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A semiotic grammar of Vedic Sanskrit

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Abstract: In this study, we apply the methodology of semiotic or interpretive grammar, based on the Peircean ontological Categories and developed in previous work with respect to Mandarin Chinese, to Vedic Sanskrit, a language whose grammar we have previously shown to be constrained by Peircean Thirdness or [+3]. We show the Peircean Category of Thirdness, with all of the paradigmatic and syntagmatic configurations implied thereby, to be richly exemplified throughout Sanskrit grammar, at the morphosyntactic, lexical, and phonological levels. In particular, the Peircean Triad implied by [+3] is found to permeate the syntagmatic structuring not only of clauses, but also of the morphology within both nouns and finite verbs, and even the ordering of phonemes. We also describe the operation of the constraint [+3] paradigmatically in noun declension, verb conjugation, lexical variation, and consonant classification. We conclude that, while "interpretive grammar," as with all other forms of grammatical description, can never be framed in a way that excludes all exceptions and "messiness," a semiotic approach to a systematic description has a significant advantage over conventional "descriptive" grammars in furnishing a unified account of different levels of language, from morphosyntax all the way down to phonology, and of both syntagmatic and paradigmatic structures.

Keywords: interpretive grammar; paradigmatic; Peircean categories; semiotic grammar; syntagmatic

1 Introduction

While it is a commonplace to assert that language is a "system of signs," the basis for and constitution of that systematicity is not so clear. The ordinary manner of characterizing language being in terms of a grammar, it is important to note that both prescriptive and descriptive grammars are ordinarily undertaken from a perspective detached from semiotic or, indeed, semantic considerations. For C. S. Peirce, on the other hand, so-called speculative grammar (*grammatica speculativa*) is an exercise in pure logical abstraction, whereas the demands of a descriptive science

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such as linguistics would seem to warrant a more evidentiary approach. We propose to explore, using Vedic Sanskrit as the object of our study, the explanatory potential of grammar qua semiotic system grounded in the Peircean semiotic as a means of maintaining the association between meaning and form. This approach, which we shall style interpretive or semiotic grammar, assumes (1) that formal explicitness is an index of semiotic priority, or in other words, that formal aspects of any language are Indexes (in the Peircean sense) signifying semiotic features given prominence; (2) that identifiable and generalizable semiotic structures are manifest in grammar, both syntactically and paradigmatically; and (3) that such semiotic grammatical structures, as signposted by differing forms, do not necessarily coincide with the categorizations of conventional prescriptive and descriptive grammars. For example, it is customary to resolve the grammatical category "person" into the first, second, and third persons, and to impose this grammatical template across languages. Yet many languages exhibit far more formal variety than would be warranted by strict semiotic conformity to this particular trichotomy. Spanish, for example, has two different "second person singular" pronouns, corresponding to a respectful/formal and familiar/informal usage, with correspondingly distinct verb inflections. Thus, from a formal (i.e., interpretive) standpoint, the Spanish subject pronoun + verb paradigm exhibits four distinct "persons" in the singular. The formal distinction between respectful and familiar in the second person is very widespread across languages. It is characteristic of Dravidian, Sinitic, and many other families outside of Indo-European, and within Indo-European, English, which lacks this distinction, is quite exceptional; yet such forms are almost always treated in conventional grammatical descriptions as mere variants of the "second person." In Dravidian languages such as Tamil, moreover, in addition to the formal/informal subject pronoun + verb distinction in the "second person" singular already mentioned, the subject pronoun + verb also displays a three-way inflectional distinction, corresponding to masculine, feminine, and irrational, in the third person singular, for a total of five different "persons," in terms of formal representation.

In addition to these assumptions, we must add an additional consideration of relevance. Any language can express any idea, whether via grammaticalized forms or lexically. For example, a language whereof attitudinal affixes constitute part of its grammar can express emotions and attitudes grammatically. English and most modern European languages, by contrast, have not grammaticalized speaker emotions and attitudes, and therefore such notions must be expressed lexemically, such as, for example, "I hate the fact that you are leaving." Because grammaticalized morphology is systemic, we hold grammar to be a truer representation of the systematicity inherent in semiosis than is the lexicon (although, as we will observe, systematicity is also manifest in the lexicon). Grammar itself may be realized via

either affixation (prefixes, suffixes, and infixes) or via periphrasis, and inasmuch as inflectional affixation is the dominant strategy in Sanskrit, we assume it to be the default or unmarked strategy for grammatical representation. Periphrasis is also present; Sanskrit uses discrete adpositions in addition to case affixes, as well as having a periphrastic and an inflectional future tense, for example. But it seems intuitive to assume that affixation and periphrasis embody two separate and non-commensurable strategies of representation and ought accordingly to be treated separately. In English, for example, although we are accustomed to thinking of the three tenses – the simple present, past, and future – as constituting a system, the formal evidence suggests otherwise. For whereas the English simple present and past are both inflectional, the future is periphrastic; and hence we conclude that, from a semiotic and interpretive perspective, the English simple present and past are more closely bound than either is to the future. The same could be said of Spanish, French, and the other modern western Romance languages, incidentally, since, while the simple present and past in those languages are formed by affixation with the stem, the future (as well as the conditional) is formed by affixation with the infinitive. Yet this is a semio-formal innovation as far as the Romance languages are concerned; the Latin future is formed by stem affixation just like the simple present, the imperfect, and the perfect tenses, signalizing a different semiotic system than in its daughter languages.

Vedic Sanskrit, like Latin, has an inflected future that seems to be on a formal (and hence, semiotic) footing similar to the present, the perfect, the aorist, and the imperfect.

While we need not always assume that semiotic structures are explicit (it seems clear, for example, that English speakers maintain a cognitive distinction between the second person singular and plural, even though standard dialects of English have no formal pronominal distinction), we do assume that explicit structures and distinctions are given semiotic prominence which non-explicit distinctions do not in general enjoy, by virtue of their stronger indexicality. Thus in the case of the second person plural pronoun, although English speakers understand the distinction between the second person singular and plural (and, in some cases, create substandard innovative second person plural pronouns to compensate), it is also significant that the absence of a singular/plural second-person pronoun distinction has been a stable fact in standard English for more than two centuries, in sharp contrast to the singular/plural distinctions in the other two grammatical persons. This surely signalizes some interesting fact about the semiotic structuring of English pronouns that is absent from other European languages.

The basis for any interpretive grammar being semiotic, we require a semiotic framework adequate to the task. The interpretive task is the elucidation of language qua a system of signs; it follows, therefore, that the semiotic should be so constituted

that it allows systemic analysis. From the Saussurean semiotic we adopt the time-honored domains of the paradigm and syntagm, the twin conceptual points of departure for every grammatical analysis. Every sign system may be reckoned according to paradigmatic and syntagmatic modes of organization. But the ontological foundation of paradigm and syntagm is less clear. We have elsewhere shown (Bonta 2023: 197) that both of these notions, in the maximally general sense, are intrinsic properties of the primordial Peircean semiotic. The Peircean schema, relying as it does on a ternary relationship among Sign, Object, and Interpretant (instead of the binary association of Signifier and Signified contemplated by Saussure), and representing the sign as a triadic and creative event catenated with other such, is the most fruitful scaffolding for erecting a theory of interpretive grammar, which labor we have already commenced, in admittedly fitful and preliminary fashion, in Bonta 2020; 2021. Here we propose to refine this methodology with an interpretive description of Vedic Sanskrit, enlarging upon our preliminary treatment of that language in Bonta 2021.

2 The Peircean categories as a basis for semiotic grammar

The essence of interpretive grammar grounded in the Peircean Categories lies in the understanding that every human language will be organized around one or more of the Peircean ontological Categories, using them as "lenses" through which the undifferentiated manifold of reality may be parsed and classified (see, e.g., Bonta 2018). There are six ontological possibilities recognized in the Peircean "architectonic," namely, the three "pure" Categories Firstness/[1], Secondness/[2], and Thirdness/[3], and the three "degenerate" Categories Firstness of Secondness/[12], Firstness of Thirdness/[13], and Secondness of Thirdness/[23].[1] Each of these six is understood to represent a maximally general class of phenomena or entia, whereof other phenomena and entia are understood to be subordinate or derivative.[2] Firstness, for example, in its most general sense, may be characterized as "anything that is, in and of itself, regardless of any Other." Phenomena in which Firstness predominates include, but are not limited to, singularity, freshness, variety, quality, feeling,

1 The bracketed numbers are my formalized, shorthand notation for the Categories which I use in all my semiotics papers for economy of expression, e.g., [1] instead of "Firstness" and [13] for "Firstness of Thirdness."

2 The Peircean "entelechy" [123] is more difficult to characterize, inasmuch as Peirce does not treat it in any great depth in published works; his most detailed treatment appears to be his discussion in "The Seven Systems of Metaphysics" (EP 1998: 180).

emotion, spontaneity, chance, and originality. Thus, a language in which Firstness predominates, or in other words, for which Firstness is chosen as the primary Category through which reality is cognized or "lensed," would be expected to manifest many of these characteristics (Bonta 2018, 2021: 36–45).

On the other hand, a language for which Thirdness is the primary lens would be expected to manifest in its grammar phenomena associated with Thirds, including triadic or ternary ordering, continuity, law, and so forth. The lens of Thirdness would also give rise to what we might term "Categorial arrays," that is, manifolds of elements embodying all three Categories in systemic complementarity, since every Third by definition involves both a Second and a First. Since, moreover, every Third may be resolved into one pure and two degenerate varieties, and every Second into one pure and one degenerate variety, such a Categorial array conditioned by the lens of Thirdness would be expected to display a maximum of 6 entries ([1], [12], [2], [13], [23], [3]). We have established previously that Thirdness/[3] is the primary lens or constraint conditioning (Vedic) Sanskrit grammar (Bonta 2021: 62–78).

Secondness, which we have yet to identify as a significant lens for any language, is the Category of reaction, opposition, and alterity. As such, it also embraces such notions as corporeality, tangibility, and effort.

The other three ontological/semiotic possibilities, Peirce's "degenerate" Categories Firstness of Secondness, Firstness of Thirdness, and Secondness of Thirdness, also each encompass a class of phenomena, which we will detail in the proper context further on.

Any of these six ontological Categories may operate as a conditioning constraint, i.e., a "lens" that serves to impose semiotic specificity and consistency and, by so doing, a recognizable structure on language. Such conditioning constraints may be represented, or manifest in any interpretive grammar, either as positive or negative constraints, the two signifying, in effect, two sides of the same coin. Thus, Thirdness as a positive constraint is technically to be represented as [+3], while as a negative constraint, it takes the notational form [–3]. In the case of [+3] as a conditioning constraint, we would not expect any of the other Categories to manifest as major negative constraints – but they will play a role, whether subtle or prominent, because, as already noted, [3] as a Category always involves both [1] and [2], as well as the three degenerate Categories [12], [13], and [23]. The reverse is not the case, however, and so for many interpretive grammars whereof [+3] is not a conditioning constraint, Thirdness may appear as a negative constraint [–3]. We have found this to be the case, for example, in Mandarin Chinese, whereof the major positive conditioning constraint is Firstness of Secondness/[+12], a Category altogether exclusive of Thirdness. In Mandarin Chinese, it is a straightforward matter to show that the positive constraint [+12] works in concert with the negative constraint [–3] to configure the grammar and morphosyntax of Mandarin (for details, see Bonta 2020).

