

## The Trinity of Language Aspects and Logics and Their Fractal-Quantum Properties

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**Abstract:** This article is devoted to the fractional-quantum structure of a word and the Tritiny of language aspects and its interrelation with logics processes. The each structure of a language: phonetics, lexis and grammar consists of three discrete components: meaning, form and function and such a division is formed thanks to the Trinity law and fractional-quantum structure of the Universe in general and a language particularly. A language consists of three main aspects: phonetics which in its turn divides into three: letters, sounds, pronunciation; lexis which divides into three: form, meaning and function and grammar which divides into three: form, meaning and function. These three main discrete aspects of a language with their further division work together in order to make speech for expressing the results of thinking process: ideas, conclusions, inferences and etc. Fractal –quantum effect makes the word sememe transform meaning on the basis of intension of human being. Without transforming of the word seme there are no grammar and phonetics transforming, because latter are only adapters which make word seme transformations suitable to context requirements. Words directly belong to language and indirectly belong to thinking process, because the word meaning and extra-linguistic “concept” meaning are the same as two process of a human being.

**Key words:** Trinity % Fractality % Quantum % Phonema coding % Grammar adapters % Thinking operation % information % Extra-linguistic % Concept % Notion % Meaning % Form % Function

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### INTRODUCTION

Being as a part of the objective world, language also subjects to the Universe law in general and to its principles of fractality, quantization and the Trinity in particular. The English word “Trinity” is derived from Latin Trinitas which has the meaning “the number three, a triad” or “three are one” [1, 3]. Language consists of three discrete aspects: phonetics, lexis and grammar (further PLG). Being formed by fractal-quantum effect (FQE), PLG don’t contradict with each other, they operate as a unit in speech or in sentences expressing the results of thinking process. Each aspect of PLG in its turn divides into three internal components. Being one of the language aspects the word belongs to both language and thinking process simultaneously and has relation to logics, expressing concept meanings as lexis meanings. The components of the Trinity are not toughly fixed with each other, they may combine with the components of the other Trinity. The Trinity law spreads not only to

language but also to thinking process or logics and to its components as the Universe phenomena. Fractal –quantum principles help to create seme, concepteme, phoneme and grammeme transformations.

### MATERIALS AND METHODS

There are so many notions, which need definitions and that is why one of the main sources was special dictionaries of philosophy and psychology and works of Frege G., Dammett M., Searle J., N.Chomsky, Mandelbrot B., Averinstev C., Svinstova V.I., Montequ R. Wittgenstein Z., Getmanova A. and others. Research methods: componential, semantic, functional, morphological, syntactical, phonetical and transformational methods of analyses were used.

**The Main Part:** One of the laws governing the Universe is the Trinity law which manifests itself in all sphere of life in general and in human being components as language

and logics particularly. The Trinity concept states that essential content of each phenomenon of the Universe consists of three distinctions but these distinctive components don't contradict with each other they cooperate with each other manifesting the unity of interrelation and interconnection, because language is synenegetic. The components of the Trinity are not toughly fixed which each other, they are more flexible in combination with components of other triad. In some cases components of the Trinity has a stepped or phased action, in some examples it operates as synchronous coacting forces.

One can find influence of the Trinity principle in every sphere of life. Let's begin from human being's life which consists of such three notions as: birth – life-death, if we take examples of other spheres as social life which consists of also three branches of power: (1) legislative, (2) executive, (3) juridical; education sphere doesn't also pass by this process which consists of three P's: presentation, process and production and we can endlessly continue this list.

