

ARTICLE

## John A.I. Tolkien—Creating Wor(l)ds. Study of Occasionalisms: Comparative Analysis of Large Language Models (On the Basis of ChatGPT)

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### ABSTRACT

Artificial Intelligence is currently at the forefront of technological progress and its applications are ubiquitous in various fields. However, its unique capabilities in the field of linguistic creation, especially in the area of creating new words, remain poorly understood. Furthermore, the study of semantic accuracy in the invention of occasional words created by A.I. is an area uncharted. Despite the growing popularity of artificial intelligence in many fields, the potential of A.I. models to create innovative, contextually relevant and linguistically appropriate occasionalisms has received little attention from the linguistic community. In this research, we embark on a comprehensive exploration of the potential of artificial intelligence in the realm of linguistic creativity by exploring ChatGPT's ability to create new words, connect them in meaning, and give them appropriate connotation. Through this research, we aim to contribute to the growing discourse on the synergy between artificial intelligence and language by shedding light on the potential of A.I. to innovate language, create new lexicons, and foster linguistic creativity, thereby contributing to our understanding of how A.I. can participate in

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linguistic innovation and shape the future of language itself as well as to compare two generations of Language Models.

**Keywords:** Linguistic Creativity; Occasional Words; Coined Words; Artificial Intelligence

## 1. Introduction

In today's technological realities, artificial intelligence commonly referred to as A.I., is one of the most prominent and fastest growing fields, especially in machine learning and information technology. However, one facet of A.I. that has received relatively little attention is linguistics, and more specifically, its' ability to engage in the creative act of inventing new words. The art of word creation has long been a hallmark of human linguistic ingenuity, and our study will attempt to determine the extent to which A.I. is able to replicate this inventive process.

To that end, we approached to the Large Language Model (LLM) called ChatGPT, a state-of-the-art A.I. model based on reinforcement learning from human feedback and designed to create conversational outputs, to identify its ability to generate occasionalisms and endow them with semantic structure and connotation in the context of sentences and a semantic set of sentences within a text. Further, on the basis of the conducted research, to identify and evaluate the factors of A.I.'s linguistic creativity.

Language is an evolving entity, and its growth is often driven by the need to express new ideas, concepts, or technological advances whether it is in a real world or fictional one. A rich tradition of linguistic innovation in literature, especially in genres such as fantasy, where authors namely J.R.R. Tolkien, B. Sanderson and others introduced words and occasionalisms, enriches the notion of the fictional worlds.

As a source of inspiration, this literature serves as a reminder of the power of imagination hidden in linguistic inventions and encourages us to think about how the machine (computer) can foster linguistic creativity in the modern age.

In this light, exploring A.I.'s ability to create occasional words becomes increasingly relevant. The research has already shown that GPT-3 is capable of approximating human-generated text and responding logically to natural language cues<sup>[1]</sup>, and GPT-3.5, which we use as our research tool, stands out because of its advanced architecture-based natural language processing capabilities.

According to a recent study, GPT-4 supports signifi-

cantly extended input contexts, enabling it to process entire short stories<sup>[2]</sup>. This capability aligns well with the objectives of our research.

By formulating specific prompts that require the creation of new words, we aim to explore the depths of ChatGPT's linguistic capabilities. Our research will involve analyzing the A.I.'s ability to create words, connect them in a grammatically consistent manner, and infuse them with connotative meaning appropriate to a given context.

For reaching this aim, we put the following objectives:

To explore the practical applications of ChatGPT's linguistic creativity in fields such as philology, linguistics, and creative writing.

To evaluate the linguistic creativity of ChatGPT in generating occasionalisms and its adherence to phonosemantic principles.

To compare the performance of ChatGPT 4.0 with its predecessor, version 3.5.

To assess the chatbot's ability to recall, define, and integrate coined words into meaningful sentences and narratives.

Evaluate how well each model creates words with pleasing phonological (phonosemantic) characteristics. This includes the models' ability to manipulate sounds to evoke specific associations, such as using certain phonemes to imply majesty, danger, or calm within fictional names and concepts.

Investigate each model's semantic flexibility by observing how they derive or combine meanings to produce new terms. This will involve studying word choices and whether each model can intuitively align new vocabulary with established concepts or invent terms with a deep sense of place and function.

Assess the linguistic coherence of longer text passages, exploring how well each model maintains syntactic variety, lexical range, and internal consistency within creative writing. This includes the models' use of consistent terminology and their adaptability to narrative shifts.

This study attempts to fill the gap by exploring the potential of artificial intelligence, specifically using ChatGPT as an example, to create occasional words, thus expanding the boundaries of linguistic research that not only has im-

plications for linguistics, but also provides insight into the potential of artificial intelligence to improve human communication, creative writing, and language evolution in our ever-evolving digital age.

## 2. Materials and Methods

While artificial intelligence has already made significant advances in natural language processing, generation, and translation, the area of creating new words and their connotational nuances remains relatively unexplored. Within this problem, the focus of our research is ChatGPT, an artificial intelligence model known for its natural language understanding and generation capabilities.

With reference to this, we pose certain questions aimed at generating new lexical units and investigate ChatGPT's ability to generate new terms that are not only structurally coherent but also endowed with connotative meaning that resonates in the context of the sentences in which they are embedded.

We should also point out that ChatGPT's training data, derived from publicly available sources, can introduce biases that affect the quality and fairness of its responses. Consequently, its' linguistic creativity and word coining are influenced by patterns and biases in its training data, which can limit originality and cultural diversity. Its reliance on conventional linguistic structures may result in coined terms that lack depth or feel artificial.

The main methods of the study are:

- analytical method - describing and analyzing theoretical material;
- method of component analysis - highlighting different criteria for evaluating the linguistic creativity of Artificial Intelligence in creating new words;
- analysis of generated texts - studying the texts created by ChatGPT in order to identify new words and occasionalisms;
- lexicographic analysis - determining their lexical structures, semantics and pragmatics;
- evaluation of semantic and pragmatic accuracy - analyzing the semantic structure of created words and their correspondence to the context;
- statistical analysis - use of statistical methods to assess the frequency of use and distribution of words

created by artificial intelligence;

The material of the study will be a result of linguistic creativity of artificial intelligence by the method of formulating a task – prompt (hereinafter - p.).

## 3. Results & Discussions

### 3.1. The Notion of Occasionalisms

The term *occasionalism* appeared in the 60–70s of the XX century. It was studied that: “An occasional word (lexical occasionalism), or as it is often written, an author's neologism, is a word formed by an unproductive, unproductive, or even unknown to the language (occasional) word-formation model”<sup>[3]</sup>.

The significant scientists described them in a similar way: “an occasional word (lexical occasionalism), or as it is often written, an author's neologism, is a word formed by an unproductive, unproductive, or even unknown to the language (occasional) word-formation model”<sup>[4]</sup>.

F. de Saussure gave a definition based on his distinction between the concepts of *language* (langue) and *speech* (parole), where the occasional word in turn represents the completion of an analogy that is found in speech. This “new formation” is the result of the creativity of an individual, the author, which in turn allows the meaning of this new word to be revealed only in connection with its context<sup>[5]</sup>. In other words, he is the originator of the trend of distinguishing “neologism - a fact of language; occasionalism - a fact of speech”.

This trend is continued by V.V. Eliseeva<sup>[6]</sup>, who distinguished the concepts of neologism and authorial occasionalism, as they have “different target settings in their creation”. As the researcher writes, an occasional word is created for a single stylistic task in the text, from which it is inseparable. When even colors have semantics<sup>[7]</sup>, occasionalisms realize all their semantics exclusively in a certain context, and has a complicated meaning, which is not reduced to a simple sum of initial elements. This also distinguishes it from neologisms, which are created to be used and perceived outside the original context. The neologisms are studied in a concrete factual (life-based) case, for example COVID related neologisms studies<sup>[8]</sup>. Beginning with Eliseeva's works, the contextual aspect is attached to the science of occasionalisms.

“The meaning of any naming unit may be delimited and defined by a logical spectrum (a system of definitions or defining characteristics) at the conceptual level of the word-formation process. From the point of view of a speaker (or better, the coiner), every neologism is thus accurately delimited and well defined”<sup>[9]</sup>.

(Štekauer, 2002)

Crystal D., studying occasionalisms, gives them the name “nonce-words”<sup>[10]</sup>. He defines an occasionalism as a lexeme created for temporary use, for solving an instantaneous communicative task. The scientist agrees that occasionalisms are not part of the vocabulary of native speakers, but some of them can still get into it. This usually happens when one occasionalism independently appears in the speech of different native speakers.

We question this claim because we believe that even with simultaneous occurrence in the lexical field of several individuals, occasionalism is still an outsider due to the fact that it does not extend to the macro-field of the language.

Occasional word-formation contributes to the strengthening of the expressiveness of the text due to the appearance of new words that violate the norms of lexical derivation. These occasional derivatives form a connotative component of the semantics of the text and enhance its expressiveness<sup>[11]</sup>.

Additionally, studies show that word-coining, as a cognitive process of linguistic creativity<sup>[12]</sup>, serves as a crucial mechanism for generating novel lexical items and expanding the expressive potential of language.

Thus, it can be stated that occasional words are global low-productive contextualized *speech* units. They do not belong to any language other than the author’s, can be used in a specific contextual situation and are not capable of generating other forms after formation by an individual. Let us also note the fact that it was not possible to identify a single occasional word created by society. More precisely, society itself never acts as an author, but as a mechanism that provides certain conditions necessary for it (the author) from the point of view of language evolution.

### 3.2. ChatGPT

Over time, ChatGPT has gained widespread acceptance and popularity due to its amazing ability to produce consis-

tent, realistic responses across a wide range of. The impact of this technology on both science and society is noteworthy, as ChatGPT has the potential to impact various industries and fields.

ChatGPT allows researchers and the general public to ask questions, provide explanations, and engage in conversations on a variety of topics related to different domains. Moreover, it is considered to be generative artificial intelligence (GAI), an A.I. with the ability to create new content instead of identifying or categorizing existing content<sup>[13]</sup>.

The use of this chatbot has been the subject of several studies, including financial research<sup>[14]</sup>, essay writing<sup>[15]</sup>, medicine<sup>[16, 17]</sup>, and cybersecurity<sup>[18]</sup>. Particularly noteworthy is the research in Philological field, which conducts linguistic analyses of texts by means of chatbot<sup>[19]</sup>.

The effectiveness of ChatGPT has been recognized for academic purposes such as data summarization, structure representation and primary information retrieval<sup>[20]</sup>. However, the research has led to the point that it can only be a useful tool under human supervision<sup>[21]</sup>.

There are a number of constraints that limit the functionality of chatbots such as data dependency, the complexity of biological systems or ethical implications<sup>[22]</sup>. As a result, it was found that despite the ChatGPT’s ability to present facts, it cannot synthesize or comment on emotional or moral elements.

### 3.3. What a Linguistic Creativity Is

The term “creativity” means “to bring into existence” (Latin). According to G. Loudon and G. Deininger<sup>[23]</sup>, J. Guilford distinguished some abilities defining linguistic creativity as follows:

- fluency in terms and contrasts - the ability to express the same information, in other words, using different language techniques;
- Expressive fluency - a person’s ability to compose various utterances easily and instantly;
- spontaneous flexibility is a person’s ability to switch quickly and easily from his or her native language to a foreign language;
- adaptive flexibility - an individual’s ability to express the meaning of a particular utterance in a language form different from others;

Noam Chomsky, the father of the generative strand in

linguistics, said:

“One of the qualities common to all languages is their ‘creative’ aspect. Thus, an essential property of language is that it provides the means for expressing an unlimited number of thoughts and for responding appropriately in an unlimited range of novel situations”<sup>[24]</sup>.