The primary conditioning constraint of Vedic Sanskrit being, as we have elsewhere asserted (Bonta 2021), [+3], we would expect to find triadic configurations or trichotomies to predominate in Sanskrit grammar, and this, as every Indo-Europeanist is keenly aware, is transparently the case. The form of the trichotomy emblematic of Thirdness/[+3] is manifest in Sanskrit in, among other things, the three-place vowel grade system, the three major verbal systems (present, perfect, aorist), the three numbers (singular/dual/plural), the tripartite form of a majority of finite verbs and declined nouns (stem/thematic vowel/affix), the three genders (masculine/feminine/neuter), the three thematic vowels, the three voices (active/middle/passive), and the preponderance of three stem forms for a large number of nouns, especially consonant-stem nouns. All of these we will discuss in more detail following.

3 Vedic Sanskrit morphosyntax

The most fundamental feature of morphosyntax is the manner by which a grammar signalizes the bringing together of subject and predicate. Grammatical subject and predicate, in turn, represent the more abstract semiotic Subject and Predicate, where uppercase will be used to denote semiotic/interpretive notions, and lowercase is understood to denote traditional grammar. In both semiotic and metaphysical terms, a Subject is some ens whereof the Predicate is some property or quality brought into association with it, through the instrumentality of an assertion of truth value or Copula. Languages have three possible strategies, broadly speaking, for making explicit the association of two ideas, such as the association of Subject and Predicate, they being: (1) blending, (2) contiguity, and (3) agreement.

By the first of these, we mean the literal blending or combining of two words or morphemes into a single element, such as in the creation of compound nouns, or the generation of so-called “agglutinative” and “polysynthetic” types of words. Such blending has the effect of conflating two or more forms into a single one, albeit a single form of immense internal complexity, as is frequently the case with so-called “polysynthetic” languages capable of creating single words with the force of an entire sentence. This strategy of idea association is effectively a Firstness/[1], as set forth in much more detail in both (Bonta 2018, 2021).

Contiguity, on the other hand, refers to the juxtaposition of words to signify juxtaposition of ideas. This strategy is found in all languages in varying degrees, but most especially in predominantly analytic or isolating languages like Mandarin and modern English. Juxtaposition and contiguity both being Seconds, contiguity is held to be the strategy of idea association coinciding with Secondness/[2].

Agreement, the strategy of using affixal morphology to link subjects with verbs, nouns with adjectives, etc., depends neither on juxtaposition nor upon blending. Languages like Vedic Sanskrit with very elaborate systems of agreement typically have fairly free word order, since idea association is made apparent by affixation alone. But agreement depends for its effect on knowledge of rules and the ability of the interpreting mind to apply rules of agreement in associating ideas. Because of its reliance on mentation, interpretation, and the habit associated with grammar rules (all Thirds), agreement is the strategy of idea association that embodies Thirdness/[3]. Because agreement is so pervasive in all forms of Sanskrit, we concluded in Bonta 2021 that the likely primary conditioning constraint for Vedic Sanskrit is Thirdness/[+3]. On this basis, we will examine other aspects of Vedic grammar, including morphosyntax, lexicon, and phonology, to see whether evidence of the constraint [+3] is elsewhere manifest.

4 The Vedic Sanskrit lexicon

4.1 The Sanskrit noun

Regarding the Sanskrit lexicon, we note, first of all, a characteristic tripartite morphology, viz., stem + thematic vowel/infix + inflectional affix, that predominates in many classes of nouns, adjectives, and verbs. For nouns and verbs, the thematic vowel has three qualities, each of which may be further resolved into long and short variants, that is, *-a-/-ā-, -i-/ -ī-, and -u-/-ū-.* A few examples of this canonical structure for noun and adjective declension, with the nominative singular, accusative singular, and dative plural used as examples, are shown in Table 1.

Not every vowel-stem noun paradigmatic entry follows perfectly the stem-thematic vowel-case ending pattern, as can be seen from the lack of an explicit nominative case ending for ā-stem and ī-stem forms; these examples were included to show the "messiness" typical of all genuine semiotic systems, and to highlight the fact that an interpretive grammar can never attain the exceptionless pristinity to which descriptive grammars, from Pāṇini onwards, have aspired. The thread of Firstness running through all semiotic reality implies a certain radically stochastic element in every semiotic system that will generate exceptions and inconsistencies amid variety, some of which (as with all Firstnesses) may have no underlying rule-driven cause, but are instead spontaneous and sui generis. Vedic Sanskrit paradigms, luxuriant as they are, are rife with such irregularities; yet such irregularities and inconsistencies are never so numerous as to obscure dominant patterns – and the dominant pattern with nouns and adjectives involving so-called thematic vowels is the tripartite template set forth.

Table 1: Nouns with stem + thematic vowel.

a-stem noun
dev-a-s god-[thematic *a*]-Nominative Singular *dev-a-m* god-[thematic *a*]-Accusative Singular *dev-a-bhyas* god-[thematic *a*]-Dative Plural
ā-stem adjective
kānt-ā beloved-Nominative Singular *kānt-ā-m* beloved-[thematic *ā*]-Accusative Singular *kānt-ā-bhyas* beloved-[thematic *ā*]-Dative Plural
i-stem adjective
śuc-i-s clean-[thematic *i*]-Nominative Singular *śuc-i-m* clean-[thematic *i*]-Accusative Singular *śuc-i-bhyas* clean-[thematic *i*]-Dative Plural
ī-stem noun
nad-ī river-Nominative Singular *nad-ī-m* river-[thematic *ī*]-Accusative Singular *nad-ī-bhyas* river-[thematic *ī*]-Dative Plural
u-stem adjective
madh-u-s sweet-[thematic *u*]-Nominative Singular *madh-u-m* sweet-[thematic *u*]-Accusative Singular *madh-u-bhyas* sweet-[thematic *u*]-Dative Plural

Of these three elements, the root or stem, representing as it does the lexical or essential meaning of the noun or adjective, and the common quality or theme unifying every formal variation thereof into a single paradigm, may be said to correspond to Firstness/[1]; in explicitly semiotic terms, it is the formal element most nearly coinciding with the Peircean Sign in itself, which is also a First with respect to the other elements (Object and Interpretant) in the Peircean Semiotic Triad. The inflectional suffix denoting case and number (these two qualities being – in contrast to agglutinative languages like Tamil – formally conflated in Sanskrit) is in essence an Index specifying and individuating a word in relation to some Other, be it as an argument (subject, direct object, indirect object, instrument, etc.) to some verb (noun) or with respect to some external modified noun (adjective or genitive case noun). The suffix, referring always to an Other or Second, is thus a notation for a Secondness/[2]. The thematic vowel, standing as intermediary between stem/First and suffix/Second, we hold to represent iconically a Thirdness/[3], being, as it is, the formal element serving to bring these two together into a reified whole. The thematic vowel is also the basis for the classification of the lexical entry and for the paradigmatic laws of its particular declension.

It is important to note that this tripartite scheme is in essence syntagmatic, albeit at the lexical level. Even as early as the Vedic stage of attested Sanskrit, the use of thematic vowels as the basis for declensions had become very widespread, with *a*-stem forms alone accounting for more than 50 percent of all nouns and adjectives in the lexicon (MacDonnell 1990: 76).

Alongside thematic vowel-stem declensions, Vedic and later varieties of Sanskrit also have large numbers of so-called consonant-stem nouns, for which the various case endings are affixed directly to a root ending in a consonant without an intermediary thematic vowel. In many instances, consonant-stem nouns also have vowel-stem counterparts; many of the former appear only in the Vedic language, leading to the natural conclusion that consonant-stem declensional systems represent an earlier stage of the language. A good representative of a consonant-stem noun, attested in Vedic from almost every case and number, is *vāc-*, 'speech, talk, voice'; Table 2 shows both attested and reconstructed (in parentheses) forms of this common Vedic noun:

A fruitful starting point for understanding the semiotic structure implied by such a paradigm is the relationship between the Peircean Categories and the numbers and cases, respectively. For number, the correspondence is straightforward, as the names of the Categories themselves suggest. Firstness is the Category of the singular, because it denotes that which is in and of itself, irrespective of any other. Secondness is the Category corresponding to the dual, inasmuch as Secondness presupposes one thing (a First) alongside, or against, some Other (a Second). Thirdness, broadly speaking, is the Category corresponding to plurality, in general,

Table 2: vāc-.

	Singular	Dual	Plural
Nominative	*vāk*	*vāc-ā(u)*	*vāc-as*
Accusative	*vāc-am*	*vāc-ā(u)*	*vāc-as*
Instrumental	*vāc-ā*	*(vāg-bhyām)*	*vāg-bhis*
Dative	*vāc-e*	*(vāg-bhyām)*	*vāg-bhyas*
Ablative	*vāc-as*	*(vāg-bhyām)*	*vāg-bhyas*
Genitive	*vāc-as*	*(vāc-os)*	*vāc-ām*
Locative	*vāc-i*	*(vāc-os)*	*(vāk-ṣu)*

for several reasons, among them the fact that Thirdness requires at minimum a third element (mediation), and the fact that Thirdness, being the Category of law and regularity, is always manifest as multiplicity or plurality, the action of law only being perceivable iteratively or habitually. If each Vedic consonant-stem declensional form (i.e., stem + affix in its entirety) denoted number only, we would expect to see a neat correspondence of one form to the singular, another to the dual, and a third to the plural. But since each of these forms denotes a case as well as a number, each resultant stem + affix form is in effect the outcome of the two features [case] and [number] in combination, as evaluated through a Categorial lens. In this context, the formal and interpretive distinctions do not align neatly with either traditional number or case paradigms; instead, the results signalize an interpretive paradigm, at variance with descriptive grammar, but nevertheless manifesting a semiotic logic all its own.

To understand this logic in semiotic/interpretive terms, we first must understand how such notions as Subject and Predicate are understood in semiotic terms, per Peirce, since these also are at variance with the usages of traditional descriptive grammar. Wrote Peirce:

> [I]n order properly to exhibit the relation between premises and conclusion […] it is necessary to recognize that in most cases the *subject index* is compound, and consists of a *set* of indices. Thus, in the proposition "A sells B to C for the price D," A, B, C, D form a set of four indices. The symbol "____ sells ____ to ____ for the price ____" refers to a mental icon, or idea, of the act of sale, and declares that this image represents the *set* A, B, C, D, considered as attached to that icon, A as seller, C as buyer, B as object sold, and D as price. If we call A, B, C, D four *subjects* of the proposition and "____ sells ____ to ____ for the price ____" as *predicate*, we represent the logical relation well enough, but we abandon the Aryan syntax. ("Of Reasoning in General," EP 1998: 20–21)

Thus, the Peircean semiotic "Subject" corresponds roughly to the set of arguments of a verb, while the "Predicate" is understood to consist of the verb plus other relevant

relational terms like prepositions or cases that constitute the entirety of the circumstances entailed by the predicate. This distinction is based purely on the universal conceptual or interpretive contrast between Subject and Predicate, and not (as Peirce himself notes) on any particular grammatical schema, "Aryan" or otherwise. In this light, the noun stem is seen to represent the Subject per se (or a portion thereof, if the Subject consists of multiple arguments). The affix represents the Subject's situation with regard either to the Predicate or to any semiotic Other internal to the Subject, yet constituting some other element among the grammatical arguments; subject and direct object, for example, as signalized by the nominative and accusative affixes, respectively, are different grammatical arguments of a transitive verb, yet together they constitute a single semiotic Subject. The stem-affix formal ensemble therefore represents two separate semiotic domains, each domain requiring separate consideration.

