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SEMANTIC FIELD "CATASPROPHE" IN ALTERNATIVE WORLDVIEWS: A QUANTITATIVE DIMENSION

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The paper addresses language units that constitute semantic space "catastrophe" within alternative English-mediated worldviews. Designation units synonymic or contextually related to catastrophe / disaster, were chosen from the Web 2021 (enTenTen21) corpus suggested by the Sketch Engine and from the custom corpus of present-day rock lyrics processed via the Ant.Conc 3.5.8 tools. The content of the respective concept is considered through the prism of a logical model that addresses an entropic irrevocable transformation of an open system. He paper focuses on the comparative analysis of the space's composition in two worldview variants. The structure of the semantic space is identified as a field, i.e. a dynamic volumetric continuum that sports multi-level organization as well as each level's zonal segmentation. Special attention is paid to functional-semantic and semiotic properties of the space-field's components. The article employs an interdisciplinary approach that encompasses the myth-oriented semiosis theory and broad inter-systemic analogies ("M-logic").

Key words: *system, alternative world, semantic space, corpus, myth*

Колесник О.С. **Семантичне поле "КАТАСТРОФА" у картинах альтернативних світів: квантитативний вимір**

Стаття розглядає мовні одиниці, які складають семантичний простір "катастрофа" у структурі альтернативних картин світів, актуалізованих засобами англійської мови. Номінативні одиниці, синонімічні або контекстуально пов'язані з "катастрофою", були відібрані з корпусу Web 2021 (enTenTen21), запропонованого Sketch Engine, та з користувацького корпусу сучасних рок-пісень, оброблених за допомогою інструментів Ant.Conc 3.5.8. Зміст відповідного поняття розглядається крізь призму логічної моделі, яка стосується ентропійної безповоротної трансформації відкритої системи, що призводить до її зламу. У статті здійснено порівняльний аналіз композиції простору у двох варіантах картини світу. Структура семантичного простору ідентифікується як поле, тобто динамічний об'ємний континуум, який має багаторівневу організацію, а також зональну сегментацію кожного рівня. Особливу увагу приділено функціонально-семантичним і семіотичним властивостям компонентів простору-

поля. У статті використано міждисциплінарний підхід, який охоплює міфоорієнтовану теорію семіозису та широкі міжсистемні аналогії ("М-логіка").

Ключові слова: *система, альтернативний світ, семантичний простір, корпус, міф*

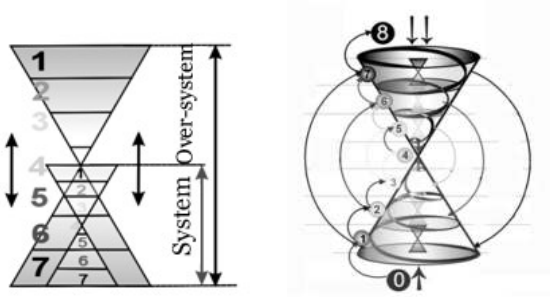
1. Introduction. Current "informational age" of the historically known civilization is marked by a profusion of intentionally construed (verbally, digitally, graphically etc.) "alternative realities" that reflect the configuration and transformations of the allegedly "primary" "real" world. Alternative worlds are construed on the basis of inchoative axiomatic "secondary mythology". The content of their constituents (conceptual and respective coreferential semantic spaces) undergoes transformational fluctuations. These are impacted by both contextual informational inputs from the "primary reality" and the internal signals from the internal "operational system" encompassing the said irrational informational quanta outlining the "default configuration" of a world (Kolesnyk, 2021).

As our firsthand experience suggests, diverse developments of variable states of affairs demonstrate the tendency towards crises that occur at all levels of systemic interactions. The projected outcome of this tendency is often identified as "the sixth extinction" (Cowiel, 2022; Bartlett, 2019; Kolbert, 2015). These crises, caused by sets of obvious, obscure or taboo-like reasons often escalate to a degree that is described as “catastrophic”. In this research we identify a scenario-like sequence of rapid transformations that contribute to a system's entropy exceeding critical values resulting in the system's irrevocable breakdown as a catastrophic event (CE). CEs occurring in the "primary reality" are projected onto the verbally created alternative worlds thus providing a "stereoscopic" conceptualized image of CATASTROPHE / DISASTER. Conceptualized human experience of CEs manifests through semantics of respective designation units connected within an "energy-information space" (semantic space) of a semiosphere

We address semantic peculiarities of English representations of the CATASTROPHE / DISASTER concept in the corpus of English web-discourse as constituents of a “globalized worldview” and compare them against those found in a custom corpus of modern rock-lyrics representing a pop-cultural alternative worldview.

2. Methodology.

The content of the semantic space "CATASTROPHE" is reconstructed via quantitative analysis of two corpora (Laurence, 2017; Mizin, 2023). Elements of highest frequency registered in each corpus are analyzed in terms of their functional-semantic and semiotic characteristics. Further synthetic interdisciplinary interpretations are carried out within the frame-work of the myth-oriented semiosis theory and the “M-logic” that employs broad inter-systemic analogies (Capra, 1996; Bertalanffy, 1968). The semantic space's architecture is thus modeled on the basis of traditional understanding of a "field" which is expanded in terms of universal "sub-system VS system VS over-system" correlation as well as the logic of qualitative relations between the levels of an open system.



(a) (b)

Figure 1. Open system’s structure: (a) Hierarchy and fractal isomorphism; (b) Logic of the hierarchical plane’s organization

The open system’s fractal isomorphism (*Figure 1a*) is complemented by the logic of system’s 7 basic structural levels’ interactions. The latter are primarily direct causative-determinative, symmetric-determinative, and complementary (*Figure 1b*).

The content of each level was consequently interpreted as a space-like construal of the field nature, encompassing nuclear, medial and peripheral zones as well as a variety of loose projected associations identified as the field’s “halo”.

3. Discussion.

3.1. Logical and typological characteristics

Considering the suggested definition of a CE, we introduce the following logical representation of a catastrophic transformation of an open system (See *Figure 2*):

(1) in WV (M/R)

(2) SYS $|a^n, b^n, c^n, d^n|$

(3) if $\Delta\varepsilon$

(4) trans SYS $|a^{\Delta n}, b^{\Delta n}, c^{\Delta n}, d^{\Delta n}|$

(5) if $a^{\Delta n} = 0$ then

(6) $SYS_{\lim \to 0}$

(7) if $b^{\Delta n} = 0$ then (6)

(8) if $c^{\Delta n} \to c^{n-1}$ then

(9) $SYS \to SYS^{-Cn}$ / $-SYS^{Cn}$ or (6)

(10) if $d^{\Delta n} \to d^{n-1}$ or $d^{\Delta n} = 0$ then

(11) $SYS \to SYS^{-Dn}$ / $-SYS^{Dn}$ or (6)

(12) WV (M/R) $\to$ WV (M/R) |trans SYS $|a^{\Delta n}, b^{\Delta n}, c^{\Delta n}, d^{\Delta n}||$