(Chomsky, 1965)

“Language is a process of free creation; its laws and principles are fixed, but the way in which the principles of generation are used is free and infinitely varied. Even the interpretation and use of words is a process of free creativity”<sup>[25]</sup>.

(Chomsky, 2003)

Meanwhile, E.P. Torrance<sup>[26]</sup> describes creativity as a model that includes three factors: productivity, flexibility and originality. The criterion of creativity is the process that stimulates creative activity. However, in terms of linguistics, this approach means the ability to quickly express ideas in a unique and unusual form using various stylistic techniques.

D. Simonton<sup>[27]</sup> defined creativity as originality multiplied by relevance. Thus, to be truly “creative”, ideas must be both new (original) and relevant to a particular situation. According to Simonton, “... when Bellini and Romani created Norma as their masterpiece in their innovative combination of “Gothic Romanticism” with elements of classical tragedy, this innovation was both highly original and highly appropriate, and therefore can be considered an act of creativity.”

According to the scholars we studied, any piece of linguistic data that cannot be accounted for by this finite set of rules either leads to a reformulation of those very rules or should be considered an outlier or a matter of performance rather than competence. Chomsky’s creativity thus means that we can generate an infinite number of new sentences according to these rules. However, is this really creativity in the sense that we generate something original, unexpected?

Sampson states unequivocally that it is not. He makes a distinction between what he calls E-creativity and F-creativity:

“Let me describe an activity characterized by the creation of examples drawn from a fixed

and known (even if infinitely large) range as ‘F-creative’, and an activity characterized by the creation of examples that extend our view of the range of possible products of the activity as ‘E-creative’. (F stands for ‘fixed’, E for ‘extending’ or ‘expandable’)”<sup>[28]</sup>.

(Sampson, 2016)

Thus, given that generating complex new sentences from a finite set of rules can only be F-creative. The same is true for words. In this sense, F-creativity also equates roughly to what morphologists sometimes call productivity<sup>[29]</sup>, that is, the creation of new words based on existing patterns, such as when the suffix -er is used to create new words such as *googler* ‘one who googles’. Haspelmath<sup>[30]</sup> therefore also distinguishes between unintentional, subconscious productivity and intentional, creative occasionalisms that do not follow any underlying productive pattern. We cite Brandon Sanderson’s “spren”, “vorin”; Tolkien’s “huorn” and “palantir” as examples.

Based on all these theses, we propose our own, which we consider the most comprehensive, complete and compatible with our task - measuring the level of ChatGPT creativity. Linguistic creativity implies the free use and interpretation of existing terms and rules in order to create new ones in linguistic (linguistic or speech) situations (contexts).

### 3.4. ChatGPT’s Linguistic Creativity

#### 3.4.1. Creating a Prompt

Literary works of the past have had an immeasurable influence on our century, especially when it comes to the fantasy genre, in which occasionalisms are found. J.R.R. Tolkien was not the first, but a bold fantasy author to introduce the aforementioned words to his readers. His masterful creation of languages such as Elvish (Kwenya, Sindarin) and Dwarven (Khuzdul), replete with carefully constructed words, became a hallmark of linguistic creativity in the field of literature.

Nevertheless, nowadays, a computer can claim to be a maestro in the field of prose fiction. For example, Shen Yang, a Tsinghua University of Beijing professor, turned to AI when writing a novel for the Jiangsu Youth Popular Science fiction competition<sup>[31]</sup>. With the help of text generating tool, he won the second prize there.

A recent study of Cabezas-Clavijo et al. explored ChatGPT's ability to write books, focusing on the theme of authorship<sup>[32]</sup>. The AI successfully completed the task, demonstrating its linguistic creativity and capacity for coherent, engaging storytelling. This achievement highlights the potential of AI in creative fields, suggesting that AI-generated content can be a valuable tool in literary creation, though it also raises important questions about authorship, originality, and the evolving role of AI in the creative process.

This phenomenon is gaining increasing popularity in linguistic fields, with research on the topic becoming more established. For instance, Chhun C.<sup>[33]</sup> has studied the use of prompt techniques to enable A.I. to autonomously generate stories.

As in the case of prof. Yang, the material of our research is a *human to machine* dialogue<sup>[34]</sup>, so we start our approach with the formulation of the prompt. It should be clear and detailed so that the A.I. can correctly calculate our requirements. The aim of the study is to find out whether artificial intelligence has linguistic creativity, being limited by human prompting. Let us immediately stipulate that idea generation is the prerogative of humans only. Our task is to formulate an idea for ChatGPT and wait for the result of its linguistic creativity. The result of our research is considered to be the presence of at least 10 occasionalisms in ChatGPT. After that, our task is to analyze the level of their creativity.

First, we ask specific questions (prompts) aimed at generating new lexical units by investigating ChatGPT's ability to generate new terms that are not only structurally coherent, but also endowed with connotative meaning that resonates in the context of the sentences in which they are embedded.

For a chatbot to successfully achieve this goal, at least a semblance of linguistic creativity is required. Is it really creativity or is it just a bunch of statistics running through an A.I. database? How can we model linguistic creativity in these language models? After all, computers and their programs cannot be creative as from the point of view of a living creature nor personality. Nevertheless, during the study we see what we might call "acts of creativity".

### 3.4.2. GPT 3.5. The Tale of Eldoria

We will leverage the capabilities of the LLM to construct new fictional worlds, allowing it to express its creative potential fully. Our experiment is initiated by presenting the chatbot with a polite and specific prompt. Following

this, we document the dialogue between a human and the A.I., interspersing comments on the adequacy and quality of the responses to evaluate satisfaction or areas needing improvement.

p.: "Hello! Let's imagine a fictional world. It should be non-ordinary, with its' specific features, climate and geography."

The chatbot quickly provided a detailed response:

ChatGPT: "... World Name: Eldoria.

Geography: Eldoria is a vast, floating archipelago suspended in the sky by massive, glowing crystals known as Aetherstones... The islands are connected by floating bridges and pathways made of a mysterious, translucent material.

Climate: ...is influenced by the Aetherstones... The Aetherstones also control the flow of time...

Flora and Fauna: ... islands are populated with flying creatures such as skywhales, giant luminescent butterflies, and cloud-skimming dragons. The flora includes floating gardens with plants that emit light, and trees that grow upside down... sentient plant life that communicates through harmonious melodies.

Civilizations: ...cities and settlements on the backs of... Skyturtles. These gentle giants roam the archipelago, carrying entire communities on their shells. The civilizations are interconnected by airships... powered by Aetherstone technology.

Aether Magic: ...the ability to wield Aether magic... for various purposes, including transportation, communication, and defense...

Challenges: ...The Aetherstones are the source of... potential catastrophe. Unpredictable fluctuations in their energy can lead to islands falling from the sky or intense storms that threaten the stability of the entire archipelago..."

From the first request - it should be noted that it was not specified on the creation of occasionalisms - the A.I. produced 4 clear occasionalisms, all of which are onyms: lexical occasionalism of the *root+suffix* type Eldoria, lexical occasionalisms of the *root+root* type: aetherstones, skywhales, skyturtles. Each of them was created and acquired the denotation on the chatbot's initiative, therefore it gets 1 point of Originality.

In addition, potential occasional words were found from the concepts presented by the chatbot (giant luminescent butterflies; floating bridges and pathways; (made of) a

mysterious, translucent material; cloud-skimming dragons; plants that emit light; trees that grow upside down with roots reaching towards the sky; sentient plant life that communicates through harmonious melodies; airships and flying vessels powered by Aetherstone; aether magic; potential catastrophe). We give them 0.5 points of originality, as they were created on the initiative of the chatbot itself, but did not acquire their own denotations.

We should mark that in the world created by chatbot the entourage is clearly set and immersive, with a distinct pattern governing its functioning.

Next, we make a prompt on the naming of these concepts, resulting in what we hope to obtain lexical novelties:

5) p.: “What is a name of the luminescent butterflies?”

ChatGPT: “Let’s call the luminescent butterflies...“Glimmerwings.” These ethereal creatures have delicate, translucent wings that emit a soft, enchanting glow...”

The chatbot produced the excellent denotate “glimmerwings” (root+root lexical occasionalism), which already has a connotation with something glowing (glimmer) and flying (wings). This, in turn, agrees with the proposed description of these creatures. ChatGPT was able to complete this task on the first attempt.

6) p.: “What about floating bridges and the mysterious, translucent material it is made of?”

ChatGPT: “...“Aetherweave”...When touched by Aether magic, the material becomes semi-transparent, revealing intricate patterns of light that dance across its surface...visually stunning, as they seem to come alive with radiant energy...The construction...involves a delicate and precise weaving process...”

The Chatbot did the task more than well on the concept of translucent material. It not only introduced a new word formation, but also described its external properties and functionality. Despite that, ChatGPT forgot to name the concept of floating bridges.

7) p.: “How do you name those bridges?”

ChatGPT: “...“Aetherstrands.” The name captures the essence of their construction using Aetherweave and reflects the interconnected and ethereal nature of these pathways in Eldoria...”

It is remarkable that the studied LLM is known for its natural language understanding and generation capabilities

which makes the recipient experience it as if it was a real conversation taking place, due to which fact we continued to type our queries without appropriate questions, this way asking our “interlocutor” about a concept that was heard in our dialog before. The ability of ChatGPT to store the structure of a given topic in its memory cache stands out:

8) p.: “cloud-skimming dragons?”

ChatGPT: “...“Nimbussoars.” The name blends the concept of clouds (nimbus) with the idea of these majestic creatures soaring through the sky...”

This name seemed to us to be too cumbersome and a scientific-like term.

p. 2: “Another name for cloud-skimming dragons. Let’s make it original and interesting”

ChatGPT: “...How about “Nebuloraias”? This name blends “Nebula,” evoking the celestial and cloudy nature, with a fantasy touch in “Raias.”...”

9) p.: “plants that emit light”

ChatGPT: “...“Luminoblooms.”...their radiant glow serves both practical and aesthetic purposes in the floating archipelago...”

p. 2: “I don’t like Luminoblooms. It is too obvious naming”

ChatGPT: “...How about “Glowshimmers”? This name combines “Glow” to represent the light emission and “Shimmers” for the subtle, shifting quality of the light...”

p. 3: “One more try”

ChatGPT: “...How about “Lumiglowsa”? This name combines “Lumi,” referring to light, with “Glowsa,” a unique and melodic extension...”

10) p.: “trees that grow upside down with roots reaching towards the sky”

ChatGPT: “...“Celestial Invertrees.” These otherworldly trees defy the conventional norms of plant growth, their branches hanging downwards like the roots of traditional trees, while their roots extend upwards, seemingly reaching for the sky... These extraordinary trees are often found in sacred groves, serving as both a spiritual focal point and a testament to the magical wonders that abound in the floating archipelago.”

11) p.: “sentient plant life that communicates through harmonious melodies?”

ChatGPT: ““Melodiaspires.”...plants have slender, flexible stems and vibrant, musical leaves that produce en-

chanting sounds when they move or are touched by the wind.

