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Smart technologies and digital intelligence

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SMART TECHNOLOGIES AND DIGITAL INTELLIGENCE

Abstract

Digital communication is the set of all activities (visual, audiovisual, textual...etc. that are shared through a system of digital technology and social networks, e-mail, and other online sites. In the Smart society these planetary tools of communication continue to surprise us and almost without realizing it we have learned to think digitally; this does not mean knowing how to use the applications, but to share them consciously. Mood digital thinking implies a professional management of the communicative message, the possession of multi-skills in disciplinary fields, new cultural horizons, new formal codes, and thus new grammars that explain to us the functions and processes of digital communication. If we would like to describe semantics of digital thinking, we should reformulate creative thinking into the fixed one. The idea arises from the intuition that perhaps LSP languages and the style of classical poetics have common processes. Will this be true? Our aim is to undertake research on the transmission patterns and formal processes of classical texts, but above all, to scientifically validate the procedures, models, and tools that allow us to listen to a wonderful verse of a classical or modern poet, which still retains the echo of a land and convey the DPH unscathed, (Abstract Bucciarelli *et al.* 2020). The present work focuses on samples from the *Iliad* and *Odyssey*, and achieves a formal understanding of the Homeric text with an implementation of the paraphrase generator, requiring: 1) a morph syntactic rhetorical analysis, in order to detect the traits of formulaic expressions in quantum theories (Planat, 2014, 2016); 2) a formal analysis of the most frequent linguistic techniques in Homer's formulary style; 3) the use of the Nooj competition (Silberztein, 2015, 2016), for the formalization of sentences and the implementation with automatic paraphrase production on the search engine and Web Semantics. Some details of the methodologies will be explained.

Keywords: topological quantum computation, R4 exotic, finite geometry fundamental group.

INTRODUCTION

With the advent of descriptive grammars arises the concept of semantic operations by categories and linguistics mediates in production techniques for the transmission of knowledge from quantum physics and beyond. The idea of describing a formal process with the mediation of a quantum paradigm is born to generate a continuum of the relationship mathematics - linguistics - quantum physics, but above all, to produce a link between the different areas of knowledge, which scientifically convinces the community concerned. Among the goals set, the research team aims to undertake research on the different textual typologies, but with absolute priority the literary communication in the poetic tradition of the ancient and modern world to find the points of contact that over the centuries have transmitted semantics intact. Nowadays, between utopia and reality, the wonderful phrase# I love you # becomes N0 V N1 and again \$NO, \$V and \$N1. See Silberztein (2019). We witness these formal processes before our eyes every day, but often even specialists, technicians, and teachers do not know how to explain the evolution of these processes. The present work is part of the research project Literary Communication in Digital and includes quantum physics, studies ranging from group theory to graph theory. The research team is led by M. Planat,

Institut FEMTO-ST Besançon, France, Department of Micro Nano Sciences and Systems (MN2S); Skills and expertise, Number Theory, Quantum Theory, Graph Theory. For the formal process we comply with the methodologies Lexicon-grammar A. Elia (EMDA) and the Nooj M. Silberztein linguistic environments for graph construction and paraphrase generation. Likewise, we will deal with implementations in blended domains using BuViTeGMS techniques with the D.I. Word Tool software for editing and visualization of chosen traits.

1 FROM GROUP THEORY TO GRAPH THEORY

The aim of these studies is to find a point of contact between scientific and humanistic disciplines, in short, between all disciplines. If we need to proceed with a feedback for our research, it must be said that we started with the desire to give a quantum explanation to the literary text. In this case for the detection of the emotional triplet of the Canto XXXIII of Paradise and Canto III of Inferno and to identify the points of contact that explain the emotional capture. The triangle in *the Fano plane* gave us a scientific answer because the projective plane includes 7 points (each of which is contained in three lines) and 7 lines (each of which contains three points). It was easy to see in the said points (nodes) and in the straight lines the interested directions (see Bucciarelli *et al.* 2021¹). It remained to clarify the relationship node-lexical sequence, was not at all easy but the studies conducted have shown us otherwise such as: G. De Bueriis and A. M. Langella in which²... *analyze some equivalences of parts of sentences, syntagms or parts of syntagms, resulting from local transformations, using notions and tools of graph theory..... that a sentence can be represented using graph theory: in it, the nodes represent the lexical units that constitute it, and the arcs represent the relationships that exist between those same units; a sentence, therefore, as a network consisting of elements (lexical) and relationships (syntactic)*. Studies continue by relating the model Planat *et al.* (2021) Full-text request: Quantum Computation and Measurements from an Exotic Space-Time R-4 a wonderful exploration that confirmed our hypothesis about topological computation for a small exotic (space-time) R4 with an example, has two remarkable properties of which the first shows the presence of standard contextual geometries such as the Fano plane:

