PLANT NAMES IN CONSTRUCTED WORLDS
Typological Issues

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ABSTRACT • This study investigates the extent to which plant names, coined within the context of fictional world-building, reflect the morphosyntactic and semantic-motivational structures characteristic of natural language phytonyms. The analysis begins by outlining the repertoire selection criteria, encompassing fictional worlds, sources, and methodologies for plant name identification. It then explores the strategies used to integrate plants into fictional settings, categorizing them into four distinct types based on two variables: the plant's real or fictitious nature and whether the naming language is natural or constructed (artlang). Furthermore, the study examines the alignment of invented plant names with Brent Berlin's five principles of ethnobotanical nomenclature, focusing on morphosyntactic and semantic aspects. The presence of phenomena such as synonymy and borrowing, typical of folk phytonym repertoires, is also analyzed, offering insights into the linguistic parallels between natural and constructed ecosystems.

KEYWORDS • Arltang; Word Coinage; Ethnobiological Nomenclature; Motivation.

1. Constructed worlds and created plants

In the process of world-building, creators make deliberate choices that shape the level of otherness within their constructed worlds. Among the foundational elements of this distinctiveness are fauna and flora, which significantly influence the cultures and ecosystems of the fictional inhabitants (Wolf 2018: 68). In fantasy settings, plants frequently fulfill the role of *farmakon*, while in science fiction, their function often extends beyond this to encompass broader symbolic and practical roles. As Bishop (2020: 3-4) observes, "plant life in s[cience] f[iction] transforms our attitudes toward morality, politics, economics, and cultural life at large, challenging and redefining traditional paradigms"[1].

The linguistic dimension mirrors the material one: as new elements are introduced into fictional worlds, they necessitate naming. This study examines the creation of phytonyms, focusing on both syntactic-morphological structures and semantic dimensions. To this end, a selection of constructed worlds, spanning fantasy and science fiction, was analyzed across diverse media.

[1] Parameters that, on the sidelines, have also been successful in philosophical (cf. at least Coccia 2016) and botanical speculation (cf. Mancuso, Viola 2015).

Many of these worlds originated for literary purposes, including Arda (Tolkien), the *Terre Occidentali* (Santoni), the Confederation of Nafilin (*Les guerriers du silence*, Bordage), Westeros (*A Song of Ice and Fire*, Martin), Earthsea (Le Guin), Arrkais (*Dune*, Herbert), Nokaï (Wach), and Ward (Werst). Others emerged from cinematic works, such as Pandora (*Avatar*) and the "galaxy far, far away" (*Star Wars*), or gaming environments like Faerûn (*Dungeons & Dragons*) and Skyrim (*The Elder Scrolls*). The study also considers hybrid sources, such as *The Wheel of Time* (Jordan), encompassing literary, cinematic, and gaming adaptations. To extract and analyze phytonyms, we consulted a range of sources, including encyclopedias (both print and digital), authorial and fan-driven materials, and specialized dictionaries where available for constructed languages (artlangs).

The narrative works were analyzed in their original languages, and the collection of phytonyms was conducted by identifying terms that could fit within the context of plant nomenclature[2]. These included generic references such as *plant*, *tree*, *bush*, *flower*, *leaf*, and *root*; terms related to medicinal contexts, such as *ingredient*, *infusion*, and *poison*; and collective terms like *forest*, *vegetation*, and *bunch*. This approach enabled the identification of over seven hundred names. However, due to the collection method employed, it is likely that not all plant names featured in the texts were exhaustively captured. Consequently, this study aims to present a series of qualitative analyses, which can serve as a foundation for more detailed quantitative investigations in the future.

2. Constructed languages (conlangs) and created plants: early reflections.

Our analysis reveals a wide spectrum of development among the fictional languages we examined. Languages like Na'vi (from *Avatar*), Quenya and Sindarin (from *The Lord of the Rings*), Wardwêsan (from *Ward*), Dothraki and High Valyrian (from *A Song of Ice and Fire / Game of Thrones*), and the Ancient Language of Nokaï are considered "complete" conlangs (whether basic or advanced) according to the classification of Johnson, Gutierrez and Campi (2024). However, the remaining works we studied primarily focus on naming languages, often without providing a glottonym.

When it comes to plant names, it's important to note that not every fictional plant receives a specific label. Authors often employ ostensive processes, relying on descriptions rather than explicit names. This approach serves a dual purpose: it contributes to the sense of otherness in the fictional world, making it feel unique and unfamiliar, while also minimizing the burden on the reader. Ostensive practices vary depending on the medium. In narratives, for instance, plants could be described and not named, relying on descriptive attributes to convey their identity, as in the following example:

> […] and they stood in the middle of a vast meadow, filled with circles of tiny mushrooms, white trumpet-like flowers, and shrubs with shiny black berries […] (Santoni 2013)[3]

[2] This analysis considered the typical presentation and integration of invented words within textual contexts; cf. Gee 2023.

