JÖTNAR AS "SUPERNATURAL BEINGS": A COGNITIVE MATRIX OF THE OLD NORSE VERBAL REPRESENTATIONS

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This article addresses verbal representations of the mythic concept JÖTUNN (Engl. JOTUN) in Old Norse eddic texts. JÖTNAR as supernatural beings inherent to the Nordic mythic space are regarded as a class of open systems marked by a set of hypertrophied features. Etymological analysis of the concep's names followed by broader analogue speculations allows identifying the basic "nano-myths" or "code-ons" that iconically outline the JOTUN-system's "preset" trajectories of behavior and interaction with other systems. The paper focuses on linguo-cognitive premises of language units verbalizing the said concept. Primary attention is paid to identifying sets of JOTUN's conceptualized features. The article suggests cognitive models and respective frame-like structures. The paper discusses different types of logical and semantic connections betweenthe said conceptual features and models. Our research employs a broad universalia-oriented interdisciplinary approach (M-logic) that focuses on the idea of irrational rationalization of reality (world-building) and encompasses the theory of myth-oriented semiosis. The identified semantic features and cognitive models are thus integrated into a model of a hierarchic plane of an open system therefore creating a "cognitive matrix" of the JOTUN concept. The correlations between the sets of conceptualized features are discussed in terms of their complementary, determinative and causative correlations. The paper argues that the JÖTNAR appeared as an imbalanced (chaotic) system capable of fractal expansion. The paper highlights the systemic premises of a paradox-type symbiosis between JÖTNAR and the AESIR.

Key words: *myth, Jotun, system, semantic feature, categorization, worldview, mythic space*

Колесник О.С. JÖTNAR як «надзвичайні істоти»: когнітивна матриця давньопівнічних мовних репрезентацій

У статті розглядаються вербальні репрезентації концепту-міфологеми JÖTUNN (ЙОТУН) у давньоскандинавських едичних текстах. JÖTNAR як надприродні істоти, невід'ємні компоненти скандинавського міфологічного простору, розглядаються як клас відкритих систем, відзначених набором гіпертрофованих

ознак. Етимологічний аналіз імен концепту з наступними широкими аналоговими інтерпретаціями дозволяє ідентифікувати основні «нано-міфи» або «код-они», які іконічним чином окреслюють «попередньо встановлені» траєкторії поведінки й взаємодії ЙОТУН-системи з іншими системами. У статті розглядається лінгвокогнітивне підґрунтя мовних одиниць, котрі вербалізують зазначений концепт. Основна увага приділяється ідентифікації наборів концептуалізованих функцій ЙОТУНА. У статті запропоновано когнітивні моделі та відповідні фреймові структури. У статті розглядаються різні типи логічних і семантичних зв'язків між зазначеними концептуальними ознаками та моделями. У нашому дослідженні використовується широкий міждисциплінарний підхід, орієнтований на універсалії (М-логіка), який зосереджується на ідеї ірраціональної раціоналізації реальності (світотворення) і охоплює теорію міфоорієнтованого семіозису. Ідентифіковані семантичні особливості та когнітивні моделі, таким чином, інтегруються в модель ієрархічної площини відкритої системи і утворюють «когнітивну матрицю» концепту ЙОТУН. Кореляції між наборами концептуалізованих ознак обговорюються з точки зору їх комплементарних, детермінативних і каузативних кореляцій. У статті стверджується, що ЙОТУН як надзвичайна істота є незбалансованою (хаотичною) системою, здатною до фрактального розширення. Стаття висвітлює системні передумови парадоксального симбіозу типу між ЙОТУНАМИ та АСАМИ.

Ключові слова: *міф, йотун, система, семантична ознака, категоризація, картина світу, міфологічний простір.*

Introduction

Recent linguistic research has been gradually shifting towards digital phenomena generated and functioning in virtual environment. Applied value of the allegedly multidisciplinary studies and their distinct discourse-communicative vector correlate to the "hard pragmatics" of the modern civilization's model. The factor of irrationality in human categorization has mostly been acknowledged yet has not been incorporated in interpretations of professional and communicative activities. Therefore a number of phenomena that do not agree with the restrictions of the "common sense" are regarded as "mythic" i.e. irrational, unreal or "supernatural" at best. The methodology of cognitive linguistics has been employed to investigate phenomena of cultural memory (Nygaard 2021), the background of tropeic figures (Birgisson 2010, 2012) and designations of mythic creatures in the Old Norse explaining the "gods' semantics" (Mikolić 2013). I believe that this methodology may be implemented in a broader universalia-oriented approach that could target a class of SUPERNATURAL BEINGS (SB) in the Nordic mythic tradition or a specific SUPERNATURAL BEING.

The vast variety of systemic and inter-systemic relations realized at different planes of existence within numerous sets of coordinates rather often escapes empirical observations. However, the systems of diverse etiology and hierarchic

affiliation impact transformations within the so called "real world" (i.e. empirically accessible and verifiable states of affairs). Human categorization based on primary and indirect experience allows including respective conceptualized entities into "alternative worlds" and "worldviews" via metaphoric personification and iconic-allusive designations. Hence most mythic systems encompass "supernatural" entities that are identified as unreal from the standpoint of the present-day axiomatic meta-rational conceptual matrix (either national or globalized one). Within the prior versions of the world / worldview, primarily those that we refer to as "linguo-demiurgic" and "reverberating" in regard to the involvement of the mythic space's content into categorization and verbal representation (Колесник 2011), the "supernatural" entities appeared to be real.

We have addressed lingual representations of mythic creatures like DWARF (Kolesnyk 2015b), ELF (Kolesnyk 2015a) and DRAGON (Kolesnyk 2016a) that definitely fit the description of "supernatural" and represent ontologically different classes of objects. We extend the analysis toward the Old Norse designations of JÖTUNN (further denoted as JOTUN).

2. Short notes on methodology. *JOTUN*-system through M-logic and numbers

We approach "supernatural" entities as systems sporting one or several enhanced parameters that provide their extra functionality. These features are perceived and identified as "hypertrophied" or "beyond common sense" from the vantage point of an anthrop observer / categorizer. A more generalized model based on the principles of fluid "neo-anthrop" salience, eco-centric categorization and fundamental principles of open systems' organization (as part of the suggested M-logic) (Kolesnyk 2019) targets the primary "hypertrophic" features that make the verbalized entities distinct.