The authors have previously found a model of universal quantum computation making use of the coset structure of subgroups of a free group G with relations. A valid subgroup H of index d in G leads to a 'magic' $|\psi\rangle$ state in d -dimensional Hilbert space that encodes for an informational complete minimal quantum measure (or MIC), which could contain a finite 'contextual' geometry. In the present work, we choose G as the fundamental group $\pi_1(V)$ of an exotic 4-variety V , more precisely a 'small exotic' (space-time) R_4 (which is homeomorphic and isometric, but not diffeomorphic to Euclidean R_4). Our selected example, due to S. Akbulut and RE Gompf, has two remarkable properties: (a) it shows the occurrence of standard contextual geometries such as the Fano plane (at index 7), the Mermin pentagram (at index 10), the two -image switching qubits $GQ(2,2)$ (at index 15), and the Grassmannian combinatorics $Gr(2,8)$ (at index 28); and (b) it allows the interpretation of MIC measurements as arising from such exotic (space-time) R_4 S . Our new framework concerning a topological quantum computation and an exotic space-time is also intended to

¹ Topological S-T R quantum computation and contextual geometries standard NLG fixed sentences.

² A large number of texts, both advanced and introductory, can be consulted on graph theory: among the latter, we note at least Chartrand & Zhang (2012), Voloshin (2009), and Wilson (1972, 1996).

become an approach to "quantum gravity". From topological computation to elementary computation and contextually numerical group and language group was easy 0.³:

Let $\text{rel}(x_1, x_2, \dots, x_r)$ be the relation defining the finitely presented group $f p = \langle x_1, x_2, \dots, x_r | \text{rel}(x_1, x_2, \dots, x_r) \rangle$ on r letters (or generators). We are

For M. Planat they are conjugation classes of groups and subgroups inserted in sequences and the secondary structures of the lines of a poem are obtained from an encoding of word types that translated into Lexicon-grammar are groups of phrases or syntagms grouped into nuclear and non-nuclear, thereby defining the theory of groups in a contextualized setting. Like this manner, we can say that:

We define a group: Let G be a non-empty set. To obtain a language group defined as such we filter through the composition of the group belonging to classes and holding a function.

A binary operation defined on G is a function

$$: G \times G \longrightarrow G \quad (1.1)$$

Operation 1.1 is said to satisfy the: associative property, if for every $a, b, c, \in G$ there is identity $(ab)c = a(bc)$

When we define a group G , it is said to be such if all the membership conditions are met

$$: G \times G \quad G \quad (1.1)$$

..... *A sentence hides a great quantity of facts (data and relations) expressible with numerical values; in essence, a sentence - an essentially "literary" sentence - is paradoxically "full of numbers." The objective is then - paraphrasing the title of Devlin's book (1998) The Language of Mathematics: Making the Invisible Visible - "to make the invisible visible", not only transforming into numbers everything that can be expressed through them, but showing at the same time as "In general, language is presented to us in the form of strings of sounds (or letters)." Yet, linguists of persuasion have argued that there is evidence for more structure than the eye meets » (Kracht, 2007). Thus, it is about a 'structural order' - underlying a 'linear order' - determined by dependency relations between the elements that constitute the utterances⁴.*

➤ Associative property: $= (a,b)= a.b$ for each $a, b \in G \ N_0 \ V \ N_1$

The operation (1.1) is said to satisfy the associative property, if for each $a, b, c \in G$ is true the identity

$(ab)c = a(bc) = e.g.$ Planat p. 5 where the structure of a group is a sequence that we will call semantic unit $rel(H, E, C, G, I, T, 4 =$

CCCCCCCCEEEEEECCCCCCCCEEEEEECCCCCCCCEEEEEECCCCCCCC...

HHHHHHHHCC444444CHHHHHHHHHHHHHHHHHHHHHCCCGGGGGHHHHH

³Planat, M.; Aschheim, R.; Amaral, M. M; Fang, F.; Irwin, K. Quantum information in the protein codes, 3-manifolds and the Kummer surface, Symmetry 2020, 13, 1146.

⁴G. De Bueriis. A. M.Langella I numeri nelle parole (in corso di stampa, volume in onore di A. Elia 2021)

HHHHHCCCCCCCCCCCCCCCCCTTTTTCCCCCCCCCHHHHHHHHHHHH...

