

# Rationale

As I embarked on the challenge of creating an international auxiliary language, or rather a prototype for a future international auxiliary language, I had two goals. First, the language had to be very easy to learn, regardless of one's native language. Second, the language had to be expressive (sufficiently expressive to be able to evince the subtleties of expression of great literary and religious works). These two goals are not mutually exclusive, but quite difficult to achieve simultaneously.

Regarding the first goal, I retreated a bit from the idea that the language would be equally easy to learn for native speakers of any language. First of all, I am not familiar with all spoken languages. And, since the best estimates put their number at about 6,000, it would be impossible to learn them all in a single lifespan. I decided to focus only on the "major" languages, as determined by the number of speakers (including those who speak a language as a second language). The list of languages to be considered shrunk to these (listed in order of number of primary plus secondary speakers): Chinese (Mandarin), English, Spanish, Russian, French, Hindi/Urdu, Arabic, Portuguese, Bengali, Japanese, German. [source: <http://www2.ignatius.edu/faculty/turner/languages.htm>]. Although there may be some disagreement between different sources concerning what is the most accurate order of the list, most sources agree that all of the languages are "major" in the sense given. Fortunately, I already spoke five of the languages listed (English, Spanish, French, Arabic, and German), and, moreover, synopses of the others are included conveniently in Bernard Comrie's reference: *The World's Major Languages*. It is unfortunate, in my opinion, that the list of major languages excludes all the indigenous languages of North and South America, many of which are extremely interesting.

My first attempt, focusing on the first goal of ease of learning, was merely to exclude any phonological or grammatical feature that did not appear in any of the major languages. This did not work. Essentially, there was nothing left. The set of intersection of phonemes contained only the consonants /t/, /k/, /s/, /j/, /m/, /n/ and the vowel /u/ [source: [http://www.eskimo.com/~ram/segmental\\_phonemes.png](http://www.eskimo.com/~ram/segmental_phonemes.png)]. The situation with the grammar was actually worse. All of this was too limited a palette from which to construct a language.

It seemed obvious at this point that I would have to construct this new language painstakingly piecemeal. There would not be any shortcuts. I split the work into three tasks: (1) Phonology, Orthography, and Morphophonemics, (2) Lexicon, and (3) Grammar.

## Phonology, Orthography and Morphophonemics

### Phonology

My goal was to choose a set of phonemes for Temenia for which, even if not every member of the set was present in every major language, most of the set would be present in most of those languages. I also wanted to make sure that the "distance" between any of

the phonemes in the set would not be too small, so that speakers whose native language did not contain some of the phonemes would not have difficulty in distinguishing between members of the set. Finally, I wanted to specify allophones to make it easier for all speakers to produce and distinguish any of the phonemes in the selected set.

The selected set contains the five most common vowels, /i/, /u/, /e/, /o/, /a/, as shown in the chart, “Segmental Phonemes of the World’s Major Languages” [source: [http://www.eskimo.com/~ram/segmental\\_phonemes.png](http://www.eskimo.com/~ram/segmental_phonemes.png)].

The set of phonemes contains 14 consonants (all pulmonic). Once again, from inspection of the segmental phoneme chart, most of the obvious candidates stand out. By applying a simple trick of making any voiced consonant allophonic to its voiceless counterpart (as well as merging, as allophones, the various forms of ‘r’), a set of consonants, almost all of which are shared by all the major languages, can be determined. The one exception, /x/, (and its allophone /χ/) was included, actually, more for reasons of “aesthetic wholeness,” even though this phoneme exists in only six of the listed 11 major languages.

## Orthography

Of course, in order to use a constructed language in the modern world, it has to have a written form. It was necessary, therefore, to choose or to construct an alphabet. I had a number of criteria for this. First, I wanted to choose a written system such that none of the letters would be easily confused. (The letters ‘b’ and ‘d’ - as well as ‘p’ and ‘q’ - are well-known examples of frequently confused letters by new learners of the Roman alphabet.) Of course, since Temenia had only 19 letters, the Roman alphabet, with seven letters excluded, was a candidate to be considered. However, to use the Roman alphabet with half of each pair of easily confused letters omitted, requires the association of a letter to a phoneme with which it is not usually associated. This itself could be confusing and a hindrance to the ease of learning of the language

I knew from having read Geoffrey Sampson’s *Writing Systems* that one of the principal factors that makes a language difficult or slow to read is too close a similarity between the shapes of the various letters in the alphabet. So, I wanted to choose an alphabet all of whose letters differed by a noticeable extent.

Secondly, I wanted to choose a system of writing that could be easily used on computers. Although I, personally, believe that computers exist to help humans, rather than that humans should conform their behavior to adapt to what is easy for computers, I felt that creating a unique alphabet with customized glyphs would slow the adoption of (or experimentation with) the new language. Therefore, I was searching for an existent alphabet, all of whose letters were quite distinct, and which could be easily handled by today’s personal computers. I found an almost perfect candidate in the lowercase Greek alphabet.

By excluding five of the 24 letters, it was easy to arrive at a set of letters all of whose shapes were quite distinct. The ‘ζ’ and the ‘ξ’ are the most similar. Furthermore, unless one is a speaker of Greek, there would be no confusion between the customarily

associated phonemes and the phonemes of Temenia associated with the Greek letters. In many cases, I associated the Greek letter to the phoneme with which it normally is associated in classical Greek (for example, the letter ‘π’ is associated with the phoneme /p/). In those cases where this was not possible, I attempted to associate a phoneme to a Greek letter based on the letter’s similarity in form to a letter of the Roman alphabet (for example, the letter ‘η’ is associated with the phoneme /n/).

