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The “Cthulhu Network”: The Process by which the Popular Myth was Made

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Abstract

In the context of popular culture, the work of Lovecraft deserves a prominent role, not only for its influence on many later authors, but for its profound impact on 20th century popular culture, from music and video games to films, comics and merchandising. This paper analyzes the way in which Lovecraft developed his *Cthulhu Mythos*, creating a dense network of relationships between his different tales. After analyzing a corpus of 102 works by this author, which covers almost all of his literary production, several conclusions are drawn about the way Lovecraft was able to create this icon of popular culture.

In the context of popular culture literature, the work of H. P. Lovecraft deserves a prominent role, not only for its influence on many later authors, but for its profound impact on 20th century popular culture (Smith, *Lovecraft in Popular Culture*). In the field of music, Lovecraft has inspired a huge number of bands (Hill). This is especially true in the field of heavy metal, where “[unlike what happens with many other cultural products, in this music, and especially in its extreme forms, [Lovecraft's cosmogony] has been successfully captured]” (Peregrina Castaños 101). Lovecraft has also inspired numerous films, although with less fortune than in the musical field, as they have generally not been able to “convey a sense of Lovecraft’s materialistic, relativistic worldview” (Menegaldo 78). We can also find video games, comics, and a huge amount of merchandising based on the mythology created by the author, such as the popular t-shirt of the fictitious Miskatonic University. In fact, such is its impact on the collective imagination that his mythology has even influenced occult practices (Bolton; Steadman). Although it is a much less known fact, one of the dark regions near Pluto's south pole is called “Cthulhu Regio” in honor of the deity created by Lovecraft. His influence has also reached the field of politics, and since the 1996 US presidential elections, the parody campaign “Vote for Cthulhu: Why settle for the lesser evil?” has been repeated in presidential elections in the US and internationally.

The considerable impact of Lovecraft's work on popular culture is largely due to his ability to create a mythology that he and other authors made increasingly rich and complex, a mythology “that dominates the stories of the last decade of his life” (Joshi, “Lovecraft and Religion”). Although as Joshi (“The Cthulhu Mythos”) points out, Lovecraft probably did not plan the Mythos in advance, he became “gradually aware of the internal coherence of his Mythos.” Certainly, The Cthulhu Mythos are very consistent

in development: “as it emerges from ‘The Call of Cthulhu’ (1926) onward, the gods remain the same, as well as the images, descriptions and manifestations” (Kutrie 46).

As Pérez de Luque argues, Lovecraft’s stories “combine elements of the Gothic tradition with science fiction, fantasy and even some details that could be recognized in detective stories” (111). Additionally, the author’s body of work evolves as his stories become increasingly darker: the quantitative analysis of Lovecraft’s literary production (Arroyo-Barrigüete) confirms that the vast majority of works written between 1921-1935 are very dark writings, with a tremendous preponderance of negative sentiments and a huge polarization of emotions—fear being the dominant one followed by sadness and trust.

Lovecraft uses several elements to induce that fear, a fear based on “a certain atmosphere of breathless and unexplainable dread of outer, unknown forces [...]” (Lovecraft, *Supernatural Horror in Literature* 2). His work tries to convince the reader that there may be an otherworldly beyond, something inhabited by evil and much worse than the “meaningless world of material reality” (Hanegraaff 89). These elements include uncanny mathematics beyond our ability to understand, architecture and geometry (Spencer 105), unfathomable dimensions (Ingwersen 57), terrifying objects such as idols or fetishes (Hefner 667-68), unpleasant sounds (van Elferen 79-80), nauseating smells (Hölzing 183), and a narrative time overlapped with time on a universal level which the human mind cannot conceive, that is, a period so vast that it is beyond a scale that the human mind can grasp (Smith, “Re-visioning Romantic-Era Gothicism”). Each of these components are recurrently employed by Lovecraft, especially in his last stage. All of these elements are articulated around a central idea: the insignificance of humanity, surrounded by mysteries that escape its understanding. In Lovecraft’s writings, the superiority of alien civilizations is manifested in many ways (Joshi, *The Decline of the West* 339), next to which any human achievements pale by comparison.

Considering all these elements, this article analyzes how Lovecraft succeeded in creating a mythology that has become an icon of popular culture.

Building a mythology

Sunand Tryambak Joshi (“The Cthulhu Mythos”) identifies four subsidiary icons that shape Lovecraft's mythology: “(1) a vitally realised but largely imaginary New England topography; (2) an ever-growing library of occult books, both ancient and modern [...] (3) the “gods,” their human followers, and their monstrous “minions” or acolytes; and (4) a sense of the cosmic, both spatial and temporal [...]”.