CCTTTTTCCCCCTTTTTCCCC44444EEEEEECC⁵

Consequently, if the associative property is satisfied it is possible to define recursively in an unambiguous way the product of three or more elements:

$$abc=(ab) c, \quad abcd= (abc)d , \text{ ecc. } (Us+ (Us+ Us)$$

In particular, for $n = 1,2,3, \dots$ $c a \in \mathbf{G}$ we set

$$A^n = a \dots a, n \text{ factors}$$

An element $u \in G$ is said to be a neutral element for operation (1.1) if for each $a \in G$ we apply identity: $au=ua= a$

➤ Commutative property, if for each $a, b \in G$ holds the identity $ab = ba$

Therefore, with a syntactic experiment of transformation and distribution we will operate on the validity of the commutative property applied to a semantic unit of the sentence: NOV N1

. Displacement

An element of the sentence is dislocated with a pause (#), with a pronominal form of the type Ppv

From what has been said briefly, it can be deduced that fixed languages are groups and there is a context between the numerical group and the linguistic group.

2. PHASE A: MORPHO-SYNTACTIC PROSODIC ANALYSIS A CALCULATION AND AN AVERAGE

The team, then, focuses on samples from the Iliad and Odyssey and traits for textual prediction of fixed forms, with particular attention to prosodic analysis and phonetic phenomena from quantum metrics, and takes its time in some aspects of phonic recursion or non-causal, presence of vowels and consonants in a poetic corpus, in order to identify the DPH, which is the tool that allows identifying the rhythm of the tone, *l'Humanitas* that emerges and detects *l'Ego*, as well as semantics of traits in the recitation. The phonic recursion is that phenomenon known as alliteration that the poet pursues in the choice of words with a specific phonic body underpinned by a linguistic or phonetic-stylistic operation and that consists of the non-causal repetition of sounds in sequential figures such as iteration⁶, parallelism⁷, and sequence manipulation⁸, consistent with Silvestri (1996).

Homer - Odyssey - Beginning of the poem (Hom. Od. I 1-2)⁹

Ἄνδρα μῶι ἔννεπε, Μοῦσα, πολὺ τρῶπῳ, ὄζ μάλα πολλά

⁵Repeat PLANAT

⁶ Iteration occurs when two or more homophonic vowels follow each other in contiguous syllables

⁷ Parallelism occurs when two or more vowels are repeated in the same order with at least one interrupting vowel

⁸ Finally, there is sequence manipulation when two or more vowels correspond to an inversion of such a sequence

⁹http://www.poesialatina.it/_ns/Greek/tt2/Omero/Odissea0001-021.html

Recursion phenomenon: πο̃λύ̃τρο̃πο̃ν, ὄ̃ς μά̃λα̃ πο̃λλὰ

If this denotes a sequential contiguity of a vowel voice or even a combination of false vowels, simple iteration, as it is based on vowel monophony and in relation to the number of false involved vowels, we will distinguish simple bimembri iterations (or Oo), trimembers (AI OI OI) and so on; in the second case we will deal with the syntagmatic iteration, (Oi IO SS), since it is based on vowel polyphonies, which can be biphonic, homophonic, and diaphonic.

LINGUISTIC MECHANISMS AND LEXICO-GRAMMATICAL MANIPULATIONS

Omero-Iliade I 1-32 (Hom. Il. I 1-32).

Μῆ̃νι̃ν ἄ̃ει̃δε̃ θε̃ᾶ̃ Πη̃λη̃ϊ̃ά̃δεω̃ Ἀ̃χι̃λῆ̃ο̃ς

Μῆ̃νι̃ν ἄ̃ει̃δε̃ θε̃ᾶ̃ Πη̃λη̃ϊ̃ά̃δεω̃ Ἀ̃χι̃λῆ̃ο̃ς

Ira, sing Oh goddess of Pelis Achilles → Nominal dislocation

οὐ̃λο̃μέ̃νη̃ν, ἦ̃ μὴ̃ ῥί̃ Ἀ̃χα̃ϊ̃ο̃ς ἄ̃λγε̃ ἔ̃θη̃κε̃,

fatal that the infinite pains caused the Achaeans → verbal dislocation

πο̃λλὰ̃ς δ̃ ἰ̃φθί̃μου̃ς ψυ̃χὰ̃ς Ἀ̃ϊ̃δι̃ προ̃ϊ̃α̃ψε̃ν

many and strong lives to Hades he threw

ἦ̃ρω̃ων, αὐ̃τοῦ̃ς δὲ̃ ἑ̃λώ̃ρια̃ τε̃υ̃χε̃ κῦ̃νε̃σσι̃ν

of their heroes and surrendered prey by afflicts

Homer-Odyssey-Beginning of the poem (Hom. Od. I 1-21)

Ἄ̃νδρα̃ μοι̃ ἔ̃ννε̃πε̃, Μοῦ̃σα̃, πο̃λύ̃τρο̃πο̃ν, ὄ̃ς μά̃λα̃ πο̃λλὰ̃

Man inspires me, O Muse, with many ways → Ppt μοι̃

πλά̃γχθη̃, ἔ̃πει̃ Τροί̃ης ἰ̃ε̃ρό̃ν πτο̃λί̃ε̃θο̃ν ἔ̃πε̃ρσε̃.