A language consists of three aspects: phonetics, lexis and grammar (PLG). When these three aspects are in a static balancing state they don't manifest their peculiar characteristics, they are only the nomenclature of morphology. When they are in dynamics (in syntax), morphology actuates all morphological categories to express proposition of logics: conclusions, inferences, judgments, ideas and others into surface in the format of speech or sentences. Each discrete components of PLG in its turn divides into further inner three discrete components: phonetics: letters, sounds, pronunciation; lexis: form, meaning and function and grammar: form, meaning and function. Such a division is formed thanks to the Trinity law and fractional-quantum structure of the Universe. In compiling sentences, word seme plays the main role, it is the source of grammar and phonetics transformations, because they function within the frame of word seme transformation and adapt newly transformed form of word meaning to the context of discourse in expressing syntax semantics, for example, the verb: 'write', 'I am writing'- process; 'I had written'-result; 'I write'- fact; 'I have been writing'-protraction. Here we see the reactions of grammar and phonetics to the aspectual transformation of the word 'write' into four forms. And each form of these four sentences are changed from the point of grammeme and pnoneme transformations on the basis of fractal -quantum effects.

In order to analyze the effect of the Trinity law and reason the flexibility of each component of the Trinity to combine with components of other triad, especially the combination of language components of triad with extra – linguistic concepts' triad. Let's take the concept and word 'sun' for analyzing the peculiar features of components of language PLG and their interrelation with components of thinking process.

## PHONETICS

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**Letter (Pl) Sound (Psn) Pronunciation (Pp)**

The range of conceptual signs of phonetics is denoted as Ps (Pl+Psn+Pp). Let's analyze the word "sun" from the point of Ps.

**Letters (The External Phonemic Coding):** Three - S, U, N.

**Sounds (The Internal Phonemic Coding):** Three - S, A, N.

**Pronunciation:** Sun. Pronunciation is a joint action of external and internal phonemic coding for denomination a word which makes it different from other words.

**Form (Pf):** Letters and sounds;

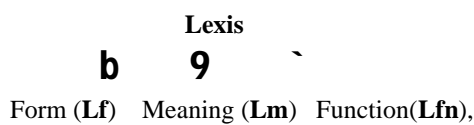
**Meaning (Pm):** Word form coding and differentiating words from others with a set of letters, therefore sounds and languages from each other.

**Function (Pfn):** Fixing set of letters (sounds) for denoting a word without connection with semantics of it.

These inner three divisions of phonetics: letters, sounds and pronunciation will compose external sell of a word for differentiating one word from other words and one language from others. Combination and fixation of set of letters (sounds) for denoting a word takes place without connection with semantics of the denoted words. There are different languages with their own number of letters and sounds and with their own way of combination of them. If each letter connects with a certain piece of word meaning and on the basis of letters' meaning we form an external letter (sound) frame of a word, in that case we need hundreds and thousands letters in order to denote the word stock, which has thousands and thousands of words. Let's imagine, that each letter carries

or connects with a certain piece of meaning of words, for example, that the letter “s” denotes the “particle of ray”, probably it is understandable, when we see it in the word ‘sun’, but there are so many words which have the letter ‘s’ in their denomination and they have no any connection with the “particle of the ray” and it would be difficult to differentiate each word by this system. We have different languages which have different number of letters, for example, the Kazakh language has forty two letters but the English language has twenty six and different way of their combination which differentiates one language from others. In general phonetic matrix is the same for all languages (letters, sounds, intonation). Phonemes compose of word forms. Without the components of phonetic trinity: letters, sounds and pronunciation, a language can’t realize itself.

The next aspect of language is lexis or word which is also influenced by the trinity law and consists of three aspects.



The range of conceptual signs of lexis or word is denoted as Ls (Lf+Lm+lfm). Let’s analyze the word “sun” from the point of **Ls**. “Sun” is a noun.

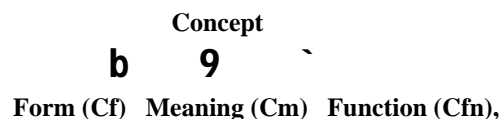
**Form (Lf): Fs** (letters + sounds + pronunciation): three letters, three sounds and their pronunciation.

**Meaning (Lm):** Has specific physical-mechanical properties; gives day light; has round gold form; it is far from the Earth.

**Function (Lfn):** The sun gives a suitable certain temperature, which gives energy necessary for all living being to grow in the terrestrial life; it lights the Earth dividing the terrestrial life into two: day for human activity and night for human relaxation; human being knows without the sun there is no life in the Earth.