Regarding first the representational characteristics of case affixation, which, as noted above, denote the relationship of the Subject to the Predicate or of different arguments within the Subject to one another, we make note of another formal curiosity, also at variance with descriptive paradigms. This is the circumstance that a number of case-number affix forms, both of consonant-stem and vowel-stem noun declensions, are always or almost always formally identical, suggesting that, at the semiotic/interpretive level, at least, they are reckoned as indistinguishable. These universal or near-universal formal identities, as partially evident from the sample masculine consonant-stem paradigm in Table 2 and further exemplified in Table 3, which includes examples of all three genders, as well as both vowel-stem and consonant-stem nouns, are the neuter nominative and accusative (all numbers), the dual nominative and accusative (for masculine and feminine, in addition to the neuter), the genitive/ablative singular (identical everywhere except for *a*-stem nouns), the instrumental/dative/ablative dual, the genitive/locative dual, and the dative/ablative plural.[3]

The neuter nominative/accusative formal identity is perhaps the most transparent from a semiotic standpoint. While acknowledging that, in Sanskrit as in Latin and modern Romance languages, the correspondence between biological and grammatical gender, and between inanimacy and neuter, is far from exact, it must have been much more so originally; in particular, while the attributions of femininity and masculinity even in Vedic Sanskrit already seem fairly arbitrary, and often

3 Regarding "vocative," which we have excluded from the paradigm, we see no formal basis for inclusion, inasmuch as the vocative almost never has a distinctive form (with the sole exception of a-stem nouns in the singular), and often exhibits no affixal morphology whatsoever. All of this suggests that the vocative "case" is in fact an exceptional usage not truly constituting a part of the case declensional system in any semiotic sense.

Table 3: Formal identities in case/number/gender categories.

A. Neuter Nominative/Accusative:
apas, 'work': *apas* (N/A Sing.); *apasī* (N/A Du.); *apāmsi* (N/A Pl.)
cakṣus, 'eye': *cakṣus* (N/A Sing.); *cakṣusī* (N/A Du.); *cakṣūmsī* (N/A Pl.)
priya-, 'dear' (adj.): *priyam* (N/A Sing.); *priye* (N/A Sing.); *priyā* or *priyāṇi* (N/A Pl.)
śuci-, 'bright': *śuci* (N/A Sing.); *śucī* (N/A Du.); *śucaye* (N/A Pl.)
madhu-, 'sweet': *madhu* (N/A Sing.); *madhvī* (N/A Du.); *madhū* or *madhūni* (N/A Pl.)
B. Masculine/Feminine Dual Nominative/Accusative:
śvan, m. 'dog': *śvānā* OR *śvānau* (N/A Du.)
yuvan, m. 'youth': *yuvanā* (N/A Du.)
priya-, m. (adj.) 'dear': *priyā-* OR *priyau* (N/A Du.)
madhu-, m. (adj.) 'sweet': *madhū* (N/A Du.)
rathī, m. or f., 'charioteer': *rathiā* (N/A Du.)
C. Genitive/Ablative Singular:
rājan, 'king': *rājñas* (Gen./Abl. Sing.)
pratyañc-, adj. 'turned toward': *pratīcas* (Gen./Abl. Sing.)
śuci-, 'bright': *śuces* (Gen./Abl. Sing.)
madhu-, 'sweet': *madhos* (Gen./Abl. Sing.)
devī, 'goddess': *devyas* (Gen./Abl. Sing.)
D. Instrumental/Dative/Ablative Dual:
devī, 'goddess': *devibhyām* (Instr./Dat./Abl. Du.)
bhū, 'earth': *bhūbhyām* (Instr./Dat./Abl. Du.)
śuci-, 'bright': *śucibhyām* (Instr./Dat./Abl. Du.)
rājan, 'king': *rājabhyām* (Instr./Dat./Abl. Du.)
pad, 'foot': *padbhyām* (Instr./Dat./Abl. Du.)
E. Genitive/Locative Dual:
pad, 'foot': *pados* (Gen./Loc. Du.)
uśij, 'desiring': *uśijos* (Gen./Loc. Du.)
apas, 'work': *apasos* (Gen./Loc. Du.)
priya-, 'dear': *priyayos* (Gen./Loc. Du.)
śuci-, 'bright': *śucyos* (Gen./Loc. Du.)
madhu-, 'sweet': *madhvos* (Gen./Loc. Du.)
F. Dative/Ablative Plural:
śuci-, 'bright': *śucibhyas* (Dat./Abl. Pl.)
madhu-, 'sweet': *madhubhyas* (Dat./Abl. Pl.)
priya-, 'dear': *priyebhyas* (Dat./Abl. Pl. masc.)
apas, 'work': *apobhyas* (Dat./Abl. Pl.)
uśij, 'desiring': *uśigbhyas* (Dat./Abl. Pl.)

include many inanimate concepts and entities, the alignment of neuter with things deemed inanimate, to the exclusion of animacy, is fairly straightforward. Considering the relative status of the nominative and accusative in particular, we have seen that they are, from a strictly semiotic standpoint, both constituents of the Subject, i.e., both are arguments called into being as "blanks to be filled" in relation to a given predicate. Thus "boy" and "snake" in the sentence "the boy catches the snake" are, taken together, understood to be the Subject of the predicate of the form "____ catches ____." The distinction between "boy" and "snake" is the difference between Actor and Acted-Upon, or Agent and Patient, between Who and Whom. But action qua agentivity is an attribute solely of animate beings capable of acting purposefully; absent purposeful agency, the relationship between subject and direct object becomes a matter only of blind reaction, not of Who/Whom but of What. The absence of a formal distinction between the neuter nominative and accusative is an iconic representation of this state of affairs, and also furnishes evidence of the semiotic reality of the Peircean Subject.

To understand the other formal identities, we must first consider that each affix in Table 2 signifies three different qualia, namely, "gender," number, and case. This threefold signification itself conforms to the triadic form of representation previously shown to constrain Sanskrit grammar, with "gender," the abstract quality loosely associated with animistic properties, corresponding to Firstness, number to Secondness, and case (the various laws of relationships) to Thirdness. Number and gender, in their turn, are transparently resolved into triadic structures, as singular/[1], dual/[2], and plural/[3] and masculine/[1], neuter/[2], and feminine/[3], respectively.

Case, on the other hand, presents a more vexing state of affairs, inasmuch as traditional prescriptive grammars, both Indian and Western, typically resolve the Sanskrit paradigm into eight cases. But from a formal perspective, we see that, first of all, for the singular and plural numbers, the ordinary number of formally distinct cases is six (five for the neuter, owing to the formal identity, already noted, of the nominative and accusative), but for the dual, only three. So from a semiotic standpoint, as shown in Table 3, there is no basis for distinguishing the genitive from the ablative singular (except in later stages of the *a*-stem masculine, where these two cases diverge). Similar reasoning leads to the treatment of the ablative/dative plural, the nominative/accusative dual, the genitive/locative dual, and the ablative/dative/instrumental dual as semiotic identities. The fact that the formal diversity of case affixes (non-neuter nouns typically display a total of fifteen distinct forms, six for the singular, three for the dual, and six for the plural) far exceeds the typical three forms associated with formal variation of the stem (for consonant-stem nouns like *vāc-*) suggests that the semiotic complexity of relational/predicational valences signified by these affixes is much greater than those associated with the stem.

To understand why, we must consider the usages and meanings of each of the grammatical cases, bearing in mind that, in many instances, they do not entirely coincide with the uses of similarly-named or cognate cases in other Indo-European languages, let alone non-Indo-European languages. The nominative case, however, is fairly typical of nominative and "direct" (non-oblique) cases across language. It is, particularly in the singular, the default or unmarked case, the case of simple naming, denotative of a "thing-in-itself" irrespective of any other, the abstraction of Who or What, the very embodiment of suchness. In Peircean terms, the nominative is the case of Firstness ([1]).

The accusative also, in Sanskrit as in other languages, corresponds to the direct object, the patient, the acted-upon, or Whom, writ large, for any predicate of a transitive character, i.e., for which the Subject may be resolved into an agent/grammatical subject and a patient/grammatical direct object (except for neuter nouns, as already noted). Just as the nominative is a First, involving in and of itself nothing but the Object named, so the accusative is a Second, involving – in the case of an animate nominative – an Actor and an Acted Upon in dyadic combination, Who/Whom, the cardinal structure of Secondness. The second major use of the accusative is to denote direction or motion toward, either in time or space, a seemingly curious incongruity unless the full character of Secondness is reckoned with. In addition to dyadic opposition, Secondness also embraces deixis and directionality – which are precisely the other uses associated with the accusative. Hence the accusative is a pure Secondness ([2]) as pertaining to the Subject, instantiated morphologically in every instance for which the Subject consists in whole or in part of an animate, rational being.

The dative arises whenever a tripartite or triadic Subject is called for, i.e., whenever a so-called ditransitive verb requires not only a grammatical subject and direct object, but an indirect object as well. The relationship limned by the dative is irreducibly triadic, that is, cannot be conceived of except as triadic in very essence, such that no combination of dyads would suffice to create it. The canonical example, 'give' (Skt. *dā-*), representable as "X gives Y to Z," perforce involves the irreducibly triadic Subject {X,Y,Z} as the aforementioned Peircean "blanks to be filled" for the Predicate ___ gives ___ to ___. Moreover, the Sanskrit dative, as with other Indo-European languages in which the primordial morphological case system has been preserved, denotes purpose, i.e., "for the purpose of X." The notion of purpose, or Why, along with the irreducible triadic configuration associated with ditransitivity (unto Whom), signalizes Thirdness; or in other words, purpose is one of the phenomena associated with Thirdness, just as is the triad considered as a whole. In the Vedic language in particular, the "dative of purpose" extended to dative infinitives; in the later language, by contrast, as in the successor prakrits and apabhramsas (like Pāli), the dative gradually diminishes in morphological prominence, before merging

formally with the genitive in most cases. In the Vedic language, at least, it is manifest as a robust and unambiguous marker of pure Thirdness ([3]).

The nominative, accusative, and dative being shown to be, in interpretive terms, Firstness, Secondness, and Thirdness, respectively, what can be said of the locative, instrumental, and genitive/ablative?