He erred when the sacred citadel of Troy destroyed → Disc.

Fenomeno	Ricorrenze sul totale di 533 versi	Media su 100 versi
Sillaba breve	3829	718.39
Sillaba lunga	4302	807.13
Correptio attica	14	2.63
Allungamento metrico	15	2.81
Abbreviamento in iato	184	34.52
Sinizesi	8	1.50
Sinecfonesi	8	1.50
Abbreviamento metrico	0	0.00

Fig 1. An elementary calculation

2.2 PHASE A: FIXED FORM ANALYSIS

In this second part of phase A, the team tries to identify fixed phrases by which the forms predisposed to the formulaic style are defined, such as the super lexical units (Dardano, 1978), complex lexeme (Voghera, 1994; De Mauro, Voghera, 1996), syntagmatic word (Masini, 2009) and complex word (Simone, 2008). Among the most frequent Homeric forms and in the classical world we find: - the patronymics are the expressions delegated to indicate a link such as Peliades, it is the shortest form and is close to our NLG encoded languages; --The Homeric epithet not only has the function of characterizing the hero, but it does provide the already prepared portions of verse aedo, so that he can compose the poem to suit his song. Thus, "the divine and resistant Ulysses" (in ancient Greek): πολύτλας δῖος Ὀδυσσεύς) it is a hemistich ready to combine with an invented half verse or even another hemistich ready to compose the dactyl hemistich in ancient Greek: ᾧς φάτο, γήθησεν δ' ἔ / πολύτλας δῖος Ὀδυσσεύς («With these words, he was filled with joy / the divine resistant Ulysses», Od., XIII, 250). Milman Parry, in his thesis contained in the traditional epithet in Homer, essay on a problem of Homeric style (1930), He was the first to show the role of the Homeric epithet in the mechanics of the "formulaic style." This research, which points to the existence of a system of adjectives in Homer, is at the origin of the theory of oral style.¹⁰ We still remember some features of formal Epithets like fixed form "worms" that are included in higher lexical units such as:

Odisseo: Odisseo luminoso, accorto Odisseo, simile a Zeus per saggezza, abile Odisseo, figlio glorioso di Laerte, glorioso Odisseo, distruttore di rocche, pari a Zeus per saggezza, Odisseo abilissimo, Odisseo ingegnoso, magnanimo, Laerziade divino, paziente, prole divina, accorto Odisseo, costante Odisseo, divino, glorioso, caro a Zeus, gran vanto degli Achei, illustre, forte, forte con l'asta, cuore costante, ingegno astuto, re alunno di Zeus, Odisseo molto ingegno, stirpe di Zeus,

The expressions (idiomatic), or rather the higher lexical units that can be found very frequently in the Homeric text, are compounds that make use of a metaphor (idiomatic compounds). The objective of this essay is precisely the description of the syntagmatic condition of signification, that is, the analysis of those morphemic units that can be historically assigned to one or more instances of designation based on the conditions of signification and a phrase in the languages to use; those superior lexical units that designate the significance of values and anthropologies of traits. The notion of higher lexical units is confirmed by the stability of their frequency in languages. They are characterized by the fact that the succession of the different elements cannot be modified or interrupted. These types of expressions affect various areas of the composition:

¹⁰https://it.wikipedia.org/wiki/Epiteto_omerico

- a) *Compounds with structure of the type: N+Agg; Agg+N; prep+ N; N+Prep+N ecc...*
 b) *Verbal locutions and support verbs: V+N; V+Art+N ecc.*
 c) *Compounds that use a metaphor (or idiomatic compounds):* In the parameters of textual analysis, it should also be considered the essentially syntagmatic condition of signification. Thus, the ways in which we can historically assign one or more instances of designation to a specific morphemic unit from different syntagmatic conditions of signification must be taken into account. Hence, we come to consider a particular type of higher lexical units, that of idiomatic expressions. When the meaning of a word or an expression is transferred from its proper sense to another figurative one that has a similar relationship with the first one, the rhetorical figure of the metaphor is constituted. The metaphor is then the basis of the semantic change that occurs due to the similarity of meanings, but let Homer speak about this rhetorical figure and what he has transmitted to us in:

Odissea, XVI, 14-21

[...]κιρνὰς αἶθοπα οἶνον. ὁ δ' ἀντίος ἦλθεν
 ἄνακτος,

κύσσε δέ μιν κεφαλὴν τε καὶ ἄμφω φάεα καλὰ

χεῖράς τ' ἀμοφτέρας· θαλερὸν δέ οἱ ἔκπεσε δάκρυ.