The first of these elements certainly plays a key role in the Cthulhu Mythos, constituting what Butler calls “part-fictional geographies” (131). Places such as the Miskatonic region, which combines real locations like Salem and fictitious places such as Arkham and Kingsport, constitute an essential part of many of Lovecraft's works. In fact, much of Lovecraft's writing is either set in one of his fictional cities or references these fictional cities (Bridle). Certainly, his narrative style is underpinned by a meticulous topographical and documentary realism, which masterfully combines fantastic and real geography and bibliography (Gómez-Alonso), and in which places are essential (Kneale). These “part-fictional geographies” are probably another attempt to achieve the realism that, from Lovecraft's point of view, was critical in the weird (see Lovecraft, “Notes on Writing Weird Fiction”).

In terms of occult books, *Necronomicon*, a fictional book written by Abdul Alhazred that Lovecraft mentions in several of his stories, is undoubtedly the best known. As Lippert points out, “[f]ew of his inventions, however, were so persistently viral as the *Necronomicon*” (44). In fact, such has been its impact on popular culture that even today, many still consider it a real book (see Harms and Gonce). But Lovecraft includes other

fictional books in his stories, some of them created by other writers, such as *De Vermis Mysteriis*, invented by Robert Bloch, *The Book of Eibon* by Clark Ashton Smith, or *Unaussprechlichen Kulten* by Robert E. Howard. The importance of these occult books in mythology is enormous, especially *Necronomicon*, as this book serves to introduce Lovecraft's creations into his stories and to "[link] together a disparate array of grotesque creatures into a coherent pantheon" (Engle 88), something that has served the same purpose for other writers as well. Or in Lovecraft's words:

Inventing horrible books is quite a pastime among devotees of the weird [...]. [M]any of the regular W.T. contributors have such things to their credit—or discredit. It rather amuses the different writers to use one another's synthetic demons & imaginary books in their stories —so that Clark Ashton Smith often speaks of my *Necronomicon* while I refer to his *Book of Eibon* . . & so on. *This pooling of resources tends to build up quite a pseudo-convincing background of dark mythology, legendry, & bibliography [...].*

(Lovecraft, *Letter to Miss Margaret Sylvester*; emphasis added)

The third element, the "gods," their human followers, and their acolytes is also enormously relevant, largely because of the cross-references and allusions not only within Lovecraft's own work, but with the writings of other authors. Lovecraft himself explains this in one of his missives:

For the fun of building up a convincing cycle of synthetic folklore, all of our gang frequently allude to the pet daemons of the others—thus Smith uses my *Yog-Sothoth*, while I use his *Tsathoggua*. Also, I sometimes insert a devil or two of my own in the tales I revise or ghost-write for professional clients. *Thus our black*

pantheon acquires an extensive publicity & pseudo-authoritativeness it would not otherwise get.

(Lovecraft, *Letter to William Frederick Anger*; emphasis added)

These creatures are particularly terrifying because of “the declared insufficiency of the description, combined with a literary world in which this monster is a genuine player rather than a mere image. The description is horrific only insofar as it undermines any distinct image” (Harman 27). It is interesting to reflect here on Ryan’s Principle of Minimal Departure, which argues that we reconstrue alternate worlds as being the closest possible to the reality we know. In other words, when we imagine a fictitious world, we do so in a way that is as close as possible to the world we know. That is, readers assume a fictitious world resembles the real world unless otherwise indicated. It seems that Lovecraft’s insistence on the impossibility of describing his creatures was an attempt to prevent the reader from filling in the gaps, making them aware that they should not imagine anything remotely resembling the creatures they already know:

The Thing cannot be described—there is no language for such abysses of shrieking and immemorial lunacy, such eldritch contradictions of all matter, force, and cosmic order.

(Lovecraft, “The call of Cthulhu” 52)

The colour, which resembled some of the bands in the meteor’s strange spectrum, was almost impossible to describe; and it was only by analogy that they called it colour at all.

(Lovecraft, “The Colour out of Space” 22)

The thing itself, however, crowded out all other images at the time. It would be trite and not wholly accurate to say that no human pen could describe it, but one may properly say that it could not be vividly visualised by anyone whose ideas of aspect and contour are too closely bound up with the common life-forms of this planet and of the three known dimensions.

(Lovecraft, "The Dunwich Horror" 66)

On the other hand, these creatures are intimately linked to the use of teratonyms, "monstrous inventions that estrange the sound patterns of English and obscure the kinds of meaning traditionally associated with literary onomastics" (Robinson, "Teratonymy" 127). Among other defining qualities, Lovecraft's work is characterized by its lexical eccentricities (Robinson, "The Abysmal Style of HP Lovecraft"), such as the use of archaic forms and spelling of words, the use and abuse of adjectives, and even as Keith Luethke notes, an intentional misuse of adjectives and modifiers. But the use of teratonyms is one of Lovecraft's most recognizable hallmarks with the greatest impact on popular culture.