[3] Original text: "e si trovavano in mezzo a un vasto prato, pieno di cerchi di minuscoli funghi, fiori bianchi simili a trombe e arbusti dalle bacche nere e lucide".

To avoid overwhelming the user's learning curve, elements of continuity with our world, alongside elements of otherness, can coexist within the same setting. To name these elements, creators may employ either an invented language or words from a natural language, typically the default language of the medium in question. This approach allows us to identify four distinct types of phytonyms, exemplified through plants from the Tolkienian universe (cf. Hazell 2006; Judd, Judd 2017):

> Type 1 – This category includes invented plant names for which the worldbuilder has assigned names in an artlang. For instance, a plant characterized by long leaves and small white flowers, known for its healing properties, is referred to as *athelas* in Sindarin and *asëa aranion* in Quenya.
> Type 2 – This type encompasses invented plant names that have been created in the medium's default language. The aforementioned plant is also known in Westron[4] as *kingsfoil*, a compound by king-GEN and foil 'leaf'[5].
> Type 3 – This category consists of real plants that are assigned names in one of the medium's artlangs. An example is *feren*, 'beech' in Quenya.
> Type 4 – This type includes real plants that are named using the medium's default language. For example, in Ithilien, a region of Middle-earth, *asphodels* are found.

This classification transcends Tolkien's works, as nearly all consulted texts contain examples of each identified phytonym type to varying degrees[6]. Table 1 shows other examples:

	Phytonym in artlang	Phytonym in default language
Invented plant	T1 *haquedi*, *barr* (Nokaï), *baitan-jan* (Faerûn), *akarso* (Dune), *sorfa* (WoT), *worghris* (SW), *pa'liwll* (Na'vi)	T2 *duckweed*, *snowflower* (D&D), *bat bloom* (TES), *fireflower* (Dune), *sheepstongue* (WoT), *nightkelp* (SW)
Real plant	T3 *paynäppl* 'pineapple' (Na'vi), *rēko* 'rose', *melvar* 'pear tree' (SIF, High Valyrian), *kerwa* 'oak' (Wardwesân)	T4 *aspen*, *alfalfa* (D&D), *nightshade*, *motherworth* (TES), *coffee*, *melon* (Dune), *pennyroyal*, *pine* (SIF)

Table 1 - Different types of phytonyms

It is important to note that the boundary between the first two types is not distinct, but rather forms a continuum. Within this continuum, we encounter designations that blend lexical elements from both the artlang and the medium's default language. For these designations, we will employ the category of mixed type (abbreviated Tm). As an example, consider excerpts from the first novel in the *Les Guerriers du Silence* (Warriors of Silence) cycle, the space opera by Pierre Bordage:

> […] The woman's hair, very long, had been braided and adorned with leaves of pink valef, a plant traditionally dedicated to wedding ceremonies […]

[4] Westron is the common language in the Tolkienian universe; it is realized, in the novel, with English.
[5] For a more detailed explanation of the relationship between the three designations, see below.
[6] The exceptions are Werst's two novels, which do not include any phytonyms of types 2 and 4. However, these works are collections of essays written in a language invented by the author, Wardwesân (with French translation opposite). Therefore, the default language in these novels is artlang itself.

> […] They had covered their bald heads with leaves of yellow valef […]
> […] Seeing her silhouette against the tops of the green cipreniers […]
> […] on the giant, translucent spuniers that lined the jasper and lapis lazuli porch, on the albotoès with their multicolored foliage, the scarlet fleurisiers, the black and white ampasètes of a sober and supreme elegance, the jajasitiers with their wide leaves forming a fine lace of copper and gold, and finally, the rare arborivoles whose floating tops, conected to the ground by fine, flexible, transparent vines, highlighted this fabulous vegetal luxuriance in mauve […] (Bordage 1993)[7]

The term *valef jaune* 'yellow valef' and *valef rose* 'pink valef' illustrate the blending of artlang and default language elements. *Valef* is not a French word, suggesting it belongs to one of the languages within Bordage's fictional world. However, the color terms *jaune* and *rose* belong to the default language. Similarly, in the subsequent excerpts, we encounter a series of phytonyms – *cipreniers, spuniers, fleurisiers, jajasitiers* – where an invented element is combined with the derivational morpheme *-ier* of the default language (for Corbin 1989: 38 *-ier* is the prototypical morpheme in plant name formation in French)[8]. This pattern of mixed names is not unique to Bordage's work, and is particularly prevalent when artlangs function primarily as naming languages.

> D&D: *chauntea*'s token, *ginyak*'s weed, *voj*-weed;
> Dune: *tunyon* wine;
> TES: *nirn*root;
> SW: *marcan* herb, *bubse* tree, grey *gabaki, n'omis* flower, *hai-ka* flower;
> WoT: *coren*root.