We have priorly identified universal sets of features pertaining to verbalized concept GIANT in European languages (Kolesnyk 2016b, 124-129). It appears that the Scandinavian JOTUN manifests a number of specific features while the parameter of "size" is mentioned directly only once in the custom corpus of the Old Norse texts: *En er æsirnir sá þat til víss, at þar var <u>bergrisi</u> kominn, þá varð eigi þyrmt eiðunum ok kölluðu þeir á þór* "Now that the Æsir learnt for sure that the mountain-giant had come, they disregarded their oaths and called on Thor" (Gylf, 42). The same concerns the designations *íviðja* (pl. *íviðjur*) and *gýgr* (pl. *gýgjar*) that are scarcely represented within the corpus and thus statistically ignored. However, this very micro-textual designation refers to a typical

interaction pattern between two primary groups of SBs within the multiverse space. Therefore, in this paper we focus on the cognitive premises of the verbal representations of JOTUN as a class of supernatural living objects antagonistic to other systems and responsible for conflict-type scenarios in Scandinavian (Germanic) mythology and respective mythic space.

Generally, taxonomies of supernatural entities based on classic semantic dichotomies normally single out people and other non-human beings (animals, plants, gods etc.) (Lindow, 2002). Reconsidering these dichotomies in a universalia-oriented hierarchical sense, it is possible to fit the concept of JOTUN into the following taxonomy:

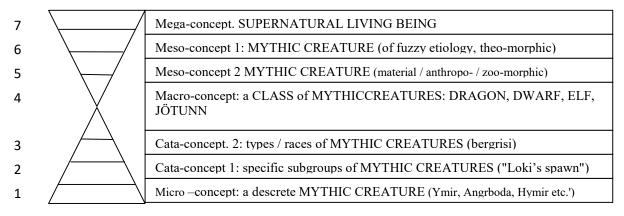|	
7	Mega-concept. SUPERNATURAL LIVING BEING
6	Meso-concept 1: MYTHIC CREATURE (of fuzzy etiology, theo-morphic)
5	Meso-concept 2 MYTHIC CREATURE (material / anthropo- / zoo-morphic)
4	Macro-concept: a CLASS of MYTHICCREATURES: DRAGON, DWARF, ELF, JÖTUNN
3	Cata-concept. 2: types / races of MYTHIC CREATURES (bergrisi)
2	Cata-concept 1: specific subgroups of MYTHIC CREATURES ("Loki's spawn")
1	Micro –concept: a descrete MYTHIC CREATURE (Ymir, Angrboda, Hymir etc.')

Figure 1. JOTUN in a hierarchical typology of SUPERNATURAL BEINGS

Thus, JOTUN is distinct at the macro-level of categorization i.e. appears as a fully functional system with specific features capable of both resonance-based clustering and intersystemic interactions with larger or contrarily organized systems.

Consequemtly, all supernatural beings (and respective concepts of a mythic space) fit the hierarchy structured around the dominant enhanced feature:

Micro level (1) – the physical parameter ("strong" / "big" / "fast" / "ugly" etc. where "strong" or "large" applies to a typical JOTUN)

Cata-1 level (2) – the emotive parameter (impactful / disturbing / scary, basically, any supernatural being triggering strong emotional reactions, as JÖTUNN is mostly fearsome)

Cata-2 level (3) – the mental parameter ("stupid" or "wise", including Jotuns Vafthrudnir and Mimir)

Macro level (4) – the social parameter (where a supernatural being appears as "the best / prototype representative" of a group, or a "leader", for instance Odin for the Aesir or Surtur as the leader of the fire-giants; in case of the enhanced featrues'

being recognized as equi-ranking or significant enough, their carriers may be accepted and incorporated into a group which is exactly the case with Jötnar joining the Aesir);

Meso - 2 level (5) – the parameter of "inter-group interaction" (where a supernatural beingfunctions as "trickster" / "instigator" that sets large-scale scenarios in motion, e.g. Loki);

Meso - 1 level (6) – the parameter of "axiological orientation" ("shaper" / "creator" as Aesir or Volundar or "destroyer" / "eliminator" – Surtur, Jormungandr or "patron of a locus" like Hel)

Mega level (7) – the parameter of "time-space-energy configuration" (where a supernatural being defines algorithms and trajectories of large inter-systemic clusters' motion and development, e.g. "programmer", the Norns

Thus, Jötnar are represented at various levels of inter-systemic relations and enter scenarios unfolding along trajectories determined by non-linear causative logic. They are not present at level 7 of the model and (like the Aesir) function within the coordinates set by larger systems (an oversystem encompassing the fundamental laws of nature that apply to realities beyond the nine world of the Old Norse mythic space or the "semantic space" of a present-day interpreter).

General configuration of the Nordic worldview and its dynamic transformations largely depend on the properties of SBs from the respective mythic spaces. The prominent role of JOTUN in the Old Norse mythic space manifests through numbers. We have chosen the five major types of the SBs designated in Old Norse texts for quantitative comparison. Other supernatural beings are significant semantically yet appear to be few and essentially irrelevant statistically within the the custom corpus which comprises 49 documents (prose Snorra Edda and songs of the Elder Edda) in Old Norse with 102,388 total words and 17,042 unique word forms (data processed via AntConc 3.5.8).

The following numeric representations testify that the Old Norse model of the world (and respective worldview) is Æsir-centric, as the designations of two races of gods (Æsir and Vanir) dominate those of the other beings (Table 1).

