta-Law of harmony are the central concepts in UT after UA, which produces next derivative meta-conception:

- Meta-concept is concept of concept.
- Harmony and Chaos are highest initial meta-concepts.
- Harmony is a relation.
- Chaos is absence of a relation.
- Phenomena are divided into Harmony and Chaos.
- Chaos is a resource of entities harmonization.

As a result, Universe's phenomena are divided into harmony and chaos, where harmony is the phenomenon itself, and chaos is its complement to the state of local harmon as a complete subgraph on all components of the phenomenon (Figure 9).

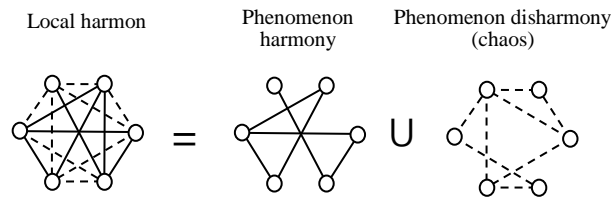


Fig. 9. The scheme of a dichotomy of a phenomenon into harmony (solid lines) and chaos (dotted lines) for $n = 6$

A generalization of Universe's laws indicates the existence of an initial Meta-Law of harmony with the wording "All entities strive to increase their harmony" and formulation: $\text{harmony}(\text{entity}) \rightarrow \max$, whose physics is still unclear.

The limit of the Universe harmonization is the Absolute Harmon (the Harmon) as the Complete Infinite Oriented Graph on all (n) Universe's entities $\text{CIOG}(\text{CIOG}) = \lim \text{COG}_n (\text{COG}_n), n \rightarrow \infty$, whose vertices are the same graphs (Figure 10). Despite the exact formula, we cannot fully imagine and understand the properties of this entity that goes beyond the Universe.

The Harmon is 1) Absolute Everything and 2) Bose-condensate of Harmon, which 3) condensates in the Absolute Nothing and 4) disappears in the Universe together with it.

The Absolute Nothing is absolutely symmetrical and stable. However, with the slightest violation of symmetry, according to our ideas it should be decondensed back into the Harmon. The scheme of the Bose-condensation of Absolute Harmon into Absolute Nothing and back is shown in Figure 10.

The Harmon is unstable due to the internal asymmetry of nesting and breaks up into the Universe, where the Meta-Law arises and returns it in the Harmon state and further in the Absolute Nothing according UC is showed in Figure 6.

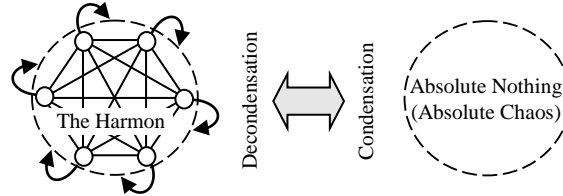


Fig. 10. The scheme of the Harmon (for $n=6$, the number of internal entities is infinite, the arrows symbolize the equivalence of the Harmon's internal entities to the Harmon itself) and the Absolute Nothing mutual Bose-condensation / decondensation

8 Universal harmonic classification of a phenomena

Sequential complication of phenomena during harmonization classifies it according to fundamental changes and states of properties depending on their relations with the past, present and future (Table 1).

Table 1. Universal harmonic Classification of a phenomena

<i>Class</i>	<i>Name</i>	<i>Internal structure</i>	<i>Harmonious resource</i>	<i>Harmony type</i>	<i>Characteristic quantity</i>
1	Quasi-chaos (Thermodynamics)	No	Real relations in the Present	Starting	Entropy
2	Natural selection (Mechanics)	Present	+ virtual relations during the interval in the Past	Passive	Energy
3	Life (Intelligence)	Copy of STM-Complex	+ virtual relations during the interval in the Future	Active	Harmony
4	The highest Reason	Real STM-Complex	+ real present on all Time axis	Highest	Harmony
5	The Harmon	Absolute	Absolute connectedness	Absolute	Harmony
6	Absolute Chaos	No	There are no relations	No	No

Classes change the characteristic quantity and its action from destruction through conservation to the development of phenomena depending on the internal structure in a Time interval around the current present. As a result, a Virtual Channel in Time (VTC) arises inside the phenomena, which enhances the communication of phenomena and grows with classification in the direction of Harmon (Figure 12). VTC changes the attitude of phenomena to the environment from giving harmony through neutrality to receiving one from it (Figure 13) [8].