The locative, in addition to denoting temporospatial location, the Where and When, is also in Sanskrit the case of condition or circumstances, as in, for example, *made ahim indro jaghāna*, 'in fury Indra slew the serpent.' The locative in Sanskrit is, moreover, the absolutive case (corresponding in this sense to the Latin ablative and Greek genitive), e.g., *stīrṇe barhiṣi*, 'the barhis-grass having been strewn.' Each of these uses has the effect of imposing a Secondness – location, deixis, or completion – upon a Subject, by associating the Subject with a temporal or physical state, a qualitative condition, or an action, in each case presenting these as attributes, or qualities, of the Subject. None of these states, conditions, or actions themselves constitute a part of the Subject per se, but instead are brought into relation with the Subject as Seconds rendered attributive or qualitative. This is, in effect, not genuine but degenerate Secondness, or Firstness of Secondness, always and everywhere manifest as some quality of Secondness reified as the subordinate member of an unequal dichotomy. Thus "the man in the woods" brings to mind an unequal, deictic pairing of the Subject 'man' with 'woods,' a Secondness-turned-attributional Other. In similar fashion, "Indra in fury" ligates Subject Indra with a concretized 'fury.' The locative absolute accomplishes the same with regard to an entire Subject-Predicate sign, placing it in subordinate relation with another such, e.g., 'the barhis-grass having been strewn, the fire was kindled.' Such an utterance takes one truth condition (the strewing of the barhis) and transforms it into a subordinate or modified setting for another (the kindling of the fire). In all of these examples we see the locative deployed to establish the unequal dichotomy characteristic of Firstness of Secondness ([12]); this, and not "location" per se, is the true unifying purport of the Sanskrit locative case.

The instrumental case presents a more vexing study. According to Whitney (1950: 94), the instrumental "is originally the *with*-case: it denotes adjacency, accompaniment, association – passing over into the expression of means and instrument by the same transfer of meaning which appears in the English prepositions *with* and *by*." Its uses include, in addition to the sociative and instrumental senses, "accordance, equality, likeness, and the like," e.g., *jyótiḥ sū́ryeṇa* (AV.) 'a brightness equal with the sun'; price, e.g., *daçábhiḥ krīṇāti dhenúbhiḥ* (RV.) 'he buys with ten kine'; and (temporospatial) medium traversed, e.g., *é 'há yātam pathíbhir devayā́nāiḥ* (RV.) 'come hither by god-traveled paths.' Broadly speaking, the uses of the instrumental correspond with the How, including How Long, How Much, etc.

Less clear is discerning where such a notion might be situated in the triadic Categorial framework so far borne out by Sanskrit grammar.

Peirce characterized the degenerate Category Firstness of Thirdness/[13] as "the peculiar color or flavor of mediation" (CP 1: 533), and also as akin to infinitely recursive maps within maps, or self-representation (CP 5: 71). From this we may infer, as noted elsewhere (Bonta 2015), that Firstness of Thirdness includes such notions as cyclicity, recursion, and reproduction. More broadly, the notion of "flavor of mediation" is akin to the "How" of any action, "mediation" corresponding in language to the "copula," overt or covert, affirmative of truth value in uniting Subject and Predicate. In actualized grammar, the copula may or may not correspond to overt morphology like a form of a verb denoting simple existence (Eng. *is*, Lat. *est*, Germ. *ist*, Skt. *asti*, Mandarin *shì*, etc.), but in either case, any instrumental or sociative-type construction, whether inflectional, analytical, or a combination of both, is an overt expression qualifying, or giving color/flavor, to the copula. Note that the customary conflation in English grammar of locative, instrumental, and sociative words and phrases as "adverbs" tends to obscure the difference between the latter two and the first; whereas the locative only has application to temporospatial location (i.e., deixis/[2]) per se, the instrumental is devoid of such strong situational deixis. The sociative sense of the Sanskrit instrumental has, it is true, a certain element of deixis with regard to some accompanying Other, but the overall ubication (for want of a more familiar term) of the event is not relevant (i.e., the fact of A being with B is independent of external circumstances). The Sanskrit instrumental, therefore, corresponds very neatly to Firstness of Thirdness/[13] in its guise as the flavor or quality of copula-qua-mediation.

Since the Vedic genitive and ablative are ordinarily conflated formally in the singular, we examine their respective modes of use in order to discern the semiotic commonalities that might have served to motivate such a conflation. The genitive, plainly enough, is the case of possession and of attribution (Whose). The ablative, by contrast, presents several apparently disparate usages, including most prominently origin (Whence), the comparative (for which Whitney claims the ablative to be "the regular and almost constant construction"), and efficient causation – none of which, at first blush, might seem semantically akin to the genitive. As examples of these three, respectively, we have, per Whitney (1950: 97), *mā́ prá gāma pathā́ḥ*, 'May we not go away from the path' (*pathā́ḥ* = Abl. 'path, way'); *prá ririce divá índraḥ pṛthivyā́ḥ*, 'Indra is greater than the heaven' (Abl. *divá*) 'and the earth' (Abl. *pṛthivyā́ḥ*); and *vájrasya çúṣṇād dadāra*, 'From (by reason of) the fury (Abl. *çúṣṇād*) of the thunderbolt he burst asunder.'

The genitive and the ablative characterized together share the general notion of incidental association or, in other words, the association of one thing with another for no reason other than association for its own sake. This is transparently the case

with the normal senses of attribution and possession ascribed to the genitive; to say that something "belongs to" or is "of" something or someone else is to call attention to the fact of association, and to nothing else. This genitival association is often susceptible to catenation, as in "the boy's cat's tail." The ablative sense of origin, often interchangeable with the genitive sense even in English (e.g., "the man from La Mancha" = "the man of La Mancha") similarly creates an association for its own sake, which may or may not have any active deictic sense; being "from New York" may refer purely to one's birthplace, and not necessarily any recent or present residence. Thus being "from" somewhere may conceivably refer to some ultimate origin (and hence, a nearly genuine Thirdness), or it may be a matter of current or predominant residency as a purely incidental fact of life. The ablative of origin/Whence incorporates as its dominant sense the Past/[2], in contrast to the dative of destination, whose basic sense is of Futurity/[3]. The ablative of comparison similarly brings into association two entia and evaluates them with respect to some quality, whereof, again, the focus is on the act of association, or of casting some quality as a basis for association. The ablative of efficient causation (or, in Whitney's terminology, "procedure as from a cause or occasion"), in particular, calls to mind Peirce's characterization of incidental or efficient causation as an instance of Secondness of Thirdness/[23]:

> "How did I slay thy son?" asked the merchant, and the jinnee replied, "When thou threwest away the date-stone, it smote my son, who was passing at the time, on the breast, and he died forthright." Here there were two independent facts, first that the merchant threw away the date-stone, and second that the date-stone struck and killed the jinnee's son. Had it been aimed at him, the case would have been different; for then there would have been a relation of aiming which would have connected together the aimer, the thing aimed, and the object aimed at, in one fact. (CP 1: 366)

Such "accidental thirds" Peirce more generally characterized in terms of "a pin fasten [ing] two things together by sticking through one and also through the other: either might be annihilated, and the pin would continue to stick through the one which remained" or as "a mixture bring[ing] its ingredients together by containing each" (CP 1: 366). Elsewhere Peirce characterized Secondness of Thirdness as an "irrational plurality," and in terms of compulsive replication via "repeated dichotomy," imagery highly suggestive of the genitive catenation mentioned above.[4]

It should be very evident that the commonality uniting the genitive with the ablative, at least in the singular number, is the degenerate Peircean Category

4 Peirce also likened Secondness of Thirdness to "the conception of Subdivision, say by repeated dichotomy, [which] certainly involves a sort of Thirdness, but it is a thirdness that is conceived to consist in a second secondness" (CP 5: 70).

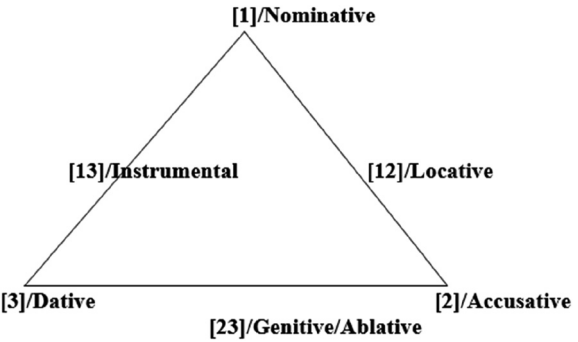

Figure 1: Categorial alignment of singular case affixes.

Secondness of Thirdness/[23]. Altogether, the Categorial configuration of these six semiotic noun cases in the singular is shown in Figure 1.

In the plural number, Vedic also tends toward six formal categories, but differing from the singular in that the ablative is conflated with the dative, and not the genitive. These six formal categories thus become, in the plural, the nominative, the accusative, the dative/ablative, the locative, the instrumental, and the genitive. Assuming all of these cases save the ablative to correspond in the plural to the same semiotic Categories as in the singular, we inquire why the ablative now finds expression alongside the dative as a pure Thirdness/[3] instead of a Secondness of Thirdness/[23] alongside the genitive. The reason would appear to reside in a subtle semantic shift entailed by the plural number, especially with regard to the ablative in its guise as efficient cause: plurality always implies some notion of regularity or shared nature. A single thunderbolt (*vajra*), such as referenced in the discussion of the ablative singular, may indeed be incidental, but a plurality of thunderbolts implies a regular or nomothetic cause. Regularities and nomothetic phenomena are all proper to Thirdness in more or less undiluted form, as Peirce often insisted. Similar arguments apply to ablatives of origin and comparison. None of which is to impose a requirement that a plurality of efficient causes, or of common origins, or of comparative Objects, be non-coincidental, but the fact of even an incidental regularity raises the likelihood that they might be. One man struck down by a thunderbolt may well be incidental, but the entire host of Sennacherib destroyed by a blast from on high is suggestive of divine agency, at least to the besieged in Jerusalem.

The Categorial (re-)configuration formally represented by the generality of Sanskrit plural noun affixation is shown in Figure 2.

The Sanskrit dual, in collapsing the six-fold formal template of the singular and the plural into but three forms, presents a much more complex interpretive

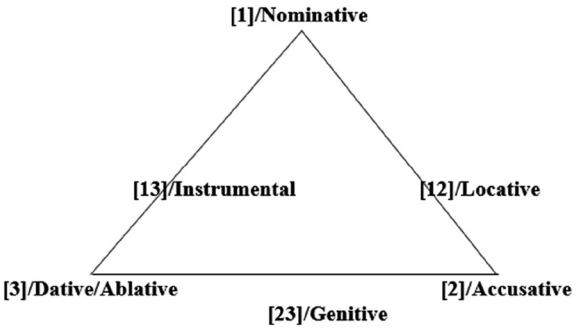

Figure 2: Categorial alignment of plural case affixes.

challenge. The nominative and accusative (as with the neuter in all numbers) are represented everywhere in the dual with a single affix, usually *–au* or *–ā*, but also *–ī* or *–e* for some declensions, and the genitive and locative similarly share the affix *–os*. The instrumental, dative, and ablative are formally indistinguishable, as signalized by the affix *–bhyām*. The most natural interpretation of this state of affairs is that the nominative/accusative in the dual embody Firstness/[1], the genitive/locative Secondness/[2], and the Dative/Ablative/Instrumental Thirdness/[3], or in other words, that the accusative, which represents [2] in the singular/plural, joins the nominative as [1] in the dual; that the locative, [12] in the singular/plural, and the genitive, [23] in the singular/plural, both merge as a representation of [2] in the dual; and that the instrumental, [13] in the singular/plural, joins the dative/ablative of the plural as a representation of [3] in the dual.