Table 1. Quantitative distribution of Supernatural Beings'
designations in the custom corpus

SB	Word-forms						TOTAL
	dvergr	*dverga*	*dvergar*	*dvergrinn*	*dvergarnir*	*dverganna*	
	18	17	19	10	6	4	74
SB	*æs*	*æsi*	*æsir*	*æsirnir*			
	101	2	73	17			193
SB	*jötunn*	*jötna*	*jötuns*	*jötnar*			
	40	38	29	27			134
SB	*þurs*	*þursa*	*þursi*				
	4	12	1				17
SB	*alfr*	*alfi*	*alfa*	*alfar*	*alfum*		
	5	2	12	13	7		39
SB	*vanr*	*vani*	*vanir*				
	16	16	2				34

On the othe hand, the number of verbal representations of the GODS' antagonists (*jötunn and þurs*) is significant enough yet insufficient for the two contrary systems' parity thus providing ground for their continuous imbalanced and competitive coexistence.
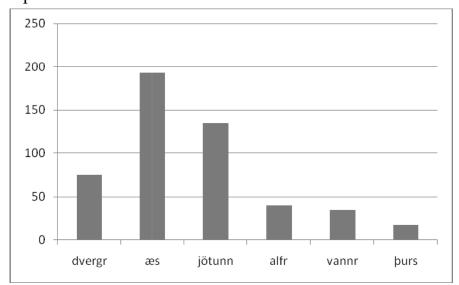

Figure 1. Comparative distribution of Supernatural Beings' designations in the custom corpus

Therefore, we treat AESIR and JÖTNAR as the primary AGONIST – ANTAGONIST pair that determines the dominating vector of the dynamics within the Old Norse mythic space (and respective worlview).

Quantitative distribution of the JÖTUNN's designations within the corpus is represented in Table 2.

Table 2. JÖTUNN's designations in Eddic texts

| Text | word-forms | | | | |
	jötunn	*jötna*	*jötuns*	*jötnar*	total
Alvíssmál				13	13
Atlamál in grænlenzku				1	1
Grímnismál	1				1
Gylfaginning	9	3	7	2	21
Hávamál		3			3
Hárbarðsljóð	1	2			3
Helgakviða Hjörvarðssonar	1				1
Hymiskviða	6	1	3		10
Hyndluljóð			2		2
Skáldskaparmál	7	11	8	5	31
Skírnismál	2	2		1	5
Þrymskviða		5	3	2	10
Vafþrúðnismál	10	5	4		19
Viðauki I	1	3		2	6
Völuspá in skamma	1	2		1	4
Völuspá	1	1	2		4
In the corpus	*40*	*38*	*29*	*27*	*134*

This distribution attests to the primary AESIR VS JÖTNAR type of interactions in regard to the textually represented scenarios.

3. Discussion. Supernatural features of the JÖTUNN-system through etymology

Sets of focal features of JOTUN as a SB responsible for the basic algorithm driving the JÖTUNN-system are considered as "nano-myths" encoded in the inner form of its verbal representations. These are reconstructed through the etymology of the respective concept's name.

For instance, O.N. *jötunn*, O.E.*eoten* < Proto-Germ. **etunaz*.~ Proto-Germ **etanan* 'to eat' < Proto-Germ. *etan* "to eat" < Proto-Germ. * *et-* < Proto I.E. * *ed-* "eat, bite" (Sanskr. *admi* "I eat", Avest. *ad- "*to eat", Gr. *Edo "*I eat", Lat. *edere "*to eat", Lith. *ėdu "*I eat', *ėdžioti "*to devour, bite", Hittite *edmi "*I eat", *adanna "*food', Armen. *utem "*I eat" O. Ch. Slav. *jasti "*to eat', Checz. *jídlo "*food", O. Ir. *ithim "*I eat", Goth. *itan*, O. Sw., O. E. *etan*, O. H. G. *essan* "to eat") (Pokorny 1959, 287, Levytskyi 2010, 157-159).

In this regard O.N. *jötunn* appears as a fractal iconic (personified) representation of the environment (outer space, CHAOS) ready to consume ("eat")

and transform ("digest") the material information carrier (a system of lesser physical mass, size or energy potential) thus ending its existence and therefore unstoppable, hostile and dangerous by default (cf. O.N. *etall* "consuming", O.E. *etol* "voracious, gluttonous", O.H.G. *filu-ezzal* "greedy", L. G. *eteninne* "witch") Levytskyi 2010, 159).

The designations O.N. *þurs*, Icel. *þurs*, Far. *tussur*, Norw. Nynorsk *tuss, tusse*, Norw. Bokmål: *tuss, tusse*, Sw. *tuss, tusse* (dialectal), O. Dan. *tusse, tosse*, Dan. *tosse*, Scot. Gael. *tursa*, O. E. *þyrs*, O. Sax. *thuris*, O. H. G. *durs, duris*. < Proto-Germ. **þursaz, *þurisaz* ("giant, name of the Þ-rune") < ? **þurjan* with no clear etymology yet associating its semantics with "anger, quarrel" (Kroonen 2013, 552) < Proto-I.-E. **tur-, *twer-* ("to rotate, twirl, swirl, move") (Pokorny 1959, 1100) refer to the mythic creature's nature of "unstructured, uncontrolled, unchecked power resulting from movement" i.e. a quantum of energy associated with an element of Chaos. The version of etymological reconstruction that connects Germ. **þur(i)saz* < Proto-Germ. **þurēnan*, ~ Sanscr. *turá-* "strong, powerful, rich" explicates the dominant feature "strong, of power" though disregards the feature of "dynamic" which is essential for open unbalanced systems. The conceptualized ontological feature "powerful / energy bound" (=A01) is therefore considered a part of the inchoative proposition X00 (where A01∈X00) that functionsas the irrational (mythic) interpretative basic operator.

Eventually, the O.N. *þurs* (O.E. *þyrs*) designation of a destructive system capable of absorbing ("eating") an opponent may hypothetically be motivated by the metaphorical sense of "absorbing liquid matter" as "thirst" (cf. *þurstu-* "thirst" (Kroonen 2013, 553)) turns the semantic feature "blood-thirsty" into a marker of a chaotic system's strife for obtaining resources from a target-system.