Among mixed-type phytonyms, compound nouns are more frequent than derived ones. In compound nouns, two lexical elements from different languages are combined. The element in the default language can appear either in the head of the syntagma, typically as a generic entry with classifier value, or in the specifier element, often as a color adjective. Derived phytonyms, on the other hand, usually combine an artlang root with a derivational suffix from the default language. In some cases, the use of Latin or Latinate suffixes, reminiscent of scientific nomenclature, can be observed. For example, we see *rominaria flower* and *ladalum* (SW).

We believe that type 2 designations should be interpreted as loan translations in the default language of the medium from one of the languages spoken in the created world. These designations are transparent, meaning they directly reflect the meaning of the original term in the created world language. This approach helps avoid overloading the medium with *alien* vocabulary. Context could also remark the status of translations of these names, as the following examples suggest:

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[7] Original texts: […] Les cheveux de la femme, très longs, avaient été tressés et ornés de feuilles de valef rose, plante traditionnellement dévolue aux cérémonies nuptiales […] ; Ils avaient recouvert leurs crânes chauves de feuilles de valef jaune […] ; En la voyant se-profiler entre les cimes des cipreniers verts […] ; […] sur les spuniers géants et translucides qui bordaient le perron de jaspe et de lapis-lazuli, sur les albotoès aux frondaisons multicolores, les fleurisiers écarlates, les ampasètes noir et blanc d'une sobre et suprême élégance, les jajasitiers aux larges feuilles formant une fine dentelle de cuivre et d'or, et enfin les rarissimes arborivoles dont les cimes flottantes et reliées au sol par de fines et souples lianes transparentes surlignaient de mauve cette fabuleuse luxuriance végétale […]

[8] Consider also that plant names appear in the plural, employing the morpheme of the default language; they can therefore be regarded as adapted borrowings.

[9] Original text: "Quei lunghi fiori color porpora che al Villaggio Alto le ragazze chiamano dita-di-morto".

> 'I will judge that when I see,' said Aragorn. 'One thing also is short, time for speech. Have you *athelas*?' / 'I do not know, I am sure, lord,' she answered, 'at least not by that name. I will go and ask of the herb-master; he knows all the old names.' 'It is also called *kingsfoil*,' said Aragorn; 'and maybe you know it by that name, for so the country-folk call it in these latter days.' / 'Oh that!' said Ioreth. 'Well, if your lordship had named it at first I could have told you'. […] Thereupon the herb-master entered. 'Your lordship asked for *kingsfoil*, as the rustics name it' he said; 'or *athelas* in the noble tongue, or to those who know somewhat of the Valinorean…' / 'I do so', said Aragorn 'and I care not whether you say now *asea aranion* or *kingsfoil*, so long as you have some'. (Tolkien 2004: 863-864)

> In the inner Grove they [the trees] were all of one kind, which grew nowhere else, yet had no name in Hardic but "tree" in the Old Speech, Ember said […] (Le Guin 2018)

> Those long purple flowers that in the High Village the girls call dead-fingers. (Santoni 2013)[9]

We do not know exactly which is the Old Speech word for *tree*, nor how it sounds, in the High Village language, *fingers-of-death*. However, it is interesting to note that the authors insist that these plants have transparent (and motivated) names; we will return to these aspects later. The quoted passage from Tolkien is more complex; in our previous discussion, we mentioned this plant, which is known by three names: *athelas* in Sindarin, *asëa aranion* in Quenya, and *kingsfoil* in Westron (the common language, rendered in literary fiction as English). In all three languages, the phytonym is transparent. For instance, *athelas* can be broken down into *athe-* 'healing' and *las* 'leaf'; in contrast, *asëa aranion*, consists of *asëa* 'beneficial, helpful, kindly' and *aranion* 'king-GEN'; the Westron name can be analyzed as *kings* 'king-GEN' and *foil*, which in Middle English referred to 'leaf'[10]. Notably, the Westron name is a compound, like the Sindarin and the Quenya names, ideally it combines the head element of the Sindarin name with the specifier of the Quenya name; doing so, the construction removes any lexical reference to one of the plant's properties, specifically its healing powers.

3. Berlin's ethnobotanical classification principles between phytonyms in created worlds

Brent Berlin outlines a set of principles that illustrate how traditional human cultures lexicalize the classification of the natural world (Berlin 1992). By *traditional human cultures*, we refer to any human culture that diverges from the paradigms of western scientific culture. Interestingly, many of these principles can also be observed in the languages of cultures influenced by Western science. For instance, plant names in national languages often inherit designations from a pre-scientific phase of their respective cultures, and even botanical nomenclature is partially affected, as Milică (2012) has shown. More intriguingly, for the purposes of our contribution, is the observation that invented phytonyms also share these characteristics. To better understand this, we will now explore the principles outlined by Berlin (1992: 34-35), and illustrate which traits are reflected in the artlangs we have observed.

