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Noninformative Inflectional Operations in Tamil*

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1. Introduction

Much recent work in inflectional morphology has revolved around the form-semantic match between bound morphosyntactic elements and does not acknowledge a level of morphology that is different from morphosyntax. Inflectional morphology in most recent theories (Anderson 1992, Halle & Marantz 1993) is the realization of the morphosyntax. But ‘inflection’ also includes theme vowels and a variety of empty suffixes that do not contribute any morphosyntactic meaning. These inflectional elements are not part of the morphosyntax, but are involved with the construction of the stem itself. I will argue that inflection is not always morphosyntax, it may also be a part of stem-formation.

A processual theory in which information contribution is required of all inflectional operations, in fact, is central to the process of mapping morphosyntactic features, is set out in Steele 1995. I will examine this theory specifically referring to Tamil verbal morphology. I will argue that any theory of morphology that does not allude to a level of pure inflection (*without* morphosyntax) cannot account for Tamil. Textbook accounts of Tamil as a “classically agglutinating language” do not acknowledge the phenomena of parasitic formation and extended exponence exhibited in its inflectional morphology. Owing to its inflectional pattern, Tamil cannot be analyzed by a theory that obligates inflectional procedures to be restricted to the morphosyntax, and to be informative.¹

Steele 1995 proposes the theory of ARTICULATED MORPHOLOGY, in which every overt or nonovert affixation process is required to be “informationally additive”. In this paper I will take

These operations may, but need not, have a phonological effect as well (Steele:272). That is, the effect of a morphological operation is not necessarily phonologically visible. Steele exemplifies the working of this theory by providing an analysis of the morphological processes in Potawatomi.

Such strict theoretical prerequisites on morphological processes preclude analysis of languages which have parasitic constructions. The following Latin data (Aronoff 1994) clearly shows that Steele's prerequisite, that every morphological operation is informationally additive, is violable.

PRESENT ACTIVE INF	PERF PARTICIPLE	FUT PARTICIPLE	GLOSS
lauda-re	laudā- <i>t</i> -	laudat-ur-	'praise'
mone-re	monit-	monit-ur-	'warn'
duce-re	duct-	duct-ur-	'lead'
audi-re	audit-	audit-ur-	'hear'
cape-re	capt-	capt-ur-	'take'

In the above data, the future participle also contains the perfect participle suffix. If Steele's contention is empirically valid, then the future participle would also have a 'perfect' meaning component in it. But that is not the case. The future participle only means 'future', not 'perfect'. The argument is rendered further untenable by the observation that the perfect participle is usually passive but the future participle is always active. Aronoff deals with this problem by arguing for an underlying stem that is morphosyntactically neutral, and on which two semantically diametrically opposite stems may be formed: "My claim is that... both participles are formed on the same stem and that this stem is semantically neither active nor passive...In a lexeme-based separationist theory, where meaning or syntax and sound are distinct, the notion of a stem divorced from meaning is entirely natural" (p34).

The Tamil data given below displays parasitic formation, thus violating Steele's prerequisite that inflectional operations are information-increasing. Later in the paper there are other morphological operations that duplicate existing information and pose further problems for Steele 1995³.

STEM	INFINITIVE	PRESENT	GLOSS
tu:ŋg-	tu:ŋg-ə	tu:ŋg-ə-r	'sleep'
o:l-	o:l-ə	o:l-ə-r	'run'
nɪmɪr-	nɪmɪr-ə	nɪmɪr-ə-r	'straighten'
vəɾəj-	vəɾəj-ə	vəɾəj-ə-r	'draw'
pəɭɪ	pəɭɪ-kkə	pəɭɪ-kkə-r	'read'
kuɭɪ	kuɭɪ-kkə	kuɭɪ-kkə-r	'bathe'

If Steele's claims are empirically valid, then the two morphological operations responsible for the suffixation of [ə] and [r] to derive the stem [tu:ŋg-ə-r-] add respectively the information INFINITIVE and PRESENT. Adhering to Steele's criterion forces the implication that the stem [tu:ŋg-ə-r-] is at once nonfinite and tensed. But semantically the verb is only present, though it is formed on the same stem as the infinitive [tu:ŋg-ə]. This disobeys Steele's claim, and supports the claim made in Aronoff (1994) that a stem is unspecified at the level of pure morphology.