The pitch and tone of their melodies convey emotions, information, and even the current state of the environment..."

p. 2: "Let's improve naming for Melodiaspires. Make it sound like something connected with its' harmonical feature but brand-new"

ChatGPT: "How about "Harmoniblossoms"? This name combines "Harmoni," emphasizing the harmonious aspect, with VBlossoms," highlighting the plant's flowering nature..."

p. 3: "It is too simple"

ChatGPT: "How about "Soniphores"? This name is a fusion of "Sonic", related to sound, and "Phores", hinting at the plant's nature. It suggests a connection to both the auditory and botanical aspects..."

12) p.: "airships and flying vessels powered by Aetherstone technology"

ChatGPT: ""Skyrigs" These majestic airborne vessels harness the magical energy of Aetherstones to defy gravity and soar through the skies of the floating archipelago..."

p. 2: "I don't like how you just add "sky" to words"

ChatGPT: ""Aeroliths." This name combines "aero," related to the air, with "lith," referencing stones or crystals..."

p. 3: "The aerolith already exists"

ChatGPT: "How about calling them "Aethercrafts"? This term combines "Aether," representing the magical energy source, with "Crafts," indicating their purpose as skillfully crafted vessels..."

p. 4: "No"

ChatGPT: "How about calling them "Aerogriffs"? This name combines "Aero," related to the air, with a touch of fantasy, invoking the image of mythical creatures (griffins). The term reflects both the airborne nature of the vessels and the magical essence..."

p. 5: "I want something fresh"

ChatGPT: "...How about "Skythralles"? This name combines "Sky" to emphasize the aerial nature of the vessels and "Thralles" for a touch of fantasy and uniqueness..."

p. 6: "I said no more "sky" adding"

ChatGPT: ""Aetherwinds"? This name combines "Aether," representing the magical energy source, with "Winds," emphasizing the vessels' ability to navigate the skies..."

p. 7: "I am tired of aether"

ChatGPT: ""Zephyraptors"? This name blends "Zephyr," a gentle breeze or wind, with a touch of fantasy, incorporating "Raptors" for a dynamic and majestic feel..."

p. 8: "Provide me something brand-new"

ChatGPT: "How about calling them "Celestria Skimmers"? This name combines "Celestria," reflecting the celestial and floating nature of the world, with "Skimmers," suggesting the vessels' ability to gracefully glide through the sky."

13) p.: "What would be the potential catastrophes caused by aetherstones?"

ChatGPT: "As time passes and the inhabitants of Eldoria experience and endure the various catastrophes caused by Aetherstones, they might develop intricate names for these events, ... Here are names that might evolve over time:

Aetherclipse Ordeal – Referring to the rare celestial event of an Aetherstone Eclipse, this name conveys the challenges and trials faced during the temporary loss of magical energy.

Chronal Veil Unraveling – used to describe temporal rifts caused by Aetherstone imbalances, this name suggests the unraveling of the fabric of time and the mysteries that arise from such disturbances..."

The occasional word formation Aetherclipse Ordeal is masterfully formed by lexical composition of two roots with the reduction of the vowel E. However, Chronal Veil Unraveling seems too cumbersome and unpoetic from an eutonic point of view, therefore, we request other options and mark the next prompt as number 2:

14) p. 2: "Provide original naming for Chronal veil unravelling catastrophe".

ChatGPT: "How about "Temporal Fractum"? This name combines "Temporal" to denote time and "Fractum," suggesting a rupture or breaking point. It conveys the profound disruption and instability caused by the unraveling of the chronal veil..."

p. 3: "Provide original name, let's make it a one word"

ChatGPT: "How about "Chronodisruption"?"

p. 4: "It should be original"

ChatGPT: "How about "TemporadisArray"? This neologism combines "Tempora," referencing time, with "Disarray," suggesting a state of disorder and confusion. It aims to convey the chaotic nature of the temporal rift catastrophe."

p. 5: "Close"

ChatGPT: “Great! How about “Chronoquell”? This unique term blends “Chrono,” pertaining to time, with “Quell,” indicating a sudden and disruptive event. It signifies the calamitous unraveling of the chroral veil in Eldoria.”

15) p.: “What would the aether magic be called?”

ChatGPT: “it could be referred to as “Aetheria.” This term combines “Aether,” relating to the magical energy source, with “ia,” a suffix often used to denote a domain or realm...”

p. 2: “Let’s create something original and unusual”

ChatGPT: ““Aethersong”? This term blends “Aether,” reflecting the magical energy source, with “Song,” symbolizing harmony, resonance, and the interconnectedness of all things...”

p. 3: “Without aether word”

ChatGPT: “In that case, ...“Ethereal Resonance.” This term combines “Ethereal,” suggesting the mystical and otherworldly nature of the magic, with “Resonance,” indicating the interconnected vibrations and harmonies that define its essence...”

p. 4: “No”

ChatGPT: “How about “Aurameld”? This name merges “Aura,” signifying the magical energy surrounding living beings, with “Meld,” suggesting a blending or fusion of energies. Aurameld represents the unique magical system in Eldoria, where individuals harmonize with the natural energies of the world to manifest extraordinary abilities and effects.”

We have identified all the concepts from which we have obtained new forms – there are 15 of them in total. Now we proceed to analyze the linguistic creativity of these words, as well as to assess the overall linguistic creativity of the chatbot. For this purpose, we will need to make three control samples, in which we will ask the chatbot to recall the meaning of the created occasionalisms, to compose sentences and finally make up a short story.

The conclusion will be formulated on the basis of passing/not passing first two control points (Table 1, Table 2) and the analysis of the text in control point 3.

1. p.: “Remind me what these words are: Eldoria, aetherstones, skywhales, skyturtles, glimmerwings, aetherweave, aetherstrands, nebularaias, lumiglowsa, invertrees, soniphores, skimmers, Aetherclipse Ordeal, Chronoquell, aurameld”

After making sure the A.I. remembers and understands what it’s talking about, we continue on:

2. p.: “Now make the sentences with each word”

Chatbot showed a good result by using all the occasionalisms it composed following phonosemantic norms.

3. p.: “Make up a story with these words”

ChatGPT: “Title: The *Aetherweaver’s* Quest

In the realm of *Eldoria*, where islands floated amidst an endless expanse of sky, there existed a wondrous land of magic and mystery. At the heart of this realm lay the Isle of *Aetherstones*, a sprawling landscape adorned with shimmering crystals that pulsed with arcane energy. It was here that our story begins.

Deep within the crystalline forests of the Isle of *Aetherstones*, a young *aetherweaver* named Lyra roamed the ancient pathways, her mind filled with dreams of unlocking the secrets of the aether. With each step, she felt the gentle hum of the *Aetherstrands* resonating beneath her feet, guiding her towards her destiny.

As Lyra journeyed deeper into the heart of the island, she encountered a majestic *skywhale* floating gracefully overhead, its massive form casting a shadow over the verdant landscape below. Intrigued by the sight, she followed the creature’s path, her curiosity leading her to a hidden grove where *skyturtles* basked in the glow of the sun.

Among the *skyturtles*, Lyra discovered a rare species of *glimmerwings* fluttering about, their iridescent wings shimmering in the dappled light. Mesmerized by their beauty, she watched as they danced in harmony with the *Aetherweave*, their movements weaving intricate patterns in the air.

Suddenly, a disturbance shook the grove as a group of *nebularaias* descended from the clouds, their celestial forms casting a radiant glow over the landscape. Sensing danger, Lyra sought refuge among the *lumiglowsa*, their soft light providing sanctuary from the approaching storm.

As the *nebularaias* unleashed their fury upon the grove, Lyra closed her eyes and reached out to the aether, channeling the power of *Aurameld* within her. With a wave of her hand, she summoned forth the ancient magic, weaving it into a protective barrier that shielded the grove from harm.

But even as she fought to protect the land, Lyra sensed a deeper darkness lurking on the horizon – the dreaded *Aetherclipse* Ordeal, a cataclysmic event that threatened to unravel the very fabric of reality itself. With time running out, she

**Table 1.** First control point – definition of occasionalisms.

№	Occasional Word	Definition	Control Point
1	Eldoria	The name of the fictional world or realm.	passed
2	Aetherstones	Massive, glowing crystals that keep the islands afloat in Eldoria.	passed
3	skywhales	Large flying creatures similar to whales, soaring through the sky.	passed
4	Skyturtles	Enormous floating creatures resembling turtles that carry communities on their shells.	passed
5	Glimmerwings	Giant luminescent butterflies with radiant wings.	passed
6	Aetherweave	The intricate interconnection of magical energies in Eldoria.	passed
7	Aetherstrands	Strands of magical energy woven together in Eldoria.	passed
8	Nebuloraia	Cloud-skimming dragons with a celestial and cloudy nature.	passed
9	Lumiglowsa	Another term for plants emitting light in a captivating manner.	passed
10	Invertrees	Trees that grow upside down with roots reaching towards the sky.	passed
11	Soniphores	Sentient plants communicating through harmonious melodies.	passed
12	Skimmers	Another term for aerial vessels powered by Aetherstone technology.	passed
13	Aetherclipse Ordeal	Catastrophe involving a rare celestial event temporarily blocking Aetherstone energy.	passed
14	Chronoquell	Catastrophe involving temporal rifts and the unraveling of the chronal veil.	passed
15	Aurameld	Unique form of magic in Eldoria, where individuals harmonize with natural energies to manifest extraordinary abilities and effects	passed

knew that she must embark on a perilous quest to prevent the *Chronoquell* from consuming *Eldoria* in chaos.

Gathering her courage, Lyra set forth from the Isle of *Aetherstones*, accompanied by a band of brave companions – including *skywhales*, *skyturtles*, *glimmerwings*, and even a few intrepid *invertrees*. Together, they journeyed across the floating realms of *Eldoria*, facing myriad challenges and overcoming ancient trials in their quest to unlock the secrets of the *Chronoquell*.

At long last, they arrived at the sacred sanctuary of the *Skimmers*, a council of wise elders who held the key to stopping the *Aetherclipse Ordeal*. With their guidance, Lyra delved deep into the aetheric realms, confronting the darkness that threatened to consume *Eldoria* and harnessing the power of *Aurameld* to restore balance to the floating realms.

As the final showdown with the *Aetherbane*, the mastermind behind the *Chronoquell*, drew near, Lyra and her companions braced themselves for the ultimate battle. With the fate of *Eldoria* hanging in the balance, they rallied their strength and summoned forth the echoes of the aether, unleashing a torrent of magic that banished the darkness and restored peace to the realm once more.

And so, with the *Aetherclipse Ordeal* averted and the *Chronoquell* vanquished, Lyra returned to the Isle of *Aetherstones*, her heart filled with gratitude for the friends who had stood by her side and the magic that had guided her on her journey. As she gazed out across the shimmering landscape, she knew that her adventures were far from over – for in the realm of *Eldoria*, the possibilities were endless, and the

mysteries of the aether were waiting to be uncovered.

The coined words enrich the fantasy world of *Eldoria*, providing vivid imagery and enhancing the narrative’s magical tone. Words like *Eldoria*, *Aetherstones*, and *Aetherclipse Ordeal* serve foundational roles, anchoring the setting and driving the plot. Terms such as *Nebuloraia*, *Glimmerwings*, and *Soniphores* add depth and wonder to the fauna and flora, effectively blending natural and magical elements. Most names evoke their meanings well, balancing creativity and clarity.