There are no capital letters in Temenia. The lowercase Greek letters should be sufficient. (After all, Arabic does not have capital letters, so clearly it is possible to do without them).

## **Morphophonemics**

In order to make it easy for speakers of various native languages to learn Temenia, and pronounce it, I decided to eliminate all consonant clusters from the syllabic morphology. Similarly, all codas (consonants following the vowels in a syllable) were eliminated, since many languages do not allow codas, or only a very few codas, and allowing initial consonants as well as final consonants in syllables can create “phantom” consonant clusters between syllables, which I wanted to avoid.

Allowing only syllables consisting of a single vowel, or a single consonant followed by a single vowel, would not give very many possible distinct syllables (only 75). Therefore, diphthongs were admitted as possible syllabic nuclei. In fact all possible diphthongs are legitimate in Temenia. Since there are five vowels, this gives 20 possible diphthongs. These, plus the five basic vowels, results in 25 possible syllabic nuclei. It may seem that the distinction between a diphthong and the basic vowels of which it is composed may be difficult to distinguish. Nevertheless, I think that there is a sufficient distinction; although it may require just a bit of practice for those speakers of languages where the difference between a simple vowel and a diphthong is often muddied (for example, the English ‘o’ is often pronounced as /ou/ rather than /o/ – these are different in Temenia).

Finally, in order to completely disambiguate syllabic separation, I adopted the rule that every syllable must start with a consonant (the “semivowels” /j/ and /w/ are considered consonants). With this set of morphophonemic rules, every syllable (and every word) must start with a single consonant, and every syllable (and every word) must end with a vowel or a diphthong. With this arrangement there are a total of 350 possible syllables in Temenia. Notice that there is never morphophonemic variation in pronunciation in Temenia.

Spoken Temenia, with its rich set of diphthongs and lack of consonant clusters, sounds a bit like native Hawaiian. Aesthetically I find this to be attractive and somewhat musical.

## **Intonation**

Temenia does not prescribe any particular patterns of intonation, including stress or pitch accent on syllables. I do realize that intonational patterns are very important in spoken communication. However, learning the intonational patterns of a language as a non-native speaker can be slow and frustrating. Temenia has been designed so that the focus

of the sentence can be altered by taking advantage of its flexible word order. In this way, speakers from different linguistic communities which have different intonational patterns hopefully can make themselves understood easily. In any case, no particular intonational pattern is prescribed.

## Lexicon

Ideally, for an auxiliary language to be easy to learn, a significant proportion of its lexicon should consist of words which are cognates of the equivalent words in the lexicon of the native language of the learner. This ideal appears to be unachievable for an auxiliary language whose intent is to be global in scope.

Consider the major languages that are used as a foundation for Temenia: Chinese (Mandarin), English, Spanish, Russian, French, Hindi/Urdu, Arabic, Portuguese, Bengali, Japanese, German – and the families to which those languages belong. Between the Germanic, Romance, Slavonic, and Sinitic language families there is no lexical commonality from which to form a set of cognates (and this is without even considering the others).

Other constructed languages, notably Loglan/Lojban, have attempted to circumvent this problem by using an algorithm that weights the “source” words from the source languages in proportion to their number of speakers [source: <http://xahlee.org/lojban/hrefgram/chapter4.html> (Section 14: The *gismu* creation algorithm)]. In my opinion, this approach, although noble in its intention, is a failure. From inspection of the Lojban lexicon one finds very few words which are recognizable as cognates to any of the Lojban source languages. The attempt to create words that are cognates to all, has resulted in words that are cognates to none.

The creation of a lexicon for Temenia clearly has the same problem. There is so little commonality between the various major languages in terms of their lexicons, that no constructed lexicon, unless it heavily favored one language family, would consist of words easily recognizable by native speakers of any source language.

I decided to create the words of the lexicon randomly.

There are two reasons for this. The first is that since Temenia is created as an exercise in the construction of an international auxiliary language, it is not important at this time to spend a significant effort in perfecting the lexicon. Secondly, since it would not be possible to create a lexicon with recognizable cognates, regardless of the approach, the constructed words could just as well be generated randomly. That is exactly what was done. A simple computer program was written to generate a long list of random words, without duplicates, which met the constraints of Temenia’s morphophonemic rules.

The source words were all drawn from English. Three sources were used:

- Peter Bergman’s *The Concise Dictionary of 26 Languages* (1,000 words)
- The *Voice of America* word book [<http://www.voanews.com/specialenglish>] (1,500 words)

- *Ogden's Basic English* [<http://ogden.basic-english.org>] (850 words)

All of these sources contain lexicons that purport to consist of the basic English vocabulary.

The words from these three sources were merged and duplicates eliminated, resulting in a lexicon totaling about 2,250 words. These form the lexicon of Temenia.

To each of these English words one of the randomly generated Temenia words was assigned. A few words, which are essentially identical throughout the world (for example, “telephone”) were hand-crafted for a phonetically similar Temenia word (“τελεφωνο”).

## Grammar

Naively, I hoped that there would be a common intersection of basic grammatical “features” that could be used for Temenia. I thought that if I eliminated every grammatical attribute that was not present in any of the major languages I used as sources, then what would remain would be a small, but usable, set of grammatical features that would become the grammar of Temenia. The fact is that what remains is almost nothing: There are verbs and there are nouns. There is some way to modify the nouns and verbs. There is some way to communicate temporal or aspectual relationships in a sentence. However, all the source languages do these things in quite different ways.

Then I considered what happens when people from distinct linguistic environments have a need to communicate. What results is a “pidgin.” A pidgin is a simple language, drawn from the two (or more) linguistic sources, that allows the people to communicate using it as an auxiliary language.