> 1. Taxa of the ranks of kingdom and intermediate are generally not named. There is growing evidence that some covert life-form taxa may also be found. When such taxa are labeled, they often show

[10] Although the meaning has fallen into disuse, it remains a component of several popular phytonyms, such as *trefoil* 'clover', *cinquefoil, milfoil* 'yarrow'.

> polysemous relations with taxa of subordinate rank. (Berlin 1992: 34)

To the extent of our interest, among the more developed artlangs considered – such as Na'vi, Wardwesân (Werst 2011, 2014), High Valyrian, and Dothraki (Littauer 2016) – there is no entry designating the plant or flora as a whole. In contrast, the concept seems to exist in Quenya. We find several terms: *lauki* 'vegetable, plant (species)', *laute* 'living thing, (especially vegetable)', *laima* 'plant'; notably, we also encounter the synonym *olve* 'plant, growing things with roots in the earth'. Strack (2024, s.v. #olva) comments that this word primarily refers to plants as a category of beings (as in the plant kingdom), distinguishing it from an individual plant, which would be referred to as *laima.* The hypothesis that *olve* designates the plant kingdom is further supported by the fact that in *The Silmarillion olvar* 'olve-PL' is contrasted with *kelvar* 'celva.PL', an entry translated as 'animals, living thing that moves' (Strack 2024, s.v. #celva). *Kelvar* is derived from the Middle Primitive Elfic root *kel-* 'go, run (especially of water), flow away downhill'; this distinction highlights a significant characteristic of the animal kingdom – free movement – in contrast to the more stationary nature of the plant kingdom.

> 2. Names for plants and animals exhibit a lexical structure of one of two universal lexical types that can be called primary and secondary plant and animal names. These types can be recognized by recourse to linguistic, semantic, and taxonomic criteria. Primary names are of three subtypes: simple (e.g., *fish),* productive (e.g., *catfish),* and unproductive (e.g., *silverfish).* Secondary names (e.g., *red maple, silver maple),* with generally specifiable exceptions, occur only in contrast sets whose members share a constituent that refers to the taxon that immediately includes them (e.g., *maple*). (Berlin 1992: 34)

The languages spoken in the constructed worlds match the different types of primary nouns described by Berlin. Both *simple primary phytonyms* (formed by a single lexical element) and *unproductive primary phytonyms* (formed by two or more lexical elements, usually syntagmatic, in which no element refers to a higher taxon; cf. Berlin 1992: 28) recur in complete artlangs and naming languages. Additionally, we can find several examples among the phytonyms of the T2, as shown in Table 2:

Simple primary names	*cavanter, kirin* (D&D); *akarso, pilingitam* (Dune); *hranna* (SIF, Dothraki); *tetias* (TES); *nlora* (SW); *marisin* (WoT)
[complex] Unproductive primary names	*ghostskin, dragon's breath* (GoT); *gift to the thirsty* (Dune); *kelemvor's kiss, chauntea's token* (D&D); *healall* (WoT)

Table 2 - Different types of Primary names

Productive primary phytonyms are formed by two or more lexical elements, typically in a syntagmatic structure. In this structure, one element serves as the head of the syntagma and refers to a higher taxon. This group of phytonyms varies in frequency across different languages. Among the languages observed, Na'vi stands out with the highest number of occurrences; the specifier-specified order (similar to English) places the classifier element second in the syntagm, sometimes showing clipping phenomena. Below is Table 3, which lists phytonyms constructed with the classifiers *'ewll* 'plant', *utral* 'tree', and *syulang* 'flower':

name	meaning	Clipped form	Primary complex phytonyms
‘ewll	‘plant’	-wll	*’ele’wll*; *fkxakewll*; *fngapsutxwll*; *fwäkìwll*; *hìrumwll*; *paywll*; *pxiwll*; *tìhawnuwll*; *tsyorina’wll*; *väfewll*; *yawrwll*
utral	‘tree’	utral ; -ut	*koaktutral*; *tautral*; *fyìpmaut*; *paymaut*; *pxiut*; *rumaut*; *rumut*; *värumut*; *vozampasukut*
syulang	‘flower’	-syu(l)	*paysyul*; *tarsyu*; *tsawksyul*

Table 3- Na’vi primary complex phytonyms

In the Tolkienian languages the structure can be traced, although it is less productive[11]:

Quenya
laima ‘plant’ > *nasta laima* ‘lanceolate plant’ (T3 thistle);
alda ‘tree’ > *lavar alda* ‘golden-flowered tree’ (T1); *culum alda* ‘orange tree’ (T3 laburnum);
ornë ‘tall tree’ > *malin ornë* ‘golden-yellow tree’ (T1);
lassë ‘leaf’ > *taniquelasse* ‘leaf of Taniquetil’ (T1) (Judd 162)
losse ‘flower; (rose)[12]’ > *endillos* ‘flower of the plain’;
lot ‘flower’ > *fumelot* ‘flower of sleep’ (T3 poppy); *camilot* ‘red flower’ (T1)
Sindarin
lossë ‘flower’ > *mallos* ‘golden flower’ (T1)
loth ‘flower’ > *lurloth* ‘flower of sleep’ (T3 poppy)
lasse ‘leaf’ > *athelas* ‘healing leaf’ (T1)
Westron
foil ‘leaf’ > *kingsfoil* (T2)

Derivation phenomena are prevalent in Wardwesân (Werst 2011, 2014): almost all fruit plant names follow the pattern of French (the mother tongue of the creator of Wardwesân) whereby the plant name is given by the name of the fruit + suffix (*-eth* in wardwesân; *-ier* in French): *barbeth* ‘fig tree’, *gāreth* ‘apple tree’, *kābeth* ‘cherry tree’, *raxaneth* ‘raxan tree’ (it’s the unique T1 name), *taweth* ‘almond tree’, *waxeth* ‘walnut tree’, *zarbareth* ‘chestnut tree’, *zerzeth* ‘mango tree’; note that ‘tree’ in Wardwesân is *yen*.

In naming languages, complex primary phytonyms are generally common; most Tm plant names fall into this category.

wisp*weed*, wax*flower* (D&D);
blood*grass*, fire*fern* (TES);
smoke*berry*, devil*grass* (GoT);
marins*leaf*; timsin *root* (WoT).

Secondary designations are significantly less common than primary designations. While Na’vi exhibits a few sets of names that might suggest a relationship between primary and secondary

[11] All of the following examples are from Strack (2024).
[12] The meaning ‘rose’, which appears in Tolkien’s early lexical collections, is later deleted. Cf. Strack (2024, s.v.).

designations, as *paywll* ‘water plant’ and *txumpaywll* ‘poisonous water plant’, these potential secondary designations lack a contrast set, a crucial criterion according to Berlin. A similar lack of contrast sets is observed in other complete conlangs. Beyond the examples of *valef jaune* and *valef rose* by Bordage, some contrast sets can be found that are based on real-world plants, as *red fennel*, *grey fennel* and *white fennel* in relation to *fennel* (WoT).

> 3. A specifiable relationship can be observed between the names of taxa and their rank. Life-form and generic taxa are labeled by primary names; subgeneric taxa are labeled, in general, with secondary names.
>
> 4. There are two well-understood conditions under which subgeneric taxa may be labeled by primary names, although these two conditions do not account for all of the empirically observed data. The first condition (4a) occurs when the name of the prototypical subgeneric is polysemous with its superordinate generic. Disambiguation of polysemy is accomplished by the optional occurrence of a modifier glossed as ‘genuine’ or ‘ideal type’. The second condition (4b) occurs when nonprototypical subgenerics refer to subgeneric taxa of great cultural importance. (Berlin 1992: 34)

The third principle is confirmed when contrast sets are created using terrestrial plants, with the real-world plant serving as the prototypical element.

Regarding the the fourth principle, only two instances can be identified that meet the first condition: *leaf* for *pipe-weed*, in Tolkien, and *tree* for a species growing in the inner Grove in Earthsea (see previously quoted passage). Both examples appear to demonstrate species names receiving a generic name through antonomasia, a phenomenon observed in natural languages, though more common among species and subspecies. This is the case with *èrbu* ‘chestnut tree’ < Lat. ARBŎREM ‘tree’ which is encountered in some dialects of northern Italy (AIS, map VII.1290).

4. Meanings and motivations in the phytonyms of constructed worlds

We preferred to deal in a separate section with the semantic issue, which constitutes Berlin’s (1992: 37) fifth principle.

> 5. Ethnobiological nomenclature is semantically active in that the linguistic constituents of plant and animal names often metaphorically allude to morphological, behavioral, or ecological features that are nonarbitrarily associated with their biological referents.

The phytonyms of constructed worlds partially adhere to this principle. Similar to natural languages, there exists a mixture of opaque and transparent nouns within artlang repertoires, as evidenced by the examination of dictionaries and glossaries created for these languages, particularly those that are more developed. The co-occurrence of transparent and opaque names, especially in the context of naming languages, often results from the interplay between T1 and T2 phytonyms, with Tm also being a relevant factor. Table 4 presents several examples illustrating this phenomenon.