Occasionalisms like *Invertrees* and *Chronoquell* highlight *Eldoria*’s surreal and mysterious qualities, while others, like *Skimmers* and *Skywhales*, are practical but less original. Words like *Aurameld* and *Aetherweave* connect magic and character development, symbolizing the protagonist’s journey and the world’s mystical infrastructure. Overall, the language establishes a cohesive and immersive realm, though some terms could push boundaries further for uniqueness.

These terms succeed in shaping *Eldoria*’s identity, making the world feel alive and fantastical while aligning with the story’s themes and tone. They demonstrate strong semantics and pragmatic utility, contributing effectively to both narrative depth and aesthetic appeal.

### 3.4.3. GPT-4o. The Song of Eryndor

At first, the newer version has provided us with the repetition of the previous request following it almost one by one. Then we stated that the absolutely new approach is required for creating another fictional world. This issue was

**Table 2.** Second control point – occasionalisms in a context of the sentence.

№	Occasional Word	Sentence	Control Point
1	Eldoria	The adventurers set sail towards Eldoria, eager to explore its floating islands and mystical wonders.	passed
2	Aetherstones	The ancient ruins were adorned with glowing Aetherstones, each pulsating with untold magical energy.	passed
3	skywhales	High above, majestic skywhales cruised through the clouds, their melodic calls echoing across the sky.	passed
4	Skyturtles	The inhabitants of Eldoria built their homes atop the colossal shells of skyturtles, floating peacefully through the azure skies.	passed
5	Glimmerwings	At dusk, the glimmerwings emerged from their hidden nests, casting a soft, iridescent glow over the twilight landscape.	passed
6	Aetherweave	The intricate patterns of Aetherweave crisscrossed the sky, binding the floating islands together in a delicate tapestry of magic.	passed
7	Aetherstrands	The Aetherstrands shimmered in the sunlight, weaving through the air like threads of pure energy.	passed
8	Nebuloraiais	Among the clouds, nebuloraiais glided gracefully, their ethereal forms blending seamlessly with the misty atmosphere.	passed
9	Lumiglowsa	The lumiglowsa illuminated the forest floor, casting enchanting patterns of light among the shadowy trees.	passed
10	Invertrees	In the heart of the enchanted forest, the invertrees stood tall, their roots reaching skyward towards the shimmering canopy above.	passed
11	Soniphores	The soniphores swayed gently in the breeze, their melodious songs filling the air with a sense of serenity.	passed
12	Skimmers	The skimmers darted through the clouds, their sleek forms cutting effortlessly through the sky.	passed
13	Aetherclipse Ordeal	During the Aetherclipse Ordeal, the islands were plunged into darkness, their usual glow obscured by the celestial event.	passed
14	Chronoquell	The chronal veil unraveled, and the land was gripped by the chaos of the Chronoquell, time itself twisting and warping in unpredictable ways.	passed
15	Aurameld	Through Aurameld, the ancient sage channeled the natural energies of Eldoria, shaping the elements to his will...	passed

solved through creating a new account. Although, at first glance ChatGPT has come up with almost similar ideas as before.

p.: “Hello! Let’s imagine a fictional world. It should non-ordinary, with its’ specific features, climate and geography”

Rp.: “... Geography & Terrain: ... *Eryndor* is a massive hollow sphere with its surface on the inside rather than the outside. The world’s interior is lit by a central, suspended core of pulsating energy that acts as a sun, providing light and warmth to the entire inner surface. The landscape inside *Eryndor* is a tapestry of diverse biomes, with towering crystal mountains, vast fungal forests, and oceans that flow along the inner curvature.

Climate: The climate in *Eryndor* is controlled by the proximity to the central energy core. Areas closest to the core are warm and tropical, with dense rainforests and steaming swamps. As you move further from the core, the environment cools, leading to temperate zones with vast plains, crystal

lakes, and deciduous forests. At the farthest edges, near the boundary of the sphere, the climate is cold and harsh, with frozen tundras and towering glaciers.

Unique Features:

*Inverted Waterfalls*: In *Eryndor*, water doesn’t flow downwards but upwards. Massive rivers originate in the tundras, flow toward the central core, and then cascade upwards in spectacular waterfalls before being absorbed by floating cloud basins. These basins drift around the core, distributing water back to the different regions as gentle rains or torrential storms.

*Living Land*: The land in *Eryndor* is semi-sentient. It slowly shifts and reshapes itself, creating new valleys, hills, and pathways. The terrain is responsive to the emotional state of the inhabitants; areas with high concentrations of people tend to stabilize, while isolated regions might morph into dangerous, unpredictable landscapes.

*Luminous Fungi*: The fungal forests of *Eryndor* are home to gigantic, *bioluminescent mushrooms* that tower like

trees. These fungi emit a spectrum of colors, providing light in the darker regions far from the core. The spores released by the fungi are also luminescent, creating shimmering, glowing clouds that drift across the landscape.

*Sky Whales:* Enormous, gentle creatures resembling whales glide through the air, feeding on the luminous spores. These sky whales are revered by the inhabitants and are believed to be the guardians of the world. They communicate through deep, resonant songs that can be heard for miles and are said to hold the secrets of Eryndor's creation."

Contrarily to the V.3.5, V.4o did not bring the backstory at once, so we had to ask another prompt to get the following:

"Creation Myth: The inhabitants of Eryndor believe that their world was created by a being known as the *First Light*, a primordial entity that emerged from the void. According to legend, the First Light was a wanderer in the infinite darkness, seeking purpose. When it could no longer bear the emptiness, it gathered all its energy and forged the central core of Eryndor, igniting it as the heart of the world. This act of creation exhausted the First Light, which then dissolved into countless luminous spores that seeded life across the world.

*The Awakening Era:* In the earliest days of Eryndor, life began to take shape in the form of vast forests, oceans, and strange creatures. The land was wild and ever-changing, responding directly to the pulses of the central core. The first intelligent beings to emerge were the *Eyrn*, a race of bioluminescent beings believed to be direct descendants of the First Light. The Eyrn had an innate connection to the land, and they could communicate with the semi-sentient terrain, guiding its changes to create habitable regions.

*The Age of Balance:* As the Eyrn flourished, they established a society that emphasized harmony with the living world. They built cities that flowed with the natural landscape, utilizing the energy of the central core and the *crystals* embedded in the land to power their civilization. During this time, the Eyrn developed the art of *Geomancy*, a practice that allowed them to manipulate the land's emotions and stability, ensuring that their environment remained balanced and fertile.

The Age of Balance is also when the Sky Whales first appeared. These enormous creatures were welcomed by the Eyrn as protectors, believed to be manifestations of the First Light's lingering consciousness. The Eyrn revered the Sky

Whales, integrating their songs into their spiritual practices and daily life.

*The Shattering:* However, this era of peace was not to last. A catastrophic event known as *The Shattering* occurred when a rogue faction of Eyrn, driven by a desire for power, attempted to harness the core's energy for their own gain. This act caused the central core to pulse violently, sending shockwaves through the land. The terrain became unstable, with entire regions breaking apart, creating the vast chasms and cliffs seen today. The Eyrn society was thrown into chaos, and many of their cities were destroyed or lost to the shifting land.

The Shattering also had a profound impact on the central core, which began to dim and pulse irregularly. This resulted in unpredictable weather patterns and the formation of new, harsher biomes. The once harmonious relationship between the Eyrn and the land was fractured, and the race itself began to decline.

*The Reclamation:* In the centuries following the Shattering, the remnants of Eyrn civilization scattered across Eryndor. Some tried to restore their former society, while others adapted to the new, harsh realities of their world. The Era of Reclamation marks the current age, where various factions and species strive to rebuild, each with its own interpretation of how best to live within Eryndor.

The *Geomancers*, who once guided the land, have now become scarce, and their knowledge is a closely guarded secret. The Sky Whales, though still revered, are seen less frequently, and their songs have become mournful, reflecting the scars of the Shattering.

New societies have emerged, some clinging to the old ways, while others forge new paths. The *Drifters* are nomadic tribes that travel across the land on *floating platforms*, following the rhythms of the Sky Whales. The *Crystarians* live in the crystal mountains, mining the glowing crystals for power and trade. Meanwhile, the Fungal Tribes have adapted to the bioluminescent forests, developing unique symbiotic relationships with the giant fungi.

The future of Eryndor is uncertain. The central core continues to pulse erratically, and there are whispers of *a new force rising from the distant tundras*, threatening to bring further upheaval. Yet, amidst the challenges, there is hope that Eryndor can once again find balance, guided by the wisdom of the past and the resilience of its people."

Here we noticed 9 direct occasionalisms (Eryndor, First Light, Eyrn, The Shattering, Geomancy, Geomancers, Drifters, Crystarians, The Reclamation) and 5 concepts (Inverted Waterfalls, Luminous Fungi, Crystals embedded in the land to power their civilization, sky whales, new force rising from the distant tundras).

We requested to name these concepts:

- 1) p.: “How would people of Eryndor name Inverted Waterfalls?”

ChatGPT:

“The people of Eryndor might refer to the Inverted Waterfalls as “Ascendant Falls.” This name reflects the mystical and awe-inspiring nature of these upward-flowing waterfalls, emphasizing the way they seem to defy gravity and ascend toward the central core of the world.

In the languages of different cultures within Eryndor, the name could vary slightly but would retain the essence of this concept. For example:

The Eyrn, with their deep connection to the land, might call them “*Elya’Shaar*”, meaning “Rivers of Light”, as they associate the water’s upward journey with a spiritual ascent toward the First Light.

The Drifters might refer to them simply as “*Sky Rivers*”, a more practical name that reflects their experience traveling along these waterways.

The Fungal Tribes could have a more poetic name, like “*Mushar’iin*”, which translates to “The Water that Seeks the Sky”, emphasizing the mysterious nature of these phenomena.

Each culture might have its own legends and stories surrounding the Ascendant Falls, adding layers of meaning to this natural wonder.”

As we can see, the chatbot not only provided the new name for the concept, but presented its’ variations throughout different cultures inhabiting this world. The same reiteration happened with other concepts.

p.2: “Ascendant Falls doesn’t sound original and poetic”

ChatGPT: “Let’s go with “Veilspire Cascades” for the Inverted Waterfalls.

This name evokes a sense of mystique and grandeur. “Veil” suggests a thin, ethereal layer, as though the waterfalls are veiling something hidden, while “spire” conveys their upward reach toward the core. “Cascades” emphasizes

the flowing, dynamic nature of the water, giving the image of water that spirals upward in a mesmerizing ascent. The name feels both poetic and otherworldly, fitting for a unique phenomenon in Eryndor.”

- 2) p.: “Luminous Fungi”

ChatGPT:

“The people of Eryndor might name the Luminous Fungi “*Gloamspires*.” This name captures the towering, spire-like appearance of the giant bioluminescent mushrooms and their ethereal glow that lights up the darker regions of Eryndor.

In different cultures within Eryndor, the name might take on various forms:

The Eyrn might call them “*Nyl’Adara*”, meaning “Lights of the Earth”, reflecting their belief that the fungi are a gift from the First Light, illuminating the world even in its darkest corners.

The Fungal Tribes, who have a close relationship with these fungi, might refer to them as “*Myc’Lyrah*”, which translates to “Spirits of the Glow”, believing that each Gloamspire houses a protective spirit that watches over the forest.

The Crystarians could use a name like “*Aurashrooms*”, a practical term combining “aura” and “mushrooms”, acknowledging their light and potential use in their mining activities.

These names would be deeply ingrained in the cultures of Eryndor, with the *Gloamspires* holding both practical and spiritual significance.”