ὥς δὲ πατήρ ὄν παῖδα φίλα φρονέων ἀγαπάζει

έλθόντ' ἐξ ἀπίης γαίης δεκάτω ἔνιαυτῷ,

μοῦνον τηλύγετον, τῷ ἐπ' ἄλγεα πολλὰ μογήσει,

ὥς τότε Τηλέμαχον θεοειδέα δῖος ὕφορβος

πάντα κύσεν περιφύς, ὥς ἐκ θανάτοιο φυγόντα·

In this simile, the substitution mechanism is apparently quite simple: the poet substitutes the words "the shepherd kissed Telemachus excited and happy" by those introduced by the "how" (ὥς δὲ) and concluded with "thus ... then" (ὥς τότε). Emotion and happiness are made known to us, instead of with two generic words, through a phrase that tells us how a father receives his son after a long time and after suffering a lot of pain¹¹.

NOOJ LANGUAGE ENVIRONMENT: DATA ANALYSIS OF FIXED FORMS

We enter to validate or refute the choices made in a highly calculated linguistic environment and we analyze the fixed forms such as: the simple sentence and the metaphor

It is an environment in which lexical-grammatical data are validated with transformational manipulation tests and fed back into PECO tables and graphs. In this high-computing environment, the team tries to reproduce fixed sentences, that is, phrases and idiomatic

¹¹ <https://www.micheletortorici.it/omero-la-straordinaria-invenzione-della-metaphora-specchio/>

expressions from the classical world and sentences transformed into fixed sentences during a formal process with the methodologies and models proposed by M. Planat and Max Silberztein before reconverting and implementing them. In Digital Intelligence WT, the automatic analysis of fixed sentences is carried out with NooJ, a program for Natural Language Processing, developed by Max Silberztein (2007, 2008). Another important computer tool is NooJ and the Intex (Silberztein 1993, 1999), in which this author worked in the decade 1992-2002 under the direction of Maurice Gross at LADL. NooJ allows the construction of electronic dictionaries and grammars and their application to large corpus (www.nooj4nlp.net). NooJ is a language engine that includes computational devices used both for the formal description of linguistic phenomena and for the analysis of written text phenomena and to analyze written texts: automata and finite state transducers, recursive networks, regular expressions and free grammars of context. In this sense, we point out that NooJ model, according to M. Silberztein, allows linguists to formalize various types of linguistic description:

Orthography and spelling, lexicons for simple words, multiword units and frozen expressions, inflectional and derivational morphology, local, structural, and transformational syntax. One important characteristic of NooJ is that the linguistic descriptions are reversible, i.e. they can be used both by a parser (to recognize sentences) as well as a generator (to produce sentences). (Silberztein, 2011, 2016) shows how, by combining a parser and a generator and applying them to a syntactic grammar, we can build a system that takes one sentence as its input, and produce the sentences that share the same lexical material with the original sentence¹².

Basic sentence: Μῆνιν ἄειδε θεὰ Πηληϊάδεω Ἀχιλῆος =

Simple sentence: Μῆνιν ἄειδ Ppt V N₁

Fixed form: Μῆνιν ἄειδε C.... Πηληϊάδεω Ἀχιλῆος

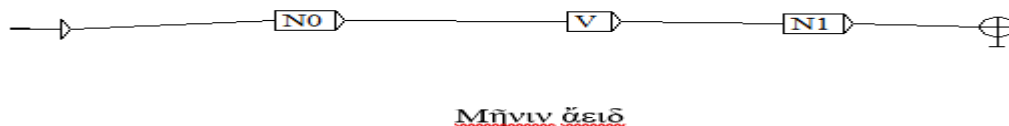


Fig 2. Reversible descriptions

Transformational analysis:

Pronominal phrase: you sing anger (by Pelide Achille) PpV V N₁

Mirrored or passive inversion: Anger is sung by you N₀V N₁

Homeric tract similarity is analyzed

¹²I am using the term *transformation* as in (Harris 1968): an operator that links sentences that share common semantic material, as opposed to (Chomsky, 1957) whose transformations link deep and surface structures.