I reasoned that whatever the common grammatical features of pidgins were, these would represent those features of grammar that people found naturally to be easier. If there was a set of such common features, then perhaps this would indicate the existence of some underlying neurological structure common to all humans. If so, it would be wise to adopt those common grammatical features, because they surely must be the easiest or most natural forms of grammar for a speaker to learn.

It turns out that there are, indeed, some common features of pidgin languages. These features are summarized clearly in Wikipedia [source: <http://en.wikipedia.org/wiki/Pidgins>], so I quote verbatim:

1. A Subject-Verb-Object word order in a sentence
2. Uncomplicated clausal structure (i.e., no embedded clauses, etc.)
3. No codas within syllables (Syllables consist of a vowel, with an optional initial consonant)
4. Basic vowels, like /a/ /i/ /u/ /e/ /o/
5. No musical tones, such as are common in West African and East Asian languages
6. Separate words to indicate tense, usually preceding the verb
7. Words are reduplicated to represent plurals, superlatives, and other parts of speech that represent the concept being increased

## 8. A lack of morphophonemic variation

The problem with a pidgin language's grammar, however, is a lack of expressiveness. The second goal for the construction of Temenia was to be sufficiently expressive to translate great literary and religious works. To meet the second goal, a more sophisticated grammar would be necessary.

The solution that I adopted is that, in a sense, there are two grammars for Temenia: a simple, core grammar that is similar to a pidgin; and a sophisticated grammar, all of whose features are optional. The central concept is that by speaking "simple" or "core" Temenia, one produces well-formed, grammatically correct Temenia sentences, understandable to any speaker. If more expressive power is needed, and if the speaker is fluent in the full grammar of Temenia, then he can use the additional grammatical features to add nuances, subtleties, and emphases to the utterances that he produces. These represent well-formed, grammatically correct Temenia sentences, that are understandable to any proficient, fluent speaker.

In terms of the eight grammatical features common to pidgins listed above, Temenia adopts all of them, with the following two exceptions:

(#2) It is not necessary to use embedded clauses in "core" Temenia; however, in "full" Temenia, embedded clauses are allowable constructs (for example, relative clauses).

(#6) In core Temenia, tense is indicated periphrastically using lexical items (for example, by using the words "today," "yesterday" or "tomorrow"); however, in full Temenia, tense can be indicated by adding a suffix to the verb.

The other six points common to pidgins are maintained even in the full grammar of Temenia.

What is perhaps unique in this approach is the "optionality" of almost all of the grammar. For example, in an inflectional language such as Spanish, the tense and aspect of the verb must be used whenever speaking correctly; it is not possible, instead, to merely use the infinitive, or some other simple form, of the verb and indicate its tense by using lexical items such as "tomorrow." This makes learning inflectional languages difficult, because in order to utter a well-formed sentence, the speaker has to be proficient with the entire inflectional structure.

In contrast, using simple verb forms and indicating tense and aspect through the use of lexical items, is exactly how Temenia functions. A new speaker can become proficient very quickly and easily since almost all of the grammatical features of Temenia are optional. The largest hurdle, in my opinion, is learning the vocabulary (especially because there are no cognates with any language). The memorization of the vocabulary, though, is a task that any language learner must undergo, regardless of the language he wishes to learn. And thus it seems impossible to eliminate that effort on behalf of the learner.

My hope is that the “optionality” of Temenia will allow speakers to become proficient quickly with the core grammar, and then eventually learn the other features of the language that can be used to express many subtle nuances.

Regarding the grammar, it was designed to conform to Greenberg’s Universals (Joseph Greenberg, *Some Universals of Grammar with Particular Reference to the Order of Meaningful Elements* [web source: <http://angli02.kgw.tu-berlin.de/Korean/Artikel02/Appendix3.html>]). The reasoning behind this, is that, in some way, these linguistic universals (or near universals) represent underlying neurological structure common to all humans, just as for pidgin languages. Since the goal of Temenia is to be easy to learn, it makes sense to construct the grammar to conform to Greenberg’s universals.

In particular, given that Temenia is an SVO (AVP) language, and also due to other features of its grammatical structure, 16 of the 45 universals are applicable. Those particular universals are discussed in an appendix at the end of this paper. Refer to that appendix for more detail on how Greenberg’s Universals pertain to Temenia.

Note, however, that two of Greenberg’s universals from which Temenia’s grammar appears to deviate are:

- It is an SVO language with postpositions—most postpositional languages are SOV languages (#4)
- It is a postpositional language with a question particle in initial position with reference to the sentence as a whole—most postpositional languages with question particles place them in final position (#9)

These apparent deviations are explained in detail in the sections on postpositionality and on interrogatives, respectively.

The subsections follow the same order as the “Complete Grammar” document. This order is based loosely on Thomas Payne’s *Describing Morphosyntax*.

## **Grammatical Categories**

It is rather arbitrary into which syntactic categories we divide the world. The external world knows nothing of syntax, and the syntactic categorization of our languages is an attempt to bring order to the world which intrinsically may not possess it. As an example, consider the word “lightning.” What is this phenomenon? Is it a thing, that should be represented as a noun? Is it an action, that should be represented as a verb? Is it both simultaneously? No matter how we try to categorize the phenomena of the world, there will be some which span the boundaries that we create. Syntactic categories, truly, are only approximate models of the phenomenological world.

Therefore, when creating a new language, it is best to choose a simple model of syntactic categorization. The choice for Temenia was to use three categories: nouns, verbs, and modifiers. Those phenomena that have aspects of both nouns and verbs are usually placed in the category of verbs. Modifiers can modify either nouns or verbs or other modifiers. Of course, as in almost all languages, there are a few “small” categories, such as

adpositions, adjuncts, and particles that are needed to structure the sentence. This simple structure fits well with the syntactic categories of the source languages.