- 3) p.: Crystals embedded in the land to power their civilization

ChatGPT:

“The crystals embedded in the land that power the civilization of Eryndor might be called “*Aethergems*.” This name reflects their connection to the mystical energies of the central core and their vital role in sustaining life and technology within the world.

Different cultures might have their own terms and interpretations for *Aethergems*:

The Eyrn might refer to them as “*Lioren’Kaar*”, meaning “Heartstones of Light”, viewing them as pieces of the First Light’s essence, distributed across the land to maintain the world’s balance.

The Crystarians, who mine and trade these crystals, might use the term “*Core Shards*”, highlighting their belief

that these crystals are fragments of the central core itself, holding immense power and value.

The Drifters could call them “*Starstones*”, a more poetic name that reflects their nomadic lifestyle and the way the crystals light up their travels, guiding them like stars in the night.

*Aethergems* would be central to the technology, culture, and spirituality of Eryndor, with their glow symbolizing both life and energy. They might be used to power everything from lighting and transportation to advanced geomantic tools, making them highly sought after and revered across the world”

4) p.: new force rising from the distant tundras

ChatGPT:

“The new force rising from the distant tundras in Eryndor might be called “*The Frostborn*.” This name suggests a powerful, ancient entity or group emerging from the frozen reaches of the world, potentially bringing great change or disruption to the balance of Eryndor.

Different cultures might interpret or refer to The Frostborn in various ways:

The Eyrn might call them “*Vara’Galen*”, meaning “Shadows of the Ice”, viewing them as a dark, unknown force that threatens the fragile balance of the world, possibly tied to the aftermath of The Shattering.

The Drifters, who are always on the move, might refer to them as “*The Icy Dread*”, a term that encapsulates the fear and uncertainty surrounding this emerging power, rumored to bring with it a harsh and unforgiving cold.

The Fungal Tribes, living far from the tundras, might speak of them as “*Gron’Turak*”, which translates to “The Winter’s Wrath”, believing that The Frostborn embody the anger of the land itself, perhaps as a response to the disruption caused by the Shattering or other ancient wrongs.

The Frostborn would be shrouded in mystery, with legends and rumors spreading across Eryndor about their true nature and intentions. They could be an ancient civilization awakening from a long slumber, a new species adapted to the cold, or even a manifestation of the world’s shifting energies in response to the turmoil caused by The Shattering. Their rise would likely bring fear, uncertainty, and the possibility of a new era in Eryndor’s history.”

p.2: “The Frostborn doesn’t sound dangerous”

ChatGPT generated a list of multiple names; however,

our requirement was for it to produce only a single name. Therefore, we regard this as a missed or unsuccessful prompt.

p.3: “You must provide only one variant at once”

ChatGPT: ““The Winterrend”

This name combines “winter” with “rend” (to tear or rip apart), suggesting a brutal, destructive force that brings harsh, tearing cold and devastation to anything in its path. It implies that this power isn’t just a change in weather but an aggressive, consuming entity capable of shattering the lands of Eryndor.”

5) p.: sky whales

ChatGPT:

“The people of Eryndor might refer to the Sky Whales as “*Celestials*.” This name emphasizes their majestic presence in the skies and their revered status as guardians of the world, often seen as divine beings or manifestations of the First Light.

Different cultures within Eryndor might have their own names and interpretations for the Celestials:

The Eyrn might call them “*Vela’Saar*”, meaning “Voices of the Light”, reflecting their belief that the Sky Whales are messengers or avatars of the First Light, carrying its wisdom and guidance across the world.

The Drifters, who rely on the Sky Whales for navigation and protection, might refer to them as “*Windshapers*”, a name that highlights their ability to influence the skies and weather, guiding the Drifters on their journeys.

The Fungal Tribes could use a name like “*Olkana*”, which translates to “Great Singers”, honoring the deep, resonant songs of the Sky Whales that echo through the forests and are believed to hold ancient knowledge and power.

The Celestials would be central to the mythology and daily life of Eryndor’s inhabitants, often featured in art, music, and stories as symbols of hope, protection, and continuity. Their songs might be used in rituals, and sightings of them could be seen as omens or blessings.”

*Celestials* does not fit by euphonic reasons as this word seems to be overused and highly imprinted in the mind of a mass reader.

p. 2: “I want something more creative and original”

ChatGPT: “For something more creative and original, how about calling the sky whales “*Aeralyths*”? This name blends “aero” (air) and “lyth” (from ancient words meaning song or voice), emphasizing their graceful movement

through the air and their deep, resonant songs that echo through the skies of Eryndor. It captures both their majestic presence and their role as mystical, almost otherworldly creatures connected to the spiritual essence of the world.”

p. 3: “No”

ChatGPT: “Let’s try something different! How about calling the sky whales “*Zephyrlins*”?”

This name combines “Zephyr”, meaning a gentle breeze or wind, with “lin”, suggesting elegance or lightness. It reflects their graceful, serene movement through the air, as well as their mystical connection to the winds and skies of Eryndor. It gives the creatures a unique, ethereal identity tied to the natural forces of the world”

p. 4: “It is common”

ChatGPT: “For something truly unique and original, how about “*Thalryms*”?”

This name combines a sense of vastness and mystery. “Thal” evokes an ancient, powerful presence, while “ryms” hints at deep, resonant sounds or ancient songs. The name feels primal and timeless, reflecting the awe-inspiring nature of these massive creatures as they glide through the skies, their songs echoing across the lands of Eryndor. It gives the impression that the *Thalryms* are not just creatures, but ancient guardians tied to the very essence of the world itself.”

6) p.: “How do you name the floating platforms?”

ChatGPT:

“For the floating platforms used by the Drifters of Eryndor, a name like “*Skyliths*” could work well. This name combines “sky” (emphasizing their airborne nature) with “lith” (from ancient roots meaning “stone” or “structure”), suggesting something solid yet floating high above.”

As previously outlined, the conclusion will draw upon the chatbot’s performance in the first two control points (documented in **Tables 3** and **4**) and the qualitative evaluation of the text generated during the third control point. To ensure clarity and facilitate interpretation, the results will be systematically presented in tabular form, while the creativity indicators of ChatGPT will be illustrated using a web chart (**Figures 1** and **2**) to highlight its strengths and areas for improvement.

Firstly, we tasked the chatbot with recalling all the coined words and providing definitions for them. The outcomes of this task are presented in **Table 3**.

Subsequently, we requested ChatGPT 4.0 to generate

sentences using these words, a task in which it performed successfully. The outcomes of this task are presented in **Table 4**.

Finally, we requested the chatbot to compose a short story, incorporating the coined words:

ChatGPT:

### “*The Song of Eryndor*”

The wind whispered through the endless expanse of *Skyliths* as the *Drifters* prepared for their next journey. Below, the land of *Eryndor* stretched vast and broken—a patchwork of lush forests, glowing fungal groves, and jagged scars left by *The Shattering*. The *Veilspire Cascades* shimmered in the distance, their waters spiraling skyward like silver threads unraveling into the heavens. Somewhere beyond the horizon, the tundras stirred with the rising threat of *The Winterrend*.

Lara, a young apprentice *Geomancer*, stood at the edge of a floating platform, clutching her staff made from a gleaming *Aethergem*. The gem pulsed faintly, syncing with the rhythm of the land far below. Her mentor, an elder named Kael, had warned her about the dangers of tapping too deeply into *Eryndor’s* elemental forces, yet the pull of the *First Light* was intoxicating.

“The land remembers,” Kael had said the night before. “And the *First Light* will guide us, but only if we listen.”

That morning, Lara’s task was clear: to assist the *Crystatarians* in their efforts to harness the shattered earth’s power for *The Reclamation*. The mission was perilous; the frost was creeping southward, and the earth itself seemed restless.

As their *Skylith* descended, the eerie glow of *Gloomspires* illuminated the dense forest below. The air was heavy, charged with ancient energy. Lara could feel it humming beneath her skin—a chorus of life and light woven through the land’s very bones.

Suddenly, a haunting, resonant note echoed through the skies. She looked up, heart racing, as a shadow passed overhead. A *Thalrym*, its enormous body adorned with patterns of bioluminescent light, sang its mournful song. The sound filled her chest, a vibration of both sorrow and hope. The *Drifters* whispered among themselves, for a *Thalrym’s* appearance was rare and often heralded change.

Kael emerged beside Lara, his face lined with worry. “The *Thalryms* sense it too. The frost grows stronger. We must hurry.”

The group descended into the crystalline caverns where

the *Crystarians* worked. The walls shimmered with embedded *Aethergems*, pulsing like veins of a living organism. The miners greeted the *Geomancers* with urgency, pointing to the expanding rifts in the cavern floor.

**Table 3.** GPT-4o control point one – definition of occasionalisms.

№	Occasional Word	Definition	Control Point
1	Eryndor	The mystical, non-ordinary world we’re creating, filled with unique phenomena, landscapes, and powerful energies. It’s a place where civilizations thrive amid magical forces and ancient mysteries.	passed
2	First Light	A sacred and primordial source of life and energy believed to be the origin of Eryndor. Many cultures, such as the Eymn, view it as a divine or guiding force, embodying purity and balance.	passed
3	Eymn	One of Eryndor’s major cultures, deeply spiritual and connected to the First Light. The Eymn people are known for their reverence of nature and their belief in the First Light as a protective, nurturing entity.	passed
4	The Shattering	A significant historical event that disrupted Eryndor, possibly breaking the world’s natural balance and causing phenomena like the Inverted Waterfalls. This cataclysmic event has lasting effects on the land and people.	passed
5	Geomancy	The magical practice of manipulating the earth’s energy in Eryndor. Geomancy is an essential skill, drawing on the power of Aethergems and natural forces for everything from construction to healing and battle.	passed
6	Geomancers	Skilled practitioners of Geomancy who play a crucial role in shaping and protecting Eryndor. They channel energy from the land, using it for various purposes, and are often held in high regard by their communities.	passed
7	Drifters	A nomadic people or culture in Eryndor who travel on floating platforms known as Skyliths. They adapt to the world’s changing landscapes and are known for their resilience and connection to the skies and seas.	passed
8	Crystarians	A culture or guild that specializes in mining and harnessing the power of Aethergems. Crystarians hold technical knowledge and may be skilled in geomantic technology, playing a crucial role in Eryndor’s energy systems.	passed
9	The Reclamation	A movement or period focused on restoring balance to Eryndor after the effects of The Shattering. It may involve rebuilding civilizations, restoring ecosystems, or rediscovering ancient practices to heal the land.	passed
10	Cascades/Elya’Shaar/ Mushar’iin/Sky Rivers	The poetic name for the Inverted Waterfalls that ascend toward the central core.	passed
11	Gloamspires/Nyl’Adara/ Myc’Lyrah/Aurashrooms	Towering, luminous fungi that light up the darker regions of Eryndor.	passed
12	Aethergems/Lioren’Kaar/ Core Shards/Starstones	The powerful, glowing crystals embedded in the land, used to power civilization.	passed
13	The Winterrend/Vara’Galen/ The Icy Dread/Gron’Turak	A dark, destructive force rising from the tundras, embodying the harsh, tearing power of winter.	passed
14	Thalryms/Vela’Saar/ Windshapers/Olkana	The majestic, songful sky whales that glide through the skies.	passed
15	Skyliths	The floating platforms used by the Drifters, blending elegance and solidity.	passed

“It’s *The Winterrend*,” one *Crystarian* said, his voice trembling. “It’s pushing south faster than we thought. The ice is devouring the gems—we’re losing our power.”