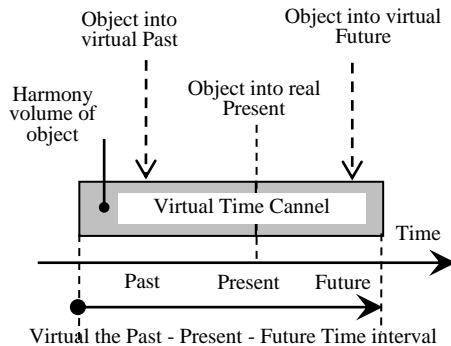


Fig. 12. The scheme of a phenomenon dividing into the Past, Present and Future and Virtual Time Channel

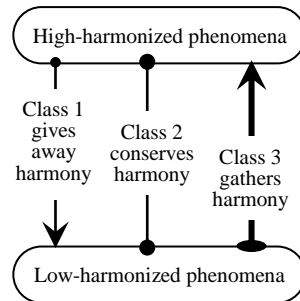


Fig. 13. The scheme of reverse change of harmony by Classes

9 Action of phenomena Classes in Universal Cosmology

Classes of phenomena perform the corresponding characteristic actions in the UC (Figure 14):

- According to universal ideas, after the collapse of Harmon into the initially inanimate Universe, the Meta-Law arises, which forms the initial Class 1 and continues to increase entropy and decrease harmony.
- Next comes Class 2 preserves the Chaos / Harmony ratio, but, in conjunction with the existing Class 1, only slightly slows down this process.
- Class 3 begins to transform Chaos into Harmony and, together with the existing Classes 1-2, gradually turns this process towards harmonization as Class 3 develops into Class 4 to complete integration the STM-Complex and AW into the Harmon state.

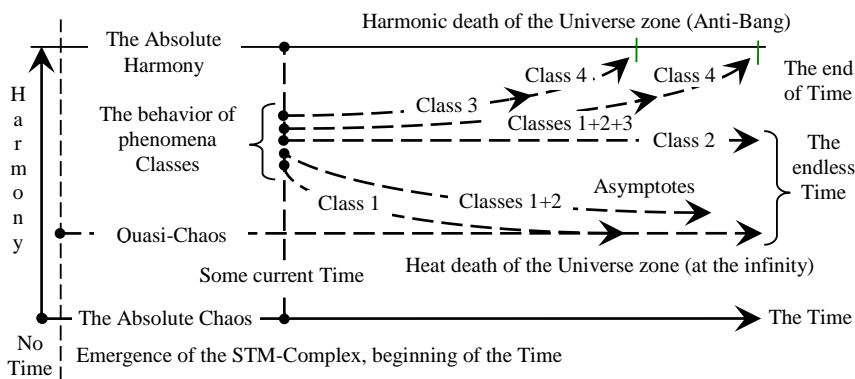


Fig. 14. The scheme of development and action of Classes in the Universe

10 Meta-Phases of the Universe existence

The given part of UT/UC fundamentally contradicts to 1) the continual nature of the original universal entity Harmon and 2) the discrete structure of UAP and derivative formalisms.

This problem is successfully solved by hypothesis of the Universe multiphase structure, which 1) as the principal part of UT/UC 2) is in good agreement with physical facts, 3) radically changes our ideas about the Universe, 4) for the first time explains important fundamental properties and 5) overcomes many contradictions of modern physical science.