T1 – opaque names	T2 – transparent names
D&D	
Aspen, Sindari	*Barrelstark, Glimmergrass*
Dune	
Akarso, Sondagi, Kelp	*Fireflower, Fogwood, Gift to the thirsty*
TES	
Jazbay	*Deathbell, Flame stalk, Gleamblossom*
SW	
Driss, Gargrell, Wadla	*Queen's heart, Spinebarrel, Sunpetal*

Table 4 - Relationship between name structure and semantic transparence

However, a significant distinction emerges when comparing the opaque nouns we have collected to their counterparts in natural languages. The opacity of the latter stems from the historical evolution of the word[13], whereas the opacity of artlang phytonyms is inherently original[14]. These terms were intentionally created as opaque, reflecting, we believe, a deliberate effort to mimic the phytonym repertoires of real languages. In other words, conlang creators appear to intentionally replicate the coexistence of transparent and opaque elements observed in natural languages, demonstrating an awareness of linguistic authenticity.

Within the opaque phytonyms of the observed artlangs, instances of phonosymbolic creation can be identified. This phenomenon is virtually absent in their natural language counterparts due to inherent restrictions related to the referent: unlike animals, plants do not produce sounds, limiting the potential for phonosymbolic association. Example of "doubling" nouns, such as Na'vi *flefle* and *seze*, as well as Bordage's *jajasitier*, can be categorized as phonosymbolic. Furthermore, considering Bordage's phytonyms, the noun *valef* may be partially phonosymbolic, as it incorporates sounds reminiscent of the English words *leaf* and *leaves*.

Phytonyms often allude to plant features by recycling pre-existing lexical elements, a common process in natural languages that promotes linguistic economy by avoiding the proliferation of new words. Typically, these names are composed of two elements, each with a specific value; the head of the syntagma serves a classificatory function, placing the referent within a culturally salient class of realia. For instance, Quenya phytonyms employs *alda* 'tree' or *ornë* 'tall tree' as the head of the syntagma, suggesting that such distinction holds cultural significance for Quenya speakers. Conversely, the specifier element predicates a characteristic that distinguishes the named referent within the class indicated by the head of the syntagma. This characteristic can be explicitly named or implicitly conveyed through rhetorical figures of meaning, such as metaphor and metonymy. Consequently, motivated nouns emerge; however, this does not imply a non-arbitrary relationship between signified and signifier. The choice of the feature of the referent

[13] Some nouns today are opaque due to the evolution of the language, but originally, they are transparent: for example, the noun daisy for a speaker of contemporary English is opaque, i.e., it is not immediately associated with one or more lexical elements of English, but originally the noun was transparent; daisy represents the phonetic evolution of the Old English phytonym *dæges ēage* 'day's eye' (cf. Krischke 2013: 279). It thus appears necessary to mention borrowings.

[14] With some notable exceptions, such as Tolkienian languages.

emphasized by the name remains arbitrary, as evidenced by synonymy. The oft-cited Tolkienian trio *asëa aranion - athelas - kingsfoil* serves as a prime example: no inherent connection exists between the plant's qualities and its name, as the Westron name, unlike its Quenya and Sindarin counterparts, lacks any reference to the plant's healing properties.

To gain a deeper understanding of the characteristics emphasized in plant names, we will deviate from Berlin's proposed grouping and instead focus on three primary categories: sensory (including morphological features), ethological (encompassing behavioral and ecological features) and functional. Subsequently, we will examine ambiguous cases where multiple stimuli converge within the context or where a single phytonym encapsulates multiple features.

4.1. Sensory phytonyms

This category encompasses all designations that evoke a quality of the plant perceivable through the senses. Sight is the most commonly employed sense, with hearing seemingly excluded; however, the phytonym *bellflower* (D&D) merits consideration: while coinciding with a real species (*Campanula* L. 1753), in the game it takes on distinctive characteristics: "they are known for their scent and melodic sound, but also as a beautiful alarm system". The feature can be evoked either directly or metaphorically, as illustrated in Table 5.

View	*elanor* (T1, Sindarin, Strack 2024)[15]: *el* 'sun' + *anor* 'star'; it is a yellow flower with five petals*mallorn* (T1, Sindarin, Strack 2024): *malt* 'gold' + *orn* 'tree'.*brassvine* (T2, SW): the plant is named for the large, dull-gold thorns that grew from their vines.*glimmergrass* (T2, D&D): plant with bioluminescent properties
Touch	*poison kisses* (T2, SFI): they cause rashes if they come into contact with skin.*pxiwll* (T1, Na'vi) *pxi 'sharp'* + *'ewll* 'plant'*prickly ben* (T2, GoT)
Taste	*sweetberry* (T2, SW)*saltrice* (T2, TES)*sweetpulp* (T2, TES)
Smell	*pleniscentia* (T2?, Dune): fragrant plant (it contains the word *scent* 'perfume')*stinkweed* (D&D), a type of foul-smelling weed*väfewll* (T1, Na'vi): *vä'* 'unpleasant' + *fahew* 'smell' + '*ewll* 'plant'.