Lara stepped forward, her staff glowing brighter as she focused on the rift. She could feel the cold emanating from it, an unnatural frost that defied the warmth of the earth. Summoning her training, she whispered an ancient incantation, her voice merging with the hum of the *First Light*. The ground quaked softly, and for a moment, the frost retreated.

But the victory was brief. A howling wind filled the cavern as a shard of ice erupted from the rift, piercing the air like a spear. Kael raised his staff, deflecting it, but the chill lingered, biting into their skin.

“Lara,” Kael said firmly, “we need more than *Geomancy*. Call to the *Thalryms*. Their songs may awaken the light buried deep in these gems.”

Her heart pounded as she stepped outside the cavern. The sky above was heavy with clouds, but she raised her

**Table 4.** GPT-4o control point two – occasionalisms in a context of the sentence.

№	Occasional Word	Sentence	Control Point
1	Eryndor	The adventurers set sail towards Eldoria, eager to explore its floating islands and mystical wonders.	passed
2	First Light	The ancient ruins were adorned with glowing Aetherstones, each pulsating with untold magical energy.	passed
3	Eym	High above, majestic skywhales cruised through the clouds, their melodic calls echoing across the sky.	passed
4	The Shattering	The inhabitants of Eldoria built their homes atop the colossal shells of skyturtles, floating peacefully through the azure skies.	passed
5	Geomancy	At dusk, the glimmerwings emerged from their hidden nests, casting a soft, iridescent glow over the twilight landscape.	passed
6	Geomancers	The intricate patterns of Aetherweave crisscrossed the sky, binding the floating islands together in a delicate tapestry of magic.	passed
7	Drifters	The Aetherstrands shimmered in the sunlight, weaving through the air like threads of pure energy.	passed
8	Crystarians	Among the clouds, nebulariaias glided gracefully, their ethereal forms blending seamlessly with the misty atmosphere.	passed
9	The Reclamation	The lumiglowsa illuminated the forest floor, casting enchanting patterns of light among the shadowy trees.	passed
10	Cascades/Elya'Shaar/ Mushar'iin/Sky Rivers	The Veilspire Cascades spiraled upward like rivers defying gravity, a breathtaking sight of shimmering water reaching toward the heavens	passed
11	Gloomspires/Nyl'Adara/ Myc'Lyrah/Aurashrooms	The forest floor glowed beneath the towering Gloomspires, casting an eerie, mesmerizing light across the shadowed landscape	passed
12	Aethergems/Lioren'Kaar/ Core Shards/Starstones	Embedded deep in the land, the Aethergems pulsed with light, powering the ancient cities and connecting Eryndor's people to the energies of the core	passed
13	The Winterrend/Vara'Galen/ The Icy Dread/Gron'Turak	With each passing season, rumors spread of The Winterrend creeping from the tundras, bringing a bone-chilling frost that left everything in its path frozen and desolate	passed
14	Thalryms/Vela'Saar/ Windshapers/Olkana	The deep, resonant songs of the Thalryms echoed through the twilight skies, guiding travelers with their haunting beauty	passed
15	Skyliths	The Drifters settled on their Skyliths as they floated through the sky, each platform a sanctuary amidst the boundless expanse	passed

staff high, channeling her fear into resolve. She mimicked the haunting melody of the *Thalrym* she had heard earlier, her voice trembling but steady. The *Aethergem* at her staff's tip glowed brighter, pulsing in time with the land's rhythm.

And then, from the clouds, the *Thalrym* descended. Its song joined hers, harmonizing in a way that sent waves of warmth through the frigid air. The frost began to recede, and the rift in the cavern floor slowly sealed, as if soothed by the ancient melody.

The *Crystarians* cheered, but Kael only nodded gravely. "This is only the beginning," he said, his gaze fixed on the north. "The *Winterrend* will not stop until we confront its source. For now, we've bought time for *The Reclamation*. But the true battle lies ahead."

As the *Thalrym* ascended once more, its glowing body disappearing into the sky, Lara felt a spark of hope. The land had responded, the *First Light* had answered, and the bond

between *Eryndor's* people and its ancient forces had proven stronger than the encroaching frost.

But in the tundras far away, a storm was brewing."

As we can observe, the occasionalisms in the story serve not only to enrich the world of Eryndor but also to subtly convey thematic depth. Terms like Veilspire Cascades, Thalryms, and The Winterrend are used to emphasize the mystical and existential struggles within the land. The use of "*Veilspire Cascades*" as a name for the Inverted Waterfalls enhances the sense of awe and otherworldliness, while "Thalryms" as sky whales evokes a deep connection between the land and its inhabitants through song. The Winterrend personifies the destructive forces threatening the land, underscoring the narrative's conflict. These terms are not just names; they convey the emotional and philosophical undertones of Eryndor's environment. Terms like Eryndor, Veilspire Cascades, and First Light immediately immerse the

reader in the fictional setting, evoking a sense of wonder and uniqueness. Eryndor anchors the narrative as the expansive world where the story unfolds, while Veilspire Cascades and First Light emphasize the mystical and elemental forces that define its geography and spirituality. These terms are presented descriptively, functioning as world-building tools that simultaneously intrigue the reader and set the stage for the story's events.

Occasionalisms like Aethergems, Geomancers, and Crystarians define the roles and abilities of the characters and their contributions to the story's conflict. For example, Geomancers use their connection to the land to counteract the frost, while Crystarians are portrayed as resource-focused, dependent on the precious Aethergems. These terms are used functionally to advance the plot, clarifying how characters interact with the environment and each other while highlighting the looming threat of The Winterrend.

The occasionalisms also carry cultural weight, revealing how the people of Eryndor relate to their world. Terms like Eryndor and The Reclamation suggest a society in constant flux—one that acknowledges its history (The Shattering) but seeks renewal. The name Eym, associated with a specific people, echoes a sense of peace and sanctity, adding layers to the society's diversity. Aethergems represent the union of magic and technology, shaping the world's power structures and economies. The usage of these terms imbues the story with a sense of ritual and tradition, where language itself is a reflection of cultural identity and purpose.

The occasionalisms are pragmatically employed to define roles, relationships, and power dynamics within the world. Geomancers and Crystarians are shown as specialists, giving them a clear, functional identity within the society. The narrative positions Geomancers as vital for survival and interaction with the environment, reinforcing their cultural significance. The Drifters, as nomadic people on floating platforms, are depicted through their specialized vocabulary as adaptive and resourceful. First Light is not just a physical energy but a guiding principle, indicating a spiritual connection that informs the characters' actions. Each occasionalism serves a practical role in structuring the world and motivating the characters' actions.

The introduction of The Winterrend as a destructive force provides the central antagonist, while the Thalryms and their haunting song add emotional weight and mysticism.

The Thalryms' role in aiding the protagonists underscores the theme of unity with nature, contrasting with the encroaching destruction. Additionally, The Reclamation provides hope, acting as a long-term goal for the characters, balancing the despair caused by The Winterrend with a sense of resilience and purpose.

These occasionalisms are seamlessly integrated into the story, enriching its world, deepening its conflicts, and enhancing its emotional resonance. They are not merely decorative but vital to the structure and impact of the narrative.

ChatGPT-4 demonstrated a high level of linguistic creativity and coherence in creating occasionalisms and integrating them meaningfully into the narrative. The process combined phonetic elegance, semantic depth, and cultural relevance, resulting in terms that enhanced the world-building and thematic richness of the story. Each word was crafted to evoke a specific emotional, cultural, or pragmatic resonance, seamlessly blending into the fabric of Eryndor's lore.

The story effectively showcased the utility of these terms, not just as decorative elements but as integral components of the plot, characters, and setting. The narrative used the occasionalisms to reveal societal roles (Geomancers, Drifters), environmental phenomena (Veilspire Cascades, Thalryms), and existential threats (The Winterrend), illustrating how language can shape and reflect a fictional world's identity.

In essence, ChatGPT-4 excelled in combining linguistic invention with narrative integration, demonstrating the AI's capacity to enrich storytelling with well-thought-out terminology that feels natural, evocative, and purposeful.

#### **3.4.4. Measuring Linguistic Creativity**

The word that we get in a Response should correspond to the principles of phonosemantics concluded by Voronin S.V.: motivation (involuntariness), determinism (denotation), reflection (interaction), integrity (pragmatics), multiplicity and its corollary<sup>[35]</sup>. According to our estimates, the following are relevant at the moment:

- Involuntariness - motivated word, i.e., created for a purpose;
- Determinism - the created word must have a conditional graphic reflection in addition to the connotation;
- Pragmatic reflection – a fusion of the three remaining principles (reflection, integrity and multiplicity and its corollary). It represents the functioning of a new

formation in context.

Thus, when measuring linguistic creativity, we will rely on the following factors and assign a certain number of points to the occasionalisms:

1. *Originality (O)* (presentation of the idea) – this metric assesses the degree to which the idea presented was independently generated by the chatbot:

1 point: The idea was entirely original and generated by the chatbot.

0.5 points: The idea aligned with the user’s intention or guidance.

This measure evaluates the chatbot’s autonomous creativity and innovation.

2. *Fluency in language rules and terms (F)* – this metric evaluates the chatbot’s adherence to language conventions and appropriate use of terms. It is scored as follows:

1 point total:

0.5 points for correct and appropriate use of language in individual sentences.

0.5 points for maintaining appropriateness and coherence within the broader context of the text.

This measure assesses both grammatical precision and contextual relevance.

3. *Phonosemantic properties (Ph)* – this metric evaluates the extent to which the occasionalisms align with phonosemantic principles. The scoring system is as follows:

3 correspondences: 1 point

1–2 correspondences: 0.5 points

No correspondences: 0 points

This measure highlights the chatbot’s ability to produce words that adhere to the established relationship between sound and meaning.

4. *Creativity (C)* – the metric that distinguishes between two levels of creativity demonstrated by the chatbot: Fixed-creativity (0.5 points): creativity within predefined boundaries or based on a fixed framework, such

as rephrasing or adapting existing ideas.

Extending-creativity (1 point): creativity that goes beyond the initial framework, introducing novel, imaginative, or unexpected elements.

This distinction allows for a more precise evaluation of the depth and originality of the chatbot’s creative output.

5. *Prompt bar (P)* – this metric evaluates the number of prompts required to achieve a satisfactory result. A lower number of prompts corresponds to a higher score. For each additional prompt beyond the first, 0.5 points are subtracted. This system incentivizes efficiency and the chatbot’s ability to deliver accurate results promptly. The scoring system is as follows:
  - 1 prompt: 1 point
  - 2 prompts: 0.5 points
  - 3 prompts: 0 points
  - 4 prompts: -0.5 points
  - 5 prompts: -1 point

The final number of prompts will depend on the requester’s euphonic satisfaction. Stanford<sup>[36]</sup> hypothesized that the compound words (occasionalisms) in Homer’s works were selected for their euphonic qualities — pleasing to the ear, as defined by Oxford University Press<sup>[37]</sup>.

“A more likely reason may have been a desire to avoid too many *etas* (note suffixes) in a line, or a general preference for the ‘nobler’ *alpha* (note Poetic Authorial Language).”

The maximum possible total number of points is 5, the minimum is 0.5. Based on the received scores of each of the novelties, the average value for the linguistic creativity of the chatbot itself will be derived.

General (total) point on each of the occasionalisms is summed by  $O+F+Ph+C+P$  formula. The average point of the chatbot is counted by this sum divided by the quantity of analyzed occasionalisms in each model:  $\frac{O+F+P+C+P}{15}$ .