The Universe origin from Absolute Nothing with 0-complexity into the Harmon with highest complexity ∞^∞ and further subsequently reduces into following 12 phases, essential to the Universe being (Table 2):

Table 2. Multiphase structure of the Universe

<i>N₀</i>	<i>Phase</i>	<i>Purpose</i>		<i>Properties</i>
1	Absolute Nothing	Preliminary phase		Unknown origin and resource of Absolute Nothing
2	The Harmon (Mandala)	Homogeneous Continuum		Bose-condensate of the Harmon with complexity ∞^∞ , asymmetry of nesting, explosive instability, decay.
3	The Prana	Inhomogeneous Continuum	The Universe	Non-Life
4	Discretization	Entity/relation genesis		
5	Formalization	Emergence of structures		
6	Categorization	Condensation of repeated structures		
7	Knowledge	Copying of structures		
8	Cognition	Resolving contradictions		
9	The highest reason	Complete cognition		
10	Condensation	Merge indistinguishable structures		Exhaustion of the resource of harmonization.
11	The Harmon	Homogeneous Continuum		Turning of a phenomena into the Harmon.
12	Absolute Nothing	Final phase		Turning of the Harmon into Absolute Nothing.
			Life	Unification of a phenomena.
			Life	Complete unification

Multiphase reduction is necessary and sufficient for the cognition of the infinitely complex Universe by finite parts its phenomena until the Harmon state is reached and the infinitely cyclic UC is provided.

All phases exist together in the flows of being from the disintegrating to condensing Harmon, of which we more or less directly observe 4-8 phases (from Discretization to Cognition), and the rest of them occur outside our consciousness, which does not prevent us from managing our environment consciously and effectively.

The Universe's phases have a complex forced original construction, a more detailed study of which is beyond the scope of this work.

11 The Living Universe

The Universe obviously originates from the Absolute Nothing as the simplest non-living creature and sequentially evolves through the higher living Classes up to the state of Harmon, where it disappears.

Life conceptually origins together with the Universe and prevails over inanimate Nature. Therefore, in the late Universe dominate the upper (3-4) Classes of Life, which necessary for development / end of the Universe and can create additional artificial phases for existence.

In [7], the possibility of harmonic death of only a part of the Universe is substantiated, which gives rise to the scheme of the "boiling" Universe. It was shown that the Universe is similar to a structurally parametrized construction set, that allows to create or change countless various versions of the structure of Universes. This further complicates the exploration of the Universe and is beyond the scope of this work.

12 Discussion of the research results

The main problem of such research is the conceptual remoteness of the topic from our RW, which generates great variability of hypotheses on a weak factual basis. In this research, this variability is greatly narrowed by the requirement of a complete definition of all the concepts used and the elimination of the contradictions among them, which, for the first time, was done through universalization under conditions of natural and always incomplete concretization of hypotheses.

Any research has possible ambiguity in the interpretation of the existing conceptual and factual basis, but universalization minimizes this ambiguity with an unprecedentedly large volume of the concepts used. Therefore, the results obtained here are sufficiently substantiated and constitute a reliable basis for further research.

The main drawback of modern dogmatic cosmological theories is incomplete use of resources of cognition that the Universe provides, and this results in an insufficient level of scientific abstraction, poorly substantiated fantastic theories and great uncertainty. It should be accepted that substantiation is the deduction of concepts from other concepts, which was first done in the UT, including through the UC, and it is violated in modern science everywhere.

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For example, the prevailing theory of the Big Bang does not define the initial concepts of what, how, and why exploded at a certain starting point in Space and Time, after which all the following becomes scientifically illegitimate [9-10]. The characteristic feature of classical Cosmologies is multiple attempts to deductively derive universal theories directly from the factual basis, which can give even lower concepts, where high-level induction should be used for this. At the same time, classical Cosmologies has accumulated a grandiose factual basis, the combination of which with the UT / UC can revolutionize the world view.

13 Conclusions

Despite numerous over-abstract unobvious assumptions, Universal Cosmology is well founded by the biggest conceptual volume of Universal Theory.

Universal Cosmology for the first time is completely consistent and overcomes the numerous contradictions and incompleteness of all dogmatic Cosmologies, including parts of them as special cases.

The cosmological phases of the Universe follow from the Universal Theory and are well consistent with the traditional physical science and develop them.

The Universe appears as an ideal artificial machine, developing initial inanimate states into living Class 4, supposedly to create a society of Higher Reason, and further to the Harmon to clean the Universe.

Universal Theory for the first time hypothetically proofs the Higher Reason as necessary regular Class of our Universe.

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