Reality in Fantasy: linguistic analysis of fictional languages

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Reality in Fantasy: linguistic analysis of fictional languages

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Reality in Fantasy: linguistic analysis of fictional languages

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This research paper aims to compare fictional languages, in particular those created in works of science fiction, to natural languages. After an introduction to conlangs in general, and to Quenya, Klingon, Dothraki and Na'vi specifically, Greenberg's linguistic universals will be used to test their resemblance to natural languages, and suggest a taxonomy of fictional languages.

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1. INTRODUCTION TO CONSTRUCTED LANGUAGES

The origin of language is a fascinating topic that still remains a mystery, mostly due to the lack of direct evidence. Linguists and scholars are able to observe language change or language death, but the true birth of any language, let alone of language itself, remains undocumented. Various hypotheses have been put forth; some suggest that language cannot have evolved out of nothing and must be based on other animal communication systems, while others present an opposite view, claiming that language is a unique human faculty and must have appeared in an already fairly developed form.

No matter its origin, language and the language faculty enable people not only to talk with each other, but also to talk about language and analyze it. This in turn allows for the opportunity to create artificial languages for various purposes, be it communication, research, or entertainment. Sometimes called fictional languages, auxiliary languages or constructed languages, these languages differ from natural languages in that all facets of their typology, morphology and phonology have been self-consciously invented by an individual or group of individuals rather than having developed naturally. Artificial languages can be classified according to their purpose, and the following paper will present such a taxonomy.

The term *conlang* – short for 'constructed languages' – has emerged as the preferred term to describe fictional languages, with other terms like *auxlang* (auxiliary languages) or *ficlang* (fictional languages) used to describe subcategories of *conlangs*.

Auxlangs may be the most well-known conlangs, with Esperanto as their prototype. Most of them are created in the hopes of developing a lingua franca to facilitate international

relationships. Polish writer and creator L. L. Zamenhof (1859-1917) developed Esperanto with two objectives: making it easy to learn by speakers of all languages, and keeping his creation separate from any political, religious or ideological beliefs. As a result of this desire for simplicity and logic, Esperanto has a very lax word order, a transparent orthography, no gender/number agreement, and very predictable stress patterns. Other *auxlangs* include Ido, a direct offspring of Esperanto, and Interlangua.

Engelangs, short for 'engineered languages', are conlangs created in pursuit of a specific scientific objective, such as testing a language hypothesis or exploring a language philosophy. Most engelangs aim to test the Sapir-Whorf hypothesis and see how an entirely different language would shape culture. Loglan (whose name itself is short for 'logical language') was created "without any ambiguities" in the hopes of avoiding misunderstandings. For example, words are made up of phonemes distributed in such a way that parsing a sentence is always unambiguous: a string of sounds can only be broken up into words in one unique way. The language is also very scientific in form, with ideas such as "all dogs are brown" essentially expressed as "for every x, if x is a dog, then x is brown". Another notable *engelang* in Láadan, created by author Suzette Haden Elgin as an experiment for her novel Native Tongue. In it, she imagines a dystopian future in which women are oppressed and forced to create a language to better represent their views and stand up to a patriarchal society. For example, the language features an elaborate vocabulary for specifically female bodily experiences, and requires the use of evidentials to mark each speaker's degree of certainty regarding their statements, which the author ties to the idea of expressing one's emotions.

Artlangs or 'artistic languages' are the third kind of *conlangs* in this taxonomy, and may be the most prominent in recent years. They are languages created purely for entertainment, and

are often described as linguistic art for art's sake. The various languages created by British linguist and fiction writer J. R. R. Tolkien (1892-1973) for his *Lord of the Rings* trilogy are a perfect example and might be the most well-known *artlangs* in the world. *Artlangs* differ from other *conlangs* in that they are usually meant to appear naturalistic and authentic, that is to say as similar to natural languages as possible. This means they include idiosyncrasies and exceptions to their own linguistic rules, rather than aiming for simplicity and logic like *auxlangs* and *engelangs*. Tolkien even went as far as creating a history of the languages he invented, explaining how they "historically" relate. Other popular *artlangs* include Klingon from *Star Trek*, Parseltongue from *Harry Potter*, and Atlantean from Disney's *Atlantis: The Lost Empire*. Unlike *auxlangs* and *engelangs*, most *artlangs* are not fully developed and only include the few words, expressions or lines of dialogue found in the work in which they appear. Additionally, the phonetic properties of *artlangs* are often a mystery, since novels are their prime medium. This led for example to the mispronunciation of some of Tolkien's languages for decades, until his books were adapted for the cinema.

It is impossible to establish how many *conlangs* have been created throughout history, since creating one remains a private or niche endeavor. The first known *conlang* is argued to be *Lingua Ignota* ('unknown language'), created in the 12th century by St. Hildegard of Bilgen. The internet has revolutionized the appeal and circulation of *conlangs*, and many sites dedicated to language creation feature amazing work by unknown authors. However, for ease and support, this paper will only focus on *conlangs* that have been vetted by conventional publication, and therefore either distributed and/or discussed in popular culture.

As a pop culture enthusiast I have a natural inclination towards *artlangs*, and I have previously studied other works that include forms of language creation, such as Philip Pullan's *His Dark Materials* series, or J. K. Rowling's Harry Potter series. As we have seen, *artlangs* are also created with different goals than *auxlangs* and *engelangs*, so comparing all three categories in an attempt to find patterns appears futile. By focusing on *artlangs* alone, I am hoping to observe if and why they resemble natural languages.

Since my goal is to carefully look at different linguistic aspects of these languages, my selection will also be limited to *artlangs* that have been developed beyond a few lexical entries or phrases. Most *artlangs* are presented through a work of fiction written in a natural language, and therefore only feature a limited number of expressions or terms. In order to study the typology of these *artlangs*, I will focus on those that have a lexicon of over 2000 words. Moreover, authors occasionally publish a dictionary of their *conlang* without providing information regarding grammatical or linguistic rules, which would be limiting for the type of research I am aiming to accomplish. I will therefore only include *conlangs* for which the author has published a comprehensive grammar. Due to my lack of facility with languages besides English and French, I will also limit myself to *artlangs* whose grammar and typology have been published in either of those two languages.

Additionally, I am hoping to look at phonetic aspects of *artlangs*, however superficially, and therefore will only study those for which clear phonetic information is provided and portrayed, either through film or television. This will allow me to study "real" dialogue and phrases in context, and consequently observe aspects of syntax and semantics.

Finally, in order to draw wide conclusions about *artlangs*, I have decided not to include more than one language created by the same author. Indeed, my goal is to establish general

patterns about these languages, and including multiple creations by the same person would most likely create false, biased trends. In cases where an author has created several languages, the most prolific or best developed one will be selected.

The final list of *conlangs* will therefore be based on the following criteria:

- created for entertainment: artlangs
- lexicon includes 2000+ words
- grammar provided by author, in either English or French
- phonetic properties established, and observable through media
- no more than 1 language per author

Based on these criteria, four languages remain:

- Quenya (aka High-Elven) (1937), as seen in *The Lord of the Rings*, created and developed by J. R. R. Tolkien
- Klingon (1966), as seen in Star Trek, developed by Marc Okrand
- Dothraki (1996), as seen in *Game of Thrones*, created by George R. R. Martin, developed by David J. Peterson
- Na'vi (2009), as seen in *Avatar*, created by James Cameron, developed by Paul Frommer

This research paper aims at observing each one carefully, and using linguistic tools to evaluate their similarities to natural languages. The goal is to see whether artistic languages follow the same linguistic universals - that is to say patterns that supposedly occur across all languages - as natural languages, or flout them and obey their own sets of rules. The work of American linguist Joseph Greenberg, notably his own set of linguistic universals presented in <u>Universals of Language</u> (1963), will be used to study Quenya, Klingon, Dothraki and Na'vi.

2. OVERVIEWS OF QUENYA, KLINGON, DOTHRAKI AND NA'VI

2.A) OVERVIEW OF QUENYA

J. R. R. Tolkien was an author and scholar with a fascination for languages. He started creating constructed languages long before he wrote novels, and *The Lord of the Rings* was in fact a receptacle for his creations. He has also explained that he invented people and cultures along with the languages, as well as fictional "historical events" such as migrations and conquests that bear on the development and evolution of his languages. ("Talkin' Tolkien" 2001)

The Lord of the Rings and Tolkien's other "Middle-Earth" works are set in a fantasy universe in which multiple races coexist. One of such races are the elves, an immortal race of people whose features resemble those of humans, except for the pointedness of their ears, and their above average height. They usually appear peaceful and in tune with nature, and most often try to stay out of global political events. Being immortal, the elves have been around in the world for longer than any other races, and their language therefore dates back centuries. Tolkien made sure to reflect this in its development, and "modern-day" elves in fact speak different languages or different dialects of a language based on their location or affiliations. Most Elves are usually at least bilingual, speaking a minimum of several Elvish languages, as well as non-Elvish ones. Quenya (pronounced ['k^wwɛnja]) is one of the Elvish languages Tolkien developed most, and is spoken by elves in their homeland of Valinor. However, in Middle-Earth where the action takes place, most speakers use Sindarin. Tolkien describes his creative process for Quenya as strongly influenced by Finnish, a language he was studying when he started working on his own language.

When Tolkien's trilogy came to be adapted into movies, the production contacted linguist David Salo to translate all dialogue into the many languages featured in the films. In some cases, Salo had to develop an entire grammar and sound system out of very little information, but for Quenya and Sindarin, Tolkien's work was so extensive that his work was much easier. ("Talkin' Tolkien" 2001)

USEFUL QUENYA VOCABULARY

- Quenya ['kwwɛnja] noun – Quenya or "Elvish", is said to mean "language, speech"

2.B) OVERVIEW OF KLINGON

Unlike Quenya, Klingon was developed in oral form first, as part of the television show *Star Trek.* Because it initially only appeared briefly, the actors were simply told to make incoherent grunts and sounds when "speaking Klingon", until production of the third movie started. In it, the Klingon language was to be featured more prominently, and the producers turned to linguist Marc Okrand who had been working on closed captioning for the team on the previous film. Okrand developed a lexicon and grammar based on the few official words that had been created throughout the years, and has said that he deliberately designed it to sound "alien", using rare phonemes as well as typologically uncommon features. (Okrand 1992)

A product of the Cold War during which *Star Trek* was born, Klingon society is filled with veiled analogies to Nazi Germany and the Soviet Union. Its people are humanoid warrior aliens, often portrayed as violent, antagonistic and reliant on slave labor. They are easily recognizable by the protruding ridges on their foreheads, and their striking language. Over the

course of the series, a more nuanced side of the Klingon was shown, and they eventually became humanity's allies.

USEFUL KLINGON VOCABULARY

- Kahless the Unforgettable (qeyIIS [keI.les] in Klingon) noun legendary messianic figure in Klingon history, who unified the Klingon people and became the first Emperor of the Klingon Empire. Known as the "greatest warrior of them all"
- Khrun (Hun [xun] in Klingon) noun a type of animal that the Klingon adapted for riding

2.C) OVERVIEW OF DOTHRAKI

George R. R. Martin is an American author best known for his fantasy novel series titled *A Song of Ice and Fire.* The epic saga follows numerous characters across interlocking storylines, in a medievalesque world filled with supernatural elements. The Dothraki language appears mostly within one storyline, that of the granddaughter of a king who was murdered during a civil war. Exiled to a different continent for her own protection, the young princess embarks on a journey to return to her homeland and claim the throne that was stolen from her family. In the process, she meets the nomadic tribe of horse-riding warriors known as the Dothraki, and becomes married to their leader. She must learn and adopt their customs and traditions, and more importantly, their language.