A lexical-grammatical data table is constructed and formalized in a dictionary or electro-dictionary or lexicon, in turn associated with an electronic grammar. The purpose of the electronic dictionary is to identify the lexical item (or sequence of lexical items) for formal understanding. We tried a conditional electronic grammar model (PECO.dic) associated with a complex grammar (PECO.nog) that in turn contains three Homeric similarity graphs: the first graph allows the annotation of sentences whose defining structure $N_0 G_n C^{I3}$ a) (Hom. II. VI 145-149)

Τὸ δ' ἐῖθε μὲν γὰρ ἄθρο μὲν τὴν ἦν γε νεῖηεν ἔρεϊνεϊς;
 οἴηεν περ φύλλων γε νεῖηεν τοίηεν δ' ἔξ καὶ ἄνδρῶν.
 Φύλλα τ' ἄ μὲν τ' ἄνε μοῖς χαμῶδις χέει, ἄλλα δ' ἔθ' ὕλην
 τηλεθόωσα φύει, ἔξαρως δ' ἔπι γίγνεται ὠρη
 ὦς ἄνδρῶν γε νεῖηεν ἦ μὲν φύει ἦ δ' ἄπο λήγει

οἴηεν περ φύλλων γε νεῖηεν τοίηεν δ' ἔξ καὶ ἄνδρῶν.

Οἴηεν γε νεῖηεν τοίηεν δ' **quale la** stirpe delle foglie tale(è)

καὶ ἄνδρῶν

ὦς γε νεῖηεν così la stirpe

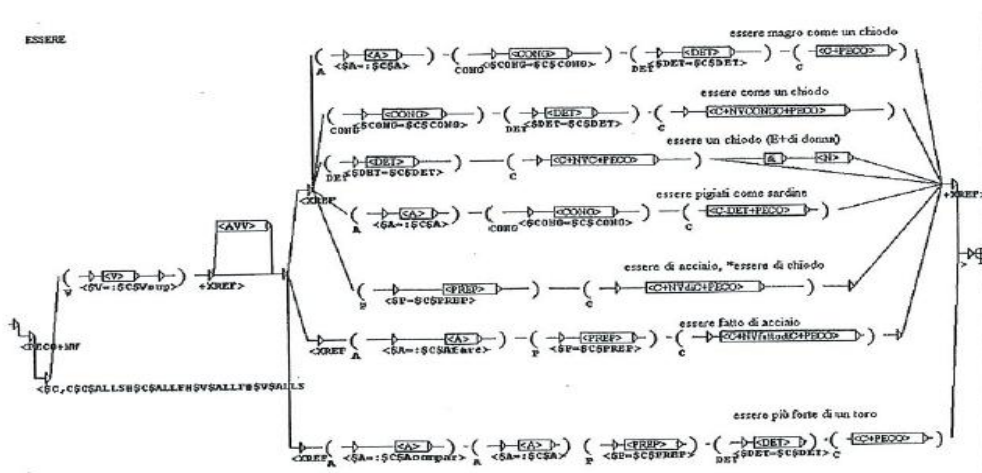


Fig 3. Sentence annotation

The graph, fig 3, allows us to recognize those comparative structures in which verbs such as *look, stay, remain* can occur, etc. $N_0 PN$ as C

¹³http://www.poesialatina.it/_ns/Greek/tt2/Omero/Iliade06-119-149.html

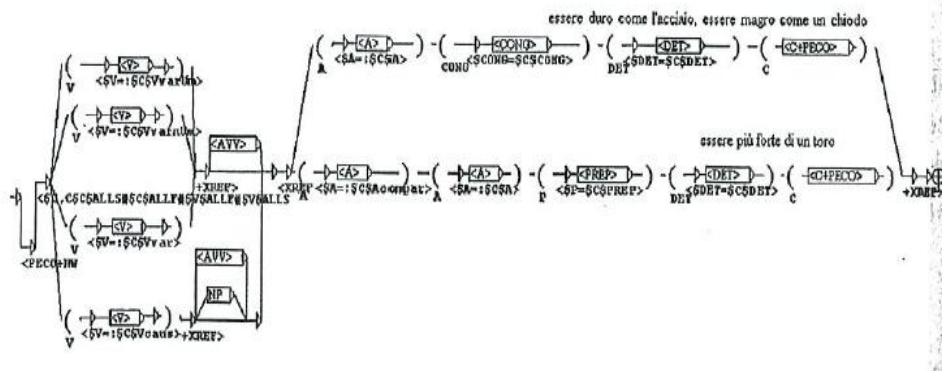


Fig 4. Recognition of comparative structures

The graph, fig 4, allows the recognition of comparative structures, in which the verb can be eliminated and the nominal groups produced by the elimination of the verb.