2. Parasitic formation in Tamil

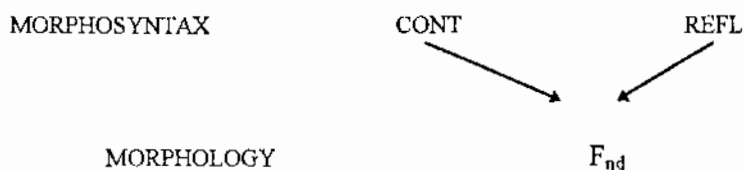
Before proceeding to my analysis, I briefly describe the tense inflection patterns of Tamil verbs⁴. Tamil verb stems can be divided into stems that end in a consonant and stems that end in a vowel; the tense inflection patterns can be predicted based on this classification. The three tense stems and the participle, infinitive and imperatives are built on different stems: given the surface similarities

of the present, past and future stems with the respective infinitives, participles and imperatives, it is reasonable to suggest that there are common stems from which these near-identical pairs (or identical in the case of the vowel-final (henceforth V-FINAL) past/participle) are derived. I do not mean that the present, past and future tenses are constructed on the actual infinitives, participles or imperatives themselves, rather that the tense stems and the other verbal stems are built on common, underlying (in the sense of Bloomfield (1933:209)) stems which I will refer to as the INFINITIVE, PARTICIPLE and IMPERATIVE stems. Following Aronoff 1994 I claim that these underlying stems are not semantically present or infinitive, past or participle, future or imperative⁵. Rather, these semantic values are realized as a result of their morphosyntactic properties, PRESENT, INFINITIVE, etc. So the present and infinitive are built on the infinitive stem, the past and participle on the participle stem, and the future and imperative on the imperative stem. In the following pages, I will demonstrate exactly how this mechanism works.

2.1 Analysis

Stems convey *lexemic* meaning, semantic content inherited from the lexeme, but lack *functional* meaning, morphosyntactic specification. Morphosyntactic specification occurs as a result of features like PRESENT or INFINITIVE being associated with the verb lexeme, as part of the morphosyntactic representation. This morphosyntactic information is realized phonologically in Tamil as suffixes through morphological operations involving morphological functions. These morphological functions, which do not directly carry any semantic value, map onto stems and derive other stems by delivering the information from features like PAST, PRESENT, INFINITIVE, etc. So underlying stems like the participle stem are formed when morphological functions map the

morphosyntactic specification PARTICIPLE, etc. onto verb stems. These functions are represented as F, subscripted with the actual realization of the suffix.



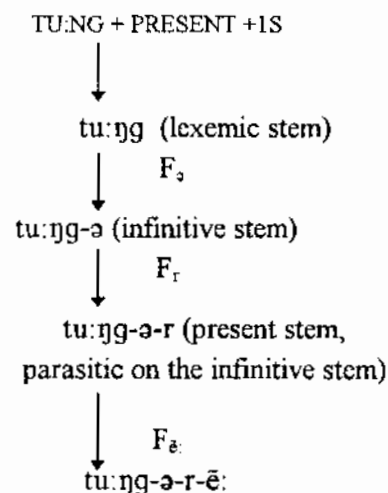
Two morphosyntactic features may map onto the same morphological function, and carry distinct information in identical phonological packets. For instance, in Tamil, CONTINUOUS and REFLEXIVE both map onto the same morphological function, F_{nd} .

Each feature is associated with one or more functions: for instance, in Tamil the feature PAST has several functions like F_n , F_{tt} and F_{nd} which are responsible for the actual realizations of the past tense. Where there are rival functions, the selection of one of these functions over another is governed in Tamil by the final segment of the verb stem. That is, in [tu:ŋg-i-n-], the selection of F_n over F_{tt} and F_{nd} is governed by the stem-final segment [g]⁶. Irregular verbs are pre-specified for a specific function, say F_x , which results in the realization of an idiosyncratic tense morph. Stems unspecified for a function are formed by the mapping of (one of) the default functions, selected according to the stem-final segment.