In 2008, the satellite television network HBO started working on a televised adaptation of the book series, which created the need for a full-fledged Dothraki language. Indeed, if Martin invented the language for his novels, he only created a limited number of lexical terms and

idioms. American linguist and language creator David J. Peterson was thus hired to fully create all aspects of the language, including morphology, syntax, and phonology. Peterson has given many interviews regarding his language creation process, as well as the decisions he faced during the development of Dothraki. ("Official HBO Press Release" 2000) Upon deciding to study the typology of Dothraki, I assumed, because of the artificial nature of the language, that it would conform to linguistic universals such as Greenberg's list. This assumption is supported by the following extract from an interview with Peterson:

I don't believe it was Mr. Martin's intention for the humans in his books—vicious Dothraki horse warriors included—to be radically different from humans in our world (at least with respect to their higher cognitive functions). As such, I made it my goal to create [a language] that would look and feel just like any natural language (English, Turkish, Hawaiian, ASL, etc.), exemplifying the kind of variability that one would find in natural human languages. As linguistic universals tend to describe the way natural languages behave in the real world, it shouldn't be surprising to find that Dothraki doesn't break many. ("Dothraki response to a call for science in a created language" 2010)

USEFUL DOTHRAKI VOCABULARY

- Khal [xal] *noun* title used for the leader of a Dothraki horde, king
- Khaleesi [xaleesi] *noun* queen, wife of a *khal*
- Khalasar [xalasar] *noun* a horde loyal to a single *khal*
- Arakh [arax] *noun* traditional Dothraki weapon, mix of sword and scythe in shape and size
- Andal [ændəl]/ *noun* a person belonging to the dominant ethnic group in Westeros, the continent located across the sea from the Dothraki-native-continent of Essos

2.D) OVERVIEW OF NA'VI

Na'vi might be the most limited of the four languages described here, having only appeared in one film, 2009's *Avatar*. However, production of a sequel is currently underway, and director James Cameron has revealed plans for three additional movies. USC Professor Paul Frommer was hired to create the language, based on a list of about 30 words created by Cameron. His directives were to create an alien-sounding but believable language, which could be easily learned and pronounced by the cast. Frommer describes the initial set of words as having a "Polynesian flavor", and he used ejective consonants as a way to increase the alienness of the language. ("An interview with Paul Frommer, Alien Language Creator for Avatar" 2009)

The film takes place about 150 years into our future, at a time where resources have become so scarce that space travel has become humanity's only hope. When the resourceful if inhabitable moon Pandora is discovered, humans begin to mine it, much to the dismay of the indigenous inhabitants. Called Na'vi, these natives are 10-foot tall, blue-skinned, feline-like humanoids, who live in harmony with, and worship, nature and all creatures. In order to facilitate interactions with them and to appear less alien, humans develop what they call "avatars": human-Na'vi hybrid host-bodies, that can be remotely controlled and survive the toxic atmosphere. The character of Grace Augustine eventually develops a school in which she teaches English to the Na'vi, and learns the Na'vi language herself. One of her students eventually develops feelings for a human, setting in motion some of the events of the film.

USEFUL NA'VI VOCABULARY

- Eywa, *noun* the nature goddess worshiped by the Na'vi
- Great Leonopteryx (Toruk in Na'vi), *noun* apex flying predator native to Pandora

- Pandora, noun native planet of the Na'vi, located 4.37 light-years away from Earth
- Toruk Makto, *noun* individual who is able to ride a Great Leonopteryx, translates to
 "rider of last shadow"
- Thanator (Palulukan in Na'vi), noun apex land predator native to Pandora
- Tsaheylu, *noun* literally 'bond', the connection that happens when two creatures connect their antennae-like 'neural queues', a physical feature present in most species on Pandora, including the Na'vi. Used by the Na'vi to connect to the animals around them, but also to each other to form a lifelong bond with their mate
- Viperwolf (Nantang in Na'vi), noun carnivorous six-legged creature native to Pandora

3. DESCRIPTIVE SURVEYS OF QUENYA, KLINGON, DOTHRAKI AND NA'VI

The following section aims at presenting important linguistic facts about each of the four target languages. While the final goal of applying Greenberg's universals to the languages suggests an emphasis on typology, phonological and pragmatic facts will also be noted here whenever available. A table of abbreviations used can be found in Appendix 1. All sentences and quotes used for glossing come from the sources listed in the works cited, in particular the following websites:

For Quenya: Parf Edhellen. 2005. < https://www.elfdict.com>

For Klingon: Klingonska Akademien. 1998. < http://klingonska.org>

For Dothraki: DothraWiki. 2013. < http://wiki.dothraki.org/Main_Page>

For Na'vi: Learn Na'vi Wiki. 2010. < http://wiki.learnnavi.org>

Additionally, the Wikipedia pages for the grammar of each of the languages were used for other content such as tables.

3.A) **DESCRIPTIVE SURVEY OF QUENYA**

• Tolkien imagined a diglossic Elven society with a vernacular language for daily use, the 'colloquial' form of the language, called Tarquesta (High-tongue), and a more formal and conservative language for use in ceremonies and lore, Parmaquesta (Book-language). Most examples studied in this paper will be from Tarquesta, but will be referred to as Quenya.

Phonology

• Tolkien used Finnish as inspiration for Quenya, except for its pronunciation. Indeed, Quenya lacks the vowel harmony and consonant gradation present in Finnish, and accent is not always on the first syllable of a word. Typical Finnish elements like the front vowels ö, ä and y are lacking in Quenya, but phonological similarities include the absence of aspirated unvoiced stops or the development of the syllables ti > si in both languages. The combination of a Latin basis with Finnish phonological rules resulted in a product that resembles Italian in many respects, which was Tolkien's favorite modern Romance language.

• The Quenya consonant system has 6 major places of articulation: labial, dental, alveolar, palatal, velar, and glottal. Notably, voiced plosives only occur after nasals and liquids, i.e. there is no simple /b, d, g/ but only the clusters /mb, (lb,) nd, ld, rd, ŋg/, and these occur only between vowels. Grouping of consonants occurs only in the central parts of a word, except for combinations with the semivowels /w/ and /j/.

• Quenya has five vowels, and a distinction of length. The short vowels are /a, e, i, o, u/, and the long ones are written with an acute accent as /á, é, í, ó, ú/.

Morphology

• Quenya nouns can have up to four numbers: singular, general plural (or plural 1), particular/partitive plural (or plural 2), and dual. All plurals are formed by adding a suffix to the root form of the noun. For example, the word *lasse*, which means 'leaf', can be declined as such:

Table 1 - Number in Quenya

Singular	lassë
Plural 1	lassi
Plural 2	lasseli
Dual	lasset

• Quenya has ten cases (including short variants). These include the four primary cases: nominative, accusative, genitive, and instrumental; three adverbial cases: allative (of which the dative is a shortened form), locative (also with a shortened form), and ablative; and an adjectival case.

Nominative	lassë
Accusative	lassé
Genitive	lassëo
Instrumental	lassenen
Allative	lassenna
Dative	lassen
Locative	lassessë
Short Locative	lasses
Ablative	lassello
Adjectival	lasseva

Table 2 – Quenya	Case Endings
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• The comparative forms of adjectives are normally expressed by the use of the preposition 'lá'.

(1) A (ná) calima lá B.
A be bright more B
'A is brighter than B'

• There are two main types of verbs in Quenya. First are weak transitive verbs, which are usually 'root' verbs, such as *car*- 'make; do' from the Elvish root KAR- 'to make, build, construct'. The second type are derivative intransitive verbs with a strong conjugation, whose stems end mainly in -ta, -na, -ya, formed by putting a verbal suffix to a base or root, like *henta*-

'to eye', from the Elvish base KHEN- 'eye'. There are five tenses in Quenya: Aorist, Present, Past, Future and Perfect.

	Derivative verb (strong)		Root verb (weak)	
	Singular	Plural	Singular	Plural
Stem	henta-		car-	
Aorist	henta	hentar	care (cari-)	carir
Present				
(continuative)	hentëa	hentëar	cára	cárar
(Aorist) Past	hentanë	hentaner	carnë	carner
Future	hentuva	hentuvar	caruva	caruvar
Perfect	ehentië	ehentier	acárië	acárier

Table 3 – Quenya Tense Endings

• Verbs in Quenya are negated by prefacing a "negative verb" *ua* (not marked for tense) to the impersonal form of the same tense. Note that the pronoun, which attaches to the verb, is added on the negative verb, not on the main verb, and that the endings are regular.

(2) cari-n

make-1S

'I make.'

(3) Ua-n care

NEGVerb-1S make

'I do not make.'

• In Quenya, moods (other than the indicative) are expressed by particles, a short function word that does not belong to any of the inflected grammatical word classes. *A* and *á* are used for the imperative mood, while *áva* (the negated imperative form) is used for the prohibitive mood. *Nai* is used for the optative mood.

(4) Á carë! IMP make 'Do/Make it!'

(5) Áva carë!

PROHIB make

'Don't do/make it!'

• The copula in late Quenya is the verb *na*-. Tolkien stated that it was used only in joining adjectives, nouns, and pronouns in statements asserting or expressing the desire for a thing to have certain quality, or to be same as another, and also that the copula was not used when the meaning was clear.

• In Quenya there are many similarities in form between prepositions and adverbs. Many Quenya prepositions have adverb-like uses with no complement. For example, the preposition *an* (to, towards) is related to the allative -nna(r) case ending.

(6) an i falma-li

towards the wave-PL

'upon the many waves'

(7) i falma-li-nnar

the wave-PL-ALL

'upon the many waves'

• Quenya allows for a flexible word order because it is an inflectional language, but the usual structure is SVO.

• Adjectives normally preceded the qualified noun, and in attributive use are rarely separated from it by other words or elements. An exception is made by numerals, which usually immediately followed the noun.

3.B) DESCRIPTIVE SURVEY OF KLINGON

Phonology

• Klingon has been created with a phonology that, while based on human natural languages, is intended to sound alien to human ears. When initially developed, the studio owners of the Star Trek franchise wanted the Klingon language to be guttural and harsh and Okrand wanted it to be unusual, so he selected sounds that combined in ways not generally found in other languages. The effect is mainly achieved by the use of a number of retroflex and uvular consonants in the language's inventory. Klingon has twenty-one consonants and five vowels and is normally written in a variant of the Latin alphabet. In this orthography, upper and lower case letters are not interchangeable, as uppercase letters mostly represent sounds different from those expected by English speakers.

• The inventory of consonants in Klingon is spread over a number of places of articulation. In spite of this, the inventory has many gaps: Klingon has no velar plosives, and only one sibilant fricative. This arrangement is deliberately very different from that of most human languages. The combination of an aspirated voiceless alveolar plosive /t^h/ and a voiced retroflex plosive /d/ is particularly unusual.

• In contrast to its consonants, Klingon's inventory of vowels is simple. There are five vowels spaced more or less evenly around the vowel space, with two back rounded vowels, one

back unrounded vowel, and two front or near-front unrounded vowels. The vowel inventory is asymmetrical in that the back rounded vowels are tense and the front vowels are lax.

Semantics

• Klingons greet each other using the phrase nuqneH, which literally means "What do you want?".

(1) nuq-neH

what-want

'Hello!'

• Similarly, their phrase for 'cheers' when drinking means "May your blood scream!".

(2) 'Iw-lIj	jachjaj
blood-2P	scream
'Cheers!'	

Morphology

• Klingon follows an OVS word order. Adverbs usually go at the beginning of the sentence and prepositional phrases go before the object.

(3) bI-pIv	'e'	vI-tu'
2S-to be healthy	that	1SNom+3SAcc-observe
'I see that you're heal	thy.'	

• Klingon has three noun classes. The first one is living beings with an innate capacity to use language, the second one is body parts (not the body itself), and the third is all other nouns.

• There are five types of noun suffixes: Type 1 (size, affection), Type 2 (plurals), Type 3 (accuracy), Type 4 (possession, determiners), and Type 5 (syntactic role). A word cannot have two suffixes of the same type.

(4) veng-Hom-mey-qoq-chaj-Daq

city- TYPE1(DIM)-TYPE2(PL)-TYPE3(DUB)- TYPE4(GEN)- TYPE 5(LOC) 'In their so-called villages.'

• Klingon has no articles, so the word *raS* (table) can mean 'a table' or 'the table'. The difference between the two is inferred from context.

• Klingon verbs mark for aspect but not for tense, which is indicated by context and by time adverbs when necessary. There are ten types of suffix, and as with nouns, a verb can have no more than one suffix of any type. (The tenth type, called rovers, is an exception.) As with nouns, the types of suffix must appear in a strict order, indicated by their type number: Type 1 (reflexive/reciprocal), Type 2 (volition/necessity), Type 3 (inceptive/inchoative), Type 4 (causative), Type 5 (undefined subject; capability), Type 6 (perfection; uncertainty), Type 7 (aspect), Type 8 (honorific), Type 9 (syntactic), Type 10 (rovers). A rover suffix can go between any other type.

• There is no infinitive in Klingon.

• Klingon verb prefixes mark both the subject and the object at once, that is to say features for subject and object are fused, as seen in the table below:

		Object						
		No	1st	2nd	3rd	1st	2nd	3rd
		ohiect	person	person	person	person	person	person
		Object	singular	singular	singular	plural	plural	plural
	1st person singular	jl-	_	qa-	vl-	_	Sa-	vl-
c	2nd person singular	bI-	cho-	-	Da-	ju-	_	Da-
S u b j	3rd person singular	Ø-	mu-	Du-	Ø-	nu-	11-	Ø-
	1st person plural	ma-	_	pl-	wl-	_	re-	DI-
с С +	2nd person plural	Su-	tu-	_	bo-	che-	_	bo-
L	3rd person plural	Ø-	mu-	nl-	lu-	nu-	11-	Ø-
	unspecified*	Ø-	vl-	Da-	Ø-	wl-	bo-	lu-

Table 4 – Klingon Pronominal Prefixes

•Klingon has no copula; the concept is expressed using a different grammatical construction. Pronouns can be used as verbs that act as the pronoun plus the verb 'to be'. The pronoun can take verb suffixes, which then modify the pronoun like any other verb. A third-person subject that is not a pronoun must go after the pronoun-verb and carry the Type 5 noun suffix.

(5) ghoj-wl'	'оН	HaD-wI'-'e'.
learn-Nom	3S+to be	study-NOM-TYPE5
'A studier is a	learner.'	