## Word Order

The basic word order in Temenia is Agent-Verb-Patient (AVP). For transitive sentences, this is the same as Subject-Verb-Object (SVO). SVO is the most common word order of human languages. Furthermore, it is the word order adopted by most pidgin languages, as the most “natural” order. For these reasons, this is the order chosen for Temenia.

A word order described as SVO, however, can hide distinct semantic roles behind syntactic constituents. I wanted to shape the syntax of Temenia as closely as possible to semantic roles, and not arbitrary syntactic categories. This is why I chose a system of split intransitivity to represent intransitive sentences. Rather than focus on the relatively artificial classification of intransitive subjects as either nominative or absolutive, the focus in Temenia is on the semantic role played by the intransitive subject. If the role is more agent-like (*John walks*), then the “subject” appears before the verb (or with the agent marking, κ $\alpha$ ). If the role is more patient-like (*John falls*), then the “subject” appears after the verb (or with the patient marking, π $\upsilon$ ).

The approach of mapping the syntax of Temenia as closely as possible to the semantics of the utterance, is one that has been adopted throughout the construction of the grammar. It is for this reason that nouns are marked, optionally, to represent the semantic roles they play in the sentence.

## Noun Markings

The common semantic roles that nouns may have can be indicated explicitly by marking the nouns with suffixes. These markings are optional. If the role of the noun is clear from the context of the utterance, then the speaker should omit it.

These noun markings can be conceptualized in two different ways. Firstly, they can be considered as postpositions to the nouns to which they apply; or, secondly, they can be considered as inflections of the nouns. This dual representation is purposeful. For native speakers of languages that decline nouns, such as Russian, conceptualizing the noun markings as inflections may be more natural. In contrast, for those speakers of languages that do not decline nouns, such as English, conceptualizing the noun markings as separable postpositions may be more natural. This ability to be conceptualized in two different ways, by speakers of different native languages, was one of the forces leading toward the decision to make Temenia postpositional.

A minor decision that had to be made was whether the noun markings should be written separately after the noun, or whether they should be written as suffixes concatenated to the noun. Note that because of the morphophonemic structure of Temenia, there would be no difference in the phonetic pronunciation between the two; this is purely an orthographical decision. I decided that the noun markings would be written as concatenated, rather than separately. This was done mostly for aesthetic reasons: it avoids

the messy appearance of many short, disconnected words in the sentence, and also it clearly indicates to which word the suffix belongs.

Not all semantic roles (or relationships) of nouns in a sentence are “common.” Only the common ones are marked using suffixes. For the others, separate postpositional words are used. (Attempting to create a suffix for every possible semantic relationship between nouns and verbs would require an extremely large number of such suffixes that would be a hindrance to learning an auxiliary language.) The reason that these words are placed postpositionally (rather than prepositionally), is to emphasize the correspondence between them and the noun marking suffixes. There is not a great difference between grammatical constructions using of the word “from” versus the word “above.” However, “from” is expressed more frequently than “above,” so there is a suffix in Temenia for “from” (-τε) but a distinct postpositional word for “above” (ζερωαφο).

### **Postpositionality**

There may be some question as to why Temenia is an SVO (AVP) language whose adpositions are postpositional instead of prepositional. The major reason is to blur the distinction between noun declinations and adpositions, thereby making Temenia more easily learnable by a larger group of speakers. Of course, it is possible to decline nouns using prefixes or infixes, instead of suffixes. There are two reasons to choose suffixes. First, the source languages, on which Temenia is based, which decline nouns (such as Russian, Hindi, Bengali) use inflections at the end of the noun stems. Second, it is easier to use a dictionary to find an unknown word if the word’s stem appears first orthographically. (Those who have mastered the art of using an Arabic dictionary with that language’s rich set of infixes will appreciate this).

Nevertheless, in spite of this explanation, there may still be some concern that the combination of postpositions with an SVO word order might represent an unnatural combination that would lead to difficulty in learning the language. A glance at Hawkins’s language type table in which he categorizes a sample of 336 languages among 24 types (John Hawkins, *Word Order Universals*, 1983) should dispel partially this concern. First, more than half (56%) of the languages sampled are postpositional, rather than prepositional. This shows that either order is equally “natural.” Second, even among the 109 SVO languages surveyed, 25 of them (23%) are postpositional. This shows that the combination of SVO word order and postpositionality occurs naturally with a significant frequency in the world. Therefore, I do not believe that these choices create a grammar that leads to learning difficulty, and that, in light of the reasons stated above for using postpositions, it is a valid choice.

### **Possessive Word Order**

The sections on noun markings and postpositionality describe the reasons for the order between nouns and adpositions. The possessive relationship is between two nouns. In Temenia, the possessive precedes the governing noun. A short consideration of the possessive used for a governing noun which is in an oblique case toward the verb will show why this is the correct order:

ωαηαζι παπαλα  
*to Juana's father*

In this sentence fragment, παπα is the governing noun and ωαηα has the possessive suffix. The entire phrase is marked as the recipient, parsed like this:

(ωαηαζι παπα) – λα

The suffix, -λα, appears at the end of the entire noun phrase, just as it appears at the end of a simple noun. If possessives followed their governing nouns, then the noun's role suffix would appear in the middle of the noun phrase; that certainly would seem to be an unnatural word order.

### **Modifier Word Order**

Modifiers follow the nouns or verbs in Temenia. This order is more common for SVO languages (73 of 109 languages (67%), as per Hawkins).