Teratonyms are built on the basis of "sounds-patterns that lie outside English phonetics or run contrary to the phonotactics of the language to result in anti-aesthetic constructions" (Robinson, "Teratonymy" 127). Lovecraft's intention in using teratonyms was to capture the phonetics of non-human words, typical of beings with vocal organs completely different from those of humans. One of Lovecraft's best-known canticles is the one corresponding to Cthulhu: "Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn" (Lovecraft, "The Call of Cthulhu" 44). This canticle could be translated as "in his house at R'lyeh dead Cthulhu waits dreaming," which also appears in his other works, including "The Shadow over Innsmouth" (Lovecraft 178). In addition, Lovecraft intended for these to make unpleasant sounds, since "[his] teratonyms are not only names that

designate monsters and their hellish abodes, but onomastic constructions which are in and of themselves monstrous in sound, form, and sense” (Robinson, “Teratonymy” 128).

Finally, the sense of the cosmic, both spatial and temporal, is also a key element in the construction of his mythology. The idea of "nameless aeons and inconceivable dimensions" (Lovecraft, “The Whisperer in Darkness” 91) linger like a shadow across a significant portion of Lovecraft's stories.

All these elements make up the mythology that Lovecraft and other writers conceived, but it is the intertextual relationships that, by “creating a network of allusion and reference” (Lippert 41), have contributed significantly to keeping Lovecraft’s mythology alive long after his death in the popular culture. The cross-references, the common locations, or the mention of stories or facts from other tales, give verisimilitude to the mythology, blurring the boundaries between reality and fiction. This is the aim of the present work: to analyze quantitatively the intertextual relationships existing in Lovecraft's work, focusing on those elements of his mythology that are shared by different tales. This includes the first three subsidiary icons that Joshi (“The Cthulhu Mythos”) identifies: fictitious places, occult books, and "gods" and acolytes, including the teratonyms linked to their invocations and canticles.

Procedure followed in the analysis

All Lovecraft’s tales analyzed in this paper have been obtained from *The H.P. Lovecraft Archive*, focusing specifically on his fiction. The final list used is shown in Appendix 1 and includes 102 tales, novellas, and novels, covering his entire career as a writer.

The analysis consists of three parts. The first stage involved data cleaning and preparation, which in this case is extremely complex. Following the usual procedure, work was carried out on all the words that make up each tale: tokenization (division of the text into smaller

pieces or tokens, which in the case of this paper are words), transformation of capital letters to lowercase and elimination of stop words (words that have no meaning on their own, as they modify or accompany others, such as articles, pronouns or prepositions). All tokens have then been compared with English words, using the Grady Augmented dictionary (Rinker) as a reference. This dictionary contains the Moby Thesaurus List by Grady Ward, augmented with proper nouns: U.S. states, countries, Mark Kantrowitz's "Names List," months, and contractions.

Theoretically this should allow the identification of the fictitious terms included in the various works, either places ("Miskatonic", "Arkham", "Kingsport", etc.), occult books (*Necronomicon*, etc.) or "gods," "minions" and teratonyms ("Cthulhu", "Yog-Sothoth", "shoggoth", etc.). However, this first approach presents several problems. First, having performed a tokenization at the word level, the algorithm does not capture terms composed of several words, as it is the case of the occult books such as *Cultes des Goules*, *De Vermis Mysteriis* or *Unaussprechlichen Kulten*. Fortunately, it is easy to modify the search algorithm to correct these problems. The second problem is much more complex to solve, since, in order to evaluate the intertextual relationships between the different tales, it is necessary to establish the correspondences between words that refer to the same element, even if the spelling is different. The most obvious case is the *Necronomicon*, which is sometimes referred to as *Al-Azif*, or the name of its author, sometimes referred to as "Abdul Alhazred", and sometimes as "Alhazred." But the same happens with many others, which present slight variations from one work to another, in some cases intentional and in others probably accidental, such as the name of Cthulhu, which also appears as "Cthulhutl", "Cloodoo", "Clulu" or "Tulu". Or the case of "Shub-Niggurath", which is sometimes referred to as "black goat of the woods with a thousand young." To solve this

problem, it has been necessary to manually define a map of relationships, identifying those terms that, for the purposes of this work, should be considered equivalent.

Finally, the typographical typos, Lovecraft's lexical eccentricities, and his use of archaic spelling leads to the appearance of a huge number of words as are not found in the dictionary (e.g. “abaout” instead of about, “haouse” instead of house, etc.). This has been the main problem: a first search identified more than 6,300 terms. For this reason, a manual revision of all the terms identified was carried out, eliminating those that were not related to mythology, but rather responded to the aforementioned errata or Lovecraft's lexical eccentricities. This process may introduce errors and inaccuracies, but unfortunately the manual revision is essential given the characteristics of the texts analyzed. However, it is possible to be reasonably sure that if there are any errors, they would be minor and would not significantly affect the results of the research. Finally, the list of selected words contains 458 terms, and the algorithm has identified the number of occurrences of each of these terms in each work.

In the second stage, this paper develops a map of the intertextual relationships between all the works, considering the number of shared elements. Thus, two works that mention the same element (for example, *Necronomicon*) will be related. We will represent these intertextual relationships as a network or graph, in which the nodes of the network represented the tales and the edges represented the interconnections between them. Logically, the more elements two tales shared, the more intense this intertextual relationship is. Drawing addresses this issue by fitting the graphics with intensities: the greater the relationship, the more intense the connections (wider edges). We considered that the links have a weight or intensity (some connections are more important than others) and are undirected (the edges don't point in a particular direction).