The dual itself is quite different from either the singular or the plural. It is marked with respect to both, meaning that it involves a much stronger deictic element than the other two numbers and that its meaning incorporates much greater specificity and complexity. The notions of singularity and plurality are both default concepts, as it were, the former denoting individuality or categoriality, and the latter, generality. The dual, by contrast, denotes a cardinal specificity, the notion of two and only two, or of pairedness, complementarity, reciprocity, or parallelism.

One of the consequences of duality may be understood in contrast with the nominative/accusative dichotomy manifest in the singular and plural as distinct forms (except in the neuter), for reasons already discussed. With the dual number there exists a semantic potentiality not found in the other two numbers, namely, reciprocity. In such a circumstance, the asymmetry between grammatical subject and direct object – and, hence, of nominative and accusative – is lost. Whereas in the sentence, "Paul hit Bill," the Subject is divided into the two arguments of _____ hit _____, for which only one configuration is possible that squares with the truth value

("Paul hit Bill"), in the reciprocal sentence "Paul and Bill hit each other," two solutions for _____ hit _____, namely, "Paul hit Bill" and "Bill hit Paul" are both necessary and sufficient. Under a condition of reciprocity, therefore, the distinction between nominative and accusative are lost, as both have become alike, both grammatical subject and direct object. The dual is not always used in this way, but the fact that it alone can allow for such a reciprocal sense, and frequently does, is presumably sufficient to trigger the formal merger of the nominative and accusative.

For the dual genitive/locative, note that these two cases, formally and Categorially distinct in the singular/plural as [23] and [12], respectively, already both involve a strong component of Secondness. In the case of the genitive, that Secondness is the deixis of "mere association," as already noted, and in the case of the locative, it is the deixis of temporospatial ubication. We surmise that the added preponderance of Secondness entailed by duality (the Secondness of the Other) suffices to transform these two cases into a unified representation of Secondness/[2] in the dual number.

The dative/ablative/instrumental dual plural presents perhaps the most vexing case of all. Assuming that the dative/ablative merely remain merged in [3], as in the plural, for reasons previously set forth, why should the instrumental, a Firstness of Thirdness/[13] in the singular/plural, "migrate" to [3] in the dual? The most likely reason would seem to reside in what is implied, for both the sociative and instrumental senses of this case, by the use of the dual. Consider a pair of sentences that, in Sanskrit, would require the instrumental case:

(a) I built the house with a tool [instrumental singular].
(b) I built the house with tools [instrumental plural].

For either of these cases, the semantic emphasis will be on the mere and not-unexpected circumstance that a tool or tools were used to build a house, or that the act of building was "tool-ful," so to speak. But consider now either of the two preceding sentences recast in the dual:

(c) I built the house with two tools [instrumental dual].

In this last instance, we are given a very specific piece of information, namely, that two and only two tools were used in the act of building. Such a statement would naturally trigger a series of queries, such as: "Which two?" and "Why those two and not others?" Questions of this sort lay bare the underlying premise of the instrumental dual, namely, that a deliberative, reflective choice was made on the part of the Subject, to use two and only two instruments, presumably for well-founded reasons whose disclosure may be anticipated. Much the same might be said, mutatis mutandis, for an utterance using the dual instrumental in the sociative sense, such as "I went with two friends" (Which two? Why only two? Why those two in particular?).

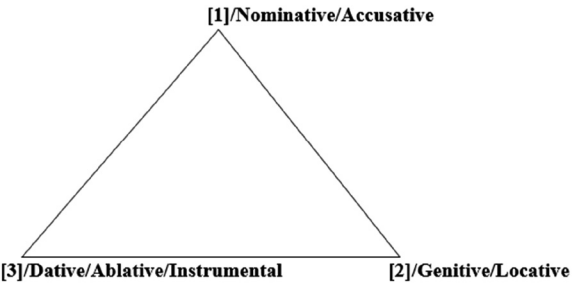

Figure 3: Categorial alignment of dual case affixes.

In fine, any action modulated by a dual instrumentality perforce signifies deliberation and reason, both cardinal attributes of Thirdness. Figure 3 shows the Categorial configuration associated with the dual case affixes.

Having examined the semiotic declensional configurations of case affixes, we now consider the formal declensional variations of the stems of consonant-stem nouns, as exemplified by the stem *vāc-* shown previously in Table 2. It will be observed that this stem exhibits three different forms, *vāk-*, *vāc-*, and *vāg-*, which are distributed across number and case as follows:

1. *vāk-* (nominative singular, locative plural)
2. *vāc-* (all other singular cases; nominative, accusative, genitive, and locative dual; nominative, accusative, and genitive plural)
3. *vāg-* (instrumental, dative, and ablative dual and plural)

Of these, the locative plural is problematic, since the stem assimilates with ending *–su*, resulting in a significant number of sandhi-induced variations. In all likelihood, the form here is derived either from **vāc-su* or **vāg-su.* For the other forms, the stem variation patterns shown here in the singular, dual, and plural hold across the vast majority of consonant-stem nouns and adjectives, with some variant forms sometimes observed in the accusative and genitive singular and the nominative, accusative, and vocative plural. Such variations may give rise to up to five different stem forms, but by far the most common number is three, usually conforming to the case/number pattern shown with *vāc-*.

Given the tendency of consonant-stem nouns to exhibit three stem forms, it is natural to inquire whether these three forms correspond in some way to the Peircean triadic structure which we have already posited as the semiotic scaffolding for all of Vedic grammar, including case/number affixes. Since the three stem forms are seen to correspond predictably to certain numbers and cases, it seems reasonable to suppose, as a working hypothesis, that these three forms correspond to three

Categorial valences of the Subject (as denoted by the noun stem) as contextualized by those numbers and cases (in contrast with the case-number combinations per se, which we have already considered in the discussion of the semiotics of case-number affixes).

Referring back to the paradigm in Table 2, we consider the semiotic array associated with the stem *vāk-*/*vāc-*/*vāg-*, i.e., the element representing the Subject as such. Conceptually, the simplest of all case-number combinations is the nominative singular, the only case-number that requires a true singularity. The nominative singular is the case of name per se; it could in theory denote a single entity, utterly solitary and non-reactive. As such, it is the only case-number that always and unavoidably is a pure First. It therefore makes sense to equate the stem form associated with the nominative singular (in this instance, *vāk-*) with Firstness/[1].

As soon as we move from the nominative singular to any of the "oblique" cases, we immediately move into the realm of the conceptual Other. Even though we describe these cases as the accusative singular, instrumental singular, genitive singular, etc., there is nothing inherently singular about them, for all of them presuppose at minimum two entia. In the case of the accusative, we have a case denoting one of two members of a dyadic Subject, the "patient" or "acted-upon," which presupposes an "agent"/"actor." With the Sanskrit instrumental, we have either a sociative or instrumental sense, both of which require an Other, either as companion or as user. The dative in its most familiar sense denotes an indirect object, thereby presupposing not two but three entia, the grammatical subject, direct object, and indirect object. But the dative's most fundamental sense was to denote purpose or directionality, of which the indirect object is seen to be a grammatical special case. In essence, though, the dative denotes at minimum an Other, either as a purpose, or as a direction or orientation, associated with some ens. Similar arguments could be made for each of the other oblique cases. Moreover, it is worth observing that the genitive occupies a special position, being the only one of the oblique cases that cannot in and of itself denote any part of the semiotic Subject, so defined (i.e., it can never denote directly any of the arguments of a verb). Overall, we suppose the stem form used with the oblique cases in the singular – *vāc-* in our example – to correspond to Secondness.

Moving into the dual number, the picture becomes more complicated. The dual number denoting (at minimum) two entia, we would not expect Firstness ever to predominate here. Indeed, we see a number of the stem forms in the dual (the nominative, vocative, accusative, genitive, and locative) to be the form corresponding to Secondness (*vāc-*). Some of these, moreover, require more than two entia inasmuch as they establish a relationship between some pair of entia and some other besides; but it is important to note that such a multiplicity in every case is compulsive or incidental only. For the locative, the plurality is one of location or

situation, and for the accusative, one of being acted upon by some Other, irrespective of the animacy or inanimacy of the actor. In such cases, the compulsive or incidental plurality presupposed is akin to the hybrid or "degenerate" Category Secondness of Thirdness/[23], which Peirce equated to an "incidental" Third, as described previously. Thus an "accusative dual" or a "locative dual," e.g., may be said to represent a duality/Secondness in combination with a compulsive or incidental plurality/Secondness of Thirdness, or [2] + [23]. In such a combination, it is easy to see that Secondness predominates; hence, the choice of the stem corresponding to [2] for each of these case-numbers. Formally, we might represent this state of affairs as $[2]_{[23]}$. For the genitive, on the other hand, the plurality is one of mere association, whereof the basis for the association is irrelevant to Subject and Predicate alike, and for which the two members or congeries are represented as an unequal dichotomy, or Firstness of Secondness/[12]. Thus, for the "genitive dual," the combination [2] + [12] obtains, in which, once again, the Category of Secondness predominates. The dual genitive may be represented as $[2]_{[12]}$.

It is otherwise with the dual instrumental, dative, and ablative cases, for which a novel stem form, *vāg-*, is deployed. With these three cases, as with the accusative, locative, and genitive, a plurality of entia, above and beyond the strict duality required by the number per se, is presupposed. But in addition, for these three cases, the additional notions of purpose (instrumental and dative) and causation (ablative) are entailed. Both purpose and causation are prominent manifestations of Thirdness/[3], such that, for these three case-numbers, we have [2]/duality, [23]/compulsive or incidental plurality, and [3]/causation or purpose all manifest. Evidently, Thirdness is held to preponderate in such a combination, inasmuch as the third stem form, *vāg-* must, by the process of elimination, denote Thirdness/[3]. These three case-numbers, formally identical for every noun in Sanskrit, must be reckoned as $[3]_{[2][23]}$.

In the plural forms, *vāc-*/[2] is deployed to mark the nominative, accusative, vocative, genitive, and, probably, mutatis mutandis, the locative. This suggests that, for these case-numbers, the plurality is at best a compulsive or incidental plurality/[23] or (for the genitive) an unequal dichotomy of plurals/[12], and a little reflection will show that this is indeed the case, for reasons given in discussions of these cases already set forth. Thus, Secondness would appear to be the common and preponderating Category with these case-numbers, and the stems are marked accordingly.

As with the dual number, the plural instrumental, dative, and ablative deploy the stem form associated with Thirdness/[3], and for similar reasons. In the plural, these cases alone deal with pure Thirdness, in the guise of purpose, causation, origin, intention, etc.

In fine, the consonant-stem noun *vāc-* manifests as three formally separate stems, *vāk-*, *vāc-*, and *vāg-*, which appear to represent, respectively, Firstness/[1], Secondness/[2], and Thirdness/[3], in the most general sense. A few of the myriad

Table 4: Consonant-stem nouns with threefold stem forms.