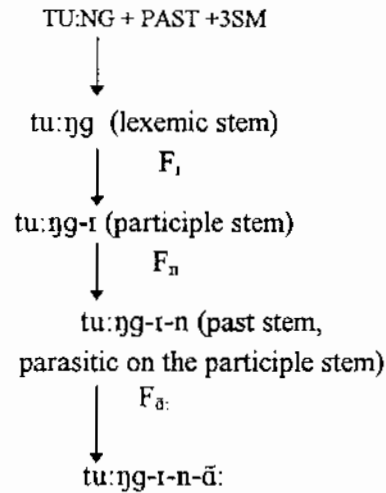
The past tense of the verb [kuɽɪ] 'drink' is the same as its participle. The participle form of the verb [tu:ŋg] 'sleep', [tu:ŋg-i], looks the same as its past tense stem [tu:ŋg-i-n-] except for the last consonant [n] of the past tense marker. We could generalize that the past tense of both the C-FINAL and V-FINAL stems and the respective participles are derived from a common stem, which I will refer to as the participle stem. That is, [kuɽɪ-tʃtʃ-] 'participle' and [kuɽɪ-tʃtʃ-] 'past' are both derived from the common participle stem kuɽɪ-tʃtʃ while [tu:ŋg-i-] 'participle' and [tu:ŋg-i-n-]

'past' are derived from another common participle stem $tu:\eta g-i$. To derive the past, a further suffixation may be necessary: in the C-FINAL verb given above the past suffix [n] is added to the participle stem⁷.

Technically, there are no participle or infinitive morphs as such, since these are also found in the past and present tenses respectively. The suffix [i] contributes the value PARTICIPLE only in the participle of 'sleep' $[tu:\eta g-i-]$ but not in the past tense $[tu:\eta g-i-n-]$. In the past form, the suffix [i] is not playing a morphosyntactic role, it is playing a purely morphological role. The argument made for the participle morph may be extended: the 'infinitive' morph $[\text{ə}]$ contributes a morphosyntactic value INFINITIVE only in the infinitive. In the present, it performs a purely formal function and is semantically null, representing the level of pure inflection, a mere indicator of the 'path' or the 'route' taken by the feature PRESENT in mapping onto the verb stem. The route of the feature INFINITIVE could be formulated as $(F_s [tu:\eta g-])$ while that of the feature PRESENT may be represented as $(F_r [tu:\eta g-\text{ə}])$. I give below some sample derivations. First, the derivation of the verb $[tu:\eta g-]$ in the present and first person singular (the relevant agreement suffix is $[\text{ē:}]$).



Next, the derivation of the past tense and third person masculine (the relevant agreement suffix is [ā:]).



The routing ensures that the correct form, for instance, [tu:ŋg-ə-r-ē:] surfaces, because F_r has to map onto an infinitive stem. Illicit forms like * [tu:ŋg-r-r-ē:], where F_r has mapped on to the participle stem, deriving an unacceptable form are thereby precluded.⁸

3. Duplicating Information: multiple marking of identical information

Now I will present data which exhibit double exponence, or instances where the information is conveyed not by a single affix, but by the joint presence of two or more suffixes. This violates Steele's claim that multiple additions of identical information are precluded.

Besides the temporal stems, other verbal and nonverbal stems may also be formed on the underlying stems. For instance, the perfective, the continuous and the continuous perfective stems are also formed on the participle stem; the reflexivization of verbs is also done on the participle stem. The overall picture we have of stems in Tamil is that of one built upon another, a third built upon the second, and so on, surface forms emerging at various stages of the formation process. In