Figure 2. Logical representation of a catastrophic event

This notation reads: (1) in a real (R) or mythic (M) world or a worldview (WV); (2) there exists a system (SYS) that possesses ontological (a), functional (b), axiological (c) and temporal-locative (d) features manifested to a degree (n) in diverse contexts; (3) if impacted by an energy-informational impulse *(Δε)*; (4) the system's basic features transform qualitatively and quantitatively to a degree *(Δn)*; (5) if a crucial ontological feature defining the system's nature is erased; (6) the system ceases to exist; (7) if a fundamental functional feature necessary for the system's sustainability is erased the system ceases to exist (6); (8) if an ascribed axiological quality transforms along the negative vector i.e. loses its value (c^{n-1}); (9) the system may acquire a strong negative marking (SYS^{-Cn}) or undergo a fundamental negative inversion into ($-SYS^{Cn}$) thus eventually losing its functionality or ceasing to exist as in (6); (10) if a structural element of the system degrades (d^{n-1}) or disappears ($d^{\Delta n} = 0$); (11) the system may acquire a strong negative marking (SYS^{-Dn}) i.e. "damaged", undergo a fundamental negative inversion into ($-SYS^{Dn}$) i.e. become "decomposed" or cease to exist as in (6); (12) the general configuration of the world / worldview becomes altered under the influence of the transformation of the said system.

For example, within a discourse sample "…*to emerge from a disastrous civil war and economic catastrophe to become relatively peaceful, prosperous and stable*…" (Entry 9 in the corpus, *See Figure 3*.) there are two designations of CEs in close proximity.

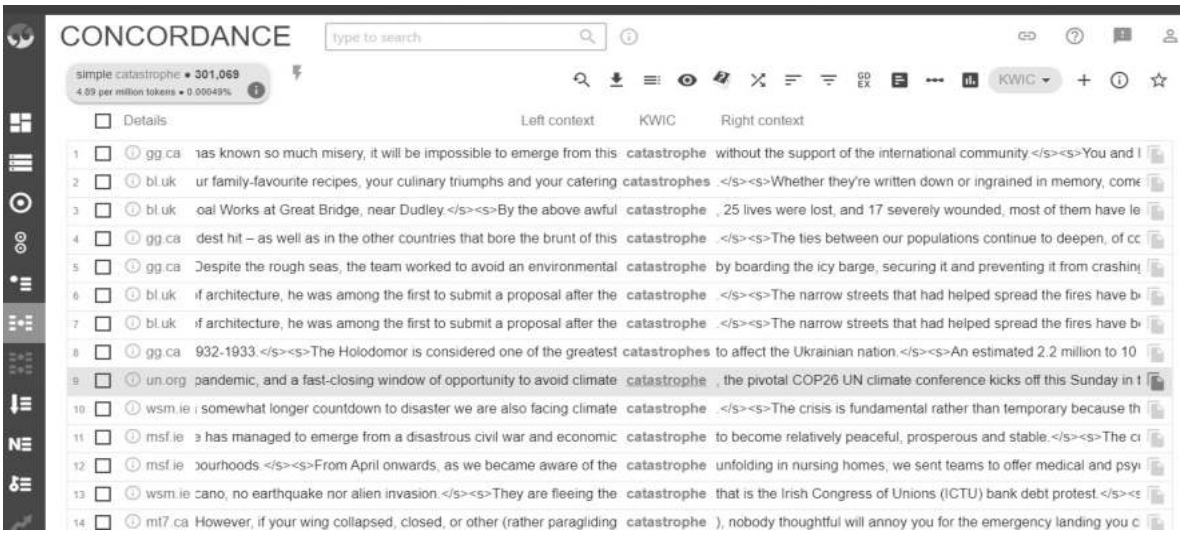


Figure 3. "Catastrophe" concordance in the Web 2021 (enTenTen21) corpus

The nominal phrase *"disastrous civil war"* contains a qualifying descriptor, derivative from "disaster" which implies that a social system has been impacted by *Δε* that triggers its components' hostile interaction caused by [if $c^{\Delta n} \rightarrow c^{n-1}$] and has lost a certain number of its constituents – living beings [x $|a^{\Delta n}$, $b^{\Delta n}$, $c^{\Delta n}$, $d^{\Delta n}|_n$] and inanimate objects [y $|a^{\Delta n}$, $b^{\Delta n}$, $c^{\Delta n}$, $d^{\Delta n}|_n$] – thus approaching the state when [SYS^{-An}] $\rightarrow$ [$SYS_{\lim \rightarrow 0}$] or [SYS^{-Bn}] $\rightarrow$ [$SYS_{\lim \rightarrow 0}$] i.e. the system hast lost its natural configuration and cannot function properly. The volume of elements' loss may approach or even cross the critical value, then the scenario [SYS $\rightarrow$ SYS^{-Dn} / - SYS^{Dn}] $\rightarrow$ [$SYS_{\lim \rightarrow 0}$] unfolds, i.e. the system disintegrates.

The nuclear nominal component of the phrase *economic catastrophe* is the assertive designator that specifies the state of affairs within a certain sphere of the system's functioning [SYS^{-Bn}] $\rightarrow$ [$SYS_{\lim \rightarrow 0}$] i.e. the crash of adequate patterns of resource exchange and the loss of the system's sustainability.

Following the principle of embodied cognition, we consider CEs and their verbal representations from the human vantage point. The types of catastrophic developments are identified in regard to the hierarchical structure of an open system (Figure 1).

The example above may thus be provided with additional interpretation: *Δε* impacts the system at level 6 resulting in the transformation [if $c^{\Delta n} \rightarrow c^{n-1}$]. This transformation provides contrary orientation vectors to the conflicting subsystems (social groups) at level 5 and simultaneously creates a general unfavorable

"atmosphere" in the system's inner space, i.e. individual and collective unbalanced emotional states at level 2 that tend to overrun system's functional routines and adaptive mechanisms. Re-oriented and imbalanced subsystems attempt to adapt to the altered states of affairs logically at level 3 though the excessive impact of the (level 2 - level 6) entropy stimulates their aggressive stance projected back onto the level 5 of interactions. As a result of this escalation the system "implodes" at level 4, as its structural units sustain irrevocable damage while the final outcome may occur along the bifurcation projected at level 7: the system either ceases to exist or undergoes fundamental restructuring that allows it to acquire totally different qualities of "*relatively peaceful, prosperous and stable*…", as the example suggests.

Therefore, from a human vantage point, CEs unfold as:

1) a system's decomposition (destruction, annihilation) on the scale from elementary particles, discrete empirically observed objects to astro-physical phenomena. From the anthropocentric standpoint this means the destruction of living or inanimate objects significant for a person, a social group or a people ("Physical" level 1).

2) an emotional disorder when an excessive uncontrolled stream of emotions hinders or overwhelms the functions of other systems of a living being or, contrarily, the lack of emotional manifestations which makes categorization and cognition lopsided, misbalanced and deficient. The emotional disorder itself may appear incurable and thus destructive (Level 2 "Psycho-emotional").