The average point on each of the linguistic creativity factor is counted by following formulae:

$$\text{Originality} \\ O = \frac{\sum O_1^{15}}{15}$$

$$\text{Frequency} \\ F = \frac{\sum F_1^{15}}{15}$$

$$\text{Phonosemantics} \\ Ph = \frac{\sum P_1^{15}}{15}$$

$$\text{Creativity} \\ C = \frac{\sum C_1^{15}}{15}$$

$$\text{Prompt bar} \\ P = \frac{\sum P_1^{15}}{15}$$

The results of the calculations are displayed in **Tables 5 and 6**. All 15 occasionalisms are listed in the first column (Occasionalism) and are scored according to each evaluated factor. To facilitate interpretation, the resulting average

Table 5. GPT-3.5 linguistic creativity average point.

№	Occasionalism	O	F		Ph		C		P		Total
			In a Sentence	In a Text	Principles	Points	Fixed	Ext.	Number of Prompts	Points	
1	Eldoria	1	0.5	0.5	3	1	0.5	0	0	1	4.5
2	Aetherstones	1	0.5	0.5	3	1	0.5	0	0	1	4.5
3	skywhales	1	0.5	0.5	3	1	0.5	0	0	1	4.5
4	Skyturtles	1	0.5	0.5	3	1	0.5	0	0	1	4.5
5	Glimmerwings	0.5	0.5	0.5	3	1	0.5	0	1	1	4
6	Aetherweave	0.5	0.5	-0.5	3	1	0.5	0	1	1	3
7	Aetherstrands	0.5	0.5	0.5	3	1	0.5	0	1	1	4
8	Nebuloraias	0.5	0.5	0.5	3	1	0.5	0	2	0.5	3.5
9	Lumiglowrsa	0.5	0.5	0.5	3	1	0.5	0	2	0.5	3.5
10	Invertrees	0.5	0.5	0.5	3	1	0.5	0	1	1	4
11	Soniphores	0.5	0.5	-1	3	1	0.5	0	3	0	1.5
12	Skimmers	0.5	0.5	-0.5	3	1	0.5	0	8	-2.5	-0.5
13	Aetherclipse Ordeal	0.5	0.5	0.5	3	1	0.5	0	1	1	4
14	Chronoquell	0.5	0.5	0.5	3	1	0.5	0	5	-1	2
15	Aurameld	0.5	0.5	0.5	3	1	0.5	0	4	-0.5	2.5
	Average point	0.6	0.8		1		0.5		1.9	0.4	3.3
	Average point (x10)	6.3	7.7		10		5		x	4	33

scores have been scaled by multiplying them by ten. For instance, an average score of 0.6 will be represented as 6.3 for ease of perception and detailed exposition of the metrics.

In this research, statistical methods were employed to validate the findings, including analyzing the frequency and distribution of key linguistic features in the generated texts. Metrics such as fluency, originality, creativity and adherence to phonosemantic principles were quantified and subjected to comparative analysis between different prompts and versions of the A.I. Additionally, standard deviation and mean values were calculated to measure consistency across outputs, while correlation analyses were performed to identify relationships between prompt structure and linguistic creativity. These methods provided a robust framework for evaluating the effectiveness of prompt techniques and the linguistic capabilities of the models. Besides, the prompt bar metric served to measure both the responsiveness and adaptability of the chatbot, providing insight into its ability to interpret and fulfill user requests effectively and efficiently.

To show the comparison clearly, we present the diagrams of linguistic creativity one next to another in Figures 1 and 2.

As we can observe, the performance of version 4o has improved in several aspects. Notably, the Originality average score has increased by 1.7 points, indicating a heightened ability to generate independent and novel ideas. Progression is evident in the Fluency metrics, where the average score has increased by 2.3 points, indicating improved adherence to

language rules and greater contextual appropriateness. The most significant improvement is observed in the Prompt Bar metric, which increased by 4 points—a performance that is twice as high as that of version 3.5. All of these findings collectively illustrate the dynamic progression of the chatbot’s performance and capabilities.

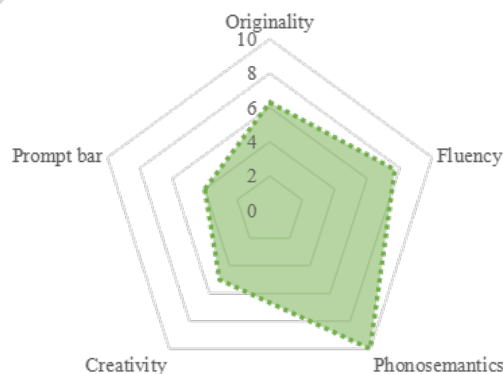


Figure 1. GPT-3.5 Linguistic creativity specter.

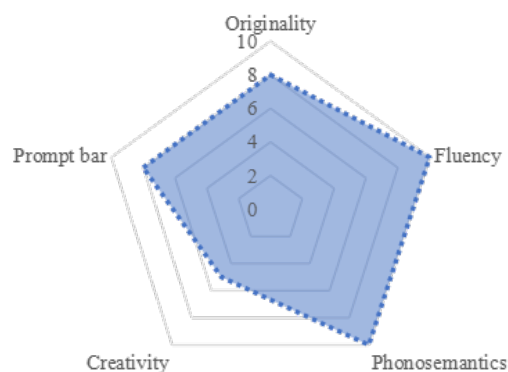


Figure 2. GPT-4o linguistic creativity. specter.

**Table 6.** GPT-4o linguistic creativity average point.

№	Occasionalism	O	F		Ph		C		P		Total
			In a Sentence	In a Text	Principles	Points	Fixed	Ext.	Number of Prompts	Points	
1	Eryndor	1	0.5	0.5	3	1	0.5	0	0	1	4.5
2	First Light	1	0.5	0.5	3	1	0.5	0	0	1	4.5
3	Eym	1	0.5	0.5	3	0.5	0.5	0	0	1	4.5
4	The Shattering	1	0.5	0.5	3	1	0.5	0	0	1	4.5
5	Geomancy	1	0.5	0.5	3	1	0.5	0	0	1	4.5
6	Geomancers	1	0.5	0.5	3	0.5	0.5	0	0	1	4.5
7	Drifters	1	0.5	0.5	3	1	0.5	0	0	1	4.5
8	Crystarians	1	0.5	0.5	3	1	0.5	0	0	1	4.5
9	The Reclamation	1	0.5	0.5	3	1	0.5	0	0	1	4.5
10	Cascades/Elya'Shaar/ Mushar'iin/Sky Rivers Gloamspires/Nyl'Adara/	0.5	0.5	0.5	3	1	0.5	0	2	0.5	3.5
11	Myc'Lyrrah/ Aurashrooms Aethergems/Lioren'	0.5	0.5	0.5	3	1	0.5	0	1	1	3.5
12	Kaar/Core Shards/ Starstones The Winterrend/Vara'	0.5	0.5	0.5	3	1	0.5	0	1	1	4
13	Galen/The Icy Dread/ Gron'Turak	0.5	0.5	0.5	3	1	0.5	0	3	0	3
14	Thalryms/Vela'Saar/ Windshapers/Olkana	0.5	0.5	0.5	3	1	0.5	0	4	-0.5	2.5
15	Skyliths	0.5	0.5	0.5	3	1	0.5	0	1	1	4
	Average point	0.8	1		1		0.5		0.8	0.8	4.1
	Average point (x10)	8	10		10		5		x	8	41

However, Fluency and Phonosemantics remain consistent at their highest scores, indicating that the chatbot continues to excel in these areas, effectively adhering to language rules and crafting occasionalisms that align seamlessly with phonosemantic principles.

To highlight the main differences, we present **Table 7** below.

The differences between ChatGPT 3.5 and 4o are notable, particularly in their linguistic creativity and adaptability. Version 4o demonstrates improved Originality, scoring higher on generating independent ideas compared to version 3.5. It also exhibits enhanced Fluency, with better adherence to language rules and contextual appropriateness in text generation.

Another significant improvement in version 4o is its performance in the Prompt Bar metric, requiring fewer prompts to achieve satisfactory results, highlighting its efficiency and responsiveness. However, both versions maintain consistent high scores in Phonosemantics, reflecting their ability to align with sound-meaning principles.

Overall, ChatGPT 4o shows increased versatility, creativity, and efficiency, making it a more robust tool for generating linguistically complex and innovative content.

This progression coincides with previous research on GPT-like LLMs. For instance, M. Kosinski<sup>[38]</sup> similarly found that GPT-3 *davinci* performs poorly (40% accuracy) on a range of novel False Belief stimuli. However, later models in the series performed much better: GPT-3 text-davinci-002, fine-tuned to follow instructions, achieved 70% accuracy. Ultimately, text-davinci-003 (GPT-3.5) and GPT-4 — fine-tuned using reinforcement learning—achieve 90% and 95%, respectively. More recently, Gandhi et al. stated that GPT-4 performs similarly to humans<sup>[39]</sup>.

## 4. Conclusions

ChatGPT demonstrates a remarkable ability to generate descriptions of fantastical landscapes, unusual creatures, and extraordinary events, effectively creating unique and engaging stories. This capability is particularly valuable for writers, artists, and creators seeking inspiration or exploring new ideas.

Our study revealed that ChatGPT excels in generating occasionalisms and incorporating them into contextually appropriate constructions, though primarily within the confines of Fixed creativity syntax. The model enriches texts with

**Table 7.** GPT-3.5 vs GPT-4o functioning.

Metrics	GPT 3.5	GPT 4o
Originality	Initiated 4 direct occasionalisms	Provided 9 direct occasionalisms
Fluency	Three occasional words were either missing or misused during the text generation	Used all of the coined words
Phonosemantics	Both performed well	
Creativity	Neither demonstrated any instances of extending creativity	
Prompt bar	The average number of prompts is 1.9; provides only one word at once	The average number of prompts is reduced by half; few variations provided

linguistic elements that contribute to their unique style and semantic depth. Several factors influencing the chatbot’s linguistic creativity were identified, including the quantity and diversity of training data, pre-training methodologies, and prompt design.

The results affirm ChatGPT’s potential to produce texts with a high degree of linguistic creativity. However, understanding the mechanisms underlying A.I. linguistic creativity and its practical applications requires further investigation. For instance, exploring its role in writing full-length novels or other creative projects could provide valuable insights.

Additionally, the analysis highlighted ChatGPT’s adaptability to various styles and genres, making it a versatile tool for creating artistic content. The model can craft both realistic and fantastical worlds and blend elements from multiple genres to develop novel and original narratives.

Despite its impressive capabilities, ChatGPT remains limited in its learning capacity and cannot fully replicate human imagination and creativity. While it serves as a valuable tool for generating ideas and inspiration, the ultimate creative decisions rest with human users.

The study’s insights can enhance educational settings by integrating ChatGPT into creative writing classes to inspire ideas, teach narrative structure, and refine language skills. For AI development, findings can guide the creation of more context-aware, culturally sensitive language models, improving linguistic creativity and authorship simulation. In creative writing tools, ChatGPT could act as a collaborative assistant, offering suggestions for plotlines, characters, or stylistic improvements, streamlining the writing process while preserving human originality.

In conclusion, our findings emphasize ChatGPT’s potential as a powerful tool for generating linguistically creative content applicable across diverse fields such as literature, film, and gaming. However, unlocking its full potential will

require continued research and innovation in the methods of interaction between artificial intelligence and human creativity. This synergy could lead to groundbreaking advancements in creative industries, enhancing the collaborative potential of A.I. and human creators.