Lf and Lfn of a word are pure language aspects. Lm has a double features: half element of extra –linguistic concept and half element of language. From one side word meaning consists of extra –linguistic concept meaning (it will be reasoned below) that is why word indirectly belongs to thinking process and from another side the meaning of word is expressed by itself and language means as grammar in a sentence or speech and phonetics.

In order to reason the content identification of the concept and the word, we ‘ll analyze the concept ‘sun’ as the unit of thinking process (logics) from the point of the triad.



The range of peculiar features of the concept is denoted as Cs (Cf+Cm+Cfn). Let’s analyze the concept ‘sun’ from the point of **Cs**.

**Form (Cf):** Round, gold, yellow

**Meaning (Cm):** Has specific physical-mechanical properties; gives day light; it is far from the Earth.

**Function (Cf):** The sun gives a suitable certain temperature, which gives energy necessary for all living being to grow in the terrestrial life; it lights the Earth dividing the terrestrial life into two: day for human activity and night for human relaxation; human being knows without the sun there is no life in the Earth.

The range of Cm of the extra- linguistic concept ‘sun’ and the **Lm** of the word ‘sun’ coincides with each other, because they are two process of one human being cognition: decision making (Cm) and its interpretation (Lm). Such duplication of the meanings of the concept and the word ‘sun’ is necessary prerequisite for synchronization of ‘deep and ‘surface’ (the terminologies of N. Chomsky) [2, 183] structures to convey adequately ‘deep structure’ into ‘surface structure’. The difference between the concept and the word ‘sun’ is only in Lf and Cf but Cf is transformed in Lm as one quality of the ‘sun’. Cfn and Lfn are the same, because they function within the conceptual feature characteristics (CIF) of Cm. Cm and Lm are equal so are Cfn and Lfn.

Extra concepts are the units of ‘deep structure’ or thinking process and words are the units of ‘surface structure’ and express the results of thinking process in language format. The ‘deep structure’ is the plane of content of speech (oral and written forms), the ‘surface structure’ is the plane of expression of speech. To express the results of ‘deep structure’ adequately into ‘surface structure’, the volume of these two notions: Cm and Lm should be equal and they are equal. If Cm and Lm are equal, Cfn and Lfn are also equal.

Cf (α) LF(sun)

Cs=Ls

Cfn=Lfn

Namely Cm consequently Lm (further CLm) dictates pragmatic aspects of concepts and words and namely they identify and restrict the area of their usage. **Cfn** and **Lfn** only fix pragmatic aspects of CM and Lm and with the help of thinking process(Cfn) and grammar (Lfn) arrange them into deep and surface structures. For example, when the concept α is in deep structure, we express it by the words ‘the sun shines’ in surface structure. And this statement is ‘truth’, because the ‘sun’ has such CIF as ‘to warm or heat’ by shining. But nobody says that ‘the sun freezes the land’, because this statement is ‘false’, the ‘sun’ has no such conceptual sign in its Cm.

Cf of the ‘**sun**’ is round, yellow (gold). As mentioned above Cfn and Lfn of the ‘sun’ depend on CLm. One can say that ‘the sun is round’, because it really has such a form and it is one of the denotative meanings. ‘Her face is round as the sun’ and there is a connotative meaning of the ‘sun’ as a metaphor. Nobody says that ‘the sun is triangle’, because the concept ‘sun’ has no such a sign. It is the main reason of appearing of ‘false’ statements, when a person doesn’t know all range of phenomenon CIFs and use this concept with uncertain CIFs in thinking process and it leads to wrong inferences, conclusions and etc. The range of phenomenon CIF identify and limit its usage.

The difference between Cf and Lf is that Cf is universal for all people of the Universe, for example, concept: surface with supporters-legs is in the matrix of all nations, but they pronounce differently in different languages: “table” in English, “stirli” in Kazakh and “stol” in Russian, different letter combinations and different pronunciations but the same concept in all languages. The main aim of phonetics is word form coding and differentiation a word from others.