In the third stage, the analysis includes the calculation of two centrality indexes for each node. The centrality of a concrete tale (node) somehow captures the "importance" of a focal node within the network. There are different definitions of centrality, and different centrality measures. This work uses two measures of centrality. The first one is the degree centrality measure (DCM), defined as the number of connections of a node, disregarding the weight of the connections (Freeman, 1978). For example, "The Whisperer in Darkness" (1930) shares one or more words with 40 different tales. In some cases, it shares a single word, as is the case of "Azathoth" (1922), while in others there is a much larger number of common terms, as is the case of "At the Mountains of Madness" (1931), with 12 shared words. This metric does not take into consideration the intensity of the connection, so that from DCM's point of view, we simply know that "The Whisperer in Darkness" is related to 40 works. The second metric used is vertex strength (VS), which does take into consideration the intensity of the connections. It is calculated as the sum of the weights of the connections, disregarding the number of connections (Barrat et al.). In "The Whisperer in Darkness", we know that it contains 12 common terms with "At the Mountains of Madness", 10 with "The Horror in the Museum", 10 with "The Mound", and so on. The VS would be calculated by simply adding all these numbers together, which would lead to a value of 166.

The analyses were conducted in R (R Core Team), a programming environment oriented to statistical analysis, using several packages to elaborate the code: "network" (Butts), "qdapDictionaries" (Rinker), "ggplot2" (Wickham, "ggplot2"), "tidytext" (Silge and Robinson), "stringr" (Wickham, "stringr"), "GGally" (Schloerke et al.), "readtext" (Benoit and Obeng) and "dplyr" (Wickham et al).

The network exposed

Table 1 shows the 10 fictitious terms most frequently repeated in the corpus (those appearing in the largest number of tales). We find deities and creatures, as well as occult books and fictional places. We also find the term “Iä” frequently in invocations or praises to the creatures of the myths (“Iä! Iä! Shub-Niggurath!” or “Iä! Iä! Cthulhu fthagn!”), and whose translation, according to the fan community, would be “hail.” Interestingly, among these 10 words we find the three subsidiary icons that Joshi (“The Cthulhu Mythos”) identifies, which points to the fact that none of them seems more relevant than the others in the process of mythology construction. Another noteworthy aspect is that the most mentioned deity, both in terms of the number of works in which it appears (12 tales) and the number of occurrences in the entire corpus (78 times) is “Cthulhu,” which seems to justify the name of the myths. As Joshi points out, in 1931 August Derleth proposed to Lovecraft the name “The Mythology of Hastur,” but Lovecraft objected due to the fact that “Hastur” was a relatively minor element in his mythology (Joshi, “The Cthulhu Mythos”). Indeed, “Hastur” is only mentioned twice in “The Whisperer in Darkness.” After Lovecraft’s death, Derleth invented the term “Cthulhu Mythology”, later changed to “Cthulhu Mythos” (Joshi, “The Cthulhu Mythos”). In view of the analysis carried out, this is undoubtedly a wise decision. “Shub-Niggurath” could also have been an alternative since it appears in almost the same number of tales, but the fact that its name is repeated only 22 times, compared to the 78 occurrences of “Cthulhu”, places it at a lower plane of importance. Finally, as might be expected, *Necronomicon* is the fictitious term that appears in the greatest number of stories, 19 in all.

Figure 1 shows the constructed graph of connections, in which the nodes correspond to the tales and the edges to the connections between them. The width of the edges corresponds to the intensity or weight of the relationship: the more different terms two

tales share, the more intense the relationship and the wider the edge will be. Looking at the connections between the different works, we observe that there are three main categories (Appendix 1 includes titles and connections of each novel, which have not been incorporated in the figure to avoid making the graphical representation confusing). There is a first category with a set of disconnected stories, which do not share terms with other works. Some of these stories belong to Lovecraft's beginnings as a writer, such as "The Secret Cave" (1898), "The Little Glass Bottle" (1897) or "The Beast in the Cave" (1905), but there are also much later works such as "The Evil Clergyman" (1933) or "The Challenge from Beyond" (1935). However, there seems to be a certain relationship between the time at which each tale was written and the number of connections it presents, as we will discuss in detail below. Secondly, we observe the presence of other stories with a limited number of connections, such as "Old Bugs" (1919), "The Shunned House" (1924) or "The Tree on the Hill" (1934). Finally, a group of very densely related works appears in the central zone. It is this last group of tales that, with their abundant cross-references, contributed to shaping the mythology. It is precisely here where we find some of Lovecraft's iconic works such as "The Call of Cthulhu" (1926), "The Dunwich Horror" (1928), "The Whisperer in Darkness" (1930), "At the Mountains of Madness" (1931) or "The Shadow over Innsmouth" (1931). In particular, of the 102 tales analyzed, the 22 most connected ones (which appear in the central part of Figure 1 and account for 21.6% of the corpus) generate 80.7% of all weighted connections (VS). The histogram of VS (see figure 2) indicates that these 22 works present a VS over 50. In other words, it is a small number of stories that configure the central core of the mythology through a dense network of intertextual relationships.