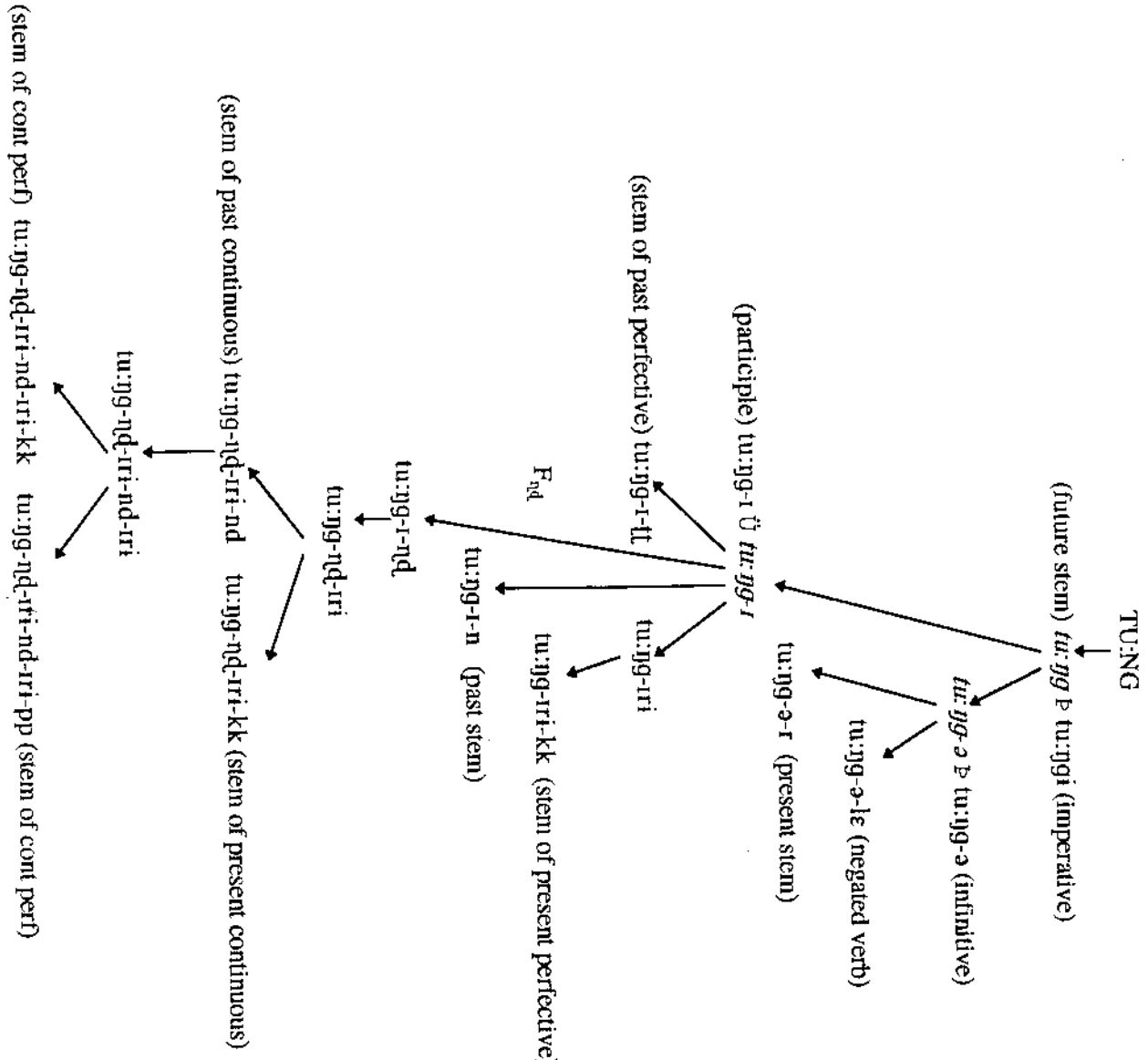
the course of this stem-construction we see that Tamil also exhibits extended exponence (refer tree overleaf). That is, in the formation of the continuous and the perfective stems, there is more than one suffix that “means” CONTINUOUS or PERFECTIVE. When more than one suffix is necessary to interpret the “meaning” of a morphosyntactic feature, it may be argued that the combination of all of the suffixes jointly provides the “meaning”. These are instances of morphological operations that duplicate information that is already present. In Potowatomi, Steele is able to clearly bifurcate the semantic contribution of each operation, and show how multiple additions of identical information are precluded. But in Tamil, it is not possible to isolate the information delivered by each operation, thereby allotting a specific segment of the meaning to each. Also, the combination of suffixes that “mean” CONTINUOUS or PERFECTIVE is not the same in all the three tenses. But before discussing the derivation of the continuous and perfective stems, I will briefly discuss the participle stem, which seems to host more stems than the infinitive and imperative stems.

3.1. The participle stem

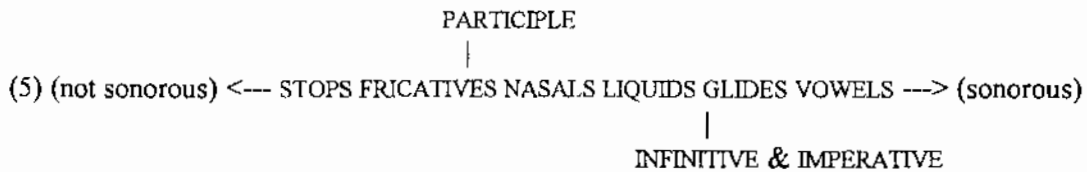
It is important to study the participle stem because a significant number of the instances of ‘multiple marking’ are seen in stems that are formed on the participle stem. The participle stem is used in several of the aspectual stems, in none of which it “means” PARTICIPLE.