3) a mental disorder (triggered by a malady, a destructive external impact or the system's overload) which results into erroneous inferences and false categorization that disrupt the knowledge system, destroy the worldview (basically, the "operational system" of one's reality) (Level 3 "mental")

4) entropy of systemic relations within a group / society that leads toward its breakdown, conflicts (up to a civil war), annihilation; (level 4 "Social-adaptive")

5) breakdown of inter-group relations that leads to large-scale conflicts and the destruction of systems and their components

6) fundamental re-orientation or inversion of axiological "navigational markers" that starts auto-destructive scenarios at lower levels and stimulate the distortions at level 7;

7) a global worldview crisis that leads towards the world's annihilation or the downfall of a civilization.

3.2 Verbal image of Catastrophe in numbers

CEs may occur at virtually any plane of existence, affect any aspect of the “PERSON” :: “SOCIETY” :: “WORLD” triad and any sphere of human activities. We look into modern English representations of CATASTROPHE / DISASTER within the English Web 2021 (enTenTen21) corpus (total of 52 268 286 493 words) provided by SketchEngine.

The data retrieved from the Web 2021 (enTenTen21) corpus are mapped against those from the custom corpus of rock lyrics created in the span of 1975-2004 (786 documents with 1,732,450 total words and 42,035 unique word forms processed via the Ant.Conc 3.5.8 tools) As the two corpora differ in volume, the obtained data are interpreted in percentage within the volume of the corpora rather than absolute values. The representations of the tokens from the custom corpus are also “filtered” in regard to the “catastrophic” types of the verbalized scenarios while their distribution between the field’s zones is determined by the digits’ rank in the fractions.

Preliminary analysis reveals the following peculiarities of semantic space's CATASTROPHE structure and content. As we treat SPACE a universal mode of material objects' manifestation, we identify its inner dynamic structure as "field". In the context of this research, we consider a “space” a logical construal that demonstrates the features of a “field” (Lehrer, 1974) and expand its architecture by acknowledging volumetric nature defined by the fuzzy nature between the boundaries of its segments, contextually relative multi-centrism, content’s dynamics in hierarchical (“paradigmatic”, causative-complimentary) and synergetic (“syntagmatic”, contextually complimentary) planes. This understanding comprises the classical opposition of the "nucleus" and "periphery", considers the multitude of transitional components filling the "medial zone" and an infinite number of loosely irradiating elements that are responsible for establishing inter-field associations and resonance.

Zonal structure is typical for each level of an open system (Figure 1). While the hierarchic plane reflects the referential quality of the field (arguably, a relatively stable value for a specific culture), the zonal distribution demonstrates volume differences caused by specific foci in interpretation and categorization within sub-cultures, worldviews, discourses etc.

Language units denoting components of the semantic space CATASTROPHE in the Web 2021 (enTenTen21) corpus are inventoried according to the frequency criterion (*Table 1*)

Table 1. Quantitative representations of the semantic space CATASTROPHE

Zones	**Frequency**
Nucleus	Above 4 million
Medial	2 - 4 million
Periphery	1 - 2 million
halo	under 1 million

The search for contextually motivated synonyms to the noun “catastrophe” yielded 1053447260 instances of word use. The registered language units are distributed in the space-field's zones the following way.

Table 2. Designation units' zonal distribution within the Web 2021 based semantic space

Nuclear zone components (%)		Medial zone components (%)	
health	0,031121045	crisis	0,007649357
kind	0,023851486	beginning	0,007606599
death	0,022267091	peace	0,007568255
risk	0,020117445	threat	0,007483775
war	0,018414608	outcome	0,00747719
news	0,016823769	violence	0,007425258
situation	0,016527318	trend	0,000979043
impact	0,016083558	fear	0,0071484
growth	0,015804737	hope	0,007145882
future	0,014760532	enemy	0,007145882
challenge	0,014597463	conflict	0,007077953
loss	0,01457536	progress	0,007077953
nature	0,013822613	thousand	0,007029111
success	0,013580367	weather	0,007002717
disease	0,013457642	vision	0,006975635
Periphery components (%)		“Halo” components (%)	
kidnapping	0,000381621	failing	0,000189844
apartheid	0,00038006	emigration	0,00018878
misinformation	0,000378767	heroism	0,000187653
dread	0,000374985	ill	0,000184473
avalanche	0,000372693	annihilation	0,000182935
bailout	0,0003719	cover-up	0,000182811
scare	0,000365885	sinking	0,000180616

desperation	0,000365355	sabotage	0,000179336
bliss	0,00036447	blizzard	0,000176294
blindness	0,000364368	shipwreck	0,000173807
incarceration	0,000362436	bloodshed	0,000173352
scarcity	0,000358984	scourge	0,000172676
stupidity	0,000357965	incursion	0,000172481
pitfall	0,000357789	inadequacy	0,000169248
arrogance	0,000357538	stagnation	0,0001692

The nuclear zone represents the "semantic core" of human experience of CEs (*Figure 4*):

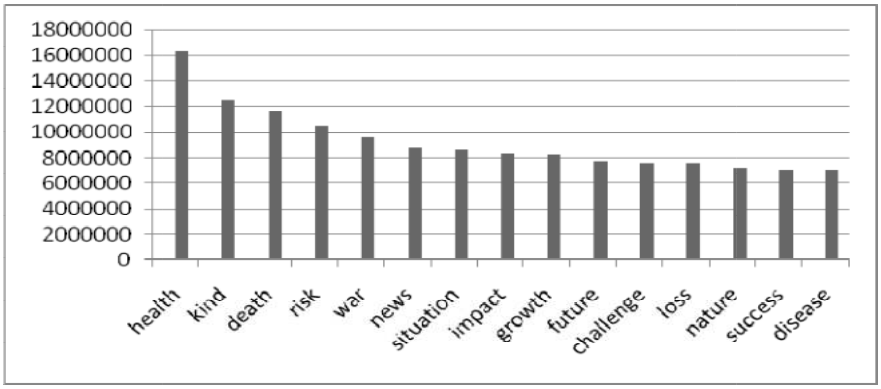


Figure 4. Nuclear zone's content

Out of 47 components of the nuclear zone let us consider the top 15 with the highest frequency (the numbers indicate the absolute quantity of each token in use in the corpus and percentage in regard to the general volume of the semantic space):

"health" (16266437, 1,54 %) is humans' primary concern and its demise is catastrophic for a human as the center / creator of their world (worlds / alternative realities); *"kind"* (12466763) as a noun specifies a class of objects prone to enter self-destructive scenarios; as both a qualifying sign or an abstract identifier it refers to either favourable conditions (their loss) or specifies a harmful factor (absence of a benevolent one); *"death"* (11638627) is a direct equivalent for "catastrophe", potentially applied to human and non-human beings, also the primary outcome of a CE; *"risk"* (10515044) is an allusive index towards a potential catastrophe; "*war*" (9625000) is a direct designation of scenario-type environment for systems' hostile / destructive interactions causing death hence catastrophe; *"news"* (8793496) is a universal signal of a dramatic change in environment or activity routine that requires extra effort for adjusting or dealing with the consequences of a CE;