• Klingon does not have adjectives as a distinct part of speech. Instead, many intransitive verbs can be used as adjectives, in which case they follow the noun they modify. Compare:

(6) wep yIQ
coat be wet
'The wet coat.'
(7) yIQ wep
be wet coat

'The coat is wet.'

The use of verbs instead of adjectives is attributed to the 'active' nature of the Klingon, whose culture is one of warriors and conquerors.

3.C) **DESCRIPTIVE SURVEY OF DOTHRAKI**

Semantics

• The Dothraki are a race of nomadic horse riders. As a result, a lot of their culture, and language, revolves around their horses. The name Dothraki itself comes from the verb *dothralat* 'to ride', while the word for foreigner, *ifak*, literally means 'walker'. Many idioms make reference to horses, such as the following greeting:

(1) Hash	yer	dothra-e	chek	asshekh
Q	2S.Nom	ride-2S.PRES	well	today
'How an	e you today?'	(<i>lit.</i> 'Do you ride well	today?)	

Phonology

• David Peterson has said "I tend to think of the sound [of Dothraki] as a mix between Arabic (minus the distinctive pharyngeals) and Spanish, due to the dental consonants." ("Dothraki response to a call for science in a created language" 2010)

- Dothraki has a four-vowel system, and no diphthongs.
- The Dothraki have no writing system for their language.

Morphology

• The basic word order in Dothraki is Subject-Verb-Object:

(2) Khal-Ø	ahhas-Ø	arakh-Ø.
Khal.Nom	sharpen-3S.Pst	arakh-INAN.ACC
'The khal shar	pened the arakh.'	

• The infinitive form of a verb ends in -(l)at. Stripping a verb of this ending gives the stem that is used to conjugate it. The infinitive ending is realized as -at if the stem ends in a consonant, and as -lat if it ends in a vowel.

• Dothraki doesn't distinguish between progressive and perfective. Sentence 3 below can either mean 'I mount the steed', or 'I am mounting the steed'.

(3) Anha	saj-ak	sajo-es.
1S.Nom	mount-1S.Pres	steed-Acc
'I mount t	he steed'/'I am mounting t	the steed'

• There is no copula in Dothraki. 'X is Y' is expressed as 'X.NOM Y.NOM' (past: X.NOM Y.ABL, Fut: X.NOM Y.ALL) or by turning an adjective into a verb: 'X.NOM V=to be Y'.

(4) Ashefa-Ø lain-a.
River-S.NOM be beautiful-3S.PRES
'The river is beautiful'

• Causative are created by reduplicating the first letter of the verb, adding an 'a' in front if it is not a vowel. For example, the following pairs represent basic verbs and their causative equivalents: drivolat/addrivat "to die/to kill (cause to die)"; nithat/annithat "to feel pain/to cause pain", raggat/arraggat "to choke on something/to choke someone (cause to choke)".

• Dothraki has five cases: nominative, accusative, genitive, ablative and allative. The subject of the sentence is usually in the nominative case (represented with a \emptyset marker), while the object is in the accusative.

• Dothraki does not have definite or indefinite articles. Common nouns appear on their own, and context alone can help differentiate between 'an arakh' and 'the arakh' in (2) for example.

• Dothraki is prepositional, and prepositions assign case to the noun they precede. For example, *torga* 'under' marks genitive.

(5) Rhoa	torga	osoleth-i.
Beast.Nom	under	bridge-GEN
'The beast is under	the bridge.'	

• Adjectives and possessive pronouns are placed after the noun they modify:

(6) Lajak-is ivezh-i mori.
Warrior-P.ACC wild-P 3P.GEN
'Their wild warriors.'

• Dothraki distinguishes alienable possession from inalienable. Alienable possession is indicated with the genitive, whereas inalienable possession is indicated with the ablative. Inalienable possession is used primarily with body parts.

(7) Jano-Ø	lajak-i	ost-Ø	hrazef-Ø.
Dog-Nom	warrior-GEN	bite-3S.Pst	horse-INAN.ACC
'The warrior's do	g bit a horse.' (alienable: GEN)

(8) Qora-Ø lajak-oon.

Arm-NOM warrior-ABL

'The warrior's arm.' (inalienable: ABL)

• Dothraki nouns come in two grammatically different types: animate or inanimate. However, nouns are not necessarily deemed animate because they represent something active and/or alive (*hake* 'name' is animate), and similarly, an inanimate noun might not refer to something passive and/or lifeless (*alegra* 'duck' is inanimate). Animacy seems to be somewhat random, much like gender can be in the Romance Languages. However, a few general rules can be established:

- humans are always animate (e.g.: father, son)
- mass-nouns are inanimate (e.g.: milk, response)
- large homogenous groups are inanimate (e.g.: horde, caravan)

- animals are usually inanimate (e.g.: horses, dogs) but marked members of a species are animate (e.g.: steed, stallion)

Occasionally, a word can be either animate or inanimate. For example, the word *lekh* can be animate, in which case it means 'language', or inanimate, in which case it means 'tongue'.

• Plurality can be observed on nouns and adjectives (case markers) and on verbs (tense endings).

• Generally, Dothraki requires subject-verb agreement and noun-adjective agreement, and different case markers and verb endings are used to mark the singular and the plural. However, these markers are sometimes the same for singular and plural, erasing any plurality distinctions. As a result, plurality is often inferred from context in Dothraki:

(9) Mori	itte-sh	lajak-is	ivezh-i	mori.
ЗР.Nom	test-3P.Pst	warrior-P.Acc	wild-P	3P.GEN
'They tested the	eir wild warriors	,		

(10)	Shafka	v-itte-e	ko-es	hakeso	shafki.
	2.Form.Nom	FUT-test-2	bodyguard-ACC	famous	2.Form.Gen
	'You(S/P) wil	l test your fame	ous bodyguard(s).'		

In (9), plurality is explicit on every word: the pronoun *mori* is marked for plurality, there is agreement between the subject and the verb as seen in the ending -sh, and the accusative marker on *lajak* would be different if the noun were singular. On the other hand, sentence (10) is completely ambiguous. Indeed, the use of the formal second person pronoun *shafka* makes it impossible to determine if the subject is singular or plural. Moreover, the tense ending -e is the same for singular and plural second person subjects. Finally, the accusative marker -es is used

for both singular and plural animate nouns. Therefore, any indication of singularity or plurality is neutralized.

Plurality also ties to the concept of animacy. Indeed, animate nouns have different cases for singular and plural, whereas there is no such difference for inanimate nouns. Adjectives do agree with the noun they modify however, and a singular or plural marker might be evident on the adjective, even if the noun itself is ambiguous.

(11)	Adra-si	verven-i	vekh-i	jinne.	
	Turtle-ANIM.GEN	violent-P	exist/be present-3P.PRES	here	
	'There are violent tu	irtles here.'			

In (11), plurality is not marked in *adrasi*: indeed, the verb *vekhat* always assigns the genitive case to its subject, and the genitive singular and plural markers are the same: *-si*. However, since *adra* 'turtle' is an animate noun, the adjective and the verb must still agree with it in number.

• Dothraki does not have gender:

(12)	Khal-Ø	verven-Ø	ahhas-Ø	arakh-Ø.
	Khal-Nom	violent-Nom	sharpen-3S.PsT	arakh-INAN.ACC
	'The violent			

(13)	Khaleesi-Ø	verven-Ø	ahhas-Ø	arakh-Ø.
	Khaleesi-Nom	violent-Nom	sharpen-3S.PST	arakh-INAN.ACC
	'The violent khaleesi	sharpened the	arakh.'	

There is no trace of gender differences between these two otherwise identical sentences. Adjectives do not agree in gender with the noun they modify, and nouns are not inflected for

gender. Additionally, the absence of definite and indefinite articles in Dothraki prevents their use as gender indicators.

• Comparative adjectives are derived from adjectives via the circumfix a-Adj-(a)n (realized a-Adj-an if the adjective ends in a consonant, or a-Adj-n if the adjective ends in a vowel). These adjectives can then be turned into verbs by adding the infinitival suffix -(l)at:

<i>haj</i> : strong	hakeso: famous		
ahajan: stronger	ahakeson: more famous		
<i>ahajanat</i> : to be stronger	ahakesonat: to be more famous		

3.D) DESCRIPTIVE SURVEY OF NA'VI

Phonology

• Na'vi lacks voiced plosives like [b],[d],[g], but has the ejective consonants [p'],[t'],[k'], which are spelled *px*, *tx*, *kx*. It also has the syllabic consonants *ll* and *rr*. There are seven vowels, *a*, *ä*, *e*, *i*, *ì*, *o*, *u*. Although all the sounds were designed to be pronounceable by the human actors of the film, there are unusual consonant clusters, as in *fngap* [fŋap] "metal". Additionally, Na'vi syllables may be as simple as a single vowel, or as complex as *skxawng* "moron" (CCVC).

• Na'vi does not have vowel length or tone, but it does have contrastive stress: *túte* "person", *tuté* "female person".

• Lenition is a phonological change that is the result of the application of certain prefixes. It manifests in Na'vi as follows, with the items on the left changing to those on the right after said prefixes:

 $px (/p ' /) \rightarrow p$ $tx (/t ' /) \rightarrow t$

 $kx (/k '/) \rightarrow k$ $p \rightarrow f$ $t \text{ or } ts \rightarrow s$ $k \rightarrow h$ $(/?/) \rightarrow \emptyset$

We can see that the ejective plosives lose their ejective quality, while standard plosives become fricatives. The glottal stop is dropped altogether.

Semantics

• The fictional language Na'vi of Pandora is unwritten.

• Na'vi use the phrase "I see you" as a greeting and sign of acceptance. It acknowledges the interlocutors' existence and their connectivity with the world, an important facet of Na'vi culture.

(1) Oe-l	nga-ti	kame-ie.
1S-ERG	2S-ACC	see (in a spiritual sense)-POSITIVEAFFECT
'I see you		

Note: free word order in Na'vi also allows Ngati oel kameie or Oel kameie ngati

Morphology

• Na'vi has a singular, dual, trial and plural number. The dual prefix is me^+ , the trial is pxe^+ and the general plural ay^+ (note that + is used to denote a prefix that causes lenition). If the

ay+ prefix causes a word to undergo lenition, the prefix may be dropped. The modified stem is also considered the general plural, and is known as the short plural.

• Na'vi does not have grammatical gender, but it has two suffixes that indicate the gender of a noun: the feminine suffix -e and the masculine suffix -an. These are not mandatory. For example: *karyu*: teacher, *karyuan*: male teacher, *karyue*: female teacher.

• The suffix -yu turns a verb into an agent noun, such as with slele: to swim, sleleyu: swimmer.

• Na'vi is a tripartite language: the subject of an intransitive verb takes the intransitive case (null). The subject of a transitive verb takes the ergative case, which is *-l* on nouns ending with vowels and *-il* on nouns ending with consonants. The object of a transitive verb takes the accusative case, which is *-t* on nouns that end with a vowel and *-it* otherwise.

• Na'vi verbs primarily use affixes to modify their meaning, which go after the initial consonant but before the vowel. Verbs do not conjugate for person, but for tense. Each affix has a specific order with respect to the stem.

• Adjectives require the affix -*a*-. Adjectives can go before or after the noun that they modify. If the adjective is before the noun -*a* becomes a suffix, and if the adjective is after the noun, *a*- becomes a prefix. Compare the two ways of saying 'the long river':

(2) ngim-a kilvan

long-ADJ river

'The long river.'

(3) kilvan a-ngim

river ADJ-long

'The long river.'

• The Na'vi copula is the verb *lu*. It can be linked to nouns or adjectives. Number is only required to be declared once in a phrase involving *lu*. Adjectives linked with *lu* are not required to have the *-a-* affix. The verb *lu* can also be used to mean 'to have'. In this case, the possessor takes the dative suffix.

(4) lu po-ru tstxo have 3S-DAT name 's/he has a name.'

• Yes-no questions are formed with the word srak(e), which can go at the beginning or end of a clause (it has no *e* if it occurs at the end of a clause). The affix *-pe*+ is used to form question words when attached to a noun, which means 'which'. It can go before or after the noun, and it causes lenition if placed before the noun. If it is a prefix, and the noun is plural, they will combine and become *pem*+ (dual), *pep*+ (trial) or *pay*+ (plural).

• Na'vi pronouns have the same declension as any other noun. The pronouns are declined for four persons: 1st person inclusive, 1st person exclusive, 2nd person, and 3rd person animate. Most of the plural forms of the various pronouns are made from the addition of the number prefix *ay*- to the singular.