In the formation of the participle stem there is a split within the C-FINAL stems: the stems that end in approximants ([j] and [r]) pattern differently from the other C-FINAL stems. The consonant stems that end in approximants (henceforth A-FINAL) pattern with the V-FINAL stems in forming the participle stem, but with the other consonant stems (obstruent-final and nasal-final, henceforth O/N-FINAL) in forming the infinitive and imperative stems. The consequences of this are predictable: in the past tense the approximants are in a group by themselves, while the obstruents

A Sample Derivation of the Verbal Stems of 'sleep'



pattern together with the nasals. But in the present and future tenses, the approximants pattern with the other consonants. At first these different groupings of consonants at different levels of sonority by different stems seem confusing. However, the sonority scale easily accommodates the groupings.



The participle stem groups liquids, glides and vowels together, and stops, fricatives and nasals in another group. The other two stems group the stops, fricatives, nasals, glides and liquids together, and the vowels in another group. The A-FINAL stems pattern: (a) with V-FINAL stems in the past tense (identical to the participle stem), and (b) with O/N-FINAL stems in the present and future (formed on the infinitive and the imperative stems respectively) as shown in Table 1:

STEMS	O/N-FINAL STEM	A-FINAL STEM	V-FINAL STEM
PARTICIPLE	tu:ŋg-r-n-ē:	nimir(r)-nd-ē: straighten-PTCPL-	kələ-nd-ē: mix-PTCPL-
INFINITIVE	tu:ŋg-ə-r-ē:	nimir-ə-r-ē: straighten-INF-	kələ-kkə-r-ē: mix-INF-
IMPERATIVE	tu:ŋg-i-v-ē:	nimir-i-v-ē: straighten-IMP-FUT-	kələ-pp-ē: mix-IMP-

TABLE 1 THE O-FINAL, S-FINAL AND V-FINAL CONJUGATIONS

Further, since the continuous and perfective stems are also formed on the participle stem, the A-FINAL stems pattern with the V-FINAL stems in forming these tenses also. Below there is a discussion of the perfective and continuous aspects.

3.1.1. The perfective aspect

The data given in Table 2 exhibits the extended exponence seen in the perfective aspect⁹. The critical point is that no single perfective morph is instantly detectable.

STEMS	PARTICIPLE STEMS	PAST PERFECTIVE	PRESENT PERFECTIVE	FUTURE PERFECTIVE
A-FINAL	vəɾə-ɲdʒ-	vəɾə-ɲdʒ-i-tt-ě:	vəɾə-ɲdʒ-iri-kk-ě:	vəɾə-ɲdʒ-iri-pp-ě:
V-FINAL	kuɾi-tʃtʃ-	kuɾi-tʃtʃ-i-tt-ě:	kuɾi-tʃtʃ-iri-kk-ě:	kuɾi-tʃtʃ-iri-pp-ě:
O/N-FINAL	tu:ɲg-i-	tu:ɲg-i-tt-ě:	tu:ɲg-i-iri-kk-ě:	tu:ɲg-i-iri-pp-ě:

TABLE 2: THE PERFECTIVE ASPECT

The data clearly indicates that the perfective is formed on the participle stem by a combination of two suffixes: either [ɪ] + [-tt-], or [ɪ] + the auxiliary [Ir-], the verb ‘to be’ in the case of the O/N-FINAL stem; and the respective ‘participle’ suffix + [-tt-], or the participle suffix + the auxiliary [Ir-] in the case of V-FINAL and A-FINAL stems¹⁰. We could isolate the morph [-tt-] as ‘perfective’, but then it is immediately obvious that the morph signifying perfective is attached to the participle only in the past tense. In the present and future tenses, there is no specific perfective morph as such. The perfective is marked by the auxiliary [Ir-], which carries the tense and agreement features¹¹. In other words, in the present and future perfectives the auxiliary is attached to the participle, and the tense is attached to the auxiliary, and this combination of participle + auxiliary + tense gives the perfective reading.

There is no way of isolating the information content of each of the suffixes that signal the perfective. It is the combination of suffixes that gives the interpretation, rather than clearly divided bits of information provided by individual suffixes.