The idea of "unstoppable [consuming] force" correlates with the semantic feature of "growing" as the "[large] size" of a consumer-system is determined by the volume of absorbed resources. Hence the cognate of O.N. *risi* (O.H. G. *riso*, Icel., Far. *risi,* Norw., O. Sw., Sw., Dan. *rise,* G. *Riese)* < Proto-Germ. **wrisjon.* ??? < Proto-Germ. **wrisja-*, possibly, "top [of a mountain]" (Vries 1962, 447). An assumption of a "folk etymology" type might relate G. *Riese* and Germ. **reisan-* "over, above" (cf. E. *to rise*, O.E. *rīsan*, G. *reisen* "to travel", O. Sax. *rīsan* "move", Dut. *rijzen*, O. Fris. *rīsa*, O.N. *rīsa*, Goth. *ur-reisan* "to elevate, appear" < Germ. **reisan-* (<**reis-) *"to move up, erect" (Levytskyi 2010, 431). Thus we identify the semantic feature "upward movement" which is seen as "the way of profiling by [excessive] upward expansion" which does not contradict the classic versions: O.N. *risi*, G. Riese < Germ. **wrís-an- / *wrísēn , *r[íw]s-an- / *r[íw]sēn*

< Proto-I.E. *wris-* "mountain", as well as < I.E.*uer-s* "elongated" (Pokorny 1959, 1151-1152) but rather implies the complementary connections between the features in *jötunn, þurs* and *risi* as different aspects of the same natural phenomenon. Therefore, the features of "absorbing" (= BX01), "expanding" (= BX02) and "energy-wielding" (= BX03) are the dominant profiles that make the respective entity distinct to a degree of "outstanding" / "supernatural." These features constitute the contetnt of the basic operator (quantor) X00, that functions as the categorizational filter for the derivative conceptual models and derivative senses.

4. Discussion. Linguo-cognitive premises of the JOTUN-system's designations

The derivative semantics of the analyzed units reflects the results of other systems' categorizational activities targeting the JOTUN-system in a number of stereotype scenarios.

Basic cognitive models reconstructed through the interpretations of the JOTUN's verbalizers are the following. The nature of the models themselves as discussed in (Lakoff 1990; Steen 2005) is considered secondary and is disregarded. We focus on the content of the "source domain" comprising ontological (a), functional (b), locative (d) and axiological (c) conceptualized features. The suggested inventorization of the cognitive models follows the above-mentioned universal model of an open system's hierarchical structure.

Level 1 models.

JOTUN – POWER / DEXTERITY, a basic ontological feature (=a01) attributed to level 1 of categorization with the frame representation of

{[J-SYS] exists SO [quality]}

For instance: *inn þrúðmóðga jötun* "powerful (< "great juggler"*) jotun" (Harb, 19), *Mikill þykkir mér Þjazi fyrir sér hafa verit* "Thjazi was immensely powerful" (Skáld, 4), *því at engi jötun // ek hugða jafnramman sem Vafþrúðni vera* "Among the jotuns I know of no one equal in might to Vafthrunir" (Vaf, 2), *unz þrjár kvámu // þursa meyjar // ámáttkar mjök // ór Jötunheimum* "until there came three thurs-maids, mighty, out of Jotunheim" (Vol, 8), *en jötunn losnar* "jotun breaks free" (Vol, 47) (a "despite" force-dynamic pattern (Talmy 1988), where JOTUN overcomes the resistance of an opposing system and sets in motion), *Sundr stökk súla // fyr sjón jötuns* "the beam broke at the glance of the giant" (Hym, 12), *bað senn jötunn // sjóða ganga* "the jotun ordered to boil them" (Hym, 14), *Dró meir Hymir // móðugr hvali* "Mighty Hymir drew [two] whales" (Hym,

21), while POWER could extend onto the SOCIAL STATUS: *Þrymr sat á haugi, // þursa dróttinn* "Thrym sat on a hill, the lord of thurses" (Thry, 5).

The propositional representation of a level 5 structure which reflects a destructive outcome for the JOTUN-system and involves a designation of POWER (a qualifying descriptor) riding the level 1 cognitive structure: *Ek drap Þjaza inn þrúðmóðga jötun* "[I killed Thjazi] that mighty jotun" (Harb, 19) refers to the fundamental capacity of open systems' (AGONIST vs ANTAGONIST) competitive imbalanced interaction as well as the positive axiology of "overcoming a worthy opponent".

JOTUN – ELEMENT (=a13): *"Ór Élivagum // stukku eitrdropar, // svá óx, unz varð ór jötunn;// þar eru órar ættir // kómnar allar saman; // því er þat æ allt til atalt"* "out of Elivagar sprinkled poisonous drops that waxed till they were a jotun; there our crazy [fierce] kin came to be all the same" (Vaf, 31) where *eitrdropar* may relate to a liquid substance, the "energy of WATER" i.e. an all-encompassing field of energy-information quanta that may be configured / charged oppositely thus creating the effect of chaos, i.e. "poison".

The set of energies and elements associated with the nature of the Jotunn-system hypothetically mirrors a specific "over-systemic program" (i.e. general natural laws of astro-physical scale). Although the respective properties appear "different" / "strange" > "hostile" > "dangerous" for an observer they still trigger scenarios where this system is categorized and treated as

JOTUN – RESOURCE (=a11): *Ór Ymis holdi // var jörð of sköpuð, // en ór beinum björg, // himinn ór hausi // ins hrímkalda jötuns, //en ór sveita sær* "Out of Ymir's flesh the earth shaped, of his bones the mountains;the sky from the skull of the frost-cold jotun, and of his blood the sea" (Vaf, 21) where the JOTUN-system embodies the primordial container of elements that are engaged in the act of creation through the act of violence (that, possibly, fractally repeats in an endless cicle of war and murder due to a complex of allusive associations "enemy" / "hostile" < "disgusting" < "different" yet "life giving" / "basis of the world") thus providing the inital point for the JOTUNN – TARGET level 5 structure.

Level 2 models.

JOTUN – EMOTION (=a09) with the frame representation of

{[J-SYS] manifests SUCH [emotion]}:

Óteitr jötunn, // er aftr reru "gloomy was the jotun as they rowed back" (Hym 25) and the subordinate model JOTUN – FEAR {[J-SYS] causes SUCH [emotional response]}: *Þjazi ... sá inn ámáttki jötunn* "Þjazi ... the terrible jotun"

(Grimnismal, 11). A hypertrophied "emotive feature" may result from a superb ontological quality (level 1 sub-structure) [haughty] < [invincible] < [stone]: *sá inn stórúðgi jötunn, // er ór steini var höfuðit á* "a haughty thurs, he had a head of stone" (Harb, 15).