Table 5 - Examples of sensory names

4.2. Ethological phytonyms

By "ethological" we refer to the set of behavioral (feeding, defense systems, etc.) or ecological characteristics (flowering period, fruit ripening period, habitat, etc.) of plants.

bibberbang (T2, D&D): When a person approaches or touches or attacks them, they explode violently.
blood-bloom (T2, SFI): Flower that grows in the open wounds of corpses;
catapult cabbage (T2, TES): When it feels threatened, il will lash out with great force using its petals.
caladanian wine (T2, Dune): A vine that grows abundantly in the Caladan region
lairelosse (T1, Quenya, Strack 2024): *laire* 'summer' + *lossë* 'snow-white'; the plant blooms in summer.

[15] The examples are constructed in this way: the phytonym is followed, in parentheses, by the type: T1, T2, Tm (T3, T4) the referring world and eventually language, if known; a brief commentary follows.

sandbeggars (T2, SFI). They grow on the edge of deserts and are said to mark nearby water.
txumtsä'wll (T1 Na'vi): *txum* 'poison' + *tsä'* 'squirt' + *'ewll* 'plant'
yomioang (T1, Na'vi): *yom* 'eat' + *ioang* 'animals'; it is a carnivorous plant.
seaflower (T2, SW): underwater species

4.3. Functional phytonyms

This category encompasses names that evoke the plant's cultural significance, often through metonymy, where the name of the consequence (the effect of the plant) is used to represent the cause (the plant itself). This category is significantly richer in constructed languages than in natural languages, possibly due to the prominent role plants often play as a *pharmakon* in fantasy and science fiction works.

beorunna's cure-all (T2, D&D): it is noted for its healing properties
feverbane (T2, WoT): plant with antipyretic properties
sleepwell (T2, WoT): plant with sleep-inducing properties
chokemist (T2, D&D): a plant that continually produce spore mist, an extremely poisonous substance.
nerfscourge (T2, SW) type of flower that contained pollen which, if overused, is capable of causing nerve damage to most species.
somnalius Fern (T2, TES): it can be used to put an enemy to sleep (< Lat. *somnium*) for a short while by passing it under his or her nose
verite (T2, Dune): it is used as a will-destroying narcotic, rendering a person incapable of falsehood (< Lat. *veritas* 'truth')

4.4. Mixed phytonyms and open-ended motivation

Some names incorporate lexical elements that evoke multiple motivations; often a generic classifier is lacking.

diamond cure (T2, D&D): herb with antivenom properties; it looks much like a clover, but with diamond-shaped leaves.
frostfires (T2, SFI): red flowers [fires] that grow Beyond the wall (the northernmost region of Westeros) [frost]

For some phytonyms, it is challenging to ascertain a definitive motivation, as the context presents a variety of cues, making it difficult to disentangle genuine motivations from reinterpretations. A compelling example of this complexity is *sparkweed*, a plant that flourishes in Earthsea, a world crafted by Ursula K. Le Guin. In her novels, Le Guin scatters clues and traces that enable the advancement of multiple hypotheses regarding the plant's characteristics and significance.

> In the hot sunlit pastures yellow flowers bloomed. "Sparkweed," said Jasper. "They grow where the wind dropped the ashes of burning Ilien, when Erreth-Akbe defended the Inward Isles from the Firelord. (Le Guin 2018; A Wizard of Earthsea)

> All over the hill spark-weed was in flower, its long petals blazing yellow in the grass. Children on Havnor knew that flower. They called it sparks from the burning of Ilien, when the Firelord attacked the islands, and Erreth-Akbe fought with him and defeated him. […] The sparkweed, past flowering, cast its ashes on the wind. There were streaks of grey in Ember's hair. (Le Guin 2018; Tales from Earthsea)

The nomenclature of the plant in question appears to be motivated by both sensory and ethological considerations. Its long, yellow, blazing petals evoke imagery of flames or sparks, suggesting a direct connection to fire. Furthermore, the plant's release of ashes into the wind after blooming reinforces this association, implying an ethological motivation. These implicit motivations, derived from the plant's characteristics, are juxtaposed with an explicit motivation rooted in classical etiology. The plant's origin and its name are linked to a significant event, the Ilien fire, suggesting a historical and symbolic connection.

Lexical transparency does not necessarily equate to motivational competence. This concept is exemplified in a previously cited passage from *The Lord of the Rings*, where Aragon inquires of Ioreth whether she possesses any *athelas*. Initially, Ioreth expresses unfamiliarity with the plant; however, upon hearing the Westron term, *kingsfoil*, she immediately recognizes it, but is unaware of its healing properties. Ioreth then reflects on her prior discussion with her sister regarding the herb:

> "kingsfoil […]. 'tis a strange name, and I wonder why 'tis called so; for if I were a king, I would have plants more bright in my garden" (Tolkien 2004: 864).

Ioreth finds the name *kingsfoil* strange, as she does not consider the plant suitable for a royal garden. The name has a different motivation for Ioreth, and she does not link the lexical element *kings-* 'king.GEN' to healing properties (folklore frequently attributes thaumaturgic abilities to kings). This also supports the assumption that the relationship between signified and signifier is arbitrary.