3.1.2. The continuous aspect

The data given in Table 3 demonstrates the extended exponence seen in the continuous aspect.

Crucially, as in the perfective aspect, a distinct ‘‘continuous’’ morph is not discernible.

PARTICIPLE	PAST CONTINUOUS	PRESENT CONTINUOUS	FUTURE CONTINUOUS
vʌɾə-ɲɔɟɜ-	vʌɾə-ɲɔɟɜ-i-ɲɔɟ-ɪri-nd-ē:	vʌɾə-ɲɔɟɜ-i-ɲɔɟ-ɪri-kk-ē:	vʌɾə-ɲɔɟɜ-i-ɲɔɟ-ɪri-pp-ē:
kuɾɪ-tʃtʃ-	kuɾɪ-tʃtʃ-i-ɲɔɟ-ɪri-nd-ē:	kuɾɪ-tʃtʃ-i-ɲɔɟ-ɪri-kk-ē:	kuɾɪ-tʃtʃ-i-ɲɔɟ-ɪri-pp-ē:
tu:ɲg-i	tu:ɲg-i-ɲɔɟ-ɪri-nd-ē:	tu:ɲg-i-ɲɔɟ-ɪri-kk-ē:	tu:ɲg-i-ɲɔɟ-ɪri-pp-ē:

TABLE 3: THE CONTINUOUS ASPECT

The continuous aspect is formed by the combination of two suffixes: the morph [-ɲɔɟ-] and the auxiliary [ɪr-], which is followed by the relevant tense morph. The first, [ɲɔɟ], which attaches to the participle stem of the verbs, is the morph that ‘‘means’’ CONTINUOUS. It could be argued that this morph [ɲɔɟ] is the continuous morph. However, this argument is unfeasible since this same suffix also appears in the reflexivized verbs. (Earlier in the paper it was shown that CONTINUOUS and REFLEXIVE both map onto the same morphological function.) That the CONTINUOUS interpretation is not expended by an individual affix is not hard to accept, given the data above, and the general behavior of Tamil inflection.

3.1.3. The reflexive

Some verbs like ‘hug’ are inherently reflexive. However, most verbs in Tamil may have a reflexive reading. The data in Table 4 presents an inherently reflexive verb, a O/N-FINAL, an A-FINAL and a V-FINAL verb, each in the three tenses:

TENSE	INHHERENTLY REFL.	DERIVED REFL.		
		O/N-FINAL	A-FINAL	V-FINAL
	kʌʈʈ- 'hug'	vɑ:ŋg- 'buy'	vəʈəj 'draw'	kuʈɪ 'drink'
PAST	kʌʈʈ-i-ŋd-ē:	vɑ:ŋg-i-ŋd-ē:	vəʈə-ɲdʒ-i-ŋd-ē:	kuʈɪ-tʃtʃ-i-ŋd-ē:
PRESENT	kʌʈʈ-i-kk-ə-r-ē:	vɑ:ŋg-i-kkə-r-ē:	vəʈə-ɲdʒ-i-kkə-r-ē:	kuʈɪ-tʃtʃ-i-kkə-r-ē:
FUTURE	kʌʈʈ-i-pp-ē:	vɑ:ŋg-i-pp-ē:	vəʈə-ɲdʒ-i-pp-ē:	kuʈɪ-tʃtʃ-i-pp-ē:

TABLE 4: FORMATION OF REFLEXIVES

Both the verbs 'hug' and 'buy' are C-FINAL verbs (they take the participle marker [ɪ]). In all the verbs the reflexive morph is attached to the participle stem. It is only in the past tense that a specific morph [-ŋd-] may be isolated as the reflexive morph. The past reflexive is constructed by attaching the continuous morph (or, a reflexive morph that is homophonous to the continuous morph) to the participle stem. In the present and future tenses the tense morphs are attached to the participle stems of all verbs.

It is not at all surprising that the V-FINAL verbs take [-kk-ə-r-] and [-pp-] as the present and future tense morphs. But the O/N-FINAL and A-FINAL verbs behave as if they are also V-FINAL. The most logical reason for the verbs to act this way is that in the formation of reflexives, the verb + participle morph is treated as the stem¹²; the final segment of this stem is the participle morph (the vowel [ɪ] for O/N-FINAL verbs) and the epenthetic vowel (for A-FINAL verbs). Hence the uniform distribution. That is, [-kk-ə-r-] and [-pp-] are uniformly attached to the participle stems of O/N-FINAL, A-FINAL and V-FINAL stems, to get the reflexive readings in the present and future tenses. In other words, the combination of participle + infinitive + present tense gives us the reflexive reading in the present tense, while the participle + imperative + future tense gives the reading in the future tense.