"situation" (8638546) could be a euphemistic designation of a dangerous and potentially catastrophic scenario; *"impact"* (8406600) is a metonymic index for forces or circumstances that are potentially harmful for a system's integrity; *"growth"* (8260865) among numerous possibilities may refer to the expansion of any phenomenon that causes the system's entropy; "*future"* (7715077) alludes to uncertainty and unpredictability of systems' development and potentially harmful interactions; *"challenge"* (7629844) is yet another euphemism referring to harmful factors and effort required to deal with a potential CE; "*loss"* (7618291) is a metonymic index referring to a transition (loss of components, functionality, connections etc.) that marks a system's catastrophic transformation; "*nature"* (7224843) is an allusive designator of a "contrarily configured" space, a potential source of a harmful impact, thus implying the unnatural essence of the systems suffering this catastrophic impact; the respective homonymic unit may refer to the essential features of a system that undergoes catastrophic developments; "*success"* (7098225) marks a variety of sub-scenarios' results that correlate with systems' attempts to overcome the negative consequences of a harmful impact; *"disease"* (7034079) is a direct designation of an event that is most likely to have catastrophic (destructive) consequences or a synonym to "catastrophe" in regard to humans as bio-systems. These units denote variants of a CE, its causes, aspects and dynamics.

The top 15 representatives of the medial space (the total of 99 tokens), containing "strong implications" and causative inferences from the content of the nuclear zone are as follows (See *Figure 5*).

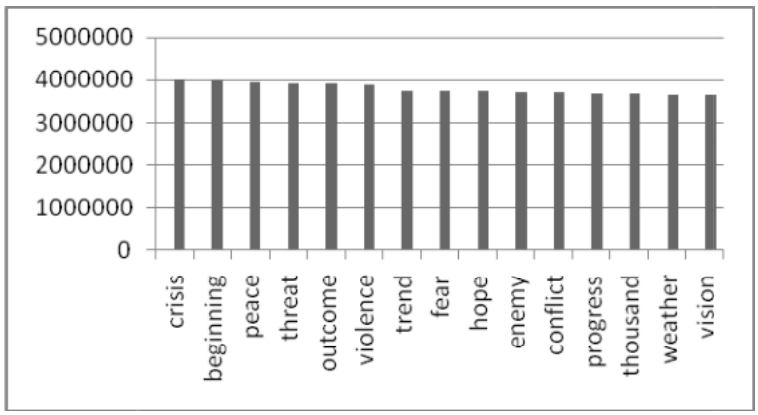


Figure 5. Medial zone's content

Respective designation units demonstrate the following semantic and functional features:

"crisis" (3998188) is an allusive index to a systems' uncontrolled, entropic or dysfunctional state that is likely to became catastrophic; *"beginning"* (3975839) could be both a direct designation of a catastrophic scenario under way or an allusion to a new scenario that bears a shade of uncertainty and potential danger; *"peace"* (3955797) is a synonymic designation of "a loss" or a desired state of affairs; *"threat"* (3911641) refers to expectations of a harmful impact; *"outcome"* (3908199) is a typical marker of catastrophe's consequences and an index for a system's further development; "*violence"* (3881055) could be both an attributive and causative descriptor of a catastrophic scenario; "*trend"* (3740638) may be identified as an "operator-type" designation referring to analytic interpretations of catastrophe; *"fear"* (3736346) is a designation of universal emotional state caused by either expectations of catastrophe or direct experience; "*hope"* (3735030) is a dialectic complement to fear, connected to virtually any component of the space, designating either irrational expectation of avoiding the worst scenario or coping with the scenario's outcome; *"enemy"* (3712956) is a direct designator of a contrarily configured system causing a catastrophe or inflicting critical damage; *"conflict"* (3699525) denotes the universal and primary type of relations between systems of contrary etiology and configuration, a certain inner factor responsible for systems' possible catastrophic transformation; *"progress"* (3673996) denotes various catastrophic developments as well as results of dealing with their consequences; *"thousand"* (3660200) is a numeric-type operator used in descriptors of large-scale CEs; "*weather"* (3646045) is a metonymic designation of natural forces that harm anthrop systems; "*vision"* (3632464) refers to irrational, prognostic or analytic interpretations of potentially catastrophic events and their outcome. The units above denote various aspects and specific causes of a catastrophic event. They also designate typical emotional reactions to a catastrophe and its interpretations in different discourses.

The boundaries between the said conventional zones of the semantic space appear rather fuzzy. For instance, tokens *"crisis"* (3998188) or *"threat"* (3911641) are very close to fitting the nuclear zone strictly in quantitative sense. Both may easily enter the nuclear zone if the bulk of discourses addressing crises and their catastrophic consequences should grow. It appears that the token *"disaster"* (2122254 cases) which is semantically closest to the *"catastrophe"* is allocated it in the middle of the medial zone of the semantic space. It might be reasonable to assume that both *"catastrophe"* and *"disaster"* imply definite "finality" and "utmost degree" of a designated fact / notion. Therefore these words

are avoided and substituted by euphemistic designations or phrasal descriptors that provide logical “rationalizations” of a CE.

The top 15 language signs allocated in the space’s periphery (out of 169 tokens) referring to optional inferences connected to the primary "axiom" of a CE are the following (*Figure 6*)

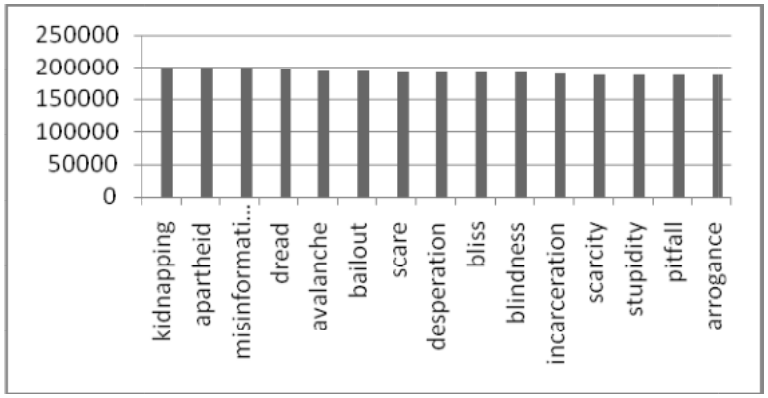


Figure 6. Peripheral zone's content

They refer to a number of phenomena or processes indirectly related to a CE or interpreted as “catastrophic” from a specific vantage point: *“kidnapping”* (199467) denotes a dangerous, life-threatening and likely harmful scenario; *“apartheid”* (198651) refers to a social model allegedly marked by human rights’ violations, racism and disrespect for the values traditionally claimed to be the basis of the present-day civilization or to the economic collapse that followed the abolishment of the said system in South Africa; *“misinformation”* (197975) may refer to a wide variety of phenomena that lead to a catastrophe, hinder dealing with its consequences or create a manipulative informational simulacrum in the media; *“dread”* (195998) indicates an emotional reaction to a possible / occurring catastrophe; *“avalanche”* (194800) as a direct designation denotes an inescapable, intense and random natural phenomenon with destructive consequences or functions as a metaphoric qualitative quantifier; *“bailout”* (194386) refers to a positive (improbable, miracle-like) outcome or an escape from a catastrophic event; *“scare”* (191242) and *“desperation”* (190965) designate negative emotional reactions to a CE; bliss (190502) on the other hand, refers to a strong positive emotion caused, most likely by a *bailout*; *“blindness”* (190449), *“stupidity”* (187102) and *“arrogance”* (186879) refer to human properties that lead to a catastrophe, aggravate one or prevent the “situation” from being fixed; *“incarceration”* (189439) refers to the loss of freedom as an individual