If one modifier modifies another, then the modifying modifier follows the modifier which it modifies. This is consistent with the order between nouns and modifiers, or verbs and modifiers; the modifying word always follows the governing word.

If all of a descriptive modifier, a numeral, and a demonstrative modify a noun, then they occur in this order: descriptive modifier, numeral, demonstrative, as per Greenberg's universal #20.

There are no articles in Temenia. Many of the source languages do not have them, demonstrating that they are not necessary. A demonstrative can be used in place of "the" if desired.

### **Apposition**

In order to conform to Greenberg's universal #23, the normal word order in appositional usage is that the common noun precedes the proper noun.

### **Flexible Word Order**

The existence of noun markings gives one the capability to utilize a flexible word order. This allows the speaker to express the focus of the sentence by changing the word order from the basic one, just as in Russian. Allowing the word order to express focus, rather than resorting to periphrastic constructions, such as clefts or idioms, simplifies the structure of the language. It may shorten the time required by a speaker to transition from a novice to an expert, since there actually is less to learn when word order is used to provide emphasis, instead of idiomatic expressions (although it is possible that novice speakers, when confronted by unusual word orders, may confuse the semantic roles played by the nouns, and assume that the sentence follows the usual word order). Furthermore, the flexible word order of Temenia may lead to poetic and lyrical styles not possible in a language whose word order is more rigid.

## Pronouns

Greenberg's universal #42 states that all languages have pronouns involving at least three persons and two numbers. This is true for Temenia as well. The third-person singular pronouns in Temenia have gender (*he, she, it*). This is the only place in the language where gender is grammaticalized. This was done to reduce ambiguity in sentences where the referent is a person. (It is a lot easier to understand the meaning of "he kicked her" than "it kicked it.") Beyond this, the pronominal structure was designed to be as simple as possible, while conforming to universal #42, with only three persons and only two numbers. Second-person is collapsed into a single pronoun (as in English) regardless of gender or number. Third-person plural together with third-person singular neuter is collapsed into a single pronoun. All possible meanings of "we" (*you and I – they and I – you and they and I*) are likewise collapsed into a single pronoun. This gives six pronouns which is an almost minimal set.

Pronouns in Temenia take exactly the same noun markings as suffixes and nouns do. They function exactly as nouns in terms of word order. This meets universal #25, since both pronominal and nominal objects follow the verb in the basic word order.

## Verb Operations

The most difficult issue in the construction of a language is what operations to allow on verbs. There are many possibilities with a multitude of rich and subtle nuances. One is torn between a simple structure that would be easy to learn and a richer structure which would allow a greater degree of expressiveness.

I have tried to create the best of both possibilities by using verbal suffixes that are optional, rather than verbal conjugations, as in most European languages, which are required for every use of the verb. By specifying that the verbal "inflections" are optional agglutinating suffixes, I hope to have achieved the best balance between simplicity and expressiveness.

From consideration of the set of source languages for Temenia, I decided that it should grammaticalize tense and aspect. These two verbal "features" together can precisely describe the temporal relationships of the actions described in the sentence with regard to the time when the speaker is uttering the sentence (tense), and with regard to their temporal relationship with each other (aspect).

Even so, it is still necessary to decide which tenses and which aspects shall be present in the grammar. Based on the source languages, the three simple tenses (past, present, future) were chosen to be represented by verbal suffixes. More tenses are possible (recent past, distant past) but do not seem necessary. These three tenses create a relatively simple and intuitive partitioning of the experiential timeline.

It was more difficult to decide upon the set of aspectual suffixes, since in many of the source languages the aspect and tense are combined together as single inflections. It was relatively easy to choose the perfective and imperfective because those aspectual

distinctions occur in the source languages, as well as in all the European languages. The completive was added as a better way to represent the “perfect” found in European languages; better because the “perfect” implies some odd nuances regarding the current situation as described at the time of the utterance. Compare:

*He has eaten* (present perfect)

*He finishes eating* (present completive)

The perfect focuses on the situation after the action of eating is done (that is, no longer eating), whereas the completive focuses on the termination of the action of eating (without regard to the current situation). So that it is acceptable to say, using the completive, “*He finishes eating dinner and then eats a snack,*” but it sounds somewhat strained to say, using the perfect, “*He has eaten dinner and then eats a snack.*” The less complex meaning of the completive fits better within an agglutinative verbal structure in which tense and aspect and evidentiality can be intermixed arbitrarily. Finally, in order to complete the set of aspectual verbal markings, the inceptive was added as a counterpoint to the completive. In summary, the four aspects make up a set of foci on actions: focus on the beginning of the action (inceptive), focus on the end of the action (completive), focus on the “middle” (the ongoing portion) of the action (imperfective), and focus on the action in its entirety (perfective).

The third main category of verb operations in Temenia is evidentiality. Many languages have some grammatical way to represent the epistemic qualification of the verb, that is, the speaker’s confidence in the truth of that which he is saying. In European languages this distinction is often represented using modes, such as the subjunctive or the conditional. In Temenia a more direct approach has been used in which the speaker is able to grammaticalize the type of evidence by which he knows the truth of his utterance (as in Quechua, for example). Presumably, there is a very close correlation between evidentiality and other epistemological qualifications of a statement. That is, by stating the evidence by which one knows a fact, one usually also implies the confidence one has in the truth of that fact. As an example, if a speaker says, “I was there and I saw him kick a field goal,” there is a very strong implication that the speaker is quite confident that the kicking of the field goal is an event that did actually occur. In spite of this high degree of correlation, there is an epistemological distinction between the evidence one has of the truth of an event (evidentiality), and the confidence one has in the truth of an event (validationality). No language, as far as I know, grammaticalizes both of these. I think that evidentiality is a more fundamental distinction than validationality, since ideally it does not rely on pre-existent belief structures (although others may disagree with my assessment).