Level 3 models.

JOTUN – WISDOM / KNOWLEDGE (=a07) with the frame representation {[J-SYS] possesse SUCH [mental quality]}:

þess ins alsvinna jötuns "jotun's wisdom" (Vaf, 5), *inn fróði jötunn* "you, wise jotun" (Vaf, 20), Wisdom manifests through a specific JOTUN-centered categorization and respective designation: *ígræn jötnar* "[as] Evergreen [known among] the Jotuns"(Alv, 10), *uppheim jötnar* "[as] the Upper World [known among] the Jotuns"(Alv, 12), *skyndi jötnar* "[as] the Goer [known among] the Jotuns"(Alv, 14), *eygló jötnar* "[as] the Ever Glowing [known among] the Jotuns" (Alv, 16), *úrván jötnar* "[as] the Watery Hope [known among] the Jotuns" (Alv, 18), *æpi jötnar* "[as] the Wailer [known among] the Jotuns" (Alv, 20), *ofhlý jötnar* "[as] the Sultry [known among] the Jotuns" (Alv, 22), *álheim jötnar* "[as] the Home of Elves [known among] the Jotuns" (Alv, 24), *frekan jötnar* "[as] the Biter [known among] the Jotuns" (Alv, 26), *eldi jötnar* "[as] the Flame's ["food"] [known among] the Jotuns" (Alv, 28), *óljós jötnar* "[as] the Lightless [known among] the Jotuns" (Alv, 30), *æti jötnar* "[as] the Eaten [known among] the Jotuns" (Alv, 32), *hreinalög jötnar, æti jötnar* "[as] the Light Beer / Bright Drink [known among] the Jotuns" (Alv, 34), *Ásviðr jötnum fyrir* "Aswith for the jotuns [did so = cut the runes]" (Hav, 143) implying that the JOTUN-system is basically engaged in the same patterns of energy-information exchange and is thus fundamentally equi-ranking to the systems of other etiology. Cf. also: *Nú eru Háva mál… óþörf jötna sonum* "Here are the words of Hof… useless for the sons of jotuns" (Hav, 164) implying a fundamental orientational difference between systems operating the same knowledge; *við þann inn alsvinna jötun* "with [against] that all-knowing jotunn" (Vaf, 1*), æði þér dugi, // hvars þú skalt, Aldaföðr, // orðum mæla jötun* "sharp in mind you should be, Allfather, as you the the jotunn speak" (Vaf, 4)*,* implying the equiranking facilities of two contrarily configured systems in competitive interation or one system's intention to absorb the informational content of the other, where the JOTUN appears as the "target / donor" of potentially larger capacity rather than an "absorber" as his name and stereotype designations suggest: *hitt vil ek fyrst vita, // ef þú fróðr sér // eða alsviðr jötunn* "and first I want to know, as you are wise, if you know everything [if you

are all-knowing], jotunn" (Vaf, 6). Apart from the RESOURCE domain, the sphere of KNOWLEDGE / WISDOM also becomes an inchoative point of other sustems' aggressive impact upon the JOTUN-system at level-5;

JOTUN – MAGIC / ILLUSION (the correlated hypertrophied feaures are "magic" / "supernatural" (=a08) and "magic user" (=b08)) that morph within the frame {[J-SYS] possesses SUCH [quality] performs SUCH [action]}:

Einn maðr er nefndr Ægir eða Hlér… Hann var mjök fjölkunnigr. Hann gerði ferð sína til Ásgarðs, en æsir vissu fyrir ferð hans, ok var honum fagnat vel ok þó margir hlutir gervir með sjónhverfingum. "A man was named Ægir or Hlér; He was skilled in magic. He made his way to Ásgard, but the æsir knew of his journey in advance. He was well received, but many things were done with illusions." (Skald, 1), *Þá kemr þar Þjazi jötunn í arnarharn* "Then came Thjazzi the jotun in the shape of an eagle" (Scald, 2)

Level 4 as the "assembly point" of a dynamic conceptual construal hosts the models or the "social projections" of the models otherwise belonging to other levels of the system's organization:

JOTUN – LOCATION. It is primarily the space "inhabited by the generic species" (=d01, associated with a physical (level 1) space of a creature's habitat or HOME fractally projected onto social (level 4) space).

The frame model of the JOTUN-system is thus

{[J-SYS] exists / owns / [SPACE]}

This location could be associated with geographic coordinates: *flýgr hann norðr í Jötunheima* "[he] flies north to Jotunheim" (Scald, 3), or associated with a specific dweller: *Þrymheimr heitir inn sétti, // er Þjazi bjó … en nú Skaði byggvir fornar tóftir föður* "Thrymheim the sixth is called where Þjazi lived… but now Skadi …lives in her father's ancient courts" (Grimn, 11), *öllum ásum // þat skal inn koma // Ægis bekki á, // Ægis drekku at* "to the all the Æsir it will become known, on Ægir's benches, at Ægir's feast" (Grimn, 45) implying the role of an "event holder / moderator" which deserves specific attitude fitting the social status; *en annarr stóð á Ókólni // bjórsalr jötuns,en sá Brimir heitir* "another [hall] stood in Okolni, the beer-hall of the jotun called Brimir" (Vol, 37), *Gnýr allr Jötunheimr* "all Jotunheim groans" (Vol, 48), *mælta ek í minn frama // í Suttungs sölum* "I spoke and was successful in Suttung's hall" (Hav, 104). The said space is thus structured according to the focal system's settings: *yfir ok undir stóðumk jötna vegir* "up and under were the jotun's ways (paths)" (Hav, 106), *Sat bergbúi // barnteitr fyr // mjök glíkr megi //miskorblinda* "sat the rock-dweller, happy as a

child mich like the son of Miskorblindi" (Hym, 2) and is dangerous to other systems: *fi er mér á // at ek væra enn kominn // jötna görðum ór* "methinks, I would hardly have come from the jotun's world" (Hav, 108);