catastrophe; *"scarcity"* (187635) could be a quantifier with a wide range of application – from the lack of wisdom to predict / avert a catastrophe to the lack of resources to deal with the consequences; *"pitfall"* (187010) marks any random subscenario that occurs along the major CE, a factor of chaos.

Eventually, 685 units are allocated in the field's rather spacious "halo" and are connected with "catastrophe" via loose dynamic associations. The top 15 most frequently occurring units are:

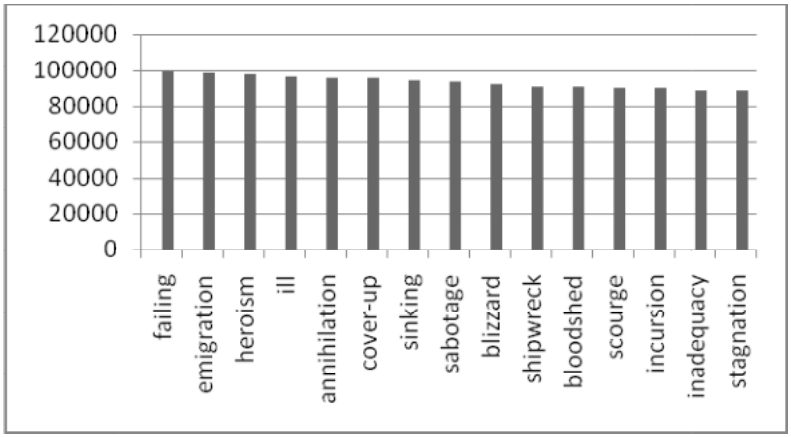


Figure 7. "Halo" zone's content

For instance, *"failing"* (99228) refers to any system's malfunctioning and irreparable loss of integrity; *"emigration"* (98672) denotes a socially significant consequence of a CE; *"heroism"* (98083) stands for "outstanding effort and sacrifice" necessary for dealing with a CE and most likely determined by a number of notions like "blindness", "arrogance" and "stupidity" that prevented adequate prognosis and prophylactic actions thus requiring heroism and sacrifice (the same interpretation applies to *"martyrdom"* (87420), one position away from the top 15 tokens); *"ill"* (96421) is a metaphoric marker for any system's malfunctioning; *"annihilation"* (95617) is yet another designation of CE's destructive consequences implying the totality and irreparable nature of damage; *"cover-up"* (95552) alludes to improper activities meant to hide the volume of damage or keep the names of those responsible for a wrong prognosis, causing a CE or ineffective dealing with its consequences; *"sinking"* (94405) denotes an outcome of a CE of any nature involving water or functions as a metaphoric synonym to "failing"; *"sabotage"* (93736) alludes to fundamentally hostile and competitive relations between professional groups, social groups or nations that manifest in deliberate destructive actions against each other; *"blizzard"* (92146) is a natural phenomenon

typically causing damage; *"shipwreck"* (90846) denotes a specific CE; *"bloodshed"* (90608) provides a metonymic hyper-reference to *"war"* and *"enemy"*; *"incursion"* (90153) is a synecdoche-type synonym to *"war"*; *"scourge"* (90255) denotes a primary factor causing a CE, correlates with "annihilation" and may refer to the consequences of a CE of any nature; *"inadequacy"* (88463) is a meliorated euphemistic designation of the above mentioned "blindness", "arrogance" and "stupidity" related to a CE; *"stagnation"* (88438) alludes to a system's loss of sustainability that most likely results in its failure.

Imaging the inner structure of the semantic space CATASPROPHE employs the classic idea of the "field" (quantitative dimension) mapped against the hierarchic model of an open system (qualitative dimension) (Figure 1, "taken apart" in causatively symmetric pairs with the levels' proportions retained). The model allows distributing the tokens found in the corpus at respective levels of the open system. While the tokens are allocated in the zones and levels where they occur naturally, we use the notation /*name*/ for representations of the same tokens at respective symmetric levels (implying that in a specific discourse these may be represented by complex verbal signs, euphemisms or implicit "semantic echoes"). Units allocated at level 4 (which itself is a fractal-like "assembly point" for the system's possible configurations) may have projections at any level and therefore are placed solely at this level of the model and are not provided with any "symmetric" notations.

The following sets of figures demonstrate distribution of the verbalized concept's semantic features within the volumetric semantic spece-field. The opposition of Level 7 VS Level 1 (*Figure 8*) addresses the "cause (program)" VS "result (resources)" correlation; the opposition of Level 6 VS Level 2 (*Figure 9*) highlights the "navigational orientation" VS "contextual intake-and-feedback" correlation; the opposition of Level 5 VS Level 3 (*Figure 10*) features the "intersystemic dynamics" VS "internal systemic processing" correlation; the "assempling focus" of Level 4 (*Figure 11*) highlights possible social-contextual noematic profiles and implicatures.