Pronouns	Singular	Dual	Trial	Plural (4+)	Generic
Exclusive	óe	móe	рхо́е	ayóe	
Inclusive	_	oéng	pxóeng	ayoéng, awngá	
2nd person	ngá	mengá	pxengá	ayngá	fko
3rd person animate	pó	mefó	pxefó	ayfó, fó	
3rd person inanimate	(use demonstratives)				

Table 5 – Na'vi Pronouns
4. APPLICABILITY OF GREENBERG'S LINGUISTIC UNIVERSALS TO QUENYA, KLINGON, DOTHRAKI AND NA'VI

Upon deciding to study the extent to which artificial languages compare to natural languages, came the need for a tool that would allow the testing of their linguistic "correctness". Indeed, even though we have seen that Quenya, Klingon, Dothraki and Na'vi have phonological, morphological, syntactical and semantic rules, my goal remained to apply to them truths that govern natural languages, and see how they fared. Greenberg's linguistics universals were envisioned by their author as such truths: linguistic facts and characteristics that theoretically hold true for all natural languages. After testing a set of 30 natural languages, Greenberg established a list of 45 universals, some of them very specific and unequivocal, others appearing as more of general guidelines. Despite the fact that Greenberg's universals are no longer seen as definite rules about languages, they still allow us to understand certain facets of Universal Grammar through the similarities shared between most natural languages. Therefore, these universals appeared like a methodical way of testing the validity of artificial languages. This section of the research paper will apply each universal to Quenya, Klingon, Dothraki and Na'vi, to establish how similar or different they are to natural languages.

1. In declarative sentences with nominal subject and object, the dominant order is almost always one in which the subject precedes the object.

1.a) In Quenya, Greenberg's Universal #1 is confirmed. Although the word order in Quenya is flexible, the usual structure is SVO. We can see in sentence (i) below that the subject of the sentence, *órenya*, appears before the object *óretya*.

(i) Óre-nya ná ve óre-tya.
 heart-my be like heart-your
 'My heart is your heart.'

1.b) In Klingon, Greenberg's Universal #1 is disproved. Indeed, the traditional word order in OVS, therefore placing the subject after the object.

(ii)	bI-pIv	'e'	vI-tu'.
	you-to be healthy	that	1SNom+3SAcc-observe
	'I see that you're hea	althy.'	

1.c) In Dothraki, Greenberg's Universal #1 is confirmed, as word order in Dothraki is SVO. We can see in sentence (iii) below that the subject of the sentence, *khal*, appears before the verb *ahhas*, which is itself followed by a direct object.

(iii)	Khal-Ø	ahhas-Ø	arakh-Ø.
	Khal.Nom	sharpen-3S.PsT	arakh-INAN.ACC
	'The khal sharper	ned the arakh.'	

1.d) In Na'vi, Greenberg's Universal #1 is unconfirmed. Indeed, Na'vi is a tripartite language with completely free word order, and relies on case marking to identify syntactic roles.

(iv)	Nantang-ìl	frìp	tute-t
	viperwolf.Erg	bite	person.Acc
	'The viperwolf bite	s the person.'	

(v)Frìptute-tnantang-ìlbiteperson.ACCviperwolf.ERG'The viperwolf bites the person.'

(vi) Tute-t nantang-il frìpperson.ACC viperwolf.ERG bite'The viperwolf bites the person.'

All three sentences listed above mean the same thing, and even though the subject precedes the object in (iv), it does not in (v) and (vi).

<u>Conclusion</u>: Quenya, and Dothraki are fully consistent with Universal #1, but Klingon is not. This Universal cannot be applied to Na'vi.

2. In languages with prepositions, the genitive almost always follows the governing noun, while in languages with postpositions it almost always precedes.

2.a) In Quenya, Greenberg's Universal #2 is confirmed. Sentence (vii) below shows thatQuenya uses prepositions, since *an* 'towards' appears before the noun *falmali* 'waves'.Additionally, we saw in Table 2 of part 3 that Quenya uses the genitive suffix -o.

(vii) an i falma-li. towards the wave-PL 'upon the many waves' 2.b) In Klingon, Greenberg's Universal #2 is disproved. Klingon uses suffixes in lieu of postpositions, but they function independently enough that they can be treated as postpositions. For example, we can see that the personal pronoun wIj 'my' can be inserted between the noun and the locative suffix in (viii). Therefore, Klingon is postpositional. However, the genitive can appear before or after the governing noun depending on its form. Sentence (viii) shows that personal pronouns come after the noun, whereas in (ix), the genitive noun yaS 'officer' precedes the governing noun taj 'knife'.

- (viii) Duj-wIj-Daq jIH-taH
 ship-GEN-LOC I-be+DUR
 'I'm in my ship.'
- (ix) yaS taj officer knife 'The officer's knife.'

Greenberg's Universal #2 uses the cautious phrase 'almost always', but both preceding and following genitive formations appear equally in Klingon.

2.c) In Dothraki, Greenberg's Universal #2 is confirmed. Sentence (x) below shows that Dothraki uses prepositions, since *torga* 'under' appears before the noun *osolethi* 'bridge'. Additionally, sentence (xi) displays a genitive construction where the genitive follows the governing noun.

(x)	Rhoa	torga	osoleth-i.
	Beast.Nom	under	bridge-GEN
	'The beast is und		

(xi) Jano-Ø lajak-i ost-Ø hrazef-Ø.
Dog-NOM warrior-GEN bite-3S.Pst horse-INAN.ACC
'The warrior's dog bit a horse.'

Here, we can see that the genitive *lajaki* follows the governing noun *jano*.

2.d) In Na'vi, Greenberg's Universal #2 is unconfirmed. Indeed, we established in Universal #1 that Na'vi has free word order, and as a result both pre- and postpositions occur. Prepositions appear separately before the noun, whereas postpositions appear as suffixes at the end of the noun, as seen in (xii) and (xiii) below:

- (xii) hu nga with you 'With you.'
- (xiii) nga-hu

you-with

'With you.'

Note that the genitive case marker is the suffix $-y\ddot{a}$, except on nouns ending with o or u, where it is $-\ddot{a}$, or nouns ending with -ia where it is $-i\ddot{a}$.

<u>Conclusion</u>: Quenya, Klingon and Dothraki are fully consistent with Universal #2, but it cannot be applied to Na'vi.

3. Languages with dominant VSO order are always prepositional.

4. With overwhelmingly greater than chance frequency, languages with normal SOV order are postpositional.

5. If a language has dominant SOV order and the genitive follows the governing noun, then the adjective likewise follows the noun.

6. All languages with dominant VSO order have SVO as an alternative or as the only alternative basic order.

7. If in a language with dominant SOV order there is no alternative basic order, or only OSV as the alternative, then all adverbial modifiers of the verb likewise precede the verb.

In Quenya, Klingon and Dothraki, Greenberg's Universals #3-7 are irrelevant since we established in Universal #1 that their usual word order is either SVO or OVS. Additionally, we know Na'vi has free word order, and thus these Universals do not apply to it either.

8. When a yes-no question is differentiated from the corresponding assertion by an intonational pattern, the distinctive intonational features of each of these patterns are reckoned from the end of the sentence rather than from the beginning.

8.a) In Quenya, Greenberg's Universal #8 is irrelevant. Quenya uses the interrogative particle *ma* for simple questions, and the rest of the sentence follows the regular word order. Intonation plays no part in question formation.

(xiv) Ma mératye men-ie-n i merende-nna ase-nye?Q want-you go-FUT-DAT the festival-ALL with-me'Will you go to the festival with me?'

8.b) In Klingon, Greenberg's Universal #8 is irrelevant. Klingon simply uses the suffix-*a* to turn a statement into a yes-no question, and intonation remains unchanged.

(xv) Da-legh-'a'2SNOM+3SACC-see-Q'Do you see it?'

8.c) In Dothraki, Greenberg's Universal #8 is irrelevant. Basic questions start with a question word, for example the interrogative particle *hash* or the interrogative pronoun *fin*. Questions then follow the normal SVO word order, and no intonation is used to mark yes-no questions.

(xvi)	Hash	ifak-Ø	driva?
	Q	foreigner-NOM	be dead.3S
	'Is the foreign	ner dead?'	

8.c) In Na'vi, Greenberg's Universal #8 is irrelevant. Yes–no questions are formed with the word *srake*, which can go at the beginning or end of a clause. The final /e/ is dropped if it occurs at the end.

(xvii)	Tse'a	srak?
	see	Q
	'See?'	

<u>Conclusion</u>: Universal #8 does not apply to Quenya, Klingon, Dothraki or Na'vi, since intonation plays no part in question formation in those languages.

9. With well more than chance frequency, when question particles or affixes are specified in position by reference to the sentence as a whole, if initial, such elements are found in prepositional languages, and, if final, in postpositional.

9a.) In Quenya, Greenberg's Universal #9 is confirmed. We established in Universal #8 that the question particle *ma* is always sentence initial, and the same can be said about question words as seen in (xviii). Additionally, Universal #2 established that Quenya is prepositional.

(xviii)	manen	lamb-ë	Quendi-on	ahya-në		
	how	language-S+NOM	elves(as a race)-P+GEN	change-PST		
	'How did the language of the Elves change?'					

9.b) In Klingon, Greenberg's Universal #9 is disproved. We established in Universal #8 that Klingon uses the suffix *-a* to turn a statement into a yes-no question, but other question words are sentence initial as seen in (xix) below. However, Universal #2 shows that Klingon uses postpositions.

(xix) ghorgh ma-mej when 1P-leave

'When do we leave?'

9.c) In Dothraki, Greenberg's Universal #9 is confirmed. As seen in Universal #8, *hash* and *fin* are used for all questions and are always sentence initial, while Universal #2 indicates that Dothraki is also a prepositional language.

9.d) In Na'vi, Greenberg's Universal #9 is irrelevant. As seen in Universal #2, Na'vi uses both prepositions and postpositions due to its free word order. Moreover, while Universal #8 showed that Y-N question word are always final, wh- questions are formed by adding *-pe-* to a noun, either as a prefix or suffix.

(xx)	Fì-swirä-ti,	nga-l	pe-lun	m-ol-unge	
	this-creature-ACC	you-Erg	which-reason(why)	bring-PERF-bring	
	fitsenge?				
	here				
	'This creature, why did you bring him here?'				

<u>Conclusion:</u> Therefore, Quenya and Dothraki are fully consistent with Universal #9, but Klingon is not. Na'vi's free word order makes the universal inapplicable to the language.

10. Question particles or affixes, when specified in position by reference to a particular word in the sentence, almost always follow that word. Such particles do not occur in languages with dominant order VSO.

In Quenya, Klingon, Dothraki and Na'vi, Greenberg's Universal #10 is irrelevant. As we have seen in Universal #8, question particles are always sentence-initial or sentence-final, and therefore are not specified in position by reference to a particular word in the sentence.

11. Inversion of statement order so that verb precedes subject occurs only in languages where the question word or phrase is normally initial. This same inversion occurs in yes-no questions only if it also occurs in interrogative word questions.

11.a) In Quenya, Greenberg's Universal #11 is irrelevant. We have seen that question words are initial, but no inversion of statement order is necessary. Moreover, flexible word order in Quenya suggests that any possible inversion is inconsequential.

11.b) In Klingon, Greenberg's Universal #11 is irrelevant. Universal #1 established that Klingon is an OVS language, and therefore the verb always precedes the subject.

11.c) In Dothraki, Greenberg's Universal #11 is irrelevant. Even though question words are initial, as seen in (xxi) below, there is no inversion of the word order in interrogative sentences compared to demonstrative ones (xxii).

(xxi)	Hash	shafka	zal-i		ad-driv	v-at	mae,
	Q	2.Form.No	M want-	2S.Pres	CAUS-	be dead-INF	3S.Acc
	zhey	Khaleesi?					
	Voc	Khaleesi					
	'Do yo	ou want him	dead, Kh	aleesi?'			
(xxii)	Shafka	v-itt	e-e	ko-es		hakeso	shafki.
	2.Form	м.Nom Fut	-test-2	bodyguard-A	CC	famous	2.Form.Gen

'You will test your famous bodyguard(s).'

11.d) In Na'vi, Greenberg's Universal #11 is irrelevant. We have seen that question words are always initial or final, and word order is free.

Conclusion: Universal #11 does not apply to Quenya, Klingon, Dothraki or Na'vi.

12. If a language has dominant order VSO in declarative sentences, it always puts interrogative words or phrases first in interrogative word questions; if it has dominant order SOV in declarative sentences, there is never such an invariant rule.

In Quenya, Klingon, Dothraki and Na'vi, Greenberg's Universal #12 is irrelevant. Indeed, we saw in Universal #1 that the word order in Quenya and Dothraki is SVO, Klingon is OVS, while Na'vi has free word order.

13. If the nominal object always precedes the verb, then verb forms subordinate to the main verb also precede it.

13.a) In Quenya, Greenberg's Universal #13 is irrelevant since Quenya is an SVO language as seen in Universal #1.

13.b) In Klingon, Greenberg's Universal #13 is disproved. Universal #1 established that Klingon is OVS, therefore nominal objects always precede the verb. However, sentence (xxiii) below shows that the subordinate verb 'run' follow the main verb 'slash':

(xxiii)	qaS-taH-vIS	wa'	ram	loS-SaD
	occur-Type7(continuous)-Type9(duration)	one	night	four-thousand

Hugh	SIj-laH	qet-bogh	loD
throat	slash-can	run-Type9(which)	man
'A man who i	runs can cut fou	ar thousand throats in a	single night.'