Still, one may ask, “Why grammaticalize evidentiality at all?” My answer to that is it serves as a very convenient and direct way to clarify to the listeners how the speaker attained the knowledge of that about which he is speaking. If nothing else, it should prove to be very useful during cross-examination of witnesses during court proceedings, or in clarifying labyrinthine philosophical treatises.

The four types of evidentiality grammaticalized in Temenia (sensory, inferential, reportative, and universal), are derived directly from ‘Abdu’l-Bahá’s speech, “*The Four*

*Methods of Acquiring Knowledge*” (#83), recorded in *Some Answered Questions*. That talk presents an epistemological breakdown, based on evidentiality, that is a concise and accurate description of the ways of acquiring knowledge.

Finally, there are two more verbal suffixes that exist in Temenia that do not fall into the other categories. These are the iterative and the reflexive. The reflexive is common in many of the source languages, especially the Romance ones. It is provided in Temenia for that reason and also so that there is no need for anaphors (such as *myself*) since the reflexive is used instead. The iterative is grammaticalized in Temenia since that grammatical “feature” occurs in most of the source languages, where it often is represented using adverbs, idioms or periphrastic constructions. (In Arabic the iterative is grammaticalized as a derivational operation represented by a verbal infix.) The iterative in Temenia gives a direct way to intensify a verb. Compare the idiomatic usage in English versus the iterative suffix in Temenia:

μι ωαεφιξει ωεκιε ξιλα

*I sent her a letter*

μι ωαεφιξειρι ωεκιε ξιλα

*I sent her letter after letter*

The iterative and the reflexive are grammaticalized in Temenia because of the frequency of their occurrence (at least in terms of semantics) in the source languages on which Temenia is based.

There are many more possible candidates for verbal operations, but to increase the number beyond the thirteen verbal suffixes specified already in Temenia would clearly impair the ease of learning. I believe that I have captured the most important verbal qualifications to grammaticalize (although some of my decisions obviously were subjective or aesthetic) and to add more would be counterproductive.

Note that since these verbal suffixes are agglutinative (not inflectional) it results in a smaller set of verb markings to memorize. The noun markings also are suffixes, so that Temenia is an exclusively suffixing language.

## **Copular Verbs**

An issue a language designer must address is the number and meaning of copular verbs. How many different copular verbs should there be, and what should their meanings be? At least one copula appears necessary, but potentially there could be separate copulas to signify equation, inclusion, attribution, existence, possession, location, and more. The languages with which I am most familiar have one or two copular verbs. I decided that Temenia would have three, as this seemed to me to be the best partitioning of this linguistic feature.

One (χια) is used for existential constructions. Another (κοι) is used for predicate adjectives and predicate nominals, in the equative, inclusive and attributive senses. And the third copular verb (μεο) is used for everything else, that is, constructions involving possession (including possessive pronouns), location, benefaction, etc. There is no

particular reason, except for subjective and aesthetic bias, that I can use to justify this particular partitioning.

## Relative Clauses

Pidgin languages usually do not have relative clauses, or other embedded clauses, but for a “fully-featured” language, embedded clauses are highly desirable, if not necessary, in order to express complex concepts concisely and unambiguously.

Temenia uses the grammatical strategy of pronoun retention to represent the syntactic relationship between the head of the relative clause and its role in the relative clause.

English uses relative pronouns for this purpose, For example:

*The man, to whom I gave the book, left yesterday.*

The head of the relative clause is *the man*, the noun which is modified by the relative clause. In English, the syntactic role of *the man* within the relative clause is signified by the relative pronoun *to whom* which indicates that the role of *the man* within the clause is that of a recipient.

In Temenia, which uses a relative particle (κε) and pronoun retention, this sentence would appear, instead, like this:

ωιπε, κε μι ηυπι τυι θυλα, θοε καηεα

*The man, that I gave the book to him, left yesterday.*

The head of the relative clause is still *the man*. The relative clause, though, is introduced by the invariant relative particle, κε (*that*), instead of a relative pronoun. The syntactic role of *the man* within the relative clause is signified by the retained pronoun, θυλα (*to him*), which indicates that the role of *the man* within the relative clause is that of a recipient.

Pronoun retention was chosen because it is probably the most common form among the world’s languages of indicating the syntactic role of the head of the relative clause within the clause. To maximize expressivity any noun, or nominal phrase, in the main clause, regardless of its syntactic role, can be relativized. Furthermore, if the syntactic role of the head of the relative clause within the clause is that of agent (or subject), then no pronoun needs to be retained; essentially the relative particle has subsumed the role as the agent of the relative clause.

## Modal Verbs and Complement Clauses

In Temenia, complement clauses are the objects of modal verbs. The strategy for complement clauses mirrors that for relative clauses. Just as all relative clauses are introduced by the relative particle, κε, a complement clause is introduced by the complementive particle, χα. The complementive particle follows the modal verb that is being complemented, just as the relative particle follows the noun that is being relativized.

This strategy consistently handles sentences whose main verbs express some epistemic (or deontic) modification of the complement clause. This is frequent in all languages

since speakers may want to express, not only a declarative fact, but their attitude toward that fact in terms of its desirability, necessity, causality, etc.

An exception is made if the main clause's agent and the subordinate clause's agent are the same. In that case, the complementive particle is omitted and the two verbs (the main verb and the subordinate verb) are written one after the other (as in English and many other European languages, for example: *Mary wants to go*).