Figure 1

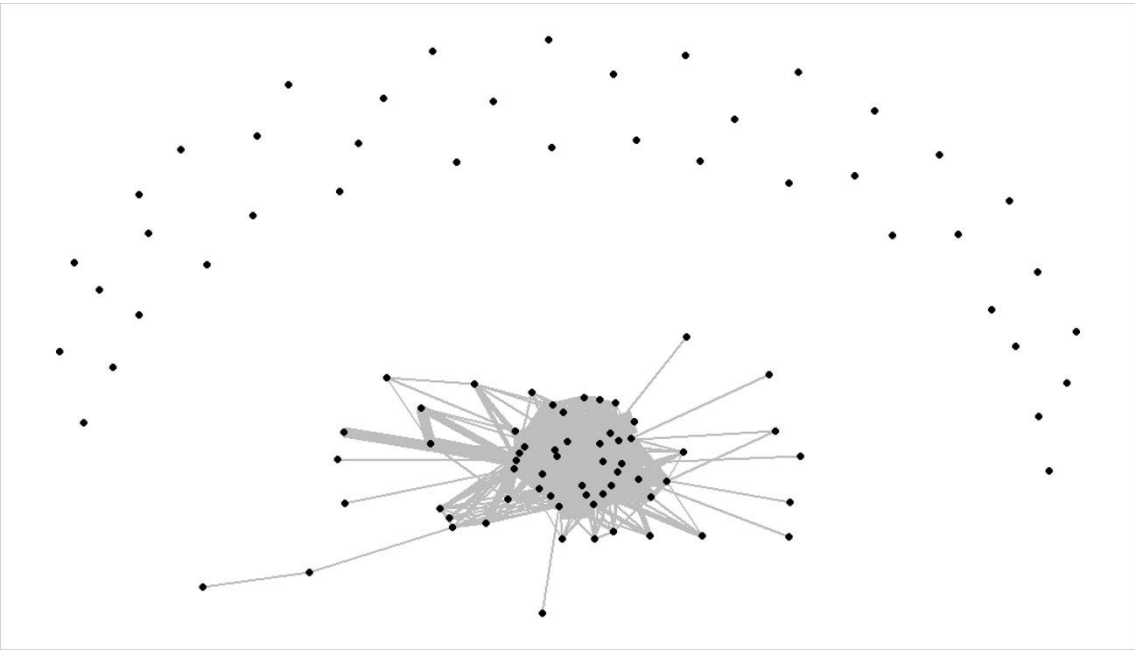
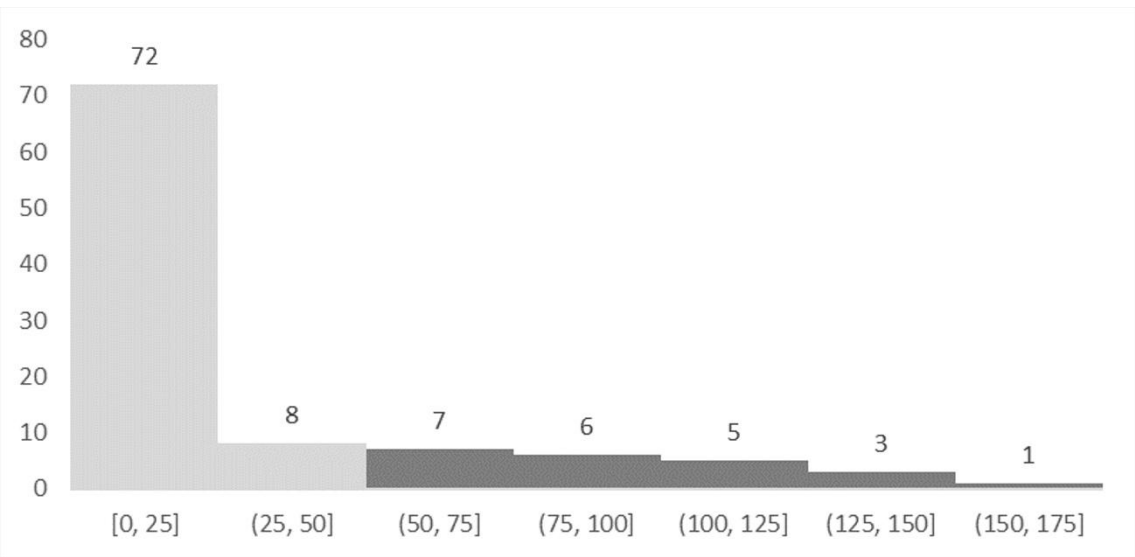


Figure 2



Focusing the analysis on these 22 works (see table 2), we can observe that practically all the stories belong to Lovecraft’s last period, with only one novel, “The Festival” (1923), prior to 1926, the year in which “The Call of Cthulhu” was written.