We can see here that *qet* 'run' appears after the main verb *SIj* 'slash'.

13.c) In Dothraki, Greenberg's Universal #13 is irrelevant since nominal objects never precede the verb, as the word order is SVO.

13.d) In Na'vi, Greenberg's Universal #13 is irrelevant because of the language's free word order.

<u>Conclusion</u>: Universal #13 does not apply to Quenya, Dothraki or Na'vi, and it is confirmed in Klingon.

14. In conditional statements, the conditional clause precedes the conclusion as the normal order in all languages.

14.a) In Quenya, Greenberg's Universal #14 is confirmed. The conditional particle $c\dot{e}$ always appears at the beginning of a conditional clause, which in turn precedes the conclusion.

(xxiv)	Cé	tul-is,	na-uva-n	tanomë.
	Maybe	come-3S.RESP	be-FUT-1S	there
	'If he/she com	es, I will be there.'		

The meaning and syntax of sentence (xxiv) confirm that the condition "if she comes" precedes the conclusion "I will be there".

14.b) In Klingon, Greenberg's Universal #14 is confirmed. The conditional clause, which includes a verb with the Type 9 conditional suffix *chugh*, always appears first in a sentence, preceding the conclusion.

(xxv) bI-jegh-be'-chugh vaj bI-Hegh
2S-surrender-Type7(conditional) then 2S-die
'Surrender or die!' (*lit.* 'If you don't surrender, then you will die.')

14.c) In Dothraki, Greenberg's Universal #14 is impossible to test, since both orders are attested.

(xxvi)	Hash	yer		laz	char-i		anna,	hash
	If	2S.No	М	can	hear-2	S	1S.Acc	if
	yer		ray		vos	0 - Ø,		attiha-s
	2S.No	М	have.P	ERF	Neg	go.Neo	G.PST	show-2S.IMP
	anna.							
	1S.Ac	С						

'If you can hear me, if you haven't gone away, show me.'

(xxvii)	Ishish	chare-9	ð	a-charo-e	hash	me	nem
	Maybe	ear-No	М	FUT-listen-3S	if	ЗS.Nom	PASS.PART
	ejerva-e		nhare-s	soon.			
	remove-3S.PR	ES	head-A	IBL			

'Maybe the ear will listen if it is removed from the head.'

Sentence (xxvi) confirms Universal #14 since the conditional clause "if you can hear me, if you haven't gone away" precedes the conclusion "show me". However, sentence (xxvii) shows the opposite construction is also found in Dothraki, since the condition "if it is removed from the head" follows the conclusion "the ear will listen". Therefore, Dothraki does not threaten Greenberg's universal, as both options are attested, but the limited data available makes it impossible to establish which order is the "normal order".

14.d) In Na'vi, Greenberg's Universal #14 is irrelevant. Because of its free word order, Na'vi allows for the conditional clause to appear before or after the conclusion, as seen in the examples below:

(xxviii)Txo	nga-l		ay-falu	ılukan-i	t	t-er-arc	on	nga
	if	you-Erg		PL-thanator-ACC		СС	hunt-IMPRF-hunt		you
	lekye'u	ing	lu.						
	crazy		be						
	'If you are hu		nting tha	nators,	you are	e crazy.'			
(xxix)	Nga	lu	lekeye'	ung	txo	ngal		ayfalulukanit	
	you	be	crazy		if	you-Er	G	PL-thanator-A	СС
	teraron.								
	hunt-IMPRF-hunt								
	'You are crazy if you are hunting thanators.'								

<u>Conclusion</u>: Quenya and Klingon are consistent with Universal #14, but it is irrelevant or impossible to test in Dothraki and Na'vi.

15. In expressions of volition and purpose, a subordinate verbal form always follows the main verb as the normal order except in those languages in which the nominal object always precedes the verb.

15.a) In Quenya, Greenberg's Universal #15 is confirmed. We have seen that Quenya word order is flexible but usually SVO, and the following sentence shows that volition is expressed by a subordinate verbal form which follows the main verb:

(xxx)	Ma	mératye	men-ie-n	i	merende-nna	ase-nye?
	Q	want-you	go-Fut-Dat	the	festival-ALL	with-me
	'Do yo	ou want to go to	the festival w	ith me?	,	

Here, the form of the verb "go" follows the verb main verb mératye "want".

15.b) Greenberg's Universal #15 does not apply to Klingon. Since Klingon word order is OVS, the nominal object always precedes the verb, and Greenberg does not make a claim about languages in which that is the case.

15.c) In Dothraki, Greenberg's Universal #15 is confirmed. We have established that Dothraki is SVO, and we can see in the following sentence that the subordinate verbal form follows the main verb:

(xxxi)	Khaleesi-Ø	zal-a	me-me	adakh-a
	Khaleesi-Nom	want-3S	that-3S	eat-3S
	esinakh	ajjalan.		
	a different thing	tonight		

'The khaleesi wants to eat something different tonight.'

In this sentence, we can see that the subordinate verb (*adakha* 'eats') follows the main verb (*zala* 'wants').

15.d) Greenberg's Universal #15 does not apply to Na'vi because of its free word order.

<u>Conclusion</u>: Quenya and Dothraki are consistent with Universal #15, and the universal does not apply to Klingon and Na'vi.

16. In languages with dominant order VSO, an inflected auxiliary always precedes the main verb. In languages with dominant order SOV, an inflected auxiliary always follows the main verb.

17. With overwhelmingly more than chance frequency, languages with dominant order VSO have the adjective after the noun.

In Quenya, Klingon, Dothraki and Na'vi, Greenberg's Universals #16 and #17 are irrelevant. We saw in Universal #1 that none of these language have a strict VSO word order.

18. When the descriptive adjective precedes the noun, the demonstrative and the numeral, with overwhelmingly more than chance frequency, do likewise.

18.a) In Quenya, Greenberg's Universal #18 is disproved. While the descriptive adjective does precede the noun, as seen in (xxxii) below, both the demonstrative and the numeral follow the noun.

(xxxii) vanya vendë

beautiful maiden

'A beautiful maiden.'

(xxxiii)Elen-i neldë

star-PL three

'Three stars.'

(xxxiv)Elda sina

Elf this

'This elf.'

(Note: the limited data made it impossible to find an example in which all three constituents appear in a single sentence.)

18.b) In Klingon, Greenberg's Universal #18 is irrelevant. Indeed, Klingon does not have adjectives as a distinct part of speech. Instead, many intransitive verbs can be used as adjectives, in which case they follow the noun they modify.

(xxxv) pa'-Daq

room-Loc

'In the room.'

(xxxvi)pa' tIn-Daq

room be big-Loc

'In the big room.'

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18.c) In Dothraki, Greenberg's Universal #18 is irrelevant. The following sentences demonstrate the position of adjectives in Dothraki:

(xxxvii)	Anha	ray		tih-Ø	alegr-e	ivezh-a
	1S.Nom	have.F	P ERF	see-1S.Pst	duck-ACC	wild-Acc
	'I have seen t	he wild	duck.'			
(xxxviii)	Jin		ave-Ø		erin-Ø	
	DemAdj.Anii	М	father	-Nom	kind-Nom	
	'This kind fat	her.'				
(xxxix)	Fekh-Ø		khalas	ar-Ø.		
	Seven-Nom		khalas	ar-Inan.Nom		
	'Seven khalas	sars.'				

Sentences (xxxviii) and (xxxix) show that demonstrative and numeral adjectives precede the noun they modify (*jin ave* lit. 'this father' and *fekh khalasar* lit. 'seven khalasar). Despite this fact, we can see in (xxxvii) and (xxxviii) that descriptive adjectives follow the noun they modify (*alegre ivezha* lit. 'duck wild' and *ave erin* lit. 'father kind').

18.d) In Na'vi, Greenberg's Universal #18 is irrelevant. We saw in sentences 2 and 3 of the descriptive survey of Na'vi that adjectives can appear before or after the noun they modify.

<u>Conclusion</u>: Universal #18 does not apply to Klingon, Dothraki or Na'vi, but is disproved in Quenya.

19. When the general rule is that the descriptive adjective follows, there may be a minority of adjectives which usually precede, but when the general rule is that descriptive adjectives precede, there are no exceptions.

19.a) In Quenya, Greenberg's Universal #19 is confirmed. As established in #18, the descriptive adjective precedes the noun, and there are no exceptions.

19.b) In Klingon, Greenberg's Universal #19 is irrelevant. As established in #18, Klingon does not have adjectives, and the intransitive verbs that replace them always follow the noun.

19.c) In Dothraki, Greenberg's Universal #19 is not really addressed. We saw in sentences (xxxvii) and (xxxviii) that descriptive adjectives follow the noun they modify. However, there is no minority of adjectives that precede the noun.

19.d) In Na'vi, Greenberg's Universal #19 is irrelevant. We saw in Universal #18 that adjectives can appear before or after the noun they modify.

<u>Conclusion</u>: Universal #19 is confirmed in Quenya, irrelevant in Klingon and Na'vi, and does not really address Dothraki.

20. When any or all of the items (demonstrative, numeral, and descriptive adjective) precede the noun, they are always found in that order. If they follow, the order is either the same or its exact opposite.

20.a) In Quenya, Greenberg's Universal #20 cannot truly be addressed. We established in Universal #18 that the descriptive adjective precedes the noun, while the numeral and demonstrative adjectives follow it. Therefore, it is impossible to establish whether the demonstrative-numeral-descriptive order is kept.

20.b) In Klingon, Greenberg's Universal #20 cannot truly be addressed either. We have seen that Klingon does not really have descriptive adjectives. It also lacks demonstrative, relying on context to convey the meaning. Numeral adjectives precede the noun they modify:

(xl) wej puq poH-mey

three generation(lit. child - period of time)-PL
'Three generations.'

20.c) In Dothraki, Greenberg's Universal #20 is partially confirmed. We have seen in Universal #18 and 19 that descriptive adjectives always follow nouns, whereas demonstrative and numeral adjectives precede nouns. Sentence (xviii) below is a case where a demonstrative and a numeral are used together:

(xli)	Jin	fekh-Ø	chiori-si
	DemAdj.Anim	seven-Nom	woman-P.Nom
	'These seven womer	1.'	

We can see that the demonstrative adjective *jin* precedes the numeral *fekh* 'seven' when they are used together.

20.d) Na'vi's free word order suggests that any order is acceptable, but the available data seems to show a preference for placing descriptive adjectives between the demonstrative adjective and the noun, therefore supporting Greenberg's Universal #20.

(xlii) Fay-saw-tute!

these-sky-people

'These sky people!'

The limited data makes it impossible to find all possibilities, so this feature might simply be a product of chance or coincidence.

<u>Conclusion</u>: Universal #20 cannot be applied to Quenya or Klingon, but Dothraki is partially consistent with it. Na'vi might be consistent with it as well, but more data is required to make a definitive statement.

21. If some or all adverbs follow the adjective they modify, then the language is one in which the qualifying adjective follows the noun and the verb precedes its nominal object as the dominant order.

21.a) In Quenya, Greenberg's Universal #21 is irrelevant. Indeed, adverbs appear as prefixes on the adjective they modify:

(xliii) Ita-ril very-brilliant 'Very bright.' 21.b) In Klingon, Greenberg's Universal #21 is irrelevant. Adverbs are placed at the beginning of the sentence:

(xliv)	DaH	nuq	ta'-pu'	Day	joH?
	now	Q	accomplish-Type7(PERF)	Di	Lady?
	'What	has La	dy Di done now?'		

21.c) In Dothraki, Greenberg's Universal #21 is irrelevant. Adverbs always precede the adjective they modify:

(xlv)	Jin	ave-Ø	sekke	erin-Ø	anni
	DemAdj	father-NOM	very	kind-Nom	1S.Gen
	'This very kir	nd father of mir	ne.'		

We can see that the adverb sekke 'very' precedes the adjective it modifies, erin 'kind'.

21.d) In Na'vi, Greenberg's Universal #21 is irrelevant. Adverbs are created by adding the prefix ni- to a noun, an adjective or a verb, for example niftue 'easily' from *ftue* 'easy', or *nitam* 'enough' from *tam* 'suffice, be enough'. These adverbs can then appear anywhere in a sentence, due to Na'vi's free word order.

Conclusion: Universal #21 does not apply to Quenya, Klingon, Dothraki or Na'vi.

22. If in comparisons of superiority the only order, or one of the alternative orders, is standard-marker-adjective, then the language is postpositional. With overwhelmingly

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more than chance frequency if the only order is adjective-marker-standard, the language is prepositional.

22.a) In Quenya, Greenberg's Universal #22 is confirmed. Indeed, we established in Universal #2 that Quenya is prepositional, and the order in comparisons of superiority is adjective-marker-standard, as seen in sentence (xliii) below:

(xlvi) A (ná) calima lá B.
A be bright more B
'A is brighter than B.'

We can see here that the standard of comparison, 'B', comes after the marker $l\dot{a}$, which itself follows the adjective *calima*.