Non-modal verbs which can take complement clauses as objects (mostly verbs of cognition or utterance) use the same complementive particle to introduce the subordinate clause (*Billy said that Rebecca ate the cake*). Using the same particle for any complement clause that is the object of any verb provides a very simple approach to handling these subordinate clauses, without requiring the speaker to learn the distinction between modal and non-modal verbs.

In Temenia, a complement clause is allowed only as the object of the main verb. This significantly simplifies the grammar of complementization. To translate a complement clause that is not the object of the main verb, but in some other syntactic relationship, a different approach is taken. For example, in the sentence, "*It surprised me that Mary came to the party,*" the complement clause, "*Mary came to the party,*" is not the object of the verb *surprise*, but rather, the subject. In Temenia, this sentence could be translated using an adjunctive clause, such as, "*I was surprised because Mary came to the party,*" or restated, such as, "*Mary's attendance at the party surprised me.*"

In brief, this strategy was adopted to provide a simple mechanism to allow the expression of epistemic (and deontic) modalities as they pertain to subordinate clauses, in a manner similar to relative clauses. The strategy was then extended to handle objective complement clauses for any verb.

## Adjunctive Clauses

The source languages on which Temenia is based support some form of adjunctive (or adverbial) clause. Therefore, so does Temenia. The adjunctive clause is introduced by an adjunction, and it may occur before or after the main clause. However, for conditional clauses, the normal order is that the conditional clause precedes the conclusion (*if... then*).

## Derivational Operations

For a constructed language, the initial lexicon is small. One way to quickly expand the breadth of the lexicon is to provide a rich set of derivational operations by which more words can be derived. This has been done in Temenia. Nevertheless, this does not mean whatsoever that the lexicon must be restricted to a small number of "fundamental" words and their possible derivatives. Just because it is possible to derive a verb whose meaning is, "to cause death," does not imply that a separate lexical item, "to kill," is proscribed. In fact, it is exactly the existence of these sort of synonyms which will provide the opportunities to select various lexical items so as to imbue sentences with different connotations.

During the development of the set of derivation operations, I initially started with six. These allowed the transformation of any of the three categories of words (nouns, verbs, or modifiers) to any other category. Subsequently, however, I inserted five additional derivational operations, all of which apply to verbs.

Three of those are based on Arabic. These are the derivational operations that transform a verb to a noun that can represent the agent of the verb, the patient of the verb, or the place where the action of the verb occurs. (In Arabic, these are represented by the prefixes, /mu-/, /mi-/, /ma-/, respectively.) I found these to be extremely useful and concise means of communication. For example, in the sentence, “John kicks the ball,” there is the agent, or kicker (John), the patient, or “kickee” (the ball), and the place of kicking (the play field).

Finally, while working on the initial lexicon for Temenia, I discovered that it would be extremely useful to have two additional derivational operations. One transforms the verb into a modifier describing the result of the action, much like a past participle, used as an adjective, in European languages. For example, after one *whips* cream, the result is *whipped* cream, which can be used in a different manner than the original liquid form. Note that in Temenia, the result of this derivational operation is a modifier, not a verbal form. The other operation is used to represent the instrument by which one performs the action (so, for example, in Spanish, the instrument by which one skis (*esquiar*) [verb] is a ski (*esquí*) [noun]).

In total, there are eleven derivational operations in Temenia. Of course, many more operators could be developed, perhaps almost an infinite number. It is necessary, though, to have a relatively small set lest learning the derivational system be needlessly difficult. I believe that the set of derivational operations which I have selected to be a reasonable one.

When applying derivational operators to a word root, the derivational operator (or operators, if more than one is applied), always is affixed to the root before any of the other verbal or nominal suffixes. Logically, this makes sense. It would not be possible to affix any non-derivational operator first, because those operators (suffixes) pertain to a particular grammatical category. The derivational operators transform the grammatical category, so they must be applied first.

Because Temenia is an exclusively suffixing language, the derivational operators are suffixed to the word root. The resultant word, of whatever category, can then take additional agglutinating suffixes, based on the grammatical category of the resultant word.

## Negation

The objective for negation was to keep its formation simple. There is one negation particle (ηα). The particle appears before the verb to negate the clause, or before a noun or modifier to negate that word (with the meaning of *un-* or *non-*).

## Interrogatives

All interrogatives, whether direct questions, indirect questions, yes/no questions, or informational questions, begin with the interrogative particle,  $\theta\alpha$ . This simplifies distinguishing between a declarative statement and an interrogative one, since all interrogative clauses have as their first syllable,  $\theta\alpha$ . (The converse is not true, because there may be some lexical items whose first syllable is  $\theta\alpha$ .)

For yes/no questions, the initial interrogative particle is all that is needed. There are no changes in word order. In fact, no intonational or punctuational differences are required, since the presence of the initial interrogative particle unambiguously identifies the sentence as an interrogative.

Informational questions are a bit more complicated, because more must be communicated by the speaker. Not only must it be communicated that a question is being asked, but also the speaker must specify what information is desired. The strategy employed is a mirror of the pronoun retention strategy used for relative clauses. The interrogative particle is suffixed with the syntactic role suffix corresponding to the piece of information that is solicited. It is rather like the  $X$  in an algebra problem. The missing piece of information is replaced with  $\theta\alpha$ - suffixed by the role which that piece of information plays in the sentence (agent, patient, beneficiary, etc.). Just as for relative clauses, if the missing piece of information is the first item in the sentence (usually the agent), then the initial interrogative particle is the one suffixed with the role suffix. If the piece of information solicited is not initial, then the initial  $\theta\alpha$  stands alone at the start of the sentence, and another interrogative particle, with the proper role suffix, which represents the solicited item of information, is found in place in the sentence. The similarities to the approach used for relative clauses should be obvious.