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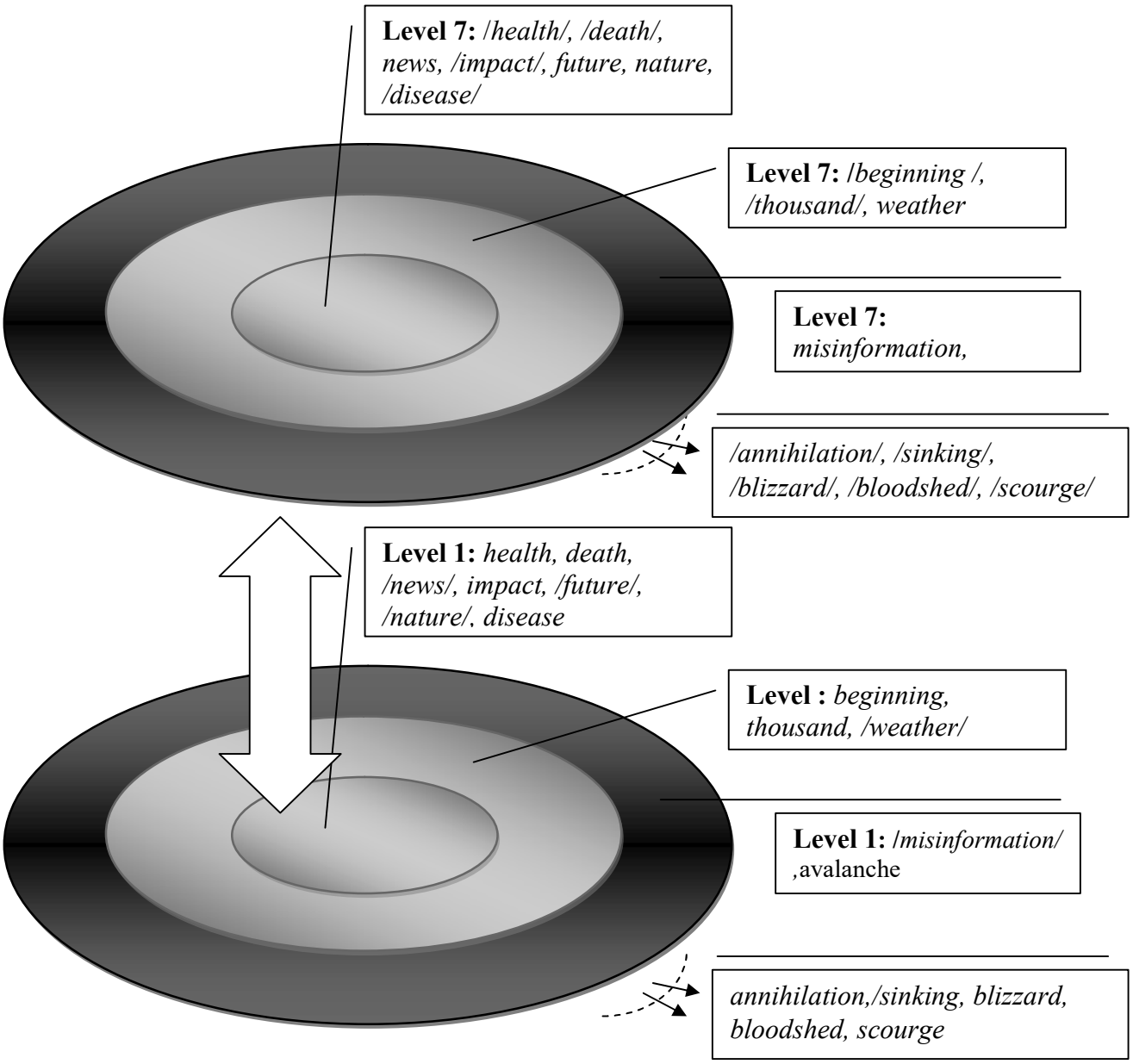

Figure 8. Semantic features' systemic distribution at the level 7 :: level 1 plane

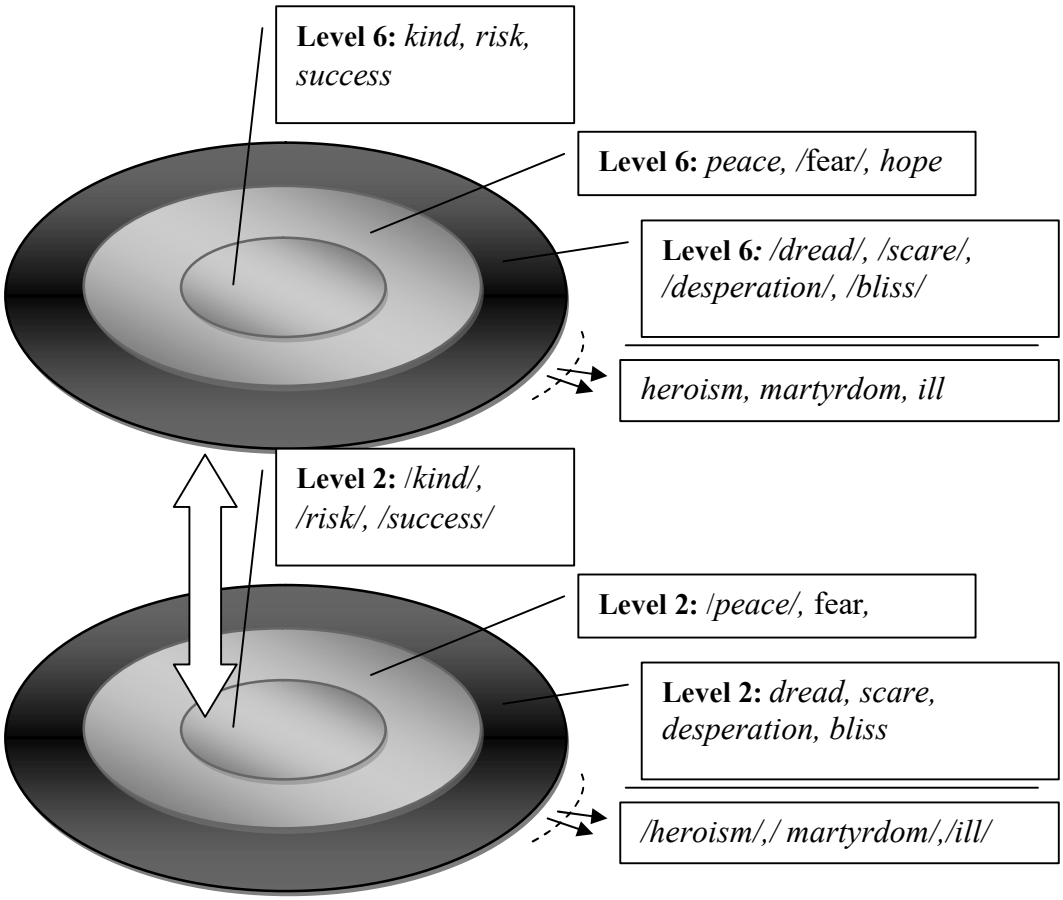

Figure 9. Semantic features' systemic distribution at level the 6 :: level 2 plane