For example, main conceptual features of a ‘table’ are a surface ( it may be oval, triangle...) and supporters (it may be four, three or one leg in accordance with design). If we take into consideration only ‘surface’ of a table and we don’t know another main conceptual feature of this phenomenon ‘legs’, which differentiates it from the other phenomena having ‘surfaces’, for example: ‘floor’ and ‘ roof’. The ‘table’ serves for ‘ having food’ and ‘studying’ in accordance of its CIF. Having ‘surface’,

‘floor’ and ‘roof’ don’t function as a table because they have no another important concept feature of the table ‘supporters’ or ‘legs’, which make a person organize their ‘writing and dining’. That is why nobody says ‘put cups on the floor or roof for dining’ or ‘put roof or floor’ in the middle of the room. The table is moveable; one can put it near window, near wall or in the middle of the room but not the “floor” and “roof”. And there is misunderstanding of the concepts ‘ table’ ‘roof’ and ‘floor’ with one given conceptual sign ‘surface’.

On G. Frege’s opinion ‘logics connects with the truth’ [3, 30] and this statement will be true if we know all concepts’ CIFs being used in thinking process. If CIFs taking part in thinking process are uncertain this leads to appearing of ‘false’ statements.

The results of thinking process primarily is ‘truth’, ‘false’ statements take place in secondly thinking process when the objective result of thinking process is processed from the point of human being’s ‘intentional states’ [4, 1], it may be positive or negative. It depends on moral feature of social human beings with his/her double moral values, objective and private standards. Human being as the unit of the Universe is also influenced by the Trinity law: he may think one thing, say the other thing and do the third thing. Understanding the results of thinking process correctly human being can sometimes misrepresent received information for the sake of himself on the basis of self-preservation instinct.

Fractality’ was introduced by the American scientist B. Mandelbrot which denotes self-similarity of an object having structural, self-similarity composition [5, 4]. Quantum is minimal quantity which is changed. On the basis of fractal quantum effect, CLm of ‘nature’ is transforming into nine conceptual identification features. The following meanings of ‘nature’ is given in Webster’s Collegiate Dictionary. Here we see the fractal-quantum word sememe transformation:

- C The inherent character or basic constitution of a person and thing;
- C A creative and controlling force in the universe;
- C A kind or class usually distinguished by fundamental or essential characteristics;
- C The physical constitution or drives of an organism;
- C Spontaneous attitude;
- C The external world in its entirety;
- C Humankind’s original or natural condition;
- C The genetically controlled qualities of an organism;
- C Natural scenery.

Namely on the basis of fractal – quantum essence, a word can reproduce itself and produces denotative and connotative meanings and belong to different parts of speech.

If we take nine meanings of ‘nature’ mentioned above, the denotative meanings of this phenomenon are the second, the sixth and ninth meanings: ‘the external world in its entirety’; ‘a creative and controlling force in the universe’; ‘natural scenery’. Some of them are connotative meanings (nature of a person etc.) and function as metaphors. And these meanings being elements of cognition compose axiomatic frames, schemata, notion blocks of thinking elements. Not only Cfn and Lfn operate within Clm, but also human being acts within CLm. We have positive and negative notions. The content of the notion ‘cigarette’ has a negative meaning, because it is harmful for a person, that is why we say ‘Don’t smoke cigarette’ with negation ‘not’. ‘A cigarette is a poison’ here one see the connotative meaning of this word. Connotative meanings appeared on the basis of positive and negative CIFs of CLm. We don’t say that ‘cigarette is sweet’, because CIF of ‘cigarette’ has no such quality as “sweet”.

According to Philosophic dictionary, ‘notion’ is ‘thought reflecting in generalized form things and phenomena of reality and essential connections between them with the help of fixation of general and specific properties’ [6, 494-495]. It will be concept notion(Cn). Cn has no phoneme coding because it is the unit of deep structure. Cn is inherent to all nations and nationalities because we live in one Universe, that is why we understand each other in spite of we speak in different languages. On the opinion of Getmanova A.D., ‘notion is a thinking form where essential features of separate things or homogeneous classes of things are reflected. Notion is expressed by word in a language [7, 7]. According to the latter definition ‘notion’ is expressed by a word, it means that there is word notion (Wn). Wn is with phoneme coding for “surface structure”.