In addition to presenting an enormous intertextual richness, these core tales present a considerable repetition of themes, as some creatures, places and occult books present an

average frequency much higher than in the rest of the works. To give some examples, “Cthulhu” is mentioned 74 times in this subset of tales, when its frequency in all Lovecraft's works is 78 times. In other words, it is in the 22 novels that make up “the central core” of the myths where “Cthulhu” is mentioned 95% of the times it appears in the whole corpus. Something similar happens with “Shub-Niggurath” (95%), *Necronomicon* (94%), and many other keywords in the mythology. Figure 3 compares the list of the 10 most frequent words (see table 1) in both groups of works.

Figure 3

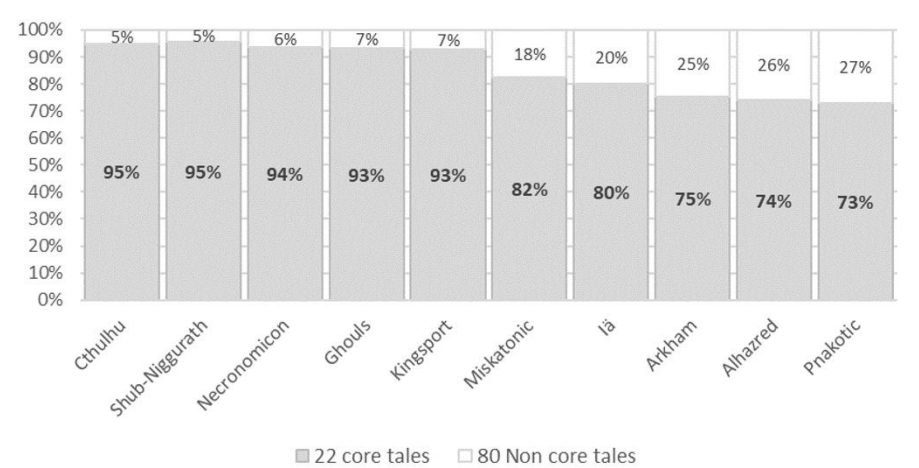
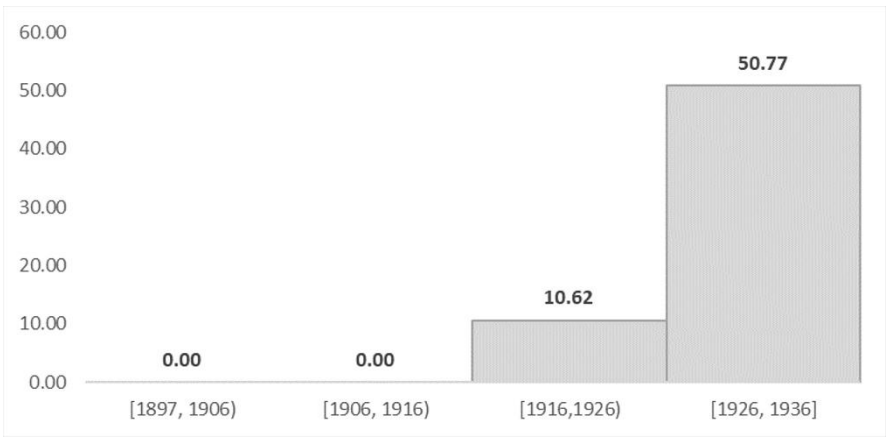


Figure 4



As it can be seen in table 2, “The Whisperer in Darkness” (1930) is the most central work considering the VS and is also connected to 40 different stories (DCM). Additionally, an

individualized analysis of this tale shows that the densest connections are those it shares with “At the Mountains of Madness” (1931), “The Horror in the Museum” (1932) and “The Mound” (1929/1930).

An analysis of the most repeated fictitious terms in “The Whisperer in Darkness” reveals very interesting points. First, the abundance of deities and creatures mentioned in the work is surprising: “Cthulhu,” “Shub-Niggurath,” “Azathoth,” “Nyarlathotep,” “Tsathoggua,” “Yog-Sothoth,” “Yig” and “Hastur,” being “The Whisperer in Darkness” the only Lovecraft’s story in which the latter deity is mentioned, as indicated above. Additionally, the “mi-go” race is cited, as well as numerous imaginary places such as “Arkham,” “Leng,” “Miskatonic,” “N’kai,” “R’lyeh,” “K’n-yan” or “Commorion.” It is also one of the two works in which the Atlantean high-priest “Klarkash-Ton” appears, a nickname of the writer Clark Ashton Smith and a character of some relevance in mythology. Occult books such as the *Necronomicon* and the *Pnakotic Manuscripts* also appear in the work. The presence of all these elements seems to justify the centrality of the tale in the mythology created by Lovecraft, which has been confirmed quantitatively. From a stylistic point of view, the work presents many elements characteristic of Lovecraft's style. First, the story is narrated by Albert N. Wilmarth, a professor of literature at Miskatonic University in Arkham, a typical character: as Houellebecq points out "in his stories the role of the victim is generally played by an Anglo-Saxon university professor who is refined, reserved, and well-educated" (128). On the other hand, in the descriptions we find another of Lovecraft’s hallmarks, which emphasizes the limitations of language to describe objects. This failure of language is, in fact, "[one more breakdown of the insignificant human episteme]" (Hernández Roura 31):

But though that voice is always in my ears, I have not even yet been able to analyse it well enough for a graphic description. It was like the drone of some loathsome,

gigantic insect ponderously shaped into the articulate speech of an alien species, and I am perfectly certain that the organs producing it can have no resemblance to the vocal organs of man, or indeed to those of any of the mammalia.