The JOTUN-space is descrete and delimited: *hvé sú á heitir, // er deilir með jötna sonum // grund ok með goðum* "how is the river called that divides the land of jotuns'sons from the [realm of] gods'? " (Vaf, 15)

It is noteworthy that the JOTUN-space is not enclosed or restricted, thus allowing the representatives of other spaces enter / invade / navigate / leave: *ok fyr innan kom // jötna heima* "he came to the land of Jotuns" (Thry, 4), *Hví ertu einn kominn // í Jötunheima?* "Why have you come alone to Jötunheim" (Thry, 5), *unz fyr útan kom // jötna heima* "he rushed out of the land of Jotuns" (Thry, 9), *vit skulum aka tvau í Jötunheima* "the two of us will go to Jötunheim (Thry, 12), *Björg brotnuðu, // brann jörð loga, // ók Óðins sonr // í Jötunheima* "mountains shook and the earth was burning as Odin's son went to Jötunheim" (Thry, 21),

JOTUN – FAMILY / KIN / BIRTH (=a03): as the primal "systemic prototype" demonstrates hermaphrodite features: *Undir hendi vaxa // kváðu hrímþursi //mey ok mög saman* "under the arms of the ice-thurs a boy and a girl were born" (Vaf, 33), *Örófi vetra // áðr væri jörð sköpuð, // þá var Bergelmir borinn, // Þrúðgelmir var þess faðir, // en Aurgelmir afi* "Countless winters before the Earth was shaped Bergelmir was born, Thrudgelmir was his father and Aurgelmir his grandfather" (Vaf, 29), *Alvalda sonar* "[eyes] of Alvaldi's son" (Grimn, 11), *Ol vlf Loki // vid Angrbodu, // enn Sleipni gat // vid Suadilfara; // eitt þotti skars // allra feiknazst, // þat var brodur fra // Byleistz komit* "Loki sired the wolf on Angrboda, and got Sleipnir on Svadilfari; the monster seemed most terrible the one that from Byleipt's brother came" (Hyndl, 40), *Angrboða heitir gýgr í Jötunheimum. Við henni gat Loki þrjú börn. Eitt var Fenrisúlfr, annat Jörmungandr, þat er Miðgarðsormr, þriðja er Hel* "Angrboda was the name of a giantess in Jötunheimr. With her Loki had three children. One was Fenrir, the second Iormungand the Midgard serpent, the third is Hel." (Gylf, 34), *Freyr atti Gerdi, //hon var Gymis dottir, // iotna ættar,// ok Aurbodu; // þo var Þiassi // þeirra frændi // skautgiarn iotun, // hans var Skadi dottir* "Freyr had Gerd the daughter of Gymir of the race of jotuns, and of Aurboda. Thjazi was their kin, greedy jotun, Skadi was his daughter" (Hyndl, 30), *Áttniðr jötna* "kinsman of jotuns" (Hym, 9).

JOTUN – SOCIAL STATUS (=a11): *Inn kom in arma // jötna systir* "then entered the jotun's poor [unlucky?] sister" (Thry, 29), *Þrymr, // þursa dróttinn* "þrym, the lord of jotuns"(Thry, 30).

The JOTUN-system is capable of fractal auto-copying (BX02) thus making a transition from level 1 to level 4 as the ever-expanding system requires (social) structuring. The JOTUN-system thus appears a structured, adaptable and self-sustainable one, capable of expansion, the latter property being the reason of other systems' hostile attitude.

JOTUN – CREATOR / MAKER (=b02): *Ægir, er öðru nafni hét Gymir, hann hafði búit ásum öl* "Ægir, who was also called Gymir, had prepared ale for the gods" (Lok, 1) where a created object is significant within the group to which JOTUN-system belongs, the latter example demonstrating a JOTUN-system's merging with the AESIR-system and providing a variant of level-5 interactions.

Level 5 models address the primary scenarios of the JOTUN-system's "intergroup relations".

JOTUNN – ADVERSARY (=b01^{X00}) with the frame representation of

{[J-SYS] impacts / opposes [N-SYS]}. The model could unfold as "balanced interaction": *laðar þurfi -// hef ek lengi farit - // ok þinna andfanga, jötunn* "I seek welcome, as I have traveled far, and a greeting, jotun" (Vaf, 8) with a possible outcome of JOTUN – GODS' COMPLEMENT (=a12): *Skaði …skír brúðr goða* "Skadi, shining bride of the gods" (Grimn, 11), *ok fyr jötna // öl fram borit* "for the jotuns beer was brought" (Thry, 24).

The conflicting model may be specified as:

JOTUN – DESTROYER (=b05): *áðr Surtar þann sefi of gleypir* "Surtr's relative will kill him soon" (Vol, 47);

JOTUN – TAKER (=b06): *eða ætt jötuns Óðs mey gefna* "[who] to the jotun's kin Od's bride had given" (Vol, 25);

JOTUN – DOMINATOR (=b10): *en jötunn losnar* "the jotun breaks free" (Vol 47) as a system capable of determining its own trajectory of development or transition, dominating over the will of an antagonist system within a classic "despite"-pattern of force-dynamic scenarios. DOMINATION may also unfold as extending one's control over the other system's space: *Þegar munu jötnar // Ásgarð búa* "or else may the jotuns in Asgard live" (Thry, 18);

JOTUN – AGGRESSOR (=b03): *En Skaði dóttir Þjaza jötuns, tök hjálm ok brynju ok öll hervápn ok ferr til Ásgarðs at hefna föður síns.* "Skadi the daughter of Thjazzi the jotun took her helmet and armor and went to Asgard to avenge her

father" (Scald, 3) where the aggression appears as an act of retaliation to a prior act of violence;

JOTUN – HARM / TRICK (=b04): *Orðheill þín // skal engu ráða, // þóttú, brúðr jötuns //bölvi heitir* "your spell shall do no harm, though [you] the kin of jotuns, threaten with evil" (Hyndl, 34).