DIGITAL INTELLIGENCE IMPLEMENTATIONS

In the implementation phase, we construct the taxonomies of the Homeric text into acronyms of the fixed forms. To this end, we draw on the database (DB) of Homeric texts in Greek. The DB is backed up by a spreadsheet that reproduces sounds and signs in text or in parts of sentences. The writing of the text is a mixed system, in other words, the operator can transfer the acronyms and insert them into the text and at the same time transcribe the sentence on the axis of the language, thus obtaining an intact and reformulated writing from time to time. In this way, Digital Intelligence W.T (BuViTeGMS© (2019) is a redactor text – a reformulator, a translator, a reconverter, composed of a multilingual database and a writing sheet-. 1) It is a scientific model (Nooj mind), which analyzes and identifies with phonological calculations the rhetoric of the speaker, which is combined with NooJ descriptive linguistic techniques (lexicon-grammar). 2) It scientifically describes the transformational and substitutive manipulations of a sentence. 3) It produces probabilistic calculation of a sentence on the NooJ model in linguistic environments. The digital worksheet produces in real time a text composed of fixed sentences, with the DB, free sentences and, on command, translates and reconverts the text, including iconic languages such as: Arabic, Chinese and sign languages; it also produces verisimilar diachronic texts. If we want to describe the WT software, we can say that it is composed of: - a database of fixed sentences transformed into acronyms, synthesized with deletion and then reduction techniques, in which it focuses the nuclear of the sentence. It is built and prepared with precise syntagmatic manipulative techniques of nuclear and extra nuclear positional elements. Finally, it determines, from the deictic positional ones, the degree and emotional level scientifically validated by studies of linguistic engineers, which explain the facts in quantum physics (Planat, 2016). Of course, the DB is reconvertible and transforms even iconic languages into acronyms. To support the database, WT uses Adalta Wolfram Cloud techniques, combines a state-of-the-art notebook interface with the scalable programming language to huge programs, with immediate access to a wide range of algorithms and embedded knowledge.

CONCLUSION

Mood digital thinking implies a professional management of the communicative message, the possession of multi-skills in disciplinary fields, new cultural horizons, new formal codes, and thus new grammars that explain to us the functions and processes of digital communication. The idea arises from the intuition that perhaps LSP languages and the style of classical poetics have common processes. With the advent of descriptive grammars arises the concept of semantic operations by categories and linguistics mediates in production techniques for the transmission of knowledge from quantum physics and beyond. We witness these formal processes before our eyes every day, but often even specialists, technicians, and teachers do not know how to explain the evolution of these processes. Throughout this paper, among the goals set, the research team aimed to undertake research on the different textual typologies, but with absolute priority the literary communication in the poetic tradition of the ancient and modern world to find the points of contact that over the centuries have transmitted semantics intact. The team, then, focuses on samples from the *Iliad* and *Odyssey* and traits for textual prediction of fixed forms, with particular attention to prosodic analysis and phonetic phenomena, in keeping with M. Plant regarding Quantum Physics. For the formal process, we complied with the methodologies Lexicon-grammar, the Nooj M. Silberztein linguistic environments for graph construction and paraphrase generation. Like this manner, we dealt with implementations in blended domains by using BuViTeGMS techniques with the D.I. Word Tool software for editing and visualization of chosen traits, with access to a wide range of algorithms and embedded knowledge.

BIBLIOGRAPHY

- Baudelaire, Charles, *Petits poèmes en prose*. Manchester University Press, (1968).
- Biondi, Francesca. "Il velo di Andromaca in Il. 22, 468-472. Analisi della tradizione esegetica antica." *Giornale Italiano di Filologia* 69 (2017): 11-25.
- Bucciarelli Ritamaria et al. (in corso di stampa), New Global Cloud Solutions and NooJ's Woven Digital Intelligence for Homologated Synthetic Fixed Communication.
- Bucciarelli, Ritamaria, et al. Technologies and new communication models for a didactic digital intelligence ESP. En *Reports on E-learning, Media and Education Meetings*. 2020. p. 227-233.
- Dardano, Maurizio. *La formazione delle parole nell'italiano di oggi: primi materiali e proposte*. Vol. 148. Bulzoni, 1978.
- De Bueriis Giustino et al. (in corso di stampa), I numeri nelle parole (volume in onore di A. Elia 2021).
- De Luca, Cosimo Damiano. "Riedizione di un papiro omerico del Museo Egizio del Cairo: PCair inv. 25, Iliade XXIV 1-34." *Riedizione di un papiro omerico del Museo Egizio del Cairo: PCair inv. 25, Iliade XXIV 1-34* (2004): 1000-1003.
- De Mauro, Tullio, and Miriam Voghera. *Scala mobile. Un punto di vista sui lessemi complessi*. NA, 1996.