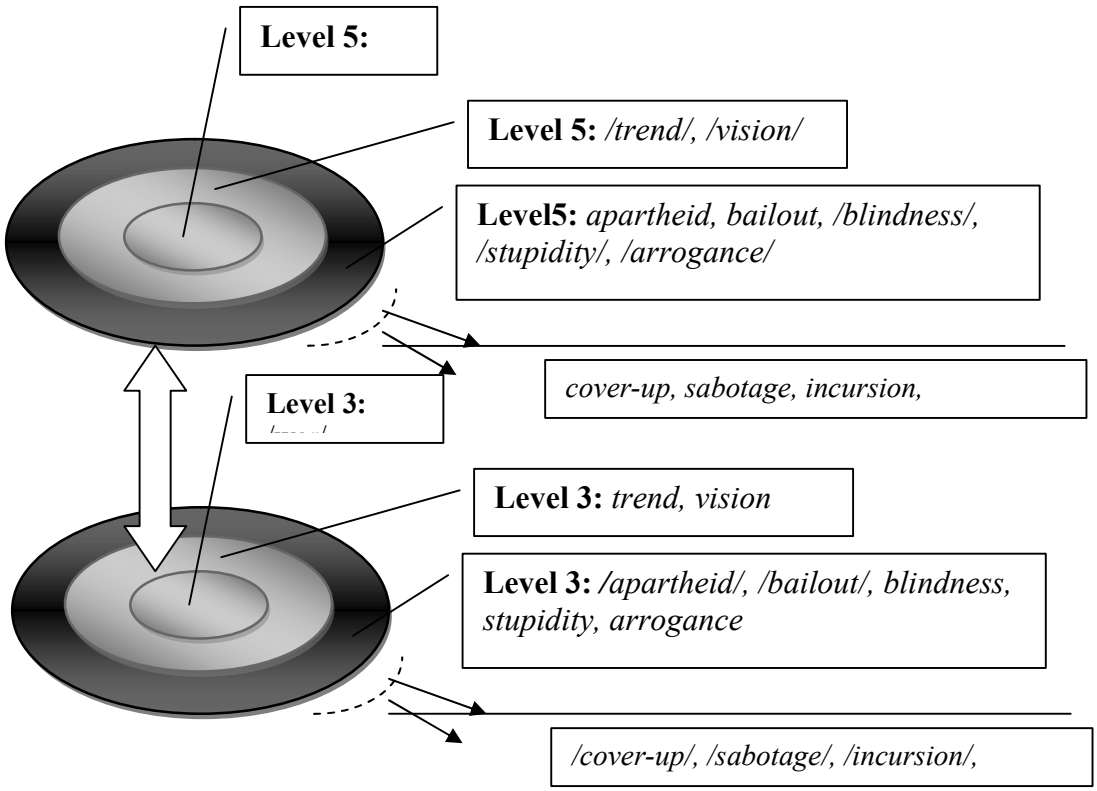

Figure 10. Semantic features' systemic distribution at the level 5 :: level 3 plane

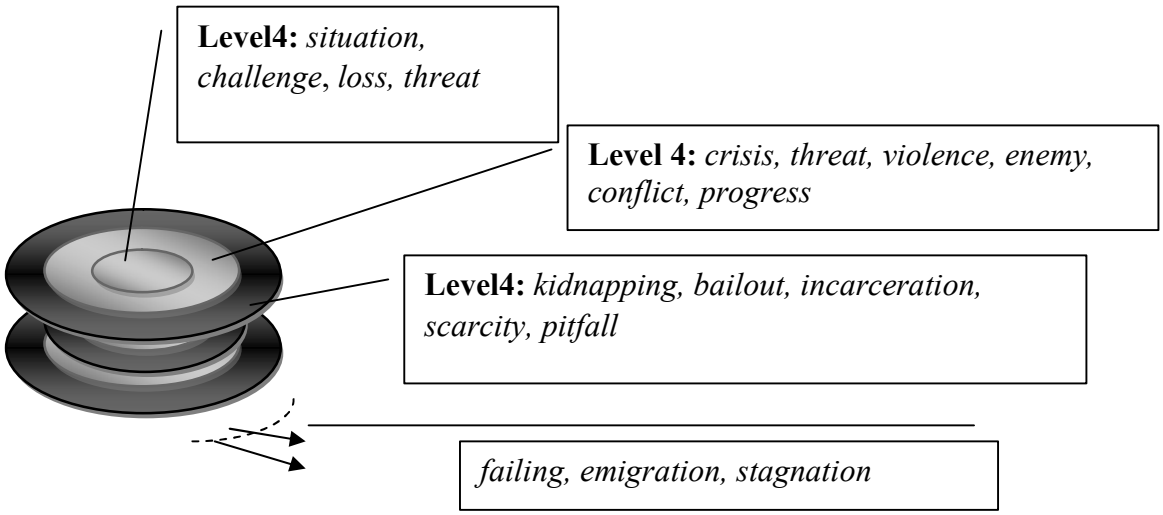

Figure 11. Semantic features' systemic distribution at the level 4 "fractal assembly point"

Diverse sets of semantic features become either accentuated or “shaded” in different contexts and genres of discourse thus turning the suggested model (and respective energy-informational quanta generated by individual and collective mind) into a “volumetric profile” that reflects the flux-and-fluid nature of a worldview (alternative world).

The number of direct lexical designations of CATASTROPHE itself (301069) is by far lesser than those of its associative correlates. Technically and strictly statistically, these designations do not belong to the nucleus of the semantic space and could be “drifting” somewhere in the space’s “halo”. Although the knowledge of CEs is a focal notion in human experience, the use of direct designation unit “catastrophe” is limited, the respective concept being verbalized by indirect and euphemistic designations. Apart from acknowledging the voluntary shift in attention / categorization vantage point, this seeming disproportion signals of essential asymmetry of conceptual and semantic spaces, misbalance (or rather flux balance) in categorization as well as of certain taboo-like irrational associations (i.e. connections to primal mythic archetypes) of CATASTRROPHE with “large-scale transformations”, “irreversibility”, “finality” and death. It is significant that while “health” is the most frequent designation connected with catastrophe, *“self-destruction”* sports the lowest frequency (26856): the fundamental fear of death

and annihilation is combined with grudging acknowledgment of system's own auto-destructive practices bordering on denial and taboo.

It is also noteworthy that apart from the designations of "*war*" (9625000) the nuclear zone of the semantic space contains designations of *"War"* (5326826) that ranks 27 on the list. The capitalized spelling refers to specific contexts and triggers additional connotations yet the concepts are obviously identical. The total number of designations (14951826) thus shifts *"war"* to rank 2 in the corpus. Different zones and segments contain units with partitive-metonymic, complimentary and allusive reference to "war".

Overall, the categorization of CATASTROPHE proves to be essentially an asymmetric (in fact, off-centric) volumetric "profile" of features, centering on "health" (the fundamental property of a system that constitutes the focus of reality or basically coincides with it) and "war" (acknowledging the system's own competitive-destructive nature which appears to be the most probable reason of the loss of health / life).

The verbal representations of CEs in rock lyrics appear much more condensed around a limited number of related concepts while the periphery and "halo" of the discussed semantic space are rather dissipated.

Table 3. Designation units' zonal distribution within the rock-lyrics' based semantic space

Nuclear zone components (%)		Medial zone components (%)	
death	0,185016548	disaster	0,005591666
war	0,099789729	future	0,004792856
violence	0,012965291	Apocalypse	0,003133791
fear	0,010998991	disease	0,002273534
		annihilation	0,002273534
		thousand	0,002089194
		catastrophe	0,001351831
Periphery components (%)		"Halo" components (%)	
Ragnarok	0,000921703		
sinking	0,000860256	kind	0,000184341
loss	0,000737363	health	0,000184341
vision	0,000614469	risk	0,000184341
conflict	0,000553022	growth	0,000184341
situation	0,000430128	weather	0,000184341

enemy	0,000430128	desperation	0,000184341
scourge	0,000430128	bliss	0,000184341
dread	0,000368681	failing	0,000184341
avalanche	0,000368681	ill	0,000184341
crisis	0,000307234	sabotage	0,000184341
threat	0,000307234	challenge	0,000122894
hope	0,000307234	nature	0,000122894
impact	0,000245788	success	0,000122894
beginning	0,000245788	scare	0,000122894
peace	0,000245788	blindness	0,000122894
arrogance	0,000245788	outcome, trend, stupidity	0,0000614469

The pop-cultural semantic space CATASTROPHE / DISASTER is asymmetric yet the distribution of semantic features appears to differ from the web-corpus: “disaster” and “catastrophe” are located in the top segment of its medial zone. The medial zone also contains “Apocalypse” which is allocated in the low ranks of the media-based space’s periphery. The top token of the peripheral segment is “Ragnarok”, absent in the media-based space.