[1]	[2]	[3]	Meaning
vanik-	*vanij-*	*vanig-*	merchant
uśik-	*uśij-*	*uśig-*	wishing, desiring
hastī-	*hastin-*	*hasti-*	having a hand
viṭ-	*viś-*	*viḍ-*	settlement
dik-	*diś-*	*dig-*	direction

other examples of such three-form consonant stems are shown in Table 4. In each case given, the forms are deployed in the same case-numbers as we have seen with *vāc-*.

There are, to be sure, examples of consonant-stem nouns whose stem forms exhibit considerable "messiness," although the underlying pattern can still be perceived clearly in most instances. For example, *-iṣ* and *-uṣ* consonant stems exhibit three dominant forms corresponding to the usual case-numbers. For *śociṣ-* they are *śocis-*/[1], *śociṣ-*/[2], and *śocir-*/[3], and for *cakṣuṣ-*, 'eye,' they are *cakṣus-*/[1], *cakṣuṣ-*/[2], and *cakṣur-*/[3]. But *śociṣ-*, an adjective, also exhibits an unusual stem form in the neuter nominative plural, *śocimṣ-*, which is seen to be a formal variant for *śociṣ-*; in other words, the full schema in this case is *śocis-*/[1], *śociṣ-* (*śocimṣ-*)/[2], and *śocir-*/[3]. *Pratyañc-*, 'sideways,' exhibits distinctive masculine/feminine and neuter nominative singular stem forms, *pratyan-* and *pratyak-*, respectively, while the accusative singular, nominative and accusative dual, and nominative and accusative plural display a stem form, *pratyañc-*, which contrasts with (and, in the case of the neuter nominative/accusative dual, alternates with) the stem *pratic-* found in the other case-numbers found elsewhere to correspond to [2]. *Pratig-* is the presumed but unattested third stem form. We thus have *pratyan-* (*pratyak-*)/[1], *pratic-* (*pratyañc-*)/[2], and **pratig-*/[3]. With *bhavant-*, '[meaning],' the nominative singular *bhavan-* becomes *bhavat-* in the neuter, while in all the case-numbers corresponding elsewhere to [2], *bhavant-* alternates with *bhavat-*. For the instrumental/dative/ablative dual and plural, however, *bhavad-*/[3] is consistently used. This state of affairs may be represented as *bhavan-* (*bhavat-*)/[1], *bhavat-* (*bhavant-*)/[2], and *bhavad-*/[3].

Overall, with consonant-stem nouns, the trichotomy associated with the lens of Thirdness is as evident as it was found to be with vowel-stem nouns. However, whereas for the latter, the trichotomy is manifest syntagmatically, in the tripartite composition of the words themselves, for the former it is manifest paradigmatically, in the tendency toward tripartite variation of the stem form. But what is the reason for this difference? Evolutionarily speaking, consonant-stem nouns appear to be

primordial, with vowel-stem nouns innovative; the latter become more and more common, even as the former become much scarcer, as the language evolves from the Vedic to the classical stage. Moreover, there are a number of instances of consonant-stem nouns found in Vedic that either disappear or become much scarcer by the classical period, to be replaced by vowel-stem equivalents; for example, *nṛ-* alongside *nar-a-*, 'man,' *vāc-* alongside *vāc-ā-* 'talk, speech,' *rāṭ-* alongside *rāj-a-*, 'king,' *pad-* alongside *pad-a-*, 'foot,' etc. Thus, the use of thematic vowels, and especially *-a-*, comes gradually to preponderate, suggesting that there is something about the use of such vowels that makes them a natural fit for Sanskrit semiotic grammar.

To see why this might have been the case, consider first the semiotic contours of a consonant-stem noun. As we have seen already, the Categorial Triad [1]/[2]/[3] is primarily made explicit paradigmatically, via the three-form stem variation evident in a majority of consonant-stem nouns. But stems being phonetically comparatively complex (usually exhibiting a minimal form CVC, but often also CVCC, CVCVC, and other forms), the likelihood of irregularities being introduced is correspondingly great, and, as we have seen, a significant number of consonant-stem nouns exhibit "messiness," much of which may be attributed to the tendency toward variety arising in language just as it does in organic forms and even in the inert physical universe.

Moreover, even though consonant-stem nouns lack an explicit sign, like a thematic vowel or other infix, signifying the relationship between stem and affix, or between their respective Objects, the mental sign denoting such a relationship must exist nonetheless; as Peirce long ago observed, human language does not always make explicit every mental sign involved in the production of meaning (e.g., "New Elements," EP 1998: 309). But, as already mentioned, we hold it as axiomatic that languages will strive to make explicit those aspects of semiosis that square with a language's semiotic lens, a lens being nothing more or less than an Index denoting which aspects of reality are to be foregrounded for the "semiolect" of a given speaker community. If, then, Sanskrit speakers at some stage selected Thirdness/[3] as their primary lens, as we have suggested, then a system of representation where Thirdness is made maximally explicit would naturally be preferred.

With thematic vowel-stem nouns, we observe, as before, that the Categorial Triad is neatly and compactly made explicit syntagmatically as the stem/[1], affix/[2], and thematic vowel/[3]. Not only that, the paradigmatic representation of the Triad is maintained, and moreover in grander form, with reference to the thematic vowels themselves instead of the noun stems, inasmuch as these vowels are three in number (*–a–*, *–i–*, and *–u–*, with long forms *–ā–*, *–ī–*, and *–ū–* usually corresponding to feminine nouns). And while the thematic vowel declensions, too, exhibit occasional messiness (as with the genitive/locative dual, in which the thematic vowel is replaced for all nouns with *–o–* in the affix *–os*), there is far less formal variety among the three thematic vowels than with many consonant stems. Otherwise put, the overall

paradigmatic resolution into three grand classes of vowel-stem nouns is far clearer than the resolution of consonant-stem nouns into three forms – which forms, of course, display great formal variation among themselves. Because of the greater paradigmatic clarity and syntagmatic explicitness afforded by thematic vowel-stem nouns than by consonant-stem nouns within the semiotic framework of Thirdness/[3], it is little to be wondered that the latter strategy came to predominate in Sanskrit at the expense of the former.

The representational contours of noun stem and case-number affix are therefore quite distinct, although there is some overlap. For the stem, the resolution into three forms is suggestive of a simple trichotomy [1]/[2]/[3], for which the "nominative singular" is the sole representative of [1] (except for neuter nouns), while all of the other cases in the singular, as well as the nominative, accusative, genitive, and locative dual and the nominative, accusative, genitive, and (probably) locative plural are represented as [2], and the ablative, dative, and instrumental dual and plural are shown as [3] – these last, because of the preponderance of plurality, purpose, deliberation, and other Thirds typical of these three cases in the dual/plural. For the case-number affixes, on the other hand, the resolution into fifteen forms is suggestive of a complex trichotomy incorporating both the "genuine" and "degenerate" ontological Categories implied by the Peircean Triad. This complex resolution is tantamount to much greater semiotic detail accorded to the various elements of the (semiotic) Subject and their relationships among each other and to the Predicate, considered as generals and not particulars, the case-number affixes representing not individuals but generalized relationships or laws – this, as distinct from the stem, which represents a single element, individual, or class, in and of itself. It is the Predicate, again, whose basic structure is of "blanks needing to be filled" rather than of simple explicit terms; hence, the need for greater specificity and semiotic resolution with the case affixes (which act as signposts for these different terms) in setting forth the conditions for filling what are in effect nomothetic potentialities and not mere self-contained actualities.

4.2 The Sanskrit verb

The tripartite formal structural template evident in Sanskrit noun declension is also pervasive in verb conjugation. At the same time, verb conjugational semiotic structures are both better aligned with traditional descriptive grammar templates and considerably more complex than noun declensions. This is to be expected, inasmuch as the Predicate represented by the verb root functions as an Icon, and Icons, as Firstnesses, are prone to variety. Moreover, the Sanskrit verb also encodes the copula, the Symbolic element of the proposition, which corresponds roughly to

the inflectional affix. Both Predicate-Icon and Copula-Symbol being jointly signified by the inflected verb, in contrast to the Index represented by the nominal subject, we expect the grammatical verb and its paradigmatic instantiations to be far more complex than declined nouns. The verb paradigm is understood to represent the complex interplay between Predicate and Copula, as well as their joint relationship to the Subject. Thus, while in most cases we can perceive clear formal motivation, with respect to person, number, tense, voice, and mood, for paradigms as traditionally represented, verb conjugations evidently constitute not merely a system, but a system of systems, the full elaboration of whose semiotic interrelations far exceeds the scope of this preliminary treatment. Nevertheless, with regard to the traditional differentiating properties (which are not necessarily formally distinct in other languages), many of them resolve neatly into the Peircean Trichotomy, which bears touching upon briefly.

Number (singular/[1], dual/[2], plural/[3]) we have already elaborated with respect to nouns. It remains only to be said that number is the only paradigmatic property manifest for both nouns and verbs, and that number marking on verbs constitutes part of an Index linking the Predicate with its Subject, since "number," properly speaking, is a property of enumerable things and not of qualities. Properties marked by case and gender differentiation in nouns have no counterpart, via "agreement," with Sanskrit verbs (i.e., no affix or other overt verbal morphology that signify these properties) – but this is certainly not the case across languages (in Slavic languages, for example, verbs in the past tense are marked for gender as well as number, agreeing with the gender of the subject).

Despite the conventional grammatical designations of first, second, and third person, the semiotic/Categorial designations of the grammatical persons are different. The grammatical first person does indeed coincide with Firstness/[1], inasmuch as the first person implies that which is in and of itself, irrespective of any Other. But Secondness/[2] corresponds not to the "second person" but instead to the third, since it is this person that denotes an outside, reactive Other independent of the First. For the person that inherently denotes purpose, meaning, and intelligence – all Thirds – with respect to the first person, we turn ineluctably to the second person, which, in semiotic terms, ought surely to be designated the Third Person. For it is the eternal Thou that endues language with its vitality and purpose, being its entire raison d'être, as it were. As with number agreement morphology, verb affixes denoting person are Indexes serving to bind the Predicate more securely to its Subject.

The morphological triad first/second/third person, so pervasive in Indo-European languages, is assumed to be a grammatical universal; yet formal differences in person, in many languages, as already noted, argue against this bias on a semiotic level. In Tamil, for example, verbs in the singular distinguish 6 different

forms (first person, second person informal, second person formal, third person masculine, third person feminine, third person inanimate), which in most traditional grammars are conveniently shoehorned into the three traditional persons of Indo-European familiarity. The Tamil plural displays an additional four forms (first person, second person, third person animate, third person inanimate), which, again, are made by prescriptivists (which Peirce called "children of Procrustes"!) to conform to the Indo-European template. Had the first modern prescriptive grammarians spoken a language like Tamil, it is entirely possible that default assumptions about the "natural" number of persons would be entirely different.

Moving to voice, Sanskrit has three inflectional voices, as already noted, a formal circumstance putting all three on equal semiotic footing, as it were.[5] Of these, the middle voice, whose sense is of performing an action on one's own behalf, excluding any other, must correspond to Firstness, while the active, which entails action on behalf of some Other, is a Secondness.