Notion(Cs) - Thinking - Notion(Lm + Lf) Language

	<div style="text-align: center;">                     Notion  <b>b</b> </div>	
	Concept notion (Cn)	Word notion (Wn)
<b>Form:</b>	Cf	Lf
<b>Meaning:</b>	Cm	Lm + Cf

**Function:** Logic proposition organization sentence proposition organization

There are two notions: Cn for thinking process and Wn for language. Watching a movie in a foreign language which one hears it for the first time and one could understand everything in spite of not knowing a movie language. One understands it on the level of Cn, because Cn is universal for all us in spite of different languages. If adult people understand it correctly without foreign language knowledge we think that life experience helps them. What about a child of three or four years, they have no sufficient life experience, but they speak correctly from the point of syntax semantics and knows what to say to parents, friends and relatives (it is not only set of correct words and grammar, a child uses a suitable intonation to each of them). A child possesses both notions: Cn and Wn at the age of four. We can only explain it by this: Cn and partly Wn (general language structure but not specific Lf, because a child doesn’t know in what language surrounding he/she will be born) are planned in the matrix of human being and born with a child, while a child is growing, these notions are growing with a child otherwise one can’t find other explanation of such phenomenon. Here we also see that components of the Trinity interrelates.

According to Philosophical dictionary, ‘thinking is the highest form of an active reflection of objective reality consisting of purposeful, mediate and generalized cognition of a person of essential connections and relations of things and phenomena, making creative new ideas, forecasting events and actions’ [6, the same page]. Thinking process also consists of this triad.

Thinking		
<b>b</b>	<b>9</b>	<b>`</b>
<b>Form</b>	<b>Meaning</b>	<b>Function</b>

**Form:** Synthesis and analysis

**Meaning:** Logical, rational processing of notions (notions may be objective, subjective, abstract and others).

**Function:** Making inferences, conclusions, ideas, decisions for human being actions.

The quality of thinking process (positive and negative) depends on human being’s intention. The results of thinking process: inferences, ideas, thoughts, decisions and conclusions are not expressed by

a single word it will be given by several, hundreds and thousands of words and here language needs the grammar in order to organize proposition of a sentence in accordance with proposition of thinking process. The main aim of grammar is to make word some transformations contextual compatible with discourse. It also consists of triad.

### Grammar

**b 9**

**Form (Gf)    Meaning (Gm)    Function(Gf)**

The range of concept features of Grammar is denoted as Gs (Gf+Gm+Gfn). Let's analyze the word 'sun' from the point of Gs. 'Sun' is a noun.

**Form:** Number-singular; case-possessive; (gender in English is absent)

**Meaning:** Thingness

**Function:** Subject, object, attribute, adverbial modifier.

Grammar is an adapter of the newly transformed form of word some into discourse context. Grammar doesn't transform itself without Lm. In spite of different languages and different grammar types of adaptations (synthetical, analytical, agglunative), matrix of grammar is universal for all languages in general, all grammars have universal instruments: subject, predicate, object, attribute and adverbial modifier and their questions: who, what, what to do, with whom, with what, by whom, to whom, when, where why, how etc. Besides these mentioned pure language instruments grammar uses space distribution of sentence members (word order of members of a sentence). Grammar transformation takes place within CLm CIF. Grammar without CLM is nothing.

On the basis of FQE, the word-verb 'analyze' is changed into different parts of speech: 'analyze' is the verb and functions as predicate when human being's intention wants to stress to action 'We are analyzing the style of this book'; the forms 'analyzing', 'analysed' belong to Gerund and Participle I and II and function as an attribute, if one wants to stress to sign of something or somebody: 'The boy analyzing the list is my brother'; subject if somebody wants to use it as an agent 'Analysis is necessary instrument for theories' or 'Analyzing of sentences is interesting'; if somebody wants to pay attention to time of action, in that case one compiles 'Analyzing this book I faced with interesting facts'. The

grammar is only responsible for organization of sentences to express proposition of logics into surface.