Apart from the balanced or JOTUN-dominated interactions, the contrarily configured systems enter CONFLICT-type scenarios where the participants' roles are reversed:

JOTUN – TARGET (VICTIM / OBJECT OF VIOLENCE / MISTREATING) (= -b07) with the frame representation of {[N-SYS] impacts / hurts [J-SYS]}: *Ek drap Þjaza* "I felled Þjazi" (Harb, 19), *görnum fyrstr ok efstr // var ek at fjörlagi, // þars vér á Þjaza þrifum* "first and last I was at the killing that was Þjazi's demise (quartering* ?)" (Lok, 50), *ok dulðak ek þann inn aldna jötun* "and I deceived that old jotun" (Grimn, 50), *Ek slæ <u>eldi // of íviðju</u>, // svá at þú eigi kemsk // á braut heðan* "I will surround with fire the giantess so that you shall not get out" (Hyndl, 32), *ill iðgjöld // lét ek hana eptir hafa* "an ill reward I let her have" (Hav, 105), *er vit Hrungnir deildum,… þó lét ek hann falla // ok fyrir hníga* "with Hrungnir I fought… though I felled him and brought him down" (Harb, 15), *en ek vélta hann ór viti* "and I took his [Hlebard's] wits away " (Harb, 20), *Ek var austr // ok jötna barðak // brúðir bölvísar, // er til bjargs gengu* "I was in the eastand destroyed jotuns' ill-working women who had fled to the mountains" (Harb, 23), *Önn fekk jötni //orðbæginn halr* "a toil for the jotun the word-wielder designed" (Hym, 3), *er hann sá gýgjar græti // á golf kominn* "the giant-women's grief [=enemy] to the apartment came" (Hym, 14), *brjótr bergdana* "destroyer of rock-dwellers" (Hym, 17), *þurs ráðbani* "destroyer of thurses" (Hym, 19), *drep við haus Hymis,// hann er harðari, // kostmóðs jötuns, //kálki hverjum* "Strike Hymir's head, it is hard, heavy with food, [harder than the] chalice" (Hym, 30), *Þrym drap hann fyrstan, // þursa dróttin, //ok ætt jötuns // alla lamði* "Thrym was the first to fall, lord of jotuns, then all the kin of jotuns was felled" (Thry, 31), *Drap hann ina öldnu // jötna systr* "then he killed the jotun's old sister" (Thry, 32), *Þá váru æsirnir nær ok drápu Þjaza jötun fyrir innan ásgrindr* "The Aesir were [close] there and felled Thjazzi the jotun inside Asgard" (Scald, 3).

Level 6 models.

JOTUN – RICH (a02^c+): *Ölvaldi hét faðir hans… Hann var <u>mjök gullauðigr</u>. En er hann dó… En þat höfum vér orðtak nú með oss at kalla <u>gullit munntal þessa jötna</u>, en vér felum í rúnum eða í skáldskap svá, at vér köllum þat mál <u>eða orð eða</u>*

tal þessa jötna "His father's name was Ölvaldi… He was very rich in gold. When he died… And now we have an expression among the aesir to call gold the "mouth-count of the jotuns" and we hide it in the secret language of poetry by calling it the speech of the jotuns" (Skáld, 56–57), *brimsvín jötuns* "jotun's boar-of-waves [ship]" (Hym, 27), *Ganga hér at garði // gullhyrnðar kýr,// öxn alsvartir // jötni at gamni; // fjöld á ek meiðma, // fjölð á ek menja, // einnar mér Freyju // ávant þykir* "go here to the stables gold-horned cows, all-black oxen, the joy of the jotuns, many are the treasures, many are the gems, the only thing I lack was Freja" (Thry, 23) i.e. the JOTUN-system functions as both the container and accumulator of resources and consciously ascribes value properties to them.

The vis-à-vis system's categorization manifests through the model JOTUN – GREED (=a04^{-c}): *skautgiarn iotun* (Hyndl, 30);

JOTUN – STUBBORN / DURABLE: (=a06^c): *Ok enn jötunn //um afrendi, // þrágirni vanr* "And the jotun in power [competed], being stubborn" (Hym, 28), *harðan jötun // ek hugða Hlébarð vera* "a hard jotun that was called Hlebard" (Harb, 20);

JOTUN – AGE (=a05^c): *ok dulðak ek þann inn aldna jötun* "and I deceived that old jotun" (Grimn, 50], *Ek man jötna ár of borna* "I know the jotuns born of yore" (Vol , 2), *Inn aldna jötun ek sótta* "The old jotun I sought out" (Hav, 104), en forn jötunn // sjónum leiddi // sinn andskota "the old jotun his gaze help upon his enemies" (Hym 13), "*Örófi vetra // áðr væri jörð sköpuð, // þá var Bergelmir borinn* "Countless winters before the Earth was shaped Bergelmir was born" (Vaf, 29). The axiological "coloring" of this model is teremined by the association of [extraordinary] / [wise] / [powerful] < [continuous accumulation] < [old].

JOTUN – SUSTAINING (=b09^{X00}), that unfolds as (1) the system's ability for self support, primarily in the form of expansion thus creating the pretext for other systems' hostile actions: *mikil myndi ætt jötna, // ef allir lifði // vætr myndi manna // und Miðgarði* "huge would be the race of jotuns if all were alive, no man would there be in Midgard" (Harb, 23)

or (2) the system's ability to share (=b10) resources with other systems (sustain them) thus becoming a symbiotic element in the multiverse:

jötna…,þá er forðum mik "jotuns… that fed me" (Vol, 2) (i.e. a resourcesful system capable of sharing), which could manifest as hospitality or affection: *Gunnlöð mér of gaf // gullnum stóli á // drykk ins dýra mjaðar* "Gunnljoth gave me on a golden stool a drink of the marvelous mead" (Hav, 105), *gaf hann mér gambantein* "[Hlebard] gave me his magic staff" (Harb, 20);

The JOTUN-system is not manifested at level 7 of the model: although it provides the material resources for a created world it is denied either free-will or sufficient mental organization capable of "conscious world-designing".

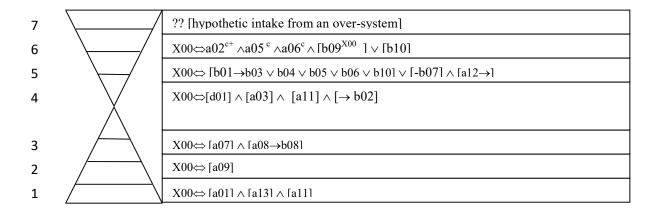The models above constitute a synthetic "cognitive matrix" (Figure 3).