5. Synonyms and loan words

Folk repertoires are often rich in synonyms, primarily consisting of diatopic variants; This characteristic is sometimes replicated in artlangs, or mentioned in context. For instance, in Tolkien's works, we see how names in different languages can serve a narrative purpose; in other cases, it is only communicated that the plant is known by various names.

> Sometimes the questioning lagged a moment when one spoke of a plant the other knew only by another name, but they picked up speed again. (Jordan 1991)
> Archmage Ged, who knew all the names of moly […] (Le Guin 2018)
> D&D*:* moonflower = blueshine; halfling's hand = oxhrel; voj-weed = vauge

Determining whether synonyms belong to the same language or to different languages can often be challenging, particularly when they pertain to T2. Among the examples provided, it is clear that *voj-weed* and *vague* belong to two distinct languages of Faerûn (specifically, the languages of the city of Khôlthar and Shaar, respectively, although we do not know their genetic relationships). In Tolkien's works, synonyms seem to reflect a diastratic axis of variation rather than the diatopic one; in the frequently referenced passage that mentions the three names *kingsfoil*, *asëa aranion* and *athelas*, it becomes evident that Westron is regarded as the lowest language in the repertoire. At another point in the trilogy, Aragorn says that *pipe-weed* (previously called *pipe-weed* or *leaf* and sometimes simply *tobacco*: Tolkien 2004: 8; 562) "is called *westmansweed* by the vulgar, and *galenas* by the noble, and other names in other tongues more learned" (Tolkien 2004: 869).

Borrowing is a common linguistic phenomenon, that plays a crucial role in the evolution and expansion of language repertoires. For instance, American exploration introduced thousands of

previously unknown species to Europe, while earlier contacts with Arab culture facilitated the spread of various oriental species to the Old Continent. Languages adopted their names, which often underwent varying degrees of adaptation, or created entirely new terms. In ancient times, cultural languages (such as Latin) borrowed terms from substratum languages and subsequently transmitted them to their descendant languages.

In invented worlds, we can observe two types of borrowing. The first type consists of "necessity" loans, which arise when a culture encounters foreign elements. An example of this is *paynäppl* 'pineapple' in Na'vi. The second type involves artlangs that incorporate plant names from other fantasy worlds. For example, in the language spoken on Nokaï (Wach 2020, 2023) we find *haquedi*, *barr*, *palmath* – plants that also occur in an unofficial guide for the game D&D (AideDD). In Faerûn (D&D), the Tolkienian *pipeweed* grows, while on Earthsea, we encounter the Tolkenian *kingsfoil* and *moly*, a phytonym designating a magical plant, created by Homer (it appears in Hod. X, 302-306)[16]. We believe that the second type of borrowing can be seen as a form of *easter egg*, where the author engages with users of their invented world, highlighting shared – or supposedly shared – cultural elements.

6. Conclusions

The coinage of plant names in the observed created worlds largely follows the model of natural languages, both in terms of morpho-syntactic structures and semantics and motivation. Achieving linguistic naturalness is a key objective for conlanguagers (cf. Rosenfelder 2013; Peterson 2015), and this study confirms significant success. However, the aforementioned manuals, which carefully explain the word coinage process from a morphological perspective, devote little attention to semantics and motivation, and place less importance on the phonesthetic-phonosymbolic aspects than was previously attributed to them (cf. Carter 1973: 200ff.). Consequently, we can infer that if the morphosyntactic and semantic patterns of conlangs coincide with those of natural languages, this may have occurred spontaneously. Even in the case of languages created for nonhuman species, their human creator simulates the underlying structures of their own language – and, more generally, of all human languages. Following Berlin (1992: XI), we can argue that "the observed structural and substantive typological regularities found among systems of ethnobiological classification […] can be best explained in terms of human beings' similar perceptual and largely unconscious appreciation." Thus, we can extend to the lexicon coinage what Beinhoff (2015: 15) posits about the phonetics of conlangs: "Conlangs in fiction are created by human beings for other human beings who have to be able to make sense of the conlangs at some level in order for the conlang to serve its purpose."

A broader sampling of created worlds may yield diverse observations, potentially uncovering additional patterns or exceptions. Therefore, it would be interesting to extend this initial survey to explore whether, and in what ways, there has been an attempt to incorporate non-human features in created languages – assuming this is feasible. At the current state of research, the "parallel worlds" we have examined appear to be less distant than we might have thought, at least in terms

[16] Also *jajasitier* (Bordage) might recall *jubjub tree*, which appears in a nonsense poem by Lewis Carroll (Jabberwocky, in *Through the Looking-Glass, and What Alice Found There*). I have to thank one of the two anonymous reviewers for this suggestion.

of word coinage. This exploration has also been partially useful in corroborating the efficacy and universality of certain mechanisms in word coinage.

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