How to answer to the question asked by M. Dammett "does the meaning of sentence depend on truth value"? [8, 25]. For example, the statement "I read the book" it may be "truth", if a child really reads, it may be "false" if a child is afraid of his parents (teacher) in order to save himself, he may say "I read the book" without reading it. The same component of words, the same grammar, but results are different. Grammar doesn't react to false statement, it organizes them on the level of its means: subject, predicate and object.

According to Dummett M., the logician wants to be able to recognize, from the structure of one set of sentences, that the members of another set of sentences are true. One method of validating rules of inference is by means of a semantic theory. In such a theory, every expression is assigned a semantic value and an account is offered of how the semantic value of a complex expression is based upon the semantic value of its components. The aim of the semantic theory is to explain how the parts of a sentence determine the truth-value of that sentence [9, 67]. 'True' and 'false' statements appear on the basis of CLm.

Language is only an interpreting instrument of deep structure but not a problem solving and decision making element. Language has no capability to filter 'truth' statements and 'false' statements of human being. Language only states.

FGE allows to transform not only word some and consepteme but it allows to transform also grammeme, for example: 'he has a house'; 'he possesses a house'; 'he owns a house'; 'it is his house'. Without transforming grammar, lexis and phonetics it is difficult to imagine the situation when for one proposition of logics we have one set of grammar rules and one set of words, in that case we speak with the same grammar, words, style, pronunciation in that case there is no place for human being's intension transformation.

But transformation is not unlimited. A proposition of logics is dictated and limited by human being's intension within CIFs of concepts. One couldn't say 'to get the sun', because human beings know that it is not obtainable and is so far from the Earth and the CIF of the "sun" has no such quality "to get and to present". Human being never wishes to get it, because his intention is limited by CLm. As it was said by L. Wittgenstein 'meaning is use' [10, 85]. Without understanding the meaning of a word, one doesn't use it.

## RESULTS

The Trinity law exists and governs the Universe. The Trinity is “three are one”, it means that three different distinctions function as a unit. Being properties of the Universe, human being logics (thinking process) and language are subjected to the Trinity.

Language is divided into three aspects on the basis of the Trinity law: phonetics, grammar and lexis. And they in their turn are divided into three.

The three aspects of the Trinity is not toughly fixed, they may combine with other aspects of other trinity.

Concept is a unit of thinking process, a word is the unit of speech (sentence) and their contents coincides with each other for synchronization of “deep” and “surface” structures.

Notion is divided into two: concept notion (Cn) for deep structure without phoneme coding consisting only pure concepts, concept blocks, frame, schemata; word notion (Wn) for surface structure with phoneme coding, consisting of words, word combinations, sentences, phrases etc.

On the basis of fractal quantum effect (FQE) the units of thinking process: concepteme of concepts, seme of words, grammeme of grammar and phoneme of phonetics have transforming capacity.

Pragmatic usage of concepts and words depend on the range of concepts which are equal with word meanings and concept CIFs determine and limit human being's intension.

“Truth” and “false” statements take place in the level of thinking process, “truth” and “false” are determined on level of proposition of logics which is also the proposition of sentences. These notions are conveyed on the level of CLm, the grammar and phonetics are only code them without taking place on level of decision-making. Grammar recognizes them on the level of subject, predicate, object, attribute and adverbial modifier.

Problem solving and decision making take place on the level of thinking process (deep structure), sentences and speech take place on the level of surface structure.

In order to understand language as a unit we shouldn't analyze aspects of language separately and in isolated form from logics language expresses meaningful ideas on the basis of the Trinity of its aspects and logics.

A word is thoroughly well thought out phenomenon. A word is an autonomous, perfect, unique, self-sufficiency, self-developing, self-reproducing and synergetic phenomenon, which is capable of expressing to any person requirements.

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