22.b) In Klingon, Greenberg's Universal #22 is irrelevant. Indeed, since Klingon does not have adjectives, comparisons rely on adverbs instead, as seen in the following sentence:

(xlvii)	nom	leng	Hun	nom	lengqu'	lut.
	quickly	travel	khrun	quickly	travel-Type10	story
	'Stories travel	faster t	han a kl	hrun.'		

We can see that Klingon uses the repetition of the adverb *nom* as a way to indicate comparison, by wrapping it on both sides of the standard *Hun*. Therefore, the adverb functions as both the adjective and the marker, making the order adjective+marker-standard-adjective+marker. Therefore, Greenberg's Universal #22 cannot be tested in Klingon.

22.c) In Dothraki, Greenberg's Universal #22 is irrelevant. The sentence below is an example of a comparison of superiority:

(xlviii) Jorah-Ø	Andahl-i	ahajan-a	khaleesi-soon
Jorah-Nom	Andahl.GEN	be stronger-3S.PRES	khaleesi-ABL
'Jorah the An	dal is stronger than th	ne khaleesi.'	

We can see that the adjective *haj* 'strong', turned into a verb in Dothraki, appears before the standard of comparison *khaleesi* and the ablative marker *-soon*. The order is therefore adjective-standard-marker, which means Greenberg's Universal does not apply to Dothraki.

22.d) In Na'vi, Greenberg's Universal #22 is irrelevant since both prepositions and postpositions can be found in the language. Note that comparisons are expressed as such:

(xlix) po to oe lu siltsan 3S than 1S be good 'She is better than I.'

<u>Conclusion:</u> Universal #22 is confirmed in Quenya, but irrelevant in Klingon, Dothraki and Na'vi.

23. If in apposition the proper noun usually precedes the common noun, then the language is one in which the governing noun precedes its dependent genitive. With much better than chance frequency, if the common noun usually precedes the proper noun, the dependent genitive precedes its governing noun.

23.a) In Quenya, Greenberg's Universal #23 is confirmed. We established in Universal #2 that the genitive appears as a suffix, therefore following its governing noun, and the sentence below shows that in apposition, common nouns also follow proper nouns.

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Manwë heru-númen
 Manwë lord-west
 'Manwë, Lord of the West.'

23.b) In Klingon, Greenberg's Universal #23 is disproved. Sentence (xl) below shows that common nouns follow proper nouns in the context of appositions, but we established in Universal #2 that the Klingon genitive precedes the following noun.

(li)	qeylIS	lIj-laH-be'-bogh
	Kahless	forget-Type5'can'-Type10NEG-Type9'which'
	'Kahless the	Unforgettable. (lit. 'Kahless, who cannot be forgotten')

23.c) In Dothraki, Greenberg's Universal #23 is confirmed. We established in Universal #2 that the governing noun precedes the genitive, and sentence (xxiii) below shows that proper nouns precede common nouns in apposition.

(lii)	Daenerys Targaryen-Ø,	Mayes	Zhavvor-si
	Daenerys Targaryen-Nom	mother.ACC	dragon-P.ANIM.GEN
	'Daenerys Targaryen, Mothe	er of Dragons.'	

We can see that the proper noun 'Daenerys Targaryen' precedes the common noun *Mayes Zhavvorsi* 'Mother of Dragons'.

23.d) In Na'vi, Greenberg's Universal #23 is irrelevant, but almost confirmed. We established in Universal #2 that the genitive is formed by using a suffix. However, the

language's free word order allows for proper nouns to appear before or after common nouns in apposition, even though the former seems more common.

(liii)	Jake Sully,	Toruk	Makto	
	Jake Sully,	last shadow	rider	
	'Jake Sully, rider of the Last Shadow.'			

<u>Conclusion</u>: Quenya and Dothraki are consistent with Universal #23, but Klingon is not. Na'vi seems to confirm it but not exclusively.

24. If the relative expression precedes the noun either as the only construction or as an alternate construction, either the language is postpositional, or the adjective precedes the noun, or both.

24.a) In Quenya, Greenberg's Universal #24 is irrelevant. Relative clauses always follow the noun they qualify, as seen in the following sentence:

(liv) Vard-o tellumar, ya-ssen tintila-r i elen-i
Varda-GEN dome-PL which-LOC twinkle-PL the star-PL
'Varda's domes, in which the stars twinkle.'

24.b) In Klingon, Greenberg's Universal #24 is confirmed. Relative clauses can sometimes precede the noun they qualify, as seen in sentence (lv) below, and we established in Universal #2 that Klingon is postpositional. However, it is interesting to note that verbs used in lieu of adjectives do not precede the noun.

(lv) qet-bogh loD run-which man 'A man who runs.'

24.c) In Dothraki, Greenberg's Universal #24 is irrelevant. Relative clauses always follow the noun they qualify:

(lvi)	Vezh-Ø	fin		saj-a	
	Stallion-ANIM.NOM	RelPi	RO.ANIM.S.NOM	mount-3S.PR	ES
	rhaesheser-es	vo	zigere-o	ador-oon	shiqeth-i.
	world.Acc	NEG	need-3S.NEG.PRES	chair.ABL	iron-Gen
	"The stallion that m	ounts th	e world" has no need	for iron chairs.'	,

We can see that the relative clause introduced by the relative pronoun *fin* 'that/who' follows the noun it qualifies.

24.d) In Na'vi, Greenberg's Universal #24 is irrelevant. We have seen in Universals #2 and #18 that the language is not exclusively postpositional, nor one in which adjectives always precede nouns.

<u>Conclusion</u>: Universal #24 does not apply to Quenya, Dothraki or Na'vi, but is confirmed in Klingon.

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25. If the pronominal object follows the verb, so does the nominal object.

25.a) In Quenya, Greenberg's Universal #25 is confirmed. Both pronominal and nominal objects follow the verb, as seen in the following sentences.

(lvii) Mel-in sé love-1S him 'I love him.'

(lviii) Mel-in Aracorno

love-1S Aragorn

'I love Aragorn.'

In both cases, the object, whether pronominal or nominal, follows the verb.

25.b) In Klingon, Greenberg's Universal #25 is irrelevant. Pronominal objects appear as prefixes fused with pronominal subjects on verbs, and therefore precede the verb. Greenberg's Universal does not address such languages, but it is interesting to note that since Klingon is OVS, nominal objects also precede the verb, which means Klingon adheres to the opposite of Universal #25.

25.c) In Dothraki, Greenberg's Universal #25 is confirmed. Both pronominal and nominal objects follow the verb:

(lix)	Mori	a-tih-i	mae.
	ЗР-Noм	FUT-see-3S	3S.Acc
	'They will see it.'		

(lx)Anhasaj-aksajo-es.1S.NOMmount-1S.PRESsteed-ACC'I mount the steed.''

We can see that the nominal object *sajoes* 'steed' and the pronominal object *mae* 'he/she/it' both follow their respective verbs.

25.d) In Na'vi, Greenberg's Universal #25 is irrelevant because of the language's free word order.

<u>Conclusion</u>: Quenya and Dothraki are consistent with Universal #25, but it does not apply to Klingon or Na'vi.

26. If a language has discontinuous affixes, it always has either prefixing or suffixing or both.

26.a/b/d) In Quenya, Klingon and Na'vi, Greenberg's Universal #26 is irrelevant since the languages do not have discontinuous affixes. They do use both prefixes and suffixes however.

26.c) In Dothraki, Greenberg's Universal #26 is confirmed. Dothraki uses discontinuous affixes, and is prefixing and suffixing:

The prefix *a*- is used on verbs in the present tense to create the future tense:

(lxi)	Mori	tih-i	mae.
	ЗР.Noм	see-3S.PRES	3S.Acc
	'They see it.'		

(lxii)	Mori	a-tih-i	mae.
	ЗР. Nom	FUT-see-3S	3S.Acc
	'They will see it.'		

The suffix -(*a*)*k* works as an agentive nominalizer to turn verb stems into nouns (realized -*ak* if the stem ends in a consonant, and -*k* if the stem ends in a vowel). For example, *dothra-* 'to ride' becomes *dothrak* 'rider' and *laj-* 'to fight' becomes *lajak* 'warrior'. Similarly, the suffix -*asar* adds the notion of large group to a singular noun: *fonak* 'hunter' becomes *fonakasar* 'hunting party', and *verak* 'traveler' becomes *verakasar* 'caravan'.

The circumfix v(i)-X-(e)r is used around verb stems to add a notion of duration to the action, while e(s)-X-(s)a negates the meaning of the verb:

(lxiii)	tihi-lat		(lxiv)	vi-tihi-r-at
	look at-INF	\rightarrow		DUR-look at-DUR-INF
	'to look at'			'to observe'
(lxv)	e-lat		(lxvi)	v-e-r-at
	go-Inf	\rightarrow		Dur-go-Dur-Inf
	'to go'			'to travel'
(lxvii)	azh-at		(lxviii)	es-azh-a-lat
	gift-Inf	\rightarrow		NEG-gift-NEG-INF
	'to gift'			'to take back'

As we can see, Dothraki uses discontinuous affixes, and is also prefixing and suffixing, which makes it consistent with Universal #26.

<u>Conclusion:</u> Universal #26 is irrelevant in Quenya, Klingon and Na'vi, but confirmed in Dothraki.

27. If a language is exclusively suffixing, it is postpositional; if it is exclusively prefixing, it is prepositional.

27.a) In Quenya, Greenberg's Universal #27 is irrelevant. Indeed, we have seen examples of suffixes, but Quenya also uses prefixes:

(lxix) Ala-hasta not-marred 'Unmarred'

27.b) In Klingon, Greenberg's Universal #27 is irrelevant. Indeed, we have seen examples of prefixes (such as pronouns) and suffixes (such as aspect) present in the language, therefore it is not exclusively prefixing or suffixing.

27.c) In Dothraki, Greenberg's Universal #27 is irrelevant. We established in Universal #26 that Dothraki is both prefixing and suffixing.

27.d) In Na'vi, Greenberg's Universal #27 is irrelevant. We established in Universals #2 and #26 that Na'vi uses pre- and postpositions, and is both prefixing and suffixing.

Conclusion: Universal #27 is irrelevant in Quenya, Klingon, Dothraki and Na'vi.

28. If both the derivation and inflection follow the root, or they both precede the root, the derivation is always between the root and the inflection.

28.a) In Quenya, Greenberg's Universal #28 is confirmed. The derivational affix always appears between the root and the inflection suffix:

(lxx) lin
sing
'to sing'
(lxxi) lin-da
sing-NOMIN
'singer'
(lxxii) lin-da-r
fight-NOMIN-P
'singers'

Here we can see that the nominalizer affix -da- appears before the plural suffix -r.

28.b) In Klingon, Greenberg's Universal #28 is confirmed. We can see in the examples below that the derivation comes between the root and the inflection:

(lxxiii) qet

run

'to run'

(lxxiv) qet-wI'

run-Nomin

'runner'

(lxxv) qet-wI'-pu'

run-Nomin-Pl

'runners'

28.c) In Dothraki, Greenberg's Universal #28 is confirmed. Derivation and inflection always follow the root, and the derivation is always between the root and the inflection:

(lxxvi) laj-at

fight-INF

'to fight'

(lxxvii) laj-ak

fight-AGENNOMIN

'warrior'

(lxxviii) laj-ak-i fight-AgenNomin-P 'warriors'

We can see in (xxxviii) that the derivational affix -ak- is located between the root and the plural inflection -i.

28.d) In Na'vi, Greenberg's Universal #28 is irrelevant. The derivation appears as a suffix whereas the inflection can be a prefix or an infix:

(lxxix)	slele	
	swim	
	'to swim'	
(lxxx)	slele-yu	
	swim-Nomin	
	'swimmer'	
(lxxxi)	ay-slele-yu	
	P-swim-Nomin	
	'swimmers'	
(lxxxii)	sl-am-ele	
	swim-Pst-swim	
	'swam'	

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(lxxxiii) txum poison 'poison' (lxxxiv) txum-nga' poison-ADJ 'poisonous'

We can see in (lxxx) and (lxxxiv) that derivations appear as suffixes in Na'vi, whereas the inflection takes the form of a prefix in (lxxxi) and an infix in (lxxxii).

<u>Conclusion</u>: Quenya, Klingon and Dothraki are consistent with Universal #28, but it does not apply to Na'vi.

29. If a language has inflection, it always has derivation.

In Quenya, Klingon, Dothraki and Na'vi, Greenberg's Universal #29 is confirmed. We saw in Universal #28 that all four languages have inflection and derivation.

30. If the verb has categories of person-number or if it has categories of gender, it always has tense-mode categories.

30.a) In Quenya, Greenberg's Universal #30 is confirmed. Quenya marks number on verbs, and uses different forms to mark tense, as seen with the conjugation of the verb *henta-* 'to eye, to examine' below:

	Singular	Plural
Stem	henta-	
Present	hentëa	hentëar
Past	hentanë	hentaner
Future	hentuva	hentuvar
Perfect	ehentië	ehentier

Moods are expressed by particles, such as \dot{a} which marks the imperative.