The passive requires a little more thought to conceptualize. In descriptive grammars, the passive is usually described along the lines of a syntactic reversal of subject and direct object, but in interpretive semiotic terms, its sense is far subtler. If I say, in lieu of 'John wrote the book' (a typical active construction), 'The book was written by John' (a passive construction), I am in effect shifting emphasis from the grammatical subject (or agent) to the predicate, and framing the grammatical subject or agent as an attribution of source, motive, or origin with respect to the predicate. Otherwise put, the above example answers the question "From whom or what did the act of writing the book originate?" or perhaps "Who or what was the cause of the writing of the book?" Origins and causation are both Thirdnesses, and so we conclude that the passive is, in fact, the voice of Thirdness.

Moreover, the grammatical property known as "voice" is the most fundamental semiotic trait associated with the verbs, and hence with the predicate. That this is so is evident from the fact that all other systems associated with verb conjugation are subordinate to, or contained within, the active/middle/passive trichotomy. The reason for this is that so-called "voice" is, in semiotic terms, a maximally general representation not merely of the predicate in isolation, or any sub-elements thereof, but of the entire Subject-Predicate proposition and the Categorial mode in which it is represented. The middle voice represents the Subject-Predicate proposition qua First, the proposition being understood as self-representing insofar as the Subject is concerned. The active voice, properly understood, represents the Subject-Predicate qua Second, while the passive represents it qua Third. This can only be properly

5 This is in stark contrast to a language like English, where only the active is represented inflectionally; both the passive and the middle can only be expressed periphrastically, and only the former is done in any regularized way.

grasped from a semiotic/Categorial standpoint; most intransitive Sanskrit verbs, like *i-*, 'go,' and *as-*, 'sit,' have both middle and active forms, a circumstance that makes no sense if the "active" and "middle" are equated purely with transitivity, i.e., with verbs that can either take a direct or a reflexive object. Clearly something deeper and more general is operative than mere transitivity or reflexivity.

Analogous to the tripartite stem-thematic vowel-affix structure of vowel-stem nouns, a similar lexical configuration is typical of many classes of Sanskrit verbs. With several verb classes, however, a nasal infix takes the place of a thematic vowel. Table 5 shows several examples of Sanskrit verbs with thematic vowel or nasal infixes.

As we observed earlier with vowel-stem nouns, we see with these verb classes as syntactic representations of the Peircean Triad, with the stem corresponding iconically to [1] (the quality denoted by the verb root), the affix to [2] (an Index denoting the Subject, as already noted), and the thematic vowel or infix [3] (the copula, or

Table 5: Sanskrit verb classes.

Thematic –a- class	
nay-a-si	
lead-[thematic *a*]-2nd Singular	('you lead')
nay-a-nti	
lead-[thematic *a*]-3rd Plural	('they lead')
***-nu-/-no-* infix class**	
su-no-si	
press-[infix –no-]-2nd Singular	('you press')
su-nu-taḥ	
press-[infix *–nu-*]-3rd Dual	('you two press')
***-u-/-o-* infix class**	
kar-o-mi	
do-[infix –o-]-1st Singular	('I do')
kur-u-tha	
do-[infix *–u-*]-2nd Plural	('you do')
***-nā-* infix class**	
krī-ṇā-ti	
buy-[infix *-nā-*]-3rd Singular	('(s)he buys')
krī-ṇa-nti	
buy–[infix *-nā-*]-3rd Plural	('they buy')

Symbol that reifies the entire proposition). In addition to what we may call the thematic verb classes, Sanskrit also presents many consonant-stem verbs which do not display any intermediary infix between stem and affix; but unlike consonant-stem nouns, these verbs typically exhibit at most two distinct stem forms, a strong and a weak form, alongside a daunting diversity of affixal forms associated with the many tenses, valences, and moods typical of Sanskrit verbs.

Besides thematic verbs and consonant-stem verbs, Sanskrit verbs also display a formal type not found among nouns, the reduplicated stem type. Reduplication in Sanskrit is generally "partial," not "full," and realized according to a rather complicated set of rules. For example, the verb root *hu-*, 'sacrifice,' is realized in the present tense *juhu-/juho-*, while *dā-*, 'give,' is *dadā-/dada-*. Although reduplication of nouns is found in certain fixed phrases, such as *dive-dive* ('day by day'), it is systemic only in verb conjugation.[6]

Beyond the voice, number and person formal trichotomies evidenced in verbal paradigms in Vedic and all attested successive stages of Sanskrit, a subtler trichotomy, which parametrizes the entire verbal system, may be discerned. Inasmuch as the verb root denotes the qualitative aspects of the predicate itself, we consider the formal strategies by which this verb root may be realized. There are three such formal strategies, speaking in the broadest possible terms, they being: the root itself, the root augmented, and the root reduplicated.

Aside from the reduplicating present-tense verb class, which we have already described, reduplication in Vedic is primarily and characteristically associated with the so-called perfect system, which is not to be confused with the periphrastic "perfect tenses" found in English, Spanish, and many other modern Indo-European languages, or even with the Latin perfect. The Sanskrit perfect, supposedly descended from the PIE "stative aspect," is in fact a fully formed system of tenses and moods, distinct from and on an equal footing with, the "present" system (which, confusingly, also includes the imperfect tense, and is assumed to have arisen systemically from a PIE "imperfective aspect"); however, this becomes evident only in the oldest attested form of the language, in the Rigveda, a circumstance concerning which Whitney despaired of a rational interpretation. "[T]he common use of the perfect as a present in the Veda," he wrote, "deprive us of a criterion of meaning" (Whitney 1950: 293) – as indeed must be the case if we insist on being straitjacketed by a notion of the primacy of "tense" qua temporality. Later Sanskrit and its derivative Middle Indic offspring did indeed move toward temporality/tense as the primary ordering parameter of verb paradigms, as became also the case in Latin and Greek; yet in the primordial epoch of Indo-European, for which Vedic Sanskrit is the best approximation, we are

6 The rhyming "tag" form of reduplicated noun found in Dravidian languages (e.g. Tamil *vaṇṭi-kiṇṭi*, 'cars and such') is not found in Sanskrit.

compelled to acknowledge by the weight of semiotic evidence that other, more general ordering principles were at work. Thus, Kiparsky noted that the Vedic perfect could signify either the present or past time, including what he terms "stative presents" involving "achievement" verbs like *ciketa* ('knows,' *cit-*), *jujoṣa* ('enjoys,' *juṣ-*) *cakāna* ('likes,' *kan-*), *bibhāya* ('fears,' *bhī-*), *dadhāra* ('holds,' *dhṛ-*), and *babhūva* ('is,' *bhū-*). The perfect may alternate with the present in a single utterance, depending upon the purport of each verb. For example, Kiparsky furnishes the following telling example (Kiparsky 1998: 4; see also MacDonell 1916: 342):

ka īṣate tujyate ko bibhāya
who flee-3rd Sing PRES rush-3rd Sing PRES who fear-3rd Sing PERF
'Who is fleeing and rushing, who is afraid?' (RV 1.84.17)

The first two verbs, *īṣate* and *tujyate* (in the present, middle voice), denote immediate and tangible actions, while the third, *bibhāya* (perfect), denotes a more or less continuous state of mind. Other "achievement verbs" would appear to share this characteristic, including *bhū-*, which in Sanskrit contrasts with *as-* as one of two roots signifying 'be.' *bhū-* tends to signify 'become' or 'be [some quality, state, or characteristic].'

In past-tense contexts, the perfect, in contrast with the imperfect (the "past tense" within the present system) and the aorist, "introduce[s] an existential or universal quantification over past times. Predicates interpreted distributively, denoting multiple events, nearly always have the perfect in reference to past time" (Kiparsky 1998: 4). A compelling example from the same source illustrates this usage neatly, in contrast with the imperfect:

dame-dame … agnir hotā ni sasādā yajīyān. agnir hotā
in every house Agni priest down sit-3rd Sing PERF more sacrificing Agni priest
ni asīdad yajīyān upasthe mātuḥ
down sit-3rd Sing IMPERF more sacrificing lap-Loc mother-Gen
'Agni the expert priest sat down [multiple events] in every house. Agni the expert priest sat down[single event] on his mother's lap'.

Another nice example of the distributive or collective sense of the Vedic perfect, also from Kiparsky, is:

tam eva viśve papire svardṛśo bahu sākaṃ sisicur
that-Acc EMPH all-PL drink-3rd Pl PERF sun-seeing-PL much together pour-3rd Pl PERF
utsam udriṇam
source-Acc watery-Acc
'All who see the sun have drunk from that well. They have all drawn deeply from the abundant water source.' (Kiparsky 1998: 5)

With an adverb signifying perpetual time or multiple instances, the perfect is obligatory, as with:

> *śaśvat puroṣā vy uvāsa devi*
> always formerly/Dawn forth shine-3rd Sing PERF goddess
> 'The Goddess Dawn has always shone forth in the past' [note the ambiguity of *puroṣā*, which means both "formerly" and "Dawn personified" (otherwise known as Ushas)]. (Kiparsky 1998: 5)

Overall, Kiparsky characterizes the Vedic perfect as follows:

> The distributive reading [for the perfect] typically occurs with plural or collective subjects or objects. Indeed, with universally quantified plurals, the perfect is mandatory […]. A telling contrast occurs in the creation hymn 10.129. It first says that certain things did not exist – being did not exist, death did not exist (*āsīt*, imperfect) – and then concludes: nothing existed (*āsa*, perfect).
>
> The perfect is obligatory, even with singular nominal arguments, when the verb is modified by an adverb of quantification, either universal (such as "always" …) or existential, such as "many times." […] The perfect is also the normal past tense of generic and habitual sentences […]. In contrast, questions about specific past occasions, asking for particular answers […] have imperfect tense." (Kiparsky 1998:5–6)

In other words, the perfect "tense" signifies habit, generality, multiplicity, and mentation – all easily recognizable in semiotic terms as attributes of Thirdness/[3] – and we conclude that, in general, reduplication is also (or was originally), denotative of Thirdness. In this connection, it is perhaps relevant to point out that the verb most essentially denotative of the dative relationship (a Thirdness), *dā-*, 'give,' is resolutely reduplicative throughout the present system, as well as in the perfect. So too are a number of other verbs significative of mentation, like *hu-*, 'sacrifice,' and *mā-*, 'measure.' However, not all verbs in the reduplicating root class may be so characterized, such that the exceptionless association of reduplication with evident Thirdness cannot be asserted. But the tendency toward such an association, perhaps indicative of greater consistency in an earlier stage of the language, can scarcely be questioned, on the grounds of the perfect and its uses.

In this connection, it is also perhaps significant to observe the likely iconicity in the manner by which reduplication of verb roots is accomplished. As already noted, Sanskrit verbal reduplication is not manifest as a mere doubled syllable or morpheme, as is often the case in other languages using reduplication in a systematized way. Instead, the reduplicated syllable is a reduced or partial form, created according to a complex series of rules, that suggests rather than replicates the full syllable juxtaposed with it. So, for example, the root *kar-*, 'make, do,' reduplicates as *cakara-* (instead of, e.g., **kara-kara-* or even **ka-kara-*),

which is indicative of a broader rule that syllables beginning with velar stops form a reduplicating syllable with the equivalent palatal stop; thus also, e.g., *grabh-*, 'seize,' reduplicates as *jagrabh-*. A few other examples include *tasthā-* from *sthā*, 'stand,' *śuśru-* from *śru-*, 'hear,' and *caskand-* from *skand-*, 'leap.' The fact that the reduplicated syllable, rather than being a full repetition, is instead a conventionalized symbol representing a fuller whole, is a very nice instantiation of a Thirdness, and further evidence, if such be required, that so-called "reduplication" of Sanskrit verbal roots is broadly indicative of Thirdness.