7	?? [hypothetic intake from an over-system]
6	$X00 \Leftrightarrow a02^{c+} \wedge a05^{c} \wedge a06^{c} \wedge \lceil b09^{X00} \rceil \vee \lceil b10 \rceil$
5	$X00 \Leftrightarrow \lceil b01 \rightarrow b03 \vee b04 \vee b05 \vee b06 \vee b10 \rceil \vee \lceil -b07 \rceil \wedge \lceil a12 \rightarrow \rceil$
4	$X00 \Leftrightarrow [d01] \wedge [a03] \wedge [a11] \wedge [\rightarrow b02]$
3	$X00 \Leftrightarrow \lceil a07 \rceil \wedge \lceil a08 \rightarrow b08 \rceil$
2	$X00 \Leftrightarrow \lceil a09 \rceil$
1	$X00 \Leftrightarrow \lceil a01 \rceil \wedge \lceil a13 \rceil \wedge \lceil a11 \rceil$

Figure 3. Old Norse Jotun-system as a cognitive matrix

The basic irrational operator-quantor $X00 \Leftrightarrow$ provides an "interpretational prism" at each level of categorization where $\Leftrightarrow$ denotes "predication", an imperative set of system's features. The sign "$\wedge$" indicates "adjunction" i.e. an additive connection between conceptualized features within a cluster or at a level of the model. The sign "$\vee$" indicates "disjunction" i.e. an alternative between conceptualized features within a cluster or at a level of the model. The sign "$\rightarrow$" stands for "implication" that reflects the relations of determinism between between conceptualized features within a cluster e.g. [a08$\rightarrow$b08], between clusters at a level of the model or those belonging to different levels, e.g. [a12$\rightarrow$ b02].

The logic of "upward vertical determinism" (the content of lower levels provides premises for the content and structure of the upper ones) defines the **complementary** correlation between the conceptualized features: "powerful" / "elementary" / "expanding" $\rightarrow$ "grim" / "angry" / "hard" $\rightarrow$ "knowledgeable" $\rightarrow$ "organized" $\rightarrow$ "adversary" $\rightarrow$ "container of valuable features" $\rightarrow$ "*?" (unspecified, as respective designations are not found, probably, "reality shaper"). The logic of "downward vertical determinism" (the content of upper levels provides stimuli for the development of the lower ones) defines the **regulatory** correlation between the conceptualized features: "*?" (a hypothetical "reality shaper") $\rightarrow$ "container of valuable features" (in auto-ceonceptualizationand from

the standpoint of other systems) → "adversary" (attempting to implement the development program incepted at level 7 as well as protect itself in conflict-type intersystemic interactions) → "organized" (acquiring a sustainable structure and functional mode) → "knowledgeable" (cognition agent, auto-improving system) → "grim" / "angry" / "hard" (a defensive signal to potential adversaries) → "powerful" / "elementary" / "expanding" (a set of basic features providing the system's functionality). Finally, the "symmetric causative determinism" (the content of opposite upper levels provides stimuli for the development of the respective lower ones (7→1, 6→2, 5→3) with the spiral-like focusing on a system's eventual optimal configuration ($1→6→2→5→3→4$ … → $7n+1$, where $7n+1$ stands for a dialectic transition towards a new quality /dimension) defines the system's adaptive dynamics and the purpose of its each mode: "*?" (a hypothetical "reality shaper") → "powerful" / "elementary" / "expanding" (a set of basic features necessary to fulfill the program of the over-system) → "container of valuable features" (auto-diagnostics and evaluation by other systems) → "grim" / "angry" / "hard" (a system's mode resulting from "orientation" at level 6) → "adversary" (determinism of level 6 is complemented and enhanced by the mode acquired at level 2 thus defining the primary trajectory of intersystemic interactions) → "knowledgeable" (synthesis of experience from interactions at level 5) → "organized" (a focal "assembly point" that provides optimal structuring and functionality) … → hypothetical dialectic transformation or expected mega-conflict (Ragnarok) resulting in fundamental systwmic inversion.

Results.

The analysis of JOTUNN's designations in Old Norse texts allows reconstructing of a fragment of the Old Norse worldview that encompasses the knowledge of a specific type of SUPERNATURAL BEING manifesting a number of hypertrophied features of "expanding", "absorbing" and "power-wielding". The said features represent collective and mostly irrational knowledge and experience of Old Scandinavian (Nordic) peoples regarding large-scale natural phenomena (virtually equi-ranking to the deities). The said features generate a number of JOTUN's derivative capabilities that determine its peculiar position in the Aesir-centered mythic world (worldview).

Within this worldview the JOTUN-system is adaptable (sustaining) and, despite being associated with CHAOS, demonstrates the tendency towards structuring and the ability of auto-sustaining. It is noteworthy that the verbal

representations of this structuring are somewhat isomorphic to those of their adversaries: a genetically-bound social structure occupying a respectively named segment in the physical space i.e. the deep logic of adversaries' systemic organization is virtually identical.

JOTUN's axiological features are not explicit. They tend to be negative and rather overlay ontological and functional ones thus demonstrating the specific vantage point of the human / Aesir-centered subject of categorization.

Although the JOTUN-system is capable of rapid and obviously unlimited fractal expansion (and therefore targeting other systems' space as potentially hostile subjects) it is relatively passive, appears as a patient to violent destructive impacts and manifests aggression as retaliation or as the result of excessive entropy when other scenarios are eliminated (final battle of Ragnarok).

Its structure is rather isomorphic to that of the adversaries' systems. The adversaries function in dialectic collaboration and everying pertaining to the negatively assessed JOTUN-system (resources, artifacts, genetic features granting the offsprings of the gods and the Jottnar supernatural powers etc.) is utilized by the Aesir-system. However, this unbalanced and paradox-like symbiosis requiring a high level of tolerance may be identified as a deep systemic error that eventually leads to a CATASTROPHE-type transformation of the world.

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