(Lovecraft, "The Whisperer in Darkness" 94)

I could see at a glance; for the sharply defined pebbles and grass-blades in the field of vision gave a clear index of scale and left no possibility of a tricky double exposure. I have called the thing a "footprint", but "claw-print" would be a better term. Even now I can scarcely describe it save to say that it was hideously crab-like, and that there seemed to be some ambiguity about its direction.

(Lovecraft, "The Whisperer in Darkness" 90)

Another typical element is also present in the story: allusions to sounds characterized by their unpleasant nature and representing the terror of the unknown (van Elferen):

I had been able to understand the speaker when wholly across the room, and once or twice it had seemed to me that the faint but penetrant sounds represented not so much weakness as deliberate repression.

(Lovecraft, "The Whisperer in Darkness" 115)

[...] the of their footfalls having something about it like a loose, hard-surfaced clattering—as of the contact of ill-coordinated surfaces of horn or hard rubber. [...]. On the nature and appearance of those responsible for the sounds, I did not care to speculate.

(Lovecraft, "The Whisperer in Darkness" 117)

Andronova and Torhovets highlight that Lovecraft used epithets "in order to transfer the dark, mysterious and sinister atmosphere of his unique literary world by appealing to the

reader's feeling of disgust, repulsion and fear" (49), by using sight, smell, and sound. "The Whisperer in Darkness" is a good example of this tactic. In this text, we also find the allusions to unfathomable dimensions that Ingwersen (57) notes as a typical element in Lovecraft's work, a strong atmosphere of "death, darkness and melancholy" (Norman 6), and of course "a sense of the cosmic, both spatial and temporal [...]" (Joshi, "The Cthulhu Mythos"). That is, we are dealing with a typical Lovecraft tale: as Joshi points out "[The Whisperer in the Darkness] is still one of Lovecraft's great tales, full of a densely textured atmosphere derived from realistic but poetic descriptions of the dark woods of Vermont" ("The Fiction of Materialism"). Based on the results of the quantitative analysis, it must also be concluded that "The Whisperer in Darkness" is a key piece in the construction of Lovecraft's mythology, as it presents an unusually high number of intertextual relationships with his other works.

Something similar can be said of "At the Mountains of Madness" (1931). The narrator is William Dyer, a geologist and professor at Miskatonic University, so here again we find the prototypical Lovecraft character: "taciturn academics" (Harman, 50) "refined, reserved, and well-educated" (Houellebecq, 128). This text also offers a sense of the cosmic, both spatial and temporal: "In the whole spectacle there was a persistent, pervasive hint of stupendous secrecy and potential revelation; as if these stark, nightmare spires marked the pylons of a frightful gateway into forbidden spheres of dream, and complex gulfs of remote time, space, and ultra-dimensionality" (Lovecraft, "At the Mountains of Madness" 255-56). We also find the rest of Lovecraft's characteristic elements: the limits of human language to describe that which can hardly be described, unpleasant sounds, and allusions to unknown dimensions, to cite a few examples. In conclusion, these two works are not only key from the point of view of intertextual

relationships, as we have seen in this article, but they are also typical examples of Lovecraft's style.

A question that also arises from this map of intertextual relations is its correlation both with the year in which the stories were written and Lovecraft's co-authors. Figure 4 shows the average VS by time intervals. For the tales written in a period that spans more than one year, the completion date has been considered. There is a clear increase in the VS from 1926, the year in which "The Call of Cthulhu" was written. Prior to 1916, the average VS per novel is zero. Between 1916-1925 the average VS per novel is 10.6, and in the last stage of his career as a writer (between 1926-1936), the average is 50.8. In fact, the correlation coefficient between the year of publication and VS is 0.37. This confirms Joshi's hypothesis that "[The Cthulhu Mythos] dominates the stories of the last decade of his life" and that 1926 seems to be a key year in Lovecraft's literary production, marking a disruptive change in the style and content of his works ("Lovecraft and Religion").

Regarding co-authorship and considering his entire literary production, there are small differences between the works: the average VS in the works written solely by Lovecraft is 26.4, which is somewhat higher than the average of 23.4 in co-authored works. However, if we focus exclusively on his last period as writer (between 1926-1936) a notable difference is observed. We find 46 works, 23 of which were written with other co-authors. The stories written individually have an average VS of 63.8, while those written in co-authorship have an average of 31.9.