Here the verb morphology exhibits a very well organized pattern. The inherently reflexive verbs are interpretable only when they are reflexivized. The other verbs form their regular past, present and future tenses on the participle, infinitive and imperative stems respectively. The reflexive version of these other verbs is formed by conjugating the verb stem + participle morph (+ epenthetic vowel in the A-FINAL and V-FINAL verbs) as if it were the bare stem.

An interesting parallel may be drawn between the perfectives and reflexives. Recall that in the perfectives a specific perfective morph [-t-] is used only in the past tense. In the present and future perfectives the participle + aux + tense combination gives the perfective readings in the present and future tense, depending on the tense morph. In the reflexives also, there is a specific reflexive morph only in the past tense. In the present tense, the participle + infinitive + present morph gives the reflexive interpretation, while the same verb complex with the future tense (instead of the present) gives the future reflexive interpretation.

There is one more issue: both the continuous and the perfective attach to the participle. The two morphs seem to occupy the post-participle position, but in the continuous perfective the continuous is adjacent to the participle, and the perfective (represented by the auxiliary) latches on to the continuous as seen in Table 5.

STEMS	PAST CONT PERFECTIVE	PRESENT CONT PERFECTIVE
kʊɾɪ	kʊɾɪ-tʃtʃ-i-ŋɖ-ɪɾɪ-nd-ɪɾɪ-kk-ē: 'I had been drinking'	kʊɾɪ-tʃtʃ-i-ŋɖ-ɪɾɪ-nd-ɪɾɪ-pp-ē: 'I must have been drinking'
vəɾəj	vəɾəj-ŋɖʒ-i-ŋɖ-ɪɾɪ-nd-ɪɾɪ-kk-ē: 'I had been drawing'	vəɾəj-ŋɖʒ-i-ŋɖ-ɪɾɪ-nd-ɪɾɪ-pp-ē: 'I must have been drawing'
tu:ŋg-	tu:ŋg-ɪ-ŋɖ-ɪɾɪ-nd-ɪɾɪ-kk-ē: 'I had been sleeping'	tu:ŋg-ɪ-ŋɖ-ɪɾɪ-nd-ɪɾɪ-pp-ē: 'I must have been sleeping'

TABLE 4: THE CONTINUOUS PERFECTIVE TENSE

These complicated verbal stems are constructed as follows: the stem is followed by the participle marker. The participle marker is in turn followed by the combination of three suffixes [-ṇḍ-iri-nd-] that as a team normally represent the continuous. This 'team' is then followed by the auxiliary [iri] + tense suffix which usually jointly represent the perfective. This whole verb complex thus contains two auxiliaries and two tense markers. The first auxiliary has the past tense morph attached to it in all the continuous perfectives. The second auxiliary has the present tense attached to it in the past continuous perfective but the whole 'verb complex' is interpreted in the past and not the present tense. Likewise, in the present continuous perfective the future tense morph is attached to the second auxiliary, but the whole complex verb is interpreted in the past time with an epistemic modal obligation. In all the verb stems, the tense marker always appears immediately before the agreement suffix, but in the continuous perfectives, the tense markers that immediately precede the agreement suffixes do not indicate of the actual tense of the verb.

To review, the bare verb stem is the base for the infinitive, imperative and participle stems. The participle is the same as the past tense in the A-FINAL and V-FINAL verbs and is the stem for the past tense in the case of O/N-FINAL verbs. It is also the stem to which the continuous and perfective aspects are attached. However, in these tenses, the tense is not attached directly to the participle. In the continuous and the continuous perfective the tense is conveyed by the tense morph that is attached to the auxiliary while in the perfective, the auxiliary carries tense in the absence of a perfective morph. Besides these stems, the participle also serves as the base for reflexive verbs. Most temporal and aspectual stems that are derived from the participle stem violate the one-to-one relationship between sound and meaning. Parasitic formation and extended exponence are rampant in Tamil inflectional morphology. With these attributes widely marking its inflectional character,

Tamil cannot be analyzed by a theory that calls for unduplicated information in every morphological operation.