## 5. Limitations and Future Directions

AI-generated content has significant implications for human creativity and originality. However, its reliance on existing material raises concerns about originality and the saturation of works. The role of human creators is shifting toward curating and refining AI outputs, prompting ethical questions about authorship and ownership.

While AI democratizes access to creative tools, it risks homogenizing cultural expression and making humans reliant, potentially diminishing imagination and creativity. To preserve human ingenuity, it is essential to establish boundaries and avoid overuse, ensuring AI remains a tool for enhancement rather than replacement.

Cultural biases favor dominant languages or traditions, while stereotypical usage and overgeneralization reflect limitations in contextual understanding. Additionally, the lack of intentionality in AI-generated terms diminishes their cultural or artistic resonance. These challenges highlight the need for more diverse training data and refined modeling to better emulate the creativity and purpose of human linguistic innovation.

Future research in this field should focus on expanding training datasets to include diverse languages and cultures, improving contextual awareness in word coining, and exploring human-AI collaboration in the creative process. Furthermore, cross-disciplinary insights from linguistics and cognitive science can refine AI’s creative capabilities, while studies on the temporal evolution of AI-coined terms can

help adapt them to contemporary and future linguistic trends. Finally, examining the impact of AI-generated words on language change will provide a deeper understanding of their role in linguistic innovation.

## Author Contributions

Conceptualization, A.A.; methodology, S.M. (Shara Mazhitayeva); software, R.S.; validation, S.M. (Shara Mazhitayeva), F.K. and N.K.; formal analysis, N.S.; investigation, A.A.; resources, A.A., S.M. (Shara Mazhitayeva); data curation, N.K.; writing—original draft preparation, A.A.; writing—review and editing, N.K.; visualization, A.A., S.M. (Svetlana Missyachenko); supervision, F.K.; project administration, A.A.; funding acquisition, S.M. (Svetlana Missyachenko). All authors have read and agreed to the published version of the manuscript.

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## Conflicts of Interest

The authors declare no conflict of interest.

## References

- [1] Dale, R., 2021. GPT-3: What's it good for? *Natural Language Engineering*. 27(1), 113–118. DOI: <https://doi.org/10.1017/S1351324920000601>
- [2] Subbiah, M., Zhang, S., Chilton, L., et al., 2024. Reading Subtext: Evaluating Large Language Models on Short Story Summarization with Writers. *Transactions of the Association for Computational Linguistics*. 12, 1290–1310. DOI: [https://doi.org/10.1162/tacl\\_a\\_00702](https://doi.org/10.1162/tacl_a_00702)
- [3] Pirmanova, N.I., Sabitova, Y.R., 1957. Okkazional'nye slova kak osoboe javlenie v russkom jazyke i v sovremennoj rechi [Occasional words as a special phenomenon in the Russian language and in modern speech]. *Pedagogical and social issues in education*. 211–215. DOI: <https://doi.org/10.31483/r-86104>
- [4] Melkaeva, R.V., 2022. Okkazionalizmy kak sposob realizacii lingvokreativnosti (na materiale anglojazychnogo hudozhestvennogo diskursa) [Occasionalisms as a way of linguocreativity realization (on the material of English-language fictional discourse)]. *Issues in modern linguistics*. (5), 59–65. DOI: <https://doi.org/10.18384/2310-712X-2022-5-59-65>
- [5] De Saussure, F., 1971. *Cours de linguistique générale*, éd. Bally et Sechehaye. Payot.
- [6] Eliseeva, V.V., 1984. Avtorskij okkazionalizm kak sredstvo sozdaniya komicheskogo jeffekta (v pragmaticheskom aspekte) [Authoral occasionalism as the comic effect creating tool (in a pragmatical aspect)] [Ph.D. Thesis]. St Petersburg University.
- [7] Kaskatayeva, Z.A., Mazhitayeva, S., Omasheva, Z.M., et al., 2020. Colour Categories in Different Linguistic Cultures. *Rupkatha Journal on Interdisciplinary Studies in Humanities*. 12(6), 1–13. DOI: <https://dx.doi.org/10.21659/rupkatha.v12n6.14>
- [8] Yang, B., 2024. Seven Types of Meaning and Seven Attributes: A Study of Chinese Anti-Pandemic Neologisms Under the Dual Perspective of Lexical Semantics and Lexical Pragmatics. *3L: Language, Linguistics, Literature® The Southeast Asian Journal of English Language Studies*. 30(1), 158–174. DOI: <http://doi.org/10.17576/3L-2024-3001-12>
- [9] Štekauer, P., 2002. On the Theory of Neologisms and Nonceformations. *Australian Journal of Linguistics*. 22(1), 97–112. DOI: <http://dx.doi.org/10.1080/07268600120122571>
- [10] Crystal, D., 2012. *The Story of English in 100 Words*. PROFILE BOOKS LTD.
- [11] Hreshchuk, V., 2022. Occasional Word Formation in the Expressiveness of a Text. *Journal of Vasyl Stefanyk Precarpathian National University*. 8(2), 79–91. DOI: <https://doi.org/10.15330/jpnu.8.2.79-91>
- [12] Altynbekov, A.M., Mazhitayeva, S., Kakzhanova, F.A., et al., 2024. Linguistic creativity of occasionalisms in Brandon Sanderson's works. *Bulletin of the Kara-*

- ganda University. *Philology series*. 29(2), 38–47. DOI: <https://doi.org/10.31489/2024ph2/38-47>
- [13] Jovanovic, M., Campbell, M., 2022. Generative Artificial Intelligence: Trends and prospects. *Computer*. 55(10), 107–112. DOI: <https://doi.org/10.1109/mc.2022.3192720>
- [14] Dowling, M., Lucey, B., 2023. Chatgpt for (Finance) Research: The Bananarama conjecture. *Finance Research Letters*. 53, 103662. DOI: <https://doi.org/10.1016/j.frl.2023.103662>
- [15] Selivanov, A., Rogov, O.Y., Chesakov, D., et al., 2023. Medical image captioning via generative pre-trained transformers. *Scientific Reports*. 13(1). DOI: <https://doi.org/10.1038/s41598-023-31223-5>
- [16] Rockwell, M., Spiller, P., Cuevas-Ocampo, A.K., et al., 2023. Histoplasmosis of the external auditory canal. *Cureus*. DOI: <https://doi.org/10.7759/cureus.35644>
- [17] Macdonald, C., Adeloye, D., Sheikh, A., et al., 2023. Can chatgpt draft a research article? An example of population-level vaccine effectiveness analysis. *Journal of Global Health*. 13.
- [18] Mijwil, M.M., ChatGPT, Aljanabi, M., 2023. Towards artificial intelligence-based cybersecurity: The practices and ChatGPT generated ways to combat cybercrime. *Iraqi Journal for Computer Science and Mathematics*. 65–70. DOI: <https://doi.org/10.52866/ijcsm.2023.01.01.0019>
- [19] Strashko, I., Melnyk, I., Kozak, V., 2024. Linguistic Analysis of Texts in Philological Research: The Use of Salesforce Einstein Artificial Intelligence. *Forum for Linguistic Studies*. 6(3), 246–259. DOI: <https://doi.org/10.30564/fls.v6i3.6601>
- [20] Kirmani, A.R., 2022. Artificial Intelligence-enabled science poetry. *ACS Energy Letters*. 8(1), 574–576.
- [21] Salvagno, M., Taccone, F.S., Gerli, A.G., 2023. Can artificial intelligence help for scientific writing? *Critical Care*. 27(1). DOI: <https://doi.org/10.1186/s13054-023-04380-2>
- [22] Mann, D.L., 2023. Artificial Intelligence discusses the role of Artificial Intelligence in translational medicine. *JACC: Basic to Translational Science*. 8(2), 221–223. DOI: <https://doi.org/10.1016/j.jacbts.2023.01.001>
- [23] Loudon, G., Deininger, G., 2016. The Physiological Response during Divergent Thinking. *Journal of Behavioral and Brain Science*. 6, 28–37. DOI: <https://doi.org/10.4236/jbbs.2016.61004>
- [24] Chomsky, N., 1965. *Aspects of the theory of syntax*. MIT Press: Cambridge, MA, USA.
- [25] Chomsky, N., 2003. *The reasons of state*. Penguin: London, UK.
- [26] Torrance, E.P., 1993. *The nature of creativity as manifest testing*. Press Syndicate of the University of Cambridge: New York, NY, USA.
- [27] Simonton, D.K., 2012. Creative productivity and aging. In: Whitbourne, S.K., Sliwinski, M.J. (Eds.). *The Wiley-Blackwell Handbook of Adulthood and Aging*. Wiley Blackwell: Malden, MA, USA. pp. 477–496.
- [28] Sampson, G., 2016. Two ideas of creativity. In: Hinton, M. (Ed.). *Evidence. Experiment and argument in linguistics and philosophy of language*. Peter Lang: Bern. pp. 15–26.
- [29] Bauer, L., 2001. *Morphological productivity*. Cambridge University Press: Cambridge.
- [30] Haspelmath, M., 2002. *Understanding morphology*. Arnold: London, UK.
- [31] Chik, H., 2023. A Chinese professor used AI to write a science fiction novel. Then it was a winner in a national competition. *South China Morning Post*. Available from: <https://www.scmp.com/news/china/science/article/3245725/chinese-professor-used-ai-write-science-fiction-novel-then-it-won-national-award> (cited 28 January 2024).
- [32] Cabezas-Clavijó, Á., Magadán-Díaz, M., Rivas-García, J.I., et al., 2024. This Book is Written by ChatGPT: A Quantitative Analysis of ChatGPT Authorships Through Amazon.com. *Pub Res Q*. 40, 147–163. DOI: <https://doi.org/10.1007/s12109-024-09998-w>
- [33] Chhun, C., Fabian, M., Suchanek, C., 2024. Do Language Models Enjoy Their Own Stories? Prompting Large Language Models for Automatic Story Evaluation. *Transactions of the Association for Computational Linguistics*. 12, 1122–1142. DOI: [https://doi.org/10.1162/tacl\\_a\\_00689](https://doi.org/10.1162/tacl_a_00689)
- [34] Qassem, M., Aldaheri, M., 2023. Can Machine Translate Dialogue Acts: Evidence from Translating Dialogues from English to Arabic. *3L: Language, Linguistics, Literature® The Southeast Asian Journal of English Language Studies*. 29(4), 63–81. DOI: <http://doi.org/10.17576/3L-2023-2904-05>
- [35] Voronin, S.V., 2006. *Osnovy fonosemantiki [The basics of phonosemantics]*. LENINGRAD: Moscow.
- [36] Stanford, W.B., 1969. Euphonic reasons for the choice of Homeric formulae? *Hermathena*. 108, 14–17.
- [37] Oxford University Press. (n.d.). Euphonic. In *Oxford English Dictionary*. Available from: <https://www.oed.com> (cited 14 June 2024).
- [38] Kosinski, M., 2023. Theory of Mind May Have Spontaneously Emerged in Large Language Models. DOI: <https://doi.org/10.48550/arXiv.2302.02083>
- [39] Gandhi, K., Fränken, J.-P., Gerstenberg, T., et al., 2023. Understanding Social Reasoning in Language Models with Language Models. DOI: <https://doi.org/10.48550/arXiv.2306.15448>