Final reflections

This article analyzes the way in which Lovecraft configures his mythology, focusing the analysis on the intertextual relationships between his different stories. Specifically, the article examines the cross-references and common elements in different works, such as

locations, creatures, or occult books. The analysis includes a corpus of 102 stories, covering Lovecraft's entire writing career.

The results lead us to several conclusions. First, it is confirmed that the three of the four subsidiary icons that Joshi ("The Cthulhu Mythos") identifies as key elements in the mythology and this article analyzes, are indeed very relevant in Lovecraft's works. All of them are present in many of his tales: imaginary New England locations, as well as other fictional places, such as "R'lyeh," occult books, and gods and their acolytes. It has also been verified that the construction of the myths occurred mainly in Lovecraft's later period: it is in the works of his last period in which the majority of the elements of the mythology become established. Results also show that from 1926 onwards there was a remarkable increase in Lovecraft's use of intertextual relationships: in the last decade of his life as a writer, Lovecraft constructed a dense network of stories intimately related through a common mythology. Both results had already been proposed in previous research: as previously mentioned, Joshi points out that "[Cthulhu Mythology] dominates the stories of the last decade of his life" ("Lovecraft and Religion"). This work has confirmed quantitatively this point.

Considering intertextual relations, this article verifies that there seems not to be differences between the works written by Lovecraft and those written in co-authorship, except in his last stage, when the stories he wrote individually have double the average VS as co-authored works.

Finally, this paper identifies 22 tales as the central core of the "Cthulhu Mythos", that is, those works that seem to have majorly contributed to building this mythology. As expected, these tales include Lovecraft's iconic works. Two metrics were used to arrive at this core set. First, the density of connections with other stories, that is, their intertextual relationships. The 22 identified stories account for 80.7% of all VS. Secondly, in these

works the relative frequency of key elements in the mythology (fictitious places, creatures, and occult books) is much higher than in the rest of Lovecraft's works. Additionally, the quantitative analysis suggests that the two most central works are "The Whisperer in Darkness" (1930) and "At the Mountains of Madness" (1931).

The "Cthulhu Mythos" is a system of meaning that situates the reader in a distinctive aesthetic space. Barely 22 works are key to making up this system of meaning, with cross-references and shared elements that end up drawing a common and very specific landscape. It is interesting that such a small (but highly interconnected) percentage of the works analyzed configures the core of this mythology. This result implies that the study of the "Cthulhu Mythos" could be particularly fruitful by analyzing these stories together. The individual analysis of these tales is certainly interesting, but their joint study—once the central core of the mythology has been identified—could lead to remarkable conclusions, especially from a quantitative viewpoint.

For future research, it is proposed to extend the analysis to other authors in Lovecraft's circle who contributed their stories to the creation of the "Cthulhu Mythos". This is the case, for example, of August Derleth, Clark Ashton Smith, and Robert Bloch, among others. It would be of interest to analyze how the works of different authors relate to each other intertextually based on the three elements mentioned (places, creatures, and occult books), since these cross-references were common practice in Lovecraft's circle "to build up quite a pseudo-convincing background of dark mythology" (Lovecraft, *Letter to Miss Margaret Sylvester*).

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Tables

Fictitious term	# of tales	# of occurrences
Necronomicon	19	63
Arkham	17	170
Alhazred	16	23
Miskatonic	14	62
iä	13	40
Cthulhu	12	78
Shub-Niggurath	11	22
Pnakotic	11	22
Ghouls	10	115
Kingsport	10	42

Table 1: list of the 10 fictitious terms in decreasing order according to the number of tales in which it appears (column “# of tales”). A third column with the number of occurrences in the entire corpus has been included.

Title	Year	Co-authors	DCM	VS
The Whisperer in Darkness	1930		40	166
At the Mountains of Madness	1931		38	147
Through the Gates of the Silver Key	1932/1933	E. Hoffmann Price	36	131
The Dream-Quest of Unknown Kadath	1926/1927		42	127
The Dunwich Horror	1928		33	122
The Thing on the Doorstep	1933		34	112
The Shadow out of Time	1934/1935		35	109
The Dreams in the Witch House	1932		34	106
The Horror in the Museum	1932	Hazel Heald	29	102
The Last Test	1927	Adolphe de Castro	31	89
The History of the Necronomicon	1927		30	88
The Haunter of the Dark	1935		29	88
Out of the Aeons	1933	Hazel Heald	28	87
The Mound	1929/1930	Zealia Bishop	29	86
The Shadow over Innsmouth	1931		31	79
The Festival	1923		29	75
The Diary of Alonzo Typer	1935	William Lumley	32	74
The Case of Charles Dexter Ward	1927		31	70
Medusa's Coil	1930	Zealia Bishop	27	69
The Call of Cthulhu	1926		26	61
The Silver Key	1926		20	54

Table 2: Core tales in descendent ordered according to their vertex strength (VS).