The nuclear zone of the pop-cultural semantic space retains “death” and “war” as foci (both referring to a phenomenon / event that is catastrophic for a system by default), incorporates “violence” (a *modus operandi* of a CE) and “fear” (basic emotion related to a CE) that migrate from the medial zone, and drops the other components. The quantifier “thousand” is the only common component between the medial zones of the semantic space in two corpora. It incorporates “disease” (a system’s natural cause of degradation) and “future” (projected negative state of affairs) from the nuclear zone and “annihilation” (the same as “violence” with a specification of destruction of systems’ elements) from the periphery. The rest of components are dropped from the field’s zone.

Peripheral zones of the two variants of the semantic space CATASTROPHE share only “*dread*” and “*avalanche*”. The pop-cultural variant incorporates “loss”, “*impact*” and “*situation*” from the other space’s nuclear zone as well as “*sinking*”, “*scourge*” and “*arrogance*” from its “halo”. Elements “*vision*”, “*conflict*”, *“enemy”, “crisis”, “threat”, “hope”, “beginning”, “peace”* correspond to those of the medial zone of the semantic space of the Web 2021 corpus. Finally, the “halos” of the two spaces share elements “*failing”, “ill”,* and *“sabotage”*. The nuclear elements *“kind”, “health”, “risk”, “growth”, “challenge”,* medial components *“weather”, “outcome”, “trend”,* peripheral components

"desperation", "bliss", "blindness", "scare", "stupidity" are found in the "halo" of the pop-cultural semantic space.

This "reshuffling" of components together with variations in quantitative representations would considerably change the configuration of the space's volumetric model. Thus the registered disparities in the content of the semantic space CATASTROPHE testify to differences in conceptualizing a CE in different types of discourse and respective worldviews (alternative worlds).

Apart from differences in zonal distribution, verbal representation of CEs in rock lyrics are appears much more condensed around a limited number of related concepts (while the periphery and "halo" of the discussed semantic space are rather dissipated).

Conclusions

Imbalanced open systems undergo adaptive transformations and inversions which at certain points exceed the critical values of systems' parameters and result in their collapsing. Units of scaled semantic proximity constitute the semantic space CATASTROPHE, a rather fluid informational continuum that is verbally materialized with variations within a globalized web-mediated worldview and a pop-cultural worldview.

The web-based worldview encompasses the semantic field CATSTROPHE that contains hierarchically and complementarily correlated language units denoting CEs unfolding at different levels of systemic organization dominated by the designations of "[absence of] health" (level 1) and "war" (level 5). Numeric representations of CATASTROPHE's primal designations as well as its direct myth-related synonym "apocalypse" appear to drift towards the semantic space's "halo". Therefore, the said semantic space may be identified as asymmetric, off-centered and "euphemistic". It does contain experience of CEs unfolding at all levels of open systems' functioning and creates a "softer" euphemistic secondary myth that provides rationalizations and shades the finality and irrevocability of unnatural transformations thus becoming a misleading simulacrum.

The quality of the respective semantic space's asymmetry in the rock-lyric's corpus is different as the key lemmas "disaster" and "catastrophe" actually belong to the body of the corpus and are allocated in the space-field's medial zone. The set of generated senses is rather "straightforward" as it lacks euphemistic associations and focuses on "war", "violence", "death" and "fear" thus referring the primary sources of CEs to the sphere of inter-group (level 5) interactions, that result in

subsystems' demise (level 1) and their inner state (level 2). Hence, the specific content of the secondary myth concerning the "future" of the current civilization introduced in the alternative pop-cultural worldview.

Further analysis may focus on the linguo-cognitive premises of the DISASTER and CATASTROPHE concepts' verbalizers.

REFERENCES

Bartlett, A. (2019). Theology and Catastrophe: A (Girardian) Semiotics of Re-Humanization. *Forum Philosophicum*, 23(2), 171–188. DOI: 10.35765/forphil.2018.2302.10

Bertalanffy, L., von (1968). *General System theory: Foundations, Development, Applications*. New York: George Braziller.

Capra 1996 – Fritjof Capra. *The Web of Life: A New Scientific Understanding of Living Systems.* NY: Anchor Books, Doubleday.

Cowiel, R., Bouchet, Ph., Fontaine, B. (2022). The Sixth Mass Extinction: fact, fiction or speculation? *Biological Reviews,* 97, 640–663.

Kolbert, E. (2015). *The sixth extinction: an unnatural history*. N. Y.: Picador, Henry Holt and Company.

Kolesnyk, O. (2019). Cognitive premises of the myth-oriented semiosis. *Cognitive Studies | Études cognitive*. 19, Article 1916.

Kolesnyk, O. (2021). The Mythic Multiverse Through the Scope of Language: The "Procedural Anatomy" of Verbal Modelling. *Cognitive Studies | Études cognitive*. 21, Article 2447.

Laurence, A. (2017). Corpus Linguistics and Vocabulary: A Commentary on Four Studies. *Vocabulary Learning and Instruction*. Vol. 6, Issue 2, December 2017. doi: http://dx.doi.org/10.7820/vli.v06.2.Anthony

Lehrer, A. (1974). *Semantic Fields and Lexical Structure.* Amsterdam: Benjamins)

Mize, J. J. (2020). Semantics and Semiotics of the Explanation of Reality: A Brief Look into Some Semantic Properties of Langan's CTMU. *Cosmos and History.* 16/2, 495-519.

Mizin, K, Slavova, L. (2023). The corpus-based methodology of close emotion concepts differentiation: A case study of ENVY and JEALOUSY *Cognitive Studies | Études cognitives*, 23, Article 2811

Shurma, S. (2020). Manipulative discursive constructions in British and Ukrainian reporting of the MH17 downing. *Journal of Contemporary Central and Eastern Europe.* 28:2-3, 225-247, DOI: 10.1080/25739638.2020.1863643

Smarandache, F. (1999). *A Unifying Field in Logics: Neutrosophic Logic. Neutrosophy, Neutrosophic Set, Neutrosophic Probability*. Rehoboth, NM: American Research Press.

Thom, R. (1975). *Structural stability and morphogenesis* [Englsh transl. of Stabilité structurelle et morphogenèse, 1972], Reading: Benjamin

Wildgen, W. (2015). Catastrophe Theory and Semiophysics: With an Application to "Movie Physics". *Language and Semiotic Studies,* 1 (2), 61–88.

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