(lxxxv)Á carë! IMP make

'Do/Make it!'

Therefore, we can see that Quenya has categories of person-number and tensemode.

30.b) In Klingon, Greenberg's Universal #30 is disproved. Klingon has categories for person-number, as seen with pronominal prefixes (Table 4 of the descriptive survey of Klingon) but it does not mark for tense as seen in sentences (lxxxvi) and (lxxxvii) below. Instead, Klingon speakers rely on adverbs and context. Additionally, note that Klingon does not have grammatical gender, but it does use prefixes on verbs to mark mood as indicated in the descriptive survey of the language.

(lxxxvi) jI-Qong

1S-sleep

'I sleep.'
(lxxxvii) wa'Hu' jI-Qong yesterday 1S-sleep 'I slept yesterday.'

30.c) In Dothraki, Greenberg's Universal #30 is confirmed. Dothraki has categories for person-number as well as tense-mode. The full conjugation of a verb, for example *dothralat* 'to ride', demonstrates this fact:

Infinitive:

dothra-lat: to ride.INF

Indicative

Present	Past	Future
dothra-k: ride-1S.PRES	dothra-Ø: ride-1S.Pst	a-dothra-k: FUT.ride.1S
dothra-e: ride-2S.PRES	dothra-Ø: ride-2S.Pst	a-dothra-e: FUT.ride.2S
dothra-e: ride-3S.PRES	dothra-Ø: ride-3S.Pst	a-dothra-e: FUT.ride.3S
dothra-ki: ride-1P.PRES	dothra-sh: ride-1P.PsT	a-dothra-ki: FUT.ride.1P
dothra-e: ride-2P.PRES	dothra-sh: ride.2P.PsT	a-dothra-e: FUT.ride.2P
dothra-e: ride-3P.PRES	dothra-sh: ride.3P.PsT	a-dothra-e: FUT.ride.3P

Imperative

dothra-Ø: ride-PRES.IMP.FORM

dothra-s: ride-PRES.IMP.INFORM

We can see a distinction in person (first person singular *dothrak* vs. second person singular *dothrae*) and number (first person singular *dothrak* vs. first person plural *dothraki*) in the indicative, as well as a distinction in tense (present 1S *dothrak* vs. past 1S

dothra vs. future 1S *adothrak*) and mood (present indicative 2S *dothrae* vs. present imperative 2S *dothra/dothras*).

30.d) In Na'vi, Greenberg's Universal #30 is irrelevant. Na'vi verbs do not mark for person-number or gender, as seen in the sentences below.

(lxxxviii)	Nantang-Ø	hahaw.
	viperwolf-INTR	sleep
	'A viperwolf is sleep	ing.'

(lxxxix)	Me-nantang-Ø	hahaw.
	D-viperwolf-INTR	sleep

'Two viperwolves are sleeping.'

(xc) Pxe-nantang-Ø hahaw.

T-viperwolf-INTR sleep

'Three viperwolves are sleeping.'

(xci) Ay-nantang-Ø hahaw.

PL-viperwolf-INTR sleep

'Viperwolves (4+) are sleeping.'

Note that Na'vi verbs do mark for tense and mood using the infixes listed in the tables below. These infixes are located between the first consonant and the first vowel of the verb.

Na'vi aspect		
Perfective	ol	
Imperfective	er	

Na'vi tense		
Present	Ø	
Past	am	
Future	ау	
Recent		
Past	ìm	
Immediate		
Future	ìy	

Na'vi mood		
Subjunctive iv		
Intentional	S	
Imperative	(intonation)	

<u>Conclusion:</u> Quenya and Dothraki are consistent with Universal #30, but Klingon is not. Na'vi does not address it.

31. If either the subject or object noun agrees with the verb in gender, then the adjective always agrees with the noun in gender.

31.a) In Quenya, Greenberg's Universal #31 is irrelevant. Indeed, Quenya does not have a grammatical gender, and there is no gender agreement between subject/object and verb or noun and adjective as a result, as seen in the two sentences below:

- (xcii) i turca hér
 - the strong lord

'The strong lord.'

- (xciii) i turca heri
 - the strong lady

'The strong lady.'

31.b) In Klingon, Greenberg's Universal #31 is irrelevant. Indeed, there is no grammatical gender in Klingon, and thus no gender agreement between subject/object and verb or noun and adjective.

(xciv) loD Hem

man be proud

'The proud man.'

(xcv) Be' Hem

woman be proud

'The proud woman.'

31.c) In Dothraki, Greenberg's Universal #31 is irrelevant. There is no grammatical gender in Dothraki:

(xcvi)	Khal-Ø	verven-Ø	ahhas-Ø	arakh-Ø.
	Khal-Nом	violent-Nom	sharpen-3S.PsT	arakh-INAN.ACC
	'The violent k	hal sharpened t	he arakh.'	

(xcvii) Khaleesi-Ø	verven-Ø	ahhas-Ø
Khaleesi-Noм	violent-Nom	sharpen-3S.Pst
arakh-Ø.		
arakh-INAN.ACC		

'The violent khaleesi sharpened the arakh.'

There is no trace of gender differences between these two otherwise identical sentences. Adjectives do not agree in gender with the noun they modify, and nouns are

not inflected for gender. Additionally, the absence of definite and indefinite articles in Dothraki prevents their use as gender indicators.

31.d) In Na'vi, Greenberg's Universal #31 is irrelevant, as the language has no obligatory grammatical gender, even though it can use suffixes to mark gender on nouns. These are not mandatory.

(xcviii)karyu	a-kanu
	teacher	ADJ-clever
	'The clever te	acher(neutral).'
(xcix)	karyu-an	a-kanu
	teacher-male	ADJ-clever
	'The clever te	acher(male).'
(c)	karyu-e	a-kanu

teacher-female ADJ-clever

'The clever teacher(female).'

Despite the gendering of the noun, we can see that the adjective does not mark for gender.

Conclusion: Universal #31 is irrelevant in Quenya, Klingon, Dothraki and Na'vi.

32. Whenever the verb agrees with a nominal subject or nominal object in gender, it also agrees in number.

In Quenya, Klingon, Dothraki and Na'vi, Greenberg's Universal #32 is irrelevant. We saw in Universal # 31 that there is no grammatical gender in those languages.

33. When number agreement between the noun and verb is suspended and the rule is based on order, the case is always one in which the verb precedes and the verb is in the singular.

33.a) In Quenya, Greenberg's Universal #33 is irrelevant. We saw in Universal #30 that there is always number agreement between the noun and verb, and it is never suspended in favor of word order.

33.b) In Klingon, Greenberg's Universal #33 is irrelevant. We saw in Universal#30 that Klingon does not have noun-verb agreement.

33.c) In Dothraki, Greenberg's Universal #33 is irrelevant. Universal #30 shows that noun-verb number agreement is mandatory and cannot be suspended.

33.d) In Na'vi, Greenberg's Universal #33 is irrelevant. Na'vi never marks verbs for number as seen in Universal #30, and word order is free as established in Universal #1.

Conclusion: Universal #33 does not apply to Quenya, Klingon, Dothraki or Na'vi.

34. No language has a trial number unless it has a dual. No language has a dual unless it has a plural.

34.a) In Quenya, Greenberg's Universal #34 is confirmed. Quenya has four numbers: singular, general plural (or plural 1), particular or partitive plural (or plural 2), and dual. It does not have a trial number. A full declension of the word *lassë* 'leaf' is presented below:

Singular	lassë
Plural 1	lassi
Plural 2	lasseli
Dual	lasset

34.b) In Klingon, Greenberg's Universal #34 is irrelevant. Plurality in marked by suffixes, like -pu for 'beings capable of using language', -Du' for body parts, and -mey for all other nouns. There is no distinction between plural, dual or trial number.

34.c) In Dothraki, Greenberg's Universal #34 is irrelevant. Dothraki only has singular and plural numbers.

- (ci)Rizh-Ødothra-e.Son-S.NOMride-3S'The son rides.'
- (cii) Rizh-i dothra-e. Son-P.Nom ride-3P

'The sons ride.'

Here, *rizhi* 'the sons' refers to any number of sons equal to or greater than 2. There is no evidence of a dual or trial number in Dothraki.

34.d) In Na'vi, Greenberg's Universal #34 is confirmed. Na'vi has four numbers as seen in Universal #30: singular, plural, dual and trial. A full declension of the word *natang* 'viperwolf' is presented again below:

Singular	nantang
Plural	aynantang
Dual	menantang
Trial	pxenantang

<u>Conclusion</u>: Universal #34 is confirmed in Quenya and Na'vi, but does not apply to Klingon or Dothraki.

35. There is no language in which the plural does not have some nonzero allomorphs, whereas there are languages in which the singular is expressed only by zero. The dual and the trial are almost never expressed only by zero.

Note: the term 'nonzero allomorph' in this context is difficult to understand. However, its use within a sentence in which Greenberg contrasts it with "expressed only by zero" implies that the author equates 'nonzero allomorph' with 'some sort of marker'. The first part of this universal is understood to mean "there is no language in which the plural is expressed only by zero."

35.a) In Quenya, Greenberg's Universal #35 is confirmed. As seen in Universal #34, the singular is expressed by zero (in the nominative case), while both plurals and the dual are expressed exclusively by nonzero markers.

35.b) In Klingon, Greenberg's Universal #35 is confirmed. As seen in Universal #34, the plural is expressed by suffixes, while the singular is unmarked in the nominative.

35.c) In Dothraki, Greenberg's Universal #35 is confirmed. As seen in Universal #34, the singular is expressed by zero in the nominative, whereas all plural case markers – such as the plural nominative in (cii) of Universal #34 – are nonzero.

35.d) In Na'vi, Greenberg's Universal #35 is confirmed. As seen in Universals #30 and #34, the singular is expressed by zero, whereas the plural, dual and trial are always nonzero.

Conclusion: Quenya, Klingon, Dothraki and Na'vi are consistent with Universal #35.

36. If a language has the category of gender, it always has the category of number.

37. A language never has more gender categories in nonsingular numbers than in the singular.

In Quenya, Klingon, Dothraki and Na'vi, Greenberg's Universals #36 and #37 are irrelevant. We established in Universal #31 that none of these languages have gender. Therefore, Universal #36 and #37 does not apply to them.

38. Where there is a case system, the only case which ever has only zero allomorphs is the one which includes among its meanings that of the subject of the intransitive verb.

Note: similarly to Universal #35, the term 'zero allomorph' will be understood here as 'null marker'. This universal is understood to mean "the only case which ever has a null marker".

38.a) In Quenya, Greenberg's Universal #38 is confirmed. The nominative case – which is used for the subject of the intransitive verb – is the only case to be expressed by a null marker, as seen in Table 2 of the descriptive survey of Quenya, with the word *lassë* 'leaf'.

38.b) In Klingon, Greenberg's Universal #38 is confirmed. The only case expressed by a null marker is the nominative case, which is used for the subject of the intransitive verb.

Nominative	Ø
Locative	-Daq
Dative/Benefactive	-vaD
Ablative	-vo'
Causal	-mo'
Topicalizer	-'e'

38.c) In Dothraki, Greenberg's Universal #38 is confirmed. The nominative case – which is used for the subject of the intransitive verb – is the only case to be expressed by a null marker, as seen in the case markers table presented below.

Nominative	-
Accusative	-es
Genitive	-i
Allative	-aan
Ablative	-oon

38.d) In Na'vi, Greenberg's Universal #38 is confirmed. Indeed, we saw in the descriptive survey of Na'vi that it is a tripartite language, which means that the subject of an intransitive verb takes the intransitive case. This is marked by a null morpheme in Na'vi, as seen in Universal #30, whereas the other two cases, ergative and accusative, are always non-zero.

Conclusion: Universal #38 is confirmed in Quenya, Klingon, Dothraki and Na'vi.

39. Where morphemes of both number and case are present and both follow or both precede the noun base, the expression of number almost always comes between the noun base and the expression of case.

39.a) In Quenya, Greenberg's Universal #39 is irrelevant. Number and case are expressed in the same marker:

	Singular	Plural 1	Plural 2	Dual
Nominative	lassë	lassí	lasselí	lasset
Accusative	lassé	lassí	lasselí	lasset
Genitive	lassëo	lassion	lasselion	lasseto
Instrumental	lassenen	lassínen	lasselínen	lassenten
Allative	lassenna	lassennar	lasselinna(r)	lassenta
Dative	lassen	lassin	lasselin	lassent
Locative	lassessë	lassessen	lasselisse(n)	lassetsë
Ablative	lassello	lassellon	lasselillo(n)	lasselto

39.b) In Klingon, Greenberg's Universal #39 is irrelevant. Number is expressed by prefixes (as seen in the descriptive survey of Klingon), whereas case is expressed by the suffixes seen in Universal #38.

39.c) In Dothraki, Greenberg's Universal #39 is irrelevant. Number and case are expressed in the same marker:

(ciii)	ashefa-Ø	lain-a.
	river-S.Noм	be beautiful-3S.PRES
	'The river is b	peautiful'

(civ) ashefa-si lain-i river-P.NOM be beautiful-3P.PRES 'The rivers are beautiful.'