Note that all of the so-called question words (when?, why?, how?, etc.) start with an initial syllable of  $\theta\alpha$ , thereby maintaining the rule that all interrogatives start with initial syllables of  $\theta\alpha$ .

In a similar vein, indirect questions mirror the approach taken for complement clauses. Instead of the complementive particle, however, the interrogative particle is used to identify the subordinate clause containing the indirect question. The indirect question essentially is inserted, as a direct question with no changes to its word order, as the complement of the main (modal) verb. The main clause itself can be a direct question, as well. The method, therefore, is completely consistent for all types of interrogative usages.

It is true that this method deviates from Greenberg's universal #9, which refers to question particles. In most postpositional languages that have interrogative particles, the particle follows the sentence (or the word) to which it refers. In Temenia, the interrogative particle precedes the sentence (and also precedes the syntactic role suffix for informational questions).

The primary reason for this is that intonation is purposely left unspecified in Temenia. If the interrogative particle appeared in final position, it would not be possible to know that

an utterance was a question, without intonational signals to the listener, or indication by altered word order, until the entire sentence had been uttered. Perhaps it is merely my personal bias, but this does not seem to me to be an ideal mechanism of communicating the speaker's interrogative intent. I wanted a means by which the listener would be alerted immediately that a response would be required to the speaker's utterance. By placing the interrogative particle in the initial position, this purpose is accomplished. Moreover, this approach allows a parsimony of grammatical constructions since the interrogative particle can function also as a particle used to introduce a subordinate clause containing an indirect question. It is for these two reasons that I chose to place the interrogative particle in initial sentence position, and to have it precede the syntactic role marking suffixes, as well.

## Comparisons

Comparatives use the special modifiers *more* (φυ) and *less* (λι), and follow the modified word (the typical Temenia word order). Superlatives use the pidgin language technique of reduplication. *Most* is “more more” (φυφυ) and *least* is “less less” (λιλι).

Comparative constructions follow the typical pattern for postpositional languages: standard-marker-modifier. Although this differs from what European speakers are accustomed to, it is more consistent internally with Temenia's noun-modifier order. The standard (the noun) is first, followed by the modifier, with the marker in between the two to identify the construction as a comparative.

Equative constructions follow an identical standard-marker-modifier pattern, except that the marker is *as* (τυεπο) instead of *than* (ζεωυ).

## Numbers and Numerals

Temenia uses the so-called Arabic numerals, since these already are in near-universal use throughout the world today. The number words which represent scaling (ten, hundred, thousand, etc.) are derived from the metric system of prefixes.

## Alphabet

The “names” of the letters of the alphabet were chosen for consistency and to assure that the sound of the name of each letter was distinct and easily recognizable.

## Punctuation

I thought that if I did not include a section on punctuation, then I would be asked about it. Temenia does not prescribe any particular choice of punctuation.

## Appendix: Greenberg's Universals

Universal number	Abridged statement as narrowed by Temenia's grammar	Conformal?
1	Subjects precede objects in declarative sentences	<b>Yes.</b> Temenia is AVP (SVO).
2	Genitives precede governing nouns in postpositional languages	<b>Yes.</b>
4	Languages with SOV order are postpositional	<b>Possibly.</b> Temenia is not SOV so this may not apply. However, it is known that a majority of postpositional languages are SOV. As explained in the text, however, 23% of surveyed SVO languages are postpositional, so Temenia is not breaking an absolute rule.
9	Almost all languages with sentence-initial question particles are prepositional	<b>No.</b> Temenia is postpositional yet has sentence-initial question particles. As explained in the text, this is done to avoid the necessity of prescribing variant intonations, or altered word order, for declarative versus interrogative sentences. It also allows the structure of indirect questions to be identical to that of direct questions. (Personally, I don't think breaking only one rule is so egregious.)
14	Normally, conditional clauses precede the conclusion	<b>Yes.</b> This is the normal order, but it is not required.
15	In expressions of volition and purpose, the subordinate verb follows the main verb	<b>Yes.</b> This is how modal verbs (which are the main verbs) and complement clauses (which contain the subordinate verbs) function in Temenia.
19	If normally the adjectives follow the nouns, there may be only a minority of exceptions	<b>Yes</b> (and there are no exceptions).
20	When descriptive adjectives, numerals, and demonstratives follow the noun, they are found in that order (or the exact opposite)	<b>Yes.</b> They are always found in the order: descriptive adjective, numeral, demonstrative.
21	If adverbs follow adjectives, then adjectives follow nouns and normally verbs precede objects	<b>Yes.</b>

22	If the order for comparisons of superiority is standard-marker-adjective, then the language is postpositional	<b>Yes.</b>
23	If the common noun precedes the proper noun in apposition, then the genitive precedes its noun	<b>Yes.</b>
25	If the pronominal object follows the verb so does the nominal object	<b>Yes.</b>
27	If a language is exclusively suffixing, it is postpositional	<b>Yes.</b> Temenia is exclusively suffixing, both for its nouns and its verbs; it is also postpositional.
28	If both the derivation and inflection follow the root, then the derivation precedes the inflection	<b>Yes.</b> Derivational suffixes are affixed to the root before other suffixes.
29	If a language has inflection, it always has derivation	<b>Yes.</b> Temenia's agglutinative verbal suffixes could be considered inflections.
42	All languages have pronominal categories involving at least three persons and two numbers	<b>Yes.</b>

The other universals are not listed because they do not apply to Temenia's grammar.