- Devlin, Keith, and Jeremy Gray. "The Language of Mathematics: Making the Invisible Visible." *Nature* 396.6710 (1998): 428-428.
- Elia M. Martinelli E. D'Agostino Lessico e strutture sintattiche. Introduzione alla sintassi del verbo, Liguori Napoli, EMDA (1981).
- Elia, Annibale, Maurizio Martinelli, and Emilio d'Agostino. *Lexicon and syntactic structures: introduction to the syntax of the Italian verb*. Naples: Liguori, 1981.
- Gross, Maurice. "Méthodes en syntaxe, Paris, Hermann." (1975).
- Harris, Zellig S. "Co-occurrence and transformation in linguistic structure." *Language* 33.3 (1957): 283-340.
- Homero, Enrique Martínez. *La iliada y la odisea*. Editorial Ink, 2012.
- Kirk, Geoffrey Stephen, et al. *The Iliad: A Commentary: Volume 1, Books 1-4*. Cambridge University Press, 1985.
- Koeva, Svetta, Denis Maurel, and Max Silberztein. "Formaliser les langues avec l'ordinateur. De INTEX à NooJ." (2007): 482.
- Kracht, Marcus. "The emergence of syntactic structure." *Linguistics and Philosophy* 30.1 (2007): 47-95.
- Mancini, Federico, and Miriam Voghera. "Lunghezza, tipi di sillabe e accento in italiano." *Archivio glottologico italiano* 79.1 (1994): 51-77.
- Marcone *et al.* New Global Cloud Solutions and NooJ's Woven Digital Intelligences for Homologated Synthetic Fixed (abstract) in *Communication*, 2020.
- Masini, Francesca. "Phrasal lexemes, compounds and phrases: A constructionist perspective." *Word structure* 2.2 (2009): 254-271.
- Masini, Francesca. *Combinations of words and syntagmatic words*. na, 2009.
- Parry, Milman. "Studies in the epic technique of oral verse-making. I. Homer and Homeric style." *Harvard Studies in Classical Philology* 41 (1930): 73-147.°
- Planat, M.; Aschheim, R.; Amaral, M. M; Fang, F.; Irwin, K. (2016), Quantum information in the protein codes, 3-manifolds and the Kummer surface, *Symmetry* 2020, 13, 1146.
- Planat, Michel. "It from qubit: how to draw quantum contextuality." *Information* 5.2 (2014): 209-218.
- Planat, Michel. "Two-letter words and a fundamental homomorphism ruling geometric contextuality." *arXiv preprint arXiv:1605.07118* (2016).
- Saïd, Suzanne. *Homer and the Odyssey*. Oxford University Press, 2011.
- Silberztein, Max. "Disambiguation tools for NooJ." (2008).
- Silberztein, Max. "Joe loves lea: transformational analysis of direct transitive sentences." *International Conference on Automatic Processing of Natural-Language Electronic Texts with NooJ*. Springer, Cham, 2015.
- Silberztein, Max. "Text indexation with INTEX." *Computers and the Humanities* 33.3 (1999): 265-280.
- Silberztein, Max. "Variable unification in NooJ V3." *Automatic Processing of Various Levels of Linguistic Phenomena: Selected Papers from the NooJ 2011 International Conference*. Cambridge Scholars Publishing, 2012.
- Silberztein, Max. *Dictionnaires électroniques et analyse automatique de textes: le système INTEX*. Masson, 1993.

- Silberztein, Max. *Formalizing natural languages: The NooJ approach*. John Wiley & Sons, 2016.
- Silberztein, Max. "Les outils informatiques au service des linguistes: présentation." *Langue française* 3 (2019): 7-14.
- Silvestri, Domenico, 1996, Analisi linguistica della poesia, in *Analisi linguistica della poesia e fenomenologia della traduzione poetica. 1. La ricorsività vocalica*, a cura di Domenico Silvestri e Clara Montella, Napoli, Arte tipografica: 7-28.
- Simone, Raffaele. I verbi sintagmatici come costruzione e come categoria. *In Cini (ed.)*, 13-30, 2008.
- Voghera, Miriam. "Promemoria per una teoria del linguaggio." *Come Purlono gli Iraliuni* (1994): 131-148.
- Sito Web: https://it.wikipedia.org/wiki/Epiteto_omerico
- Sito Web: http://www.poesialatina.it/_ns/Greek/tt2/Omero/Iliade06-119-149.html
- Sito web:
http://www.poesialatina.it/_ns/Greek/tt2/Omero/Odissea001-021.html
- Sito Web: <https://www.mdpi.com/2073-8994/12/5/736>
- Sito Web: <https://www.micheletortorici.it/omero-la-straordinaria-invenzione-della-metafora-specchio/>

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