(cv)	Anha	tihi-k	ashefa-es
	1S.Nom	look-1S.Pres	river-S.Acc
	'I look at th	e river.'	
(cvi)	Anha	tihi-k	ashefa-es
	1S.Nom	look-1S.Pres	river-P.Acc
	'I look at th	e rivers.'	

We can see that case and number markers in Dothraki are fused. For example, the marker -si in (civ) is both a nominative marker and a plural marker.

39.d) In Na'vi, Greenberg's Universal #39 is irrelevant. Number is expressed by prefixes as seen in Universal #34, whereas case is expressed by the suffixes seen in the descriptive survey of Na'vi.

Conclusion: Universal #39 does not apply to Quenya, Klingon, Dothraki or Na'vi.

40. When the adjective follows the noun, the adjective expresses all the inflectional categories of the noun. In such cases the noun may lack overt expression of one or all of these categories.

40.a) In Quenya, Greenberg's Universal #40 is mostly irrelevant. We saw in Universal #18 that descriptive adjectives precede nouns; therefore Universal #40 does not apply to Quenya in most cases. However, numeral and demonstrative adjectives follow the noun, but are not inflected, flouting the universal.

(cvii) vanya vendí beautiful maidens 'Beautiful maidens.'

(cviii) Elen-i neldë

star-PL three

'Three stars.'

40.b) In Klingon, Greenberg's Universal #40 is irrelevant. As established in Universal #18, Klingon does not have adjectives, but we can note that the intransitive verbs that replace them are inflected differently than nouns.

40.c) In Dothraki, Greenberg's Universal #40 is confirmed. Adjectives agree in number and case with the noun they modify. Even though inanimate nouns do not decline between singular and plural, if an adjective is modifying the noun, it will still agree with it:

Rakh-Ø	haj-Ø
Boy-Anim.S.Nom	strong-S.NOM
'A strong boy.'	
	Rakh-Ø Boy-ANIM.S.NOM 'A strong boy.'

- (cx) Rakh-i haj-i Boy-ANIM.P.NOM strong-P.NOM 'Strong boys.'
- (cxi) Alegra-Ø haj-Ø Duck-INAN.NOM strong-S.NOM 'A strong duck.'
- (cxii) Alegra-Ø haj-i Duck-INAN.NOM strong-P.NOM 'Strong ducks.'

We can see in (cix) and (cx) that the animate noun *rakh* 'boy' declines for number, and the adjective agrees with it. On the other hand, the noun *alegra* 'duck' in (cxi) and (cxii) is inanimate. Therefore, it does not decline for number, but the adjective still needs to agree in number when the sentence is referring to multiple ducks.

(cxiii) Alegra-Øivezh-Ølain-a.Duck-NOMwild-NOMbe beautiful-3S.PRES'The wild duck is beautiful.'

(cxiv)	Anha	ray	tih	alegr-e	ivezh-a.
	1S.Nom	have.PERF	see-1S.Pst	duck-ACC	wild-Acc
	'I have seen th	ne wild duck.'			

We can see that the adjective *ivezh* 'wild' agrees with the case of the noun *alegra* 'duck', either the nominative in (cxiii) or the accusative in (cxiv). Based on this data, we can see that adjectives always follow nouns and must express all inflectional categories of the noun.

40.d) In Na'vi, Greenberg's Universal #40 is disproved. As established in Universal #18, Na'vi adjectives can go before or after the noun. When they follow the noun, they do not take on or carry the inflectional categories of the noun.

(cxv)	Ay-nantang-ìl	txewm	frìp	tute-t
	PL-viperwolf.Erg	scary	bite	person.Acc
	'The scary viperwol	ves bite the pe	erson.'	

Here, the adjective does not take the plural marker *ay*- expressed on the noun.

<u>Conclusion</u>: Dothraki is consistent with Universal #40, Na'vi disproves it, and Quenya and Klingon do not really address it.

41. If in a language the verb follows both the nominal subject and nominal object as the dominant order, the language almost always has a case system.

In Quenya, Klingon, and Dothraki, Greenberg's Universals #41 is irrelevant. Universal #1 established the word order in those languages as SVO or OVS, which means the verb never follows both the nominal subject and nominal object. In Na'vi, there is no dominant order since the language has free word order. Note that all four languages have a case system nonetheless, as seen in Universal #38.

Conclusion: Universal #41 does not apply to Quenya, Klingon, Dothraki or Na'vi.

42. All languages have pronominal categories involving at least three persons and two numbers.

42.a) In Quenya, Greenberg's Universal #42 is confirmed. We saw examples, notably in Universal #34, of three persons (first, second and third) and four numbers (Singular, Plural 1, Plural 2, and Dual).

42.a) In Klingon, Greenberg's Universal #42 is confirmed. Table 4 of the descriptive survey of Klingon presents the three persons (first, second and third) and two numbers (Singular and Plural) of Klingon pronouns.

42.c) In Dothraki, Greenberg's Universal #42 is confirmed. The language has pronouns for three persons (first, second and third) and two numbers (Singular and Plural), as seen in the comprehensive table below:

	1st pe	erson	2	nd perso	3rd person		
	singular	plural	singular	plural	formal	singular	plural
Nominative	anha	kisha	yer	yeri	shafka	me	mori
Accusative	anna	kisha	yera	yeri	shafka	mae	mora
Genitive	anni	kishi	yeri	yeri	shafki	mae	mori
Allative	anhaan	kishaan	yeraan	yerea	shafkea	maan	morea
Ablative	anhoon	kishoon	yeroon	yeroa	shafkoa	moon	moroa

42.d) In Na'vi, Greenberg's Universal #42 is confirmed. Table 5 in the descriptive survey of Na'vi presents the three persons (first, second and third) and four numbers (Singular, Plural, Dual and Trial) of Na'vi pronouns.

Conclusion: Quenya, Klingon, Dothraki and Na'vi are consistent with Universal #42.

43. If a language has gender categories in the noun, it has gender categories in the pronoun.

44. If a language has gender distinctions in the first person, it always has gender distinctions in the second or third person, or in both.

45. If there are any gender distinctions in the plural of the pronoun, there are some gender distinctions in the singular also.

In Quenya, Klingon, Dothraki and Na'vi, Greenberg's Universals #43-45 are irrelevant. We saw in Universal # 31 that there is no grammatical gender in those languages.

5. Analysis of Findings

Using the data analyzed in part 4, we can look at each of Greenberg's universals as it applies to Quenya, Klingon, Dothraki and Na'vi. These results can be found in Appendix 2, and a summary is presented in the table below:

	Relevant	Confirmed	Disproved
Quenya	17	16	1
Klingon	13	8	5
Dothraki	15	15	0
Na'vi	6	5	1

The first column shows how many universals are relevant in each language, the green column indicates how many of those are confirmed, while the red columns lists those that are disproved. From these results, we can divide up the languages into different groups.

First, Na'vi seems to stand out since it only addresses a little over 10% of Greenberg's Universals, compared to about a third of them which are relevant in Quenya, Klingon and Dothraki. This is mostly due to Na'vi's free word order, which is a linguistic feature that Greenberg does not address. However, of the 6 universals that are relevant in Na'vi, five are confirmed, suggesting that the language operates like a natural language whenever Greenberg's Universals are applicable. We can therefore conclude that Na'vi falls into a category of languages that Greenberg did not truly study in his research. We know that his findings are based on a limited pool of about 30 languages, most likely few of which had free word order. This would explain his lack of claims about such languages, and makes his universals a linguistic tool that is not really useful in analyzing Na'vi. This in turn makes any conclusions about Na'vi pretty tentative, but we can acknowledge that the language most likely functions like a 'non-standard' natural

language, unlike those studied by Greenberg. It is also important to note that the relatively small inventory of data in Na'vi makes it difficult to establish whether its free word order is used to encode additional information. Marc Frommer does not mention anything like that in interviews, but it seems unlikely that a language would completely ignore a crucial way to encode meaning, and rely entirely on other means. Further development of Na'vi might reveal that certain word order preferences appear based on gender, social class, tone or register for example, which is impossible to establish based on the current data.

On the other hand, Quenya and Dothraki are fully compliant with Greenberg's Universals. All or nearly all of the ones that are relevant in both languages are confirmed, suggesting that they function very much like natural languages.

Finally, Klingon disobeys about 40% of its relevant universals. This seems to indicate that the language does not adhere to the laws of natural human languages, which was in fact the goal of its creator. As we saw in the overview of Klingon, Okrand deliberately tried to make his creation seem "alien" by using odd sounds and linguistic features, and this fact also shows in the language's almost systematic flouting of Greenberg's Universals ("Qapla' - Klingon Language Creator Marc Okrand, Part 1". 2011). It is interesting to note that despite any deliberate efforts to disobey these universals, Okrand's other decisions to make Klingon "alien" resulted in repeated infringements of Greenberg's Universals.

6. CONCLUSION

Based on these results, we can assert that Quenya and Dothraki function very much like natural languages, and follow Greenberg's universals rigorously. Both languages are therefore typologically tractable, and could be studied further. Similarly, Na'vi seems to behave like a natural language, albeit a rare or uncommon one. As a result, the use of Greenberg's Universals as a tool to analyze it is not very relevant. It belongs to a category of languages that Greenberg did not study, creating the need for further research. Unlike the other three languages however, Klingon most obviously defies Greenberg's Universals, suggesting the language is very unlike natural languages.

It is interesting to note that the four men who created these languages were linguists, thus familiar with what makes a language natural. The decisions they made in developing them were therefore deliberate, and the choice to make each language sound more or less like a natural language in sound and structure is telling. Indeed, despite all four languages belonging to fictional universes, they all cohabit with human languages within their worlds. Moreover, native speakers of Quenya and Dothraki are fairly similar to humans, who live among or relatively close to them. On the other hand, both Na'vi and Klingon are spoken on planets located far from those where humans originate in their respective universes. While Quenya and Dothraki come from a different continent or land located on the same planet as human speech, Klingon and Na'vi come from an entirely different star system. Therefore, the two languages that are most like natural languages exist in a fictional universe in which they have a history of interacting with natural languages, while the two that are most different developed far away from human speech.

It is also interesting to note that Klingon and Na'vi essentially appear in futuristic versions of our universe, in which Earth, humanity and natural languages [usually represented by English] exist. On the other hand, Quenya and Dothraki are part of fantastic versions of our world, in which humans cohabit with other races, but speak "the Common Speech" or "the Common Tongue". Names, puns and other linguistic facts reveal that these languages are obvious stand-ins for English, but the fantastic nature of the world is enhanced by the erasure of any reference to the real world, including the naming of natural languages.

One question to ponder while analyzing these results is the extent to which the creators' native language, or more broadly the humanness of their native language, directs the way in which they create languages. That is to say, is the fact that a fictional language appears natural due to a conscious effort on the author's part, or is it simply impossible for a speaker of a natural language to create something that does not fit that mold. In the case of Dothraki, we know that Peterson wanted to create a language that would "look and feel like any natural language" ("Dothraki response to a call for science in a created language". 2010). For Na'vi, Frommer wanted it to be easy to learn and pronounce by the cast ("An interview with Paul Frommer, Alien Language Creator for Avatar". 2009). Tolkien's fascination with languages pushed him to combine facets of natural languages when creating Quenya and other artlangs. Even Okrand made a conscious effort to make Klingon sound and feel "alien", using features rarely or never found in natural languages ("Qapla' - Klingon Language Creator Marc Okrand, Part 1". 2011). All of their creative processes are therefore consciously influenced by natural languages, and likely unconsciously so as well. The desire to fit the mold, to be outside of it, or the inability to break out of it seem to suggest that it is impossible to create a fictional language in a vacuum. As a result, it makes sense that artlangs function very much like natural languages, except for those specifically designed not to.

APPENDIX 1

TABLE OF ABBREVIATIONS

Abbreviation	Meaning
1,2,3	first, second, third person
ABL	ablative
ACC	accusative
ADJ	adjective
Agen	agentive
ALL	allative
ANIM	animate
CAUS	causative
D	dual
DemAdj	demonstrative adjective
DIM	diminutive
Dub	dubitative
DUR	durative
Form	formal
Fut	future tense
Gen	genitive
Imp	imperative
Imprf	imperfective
Inan	inanimate
Inf	infinitive
Inform	informal
NEG	negative
Nom	nominative
Nomin	nominalizer
Овј	object
Р	plural
Prep	preposition
Pres	present tense
PST	past tense
Q	question word
RelPro	relative pronoun
Resp	respective
RFL	reflexive
S	singular
Т	trial
Voc	vocative

APPENDIX 2

GREENBERG'S UNIVERSALS IN QUENYA, KLINGON, DOTHRAKI AND NA'VI

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Quenya															
Klingon															
Dothraki															
Na'vi															
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Quenya															
Klingon															
Dothraki															
Na'vi															
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Quenya															
Klingon															
Dothraki															
Na'vi															

Green: confirmed, Red: Disproved, Black: Irrelevant

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