4. Conclusion

Morphosyntax and inflectional morphology are mostly considered synonymous in the current framework. But as discussed in §2, to account for parasitic formation a level of pure morphology has to be recognized. Then, morphological operations are required not only for morphosyntactic feature-mapping, but also for purposes of stem-formation and are therefore not required to carry information. That is, they do not have to add information to the structure they apply to.

This permissiveness allows us to analyze languages with parasitic formation like Tamil, a semantically complicated language which cannot be analyzed by a theory requiring every morphological operation to add information. Moreover, the information these operations convey does not have to be original; they may duplicate information that is already present in the structure. By precluding multiple exponence (duplication of information or redundancy) from her theory, Steele restricts the applicability of her theory to languages which do not exhibit multiple exponence, like Potowatomi. However, this phenomenon does exist in other languages and a restrictive framework of morphosyntactic mapping of features like Steele's cannot account for them.

Notes

* This paper had its origins several semesters back as a term paper I did for Mark Aronoff, who encouraged me to pursue the topic deeper and beyond its original dimensions. I am indebted to him for his patience and guidance, as I trudged along taking it through several incarnations to its present physical form. I am also grateful to Frank Anshen, Dan Finer and Bob Hoberman who opened my eyes to several important points in earlier versions, one of which was presented at CLS 33. I also thank Hasan Basri, Martin Kappus, Sherri Pargman and Nitya Sethuraman for their helpful suggestions. Special thanks to Janie Rees-Miller for giving it structure. All errors that remain are my own.

¹ This is also true of other languages that exhibit parasitic formation and extended exponence.

² Steele herself does not differentiate between these two different claims, but I think that they are different because of the implications of both. An operation that is informationally destitute does not have to be redundant.

³ This paper focuses on data from the colloquial dialect of Tamil spoken by middle class Brahmins in Madras.

⁴ Saravanan 1996 contains a more descriptive analysis of Tamil verb stems.

⁵ An alternate proposal is given by Matthews (1991), who states that stems are formed on other stems, but solely on their sound forms, with complete disregard to their semantic content. The derived stems are thus said to be *parasitic* on the stems they are derived from. But Aronoff's proposal is more appealing because semantically neutral stems take on specific semantic values depending on the morphosyntactic properties associated with that particular verbal stem.

⁶ It could be argued that the actual representation of F_{II} is actually F_{I} , and that gemination occurs at morpheme boundaries which are stronger. But I do not wish to get into the issue of strong vs. weak boundaries and will continue to refer to these functions with subscript geminates or nasal-obstruent clusters.

⁷ It is interesting to note that the suffix [ɾ], which maps the value PARTICIPLE onto the verb stem, is transparent for the purposes of selection of the past suffix.

⁸ Similarly, the Latin data on page 2 also has this level of 'pure' inflection. The suffixes that mark the perfect participle, when they appear in the future participle, are not contributing to the morphosyntax: they are formal necessities, required for the formation of the future participle.

⁹ The vowel that is attached to the participle morphs of the V-FINAL and A-FINAL stems is the epenthetic vowel. This vowel is epenthesized between the participle and continuous morphs because the consonant cluster formed by the adjacency of the participle and continuous morphs is impermissible.

¹⁰ The epenthetic vowel [i] is also found after the auxiliary [iri], which ends in [r]. One explanation for this is that the auxiliary is irregular. Only in the past tense is its behavior predictable; it takes the regular past tense morph of the A-FINAL verbs; the truncated [-kk-] of the V-FINAL infinitive [-kk-ə-] and the V-FINAL future morph are the present and future tense morphs. Compare the conjugation of the auxiliary with the regular A-FINAL stem [nɪmɪr] 'straighten up' in Table 1.

¹¹ The non-insertion of the epenthetic vowel in the present and future perfectives (and the O/N-FINAL past perfective) can be explained by looking at the morph that attaches to the participle. In the two cases where the epenthetic vowel is inserted the perfective morph is the geminate retroflex stop; in all other cases the vowel-initial auxiliary attaches to the participle, and hence there is no epenthesis. In other words, the

epenthetic vowel is attached to help enunciate an otherwise impermissible consonant sequence in the language.

¹² The same reasoning may also now be extended for the 'irregularity' of the aux: the epenthetic vowel acts like it is part of the stem of the aux; the aux + epenthetic vowel is treated as the stem.

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