Reduplication is also a characteristic of two of the so-called "secondary" conjugations in Vedic, the desiderative and the intensive or "frequentative." For these, the rules governing the formation of reduplicating syllables are slightly different than those that apply to the reduplicating present and the perfect, but are nonetheless recognizable as part of the broader general class of reduplicating verb forms. The desiderative, for example, uses the characteristic reduplicating vowel *i* in all reduplicating syllables except those representing roots with *u*/*ū*; thus, e.g., from *dā-*, 'give,' we obtain desiderative *di-dāsa*, 'desire to give.' The intensive, meanwhile, typically (although not always) uses the so-called *guṇa* grade of the stem vowel in the reduplicated syllable, as with *diś-*, 'point' (intensive *de-diś-*), and *nu-*, 'praise' (intensive *no-nu-*). With both the desiderative and the intensive or frequentative, the notion of Thirdness is also prominent. With the former, the idea conveyed is that of desire, motivation, or strong intention, all of which point to a final cause, an unambiguous Third, for the action. With the latter, the notion of frequent repetition is also a Thirdness (albeit, in many instances, a Secondness of Thirdness).

Finally, with respect to the semiotic interpretation of reduplication and the perfect system, we note that equating reduplication with Thirdness affords us a far more generalized understanding than the mere ascription by comparative historical linguistics of the semantic variety within the perfect to an earlier "stative aspect." For while cataloging the various senses of the perfect under the imprecise heading of "statives" may afford a measure of descriptive satisfaction, the semiotic version of things serves to explain the broader phenomenon of reduplication in contexts other than the perfect system.

The second mode of root realization, the root augmented, is accomplished by prefixing *a-* to the verb root. This form of the root is found in the imperfect tense and the aorist system, the two forms most directly associated with the past or pastness in Vedic Sanskrit. The imperfect, the "past tense" embedded within the present system, is straightforward enough, and is, moreover, a more or less stable feature of Sanskrit grammar in every phase of that language's development. The aorist system, however, is at once more complex and (as with its counterpart in ancient Greek) considerably less prevalent in later stages of the language. Similar

to the perfect, the aorist appears to have arisen from a non-tense modality (which is said to have been a PIE "perfective aspect"), and efforts to construct it either as a pure tense or mood fail to capture its true nature. In Vedic the aorist, like the present, displays subjunctive, optative, injunctive, imperative, and participial forms, most of which do not exhibit the *a-* augment characteristic of the more widespread indicative aorist forms.

According to Kiparsky, four seemingly disparate uses of the Vedic aorist may be discerned, namely, the "perfective aspect" (i.e., the completive sense, which would seem to be identical in sense with the "perfective aspect" held by historical PIE linguistics to be the origin of the aorist), the "immediate past," the "relative anteriority of a subordinate clause with respect to the main clause," and "a statement of fact."

The "perfective aspect" is confined to "non-finite and modal verb forms," while the "immediate past" is normally the purport of the aorist for indicative verbs in main clauses (Kiparsky 1998: 2). One example of the latter furnished by Kiparsky is:

> *vasann araṇyānyāṃ sāyam* ***akrukṣad*** *iti manyate*
> staying forest-LOC at night **scream-AOR-3rd Sing** think-3rd Sing
> 'In the forest at night, one imagines that someone has just screamed'

"Relative anteriority" is similar to the pluperfect; in such instances, the aorist will mark a verb in a subordinate whose temporal framing is anterior to that of the main clause. For example:

> *viśve devāso amadann anu tvā; śuṣṇam pipruṃ kuyavaṃ vṛtram*
> all gods rejoice-IMPF-3rd Pl to you; Śuṣṇa-ACC P.-ACC K.-ACC V.-ACC
> *indra* ***yadāvadhīr*** *vi puraḥ śambarasya*
> Indra-VOC **when-smite-AOR-3rd Sing** apart forts-ACC Śambara-GEN
> 'All the gods cheered you, Indra, when you had smashed Śuṣṇa, Pipru, Kuyava, Vṛtra, and the forts of Śambara.'

The aorist as "statement of fact" is the subtlest of all, frequently occurring subsequent to one or more uses of the imperfect that have given an occurrence or set of occurrences for which the aorist may serve as a summative statement of fact or result, e.g.:

> *satrābhavo vasupatir vasūnāṃ datre viśvā*
> totally-become-IMPF-3rd Sing wealth-lord wealth-GEN Pl portion-DAT all-ACC Pl
> ***adhithā*** *indra kṛṣṭīḥ*
> **put-AOR-3rd Sing** Indra-VOC people-ACC Pl
> 'You have become the supreme overlord of wealth, you have supplied all peoples with their portion, Indra'

Regarding these apparently incongruent usages of the aorist, Kiparsky remarks:

> The link between these four functions is certainly not obvious. What exactly do the temporal meanings "recent past" and "relative anteriority" have to do with one another? What does either of them have to do with the discourse function of "statement of fact"? And what do any of these have to do with the telicity [i.e., perfective/completive] that the aorist marks in non-indicative contexts? Part of the problem is to discover what *kind* of connection we should be looking for: a basic meaning from which the several functions are synchronically derivable? Or a natural diachronic path that connects them, grounded in principles of language change? And the answer to that depends on whether the tenses have a single lexical meaning with structural ambiguity, a single meaning with different pragmatic uses, or are genuinely polysemous (Kiparsky 1998: 3).

As with the perfect, the perplexity here arises from trying to develop a unified grammatical rather than a semiotic model. In broad semiotic terms, the picture is clear indeed: completion, past, anteriority, and factuality are all phenomena long recognized as Secondnesses; and these uses of the aorist, together with the unambiguous past tense sense of the imperfect, indicate very clearly that the augment *a-* signalizes Secondness/[2], in general, just as reduplication signifies Thirdness/[3].

The third form of the verb root, the root itself, is characteristic of the present tense as well as the multifarious injunctive, a verbal category that can "assume virtually any temporal or modal value in context" (Kiparsky 1998: 7). The association of the root with such an unmarked form as the present is itself sufficient to suggest what is implied iconically, that the root by itself, in denoting the "default" meaning of the verb, shorn of any tense or modal marks, is indicative of Firstness/[1]. However, the multifarious uses of the injunctive, a form widespread only in the earliest forms of Vedic, serves to confirm this. The injunctive per se appears to have no specific, generalized denotatum (excepting for being the default usage for "performatives," as in "I hereby proclaim," etc.), and instead assumes the tense and modal features of some other accompanying verb that is so marked. Per Kiparsky (1998: 7), "[i]njunctive forms typically pick up their tense/mood reading from a fully specified verb in a discourse context," with only aspect being feebly denoted via a present versus aorist morphological contrast within the surviving injunctive system. In the following two examples, from Kiparsky, the injunctive assumes an imperfect and an aorist sense, respectively, entirely as an appendage of the preceding verb in each case:

> *ādhvānayad duritā* ***dambhayac*** *ca*
> smoke out-IMPF-3rd Sing fortresses-ACC **sack-INJ-3rd Sing** and
> 'He smoked out the fortresses and sacked them.'

ād it paścā bubudhānā vy akhyann ād id ratnaṃ
the PART afterwards awakened around look-Aor-3rd Pl then PART jewel-ACC
dhārayanta *dyubhaktam*
hold-INJ-3rd Sing heaven-bestowed-ACC
'Then, when they had afterwards woken up, they looked around and held on to the jewel that heaven had bestowed on them.'

The uses of the injunctive in the imperative, performative, and prohibitive ("temporally unmarked," from Kiparsky's perspective) senses typically do not require another verb to establish tense or mood. Note that these uses are all "affective," connoting some attitudinal or emotional state on the part of the speaker. Thus, we see that, in Vedic, the plain verb stem is used either in contexts where presentness, absence of tense/mood, or an affective state are signified; presentness, or the present, as well as feelings and emotions, are all cardinal manifestations of Peircean Firstness, such that the injunctive as well as the present tense share this general semiotic attribute.

4.3 Compound formation

In addition to individual nouns and verbs formed with a root and affixal morphology, Sanskrit has an elaborate system of compound formation, which becomes increasingly complex in the later stages of the language. Compounds may incorporate not only nouns and verbs, but also adjectives, pronouns, adverbs, and various indeclinables. While Indian grammarians recognize many different classes and subclasses of compounds – a mastery of which is indispensable to comprehending Sanskrit literature, especially in the classical (post-Vedic) language – there are in essence only three broad classes of compounds, long recognized by astute observers like Whitney.

The first such class is what Whitney terms "secondary adjective compounds," known more conventionally to Sanskrit grammarians as "bahuvrīhi" compounds. These are compounds for which the totality of the compound has adjectival force, denoting some quality or property in the manner of an attributive adjective, and for which the full meaning cannot be determined by resolution of the compound into its constituent parts, since the final element is always a noun with no attributive force per se, thus, for example, *vīrasena*, 'having an army of heroes' (*vīra* = 'hero,' *sena* = 'army'), and *yāvayáddveṣas,* 'driving away enemies' (*yāvayád* = 'driving away, *dviṣ-,* 'enemy').

The second class is "copulative or aggregative compounds," which in the Vedic languages usually take the form of "dvandva compounds" of two members only. Such compounds are the equivalent of a pair of items (or, in later language, a group) whose relationship is one of coordination, similar to a pair or series of items

conjoined by "and." In Vedic there are many such compounded pairs, including a number of deity names, such as *indrāvaruṇāu*, 'Indra and Varuna' and *dyāvāpṛthivī*, 'Heaven and Earth,' as well as other conventionalized pairings like *satyānṛté,* 'truth and falsehood' (*satya-* = 'truth,' *ānṛta-* = 'falsehood'). Such doublets are always expressed in the dual number, emphasizing their doubled essence. In later Sanskrit, such aggregative compounds frequently included far more than two entries, as with *devagandharvamānuṣoragarakṣasās,* 'gods and Gandharvas and men and serpents and demons' (with the final entry displaying a plural suffix); but the coordinated and copulative character of such compounds remained unchanged.

Finally, Whitney identifies "determinative compounds," in which one of two constituents is syntactically and semantically contingent on the other to create a complete idea, as in *amitrasenā*, 'army of enemies' (*amitra* = 'enemy,' *senā* = 'army'), *hastakṛta,* 'made with the hands' (*hasta* = 'hand,' *kṛta* = 'made'), and *priyasakhi,* 'dear friend' (*priya* = 'dear,' *sakhi* = 'friend').

It is evident that each of these three general compounding strategies corresponds to one of the three Categories. The essence of bahuvrīhi compounds being qualitative attribution, these compounds must be regarded as Firsts/[1] insofar as their significative force is concerned. Copulative/aggregative compounds, meanwhile, are clearly Seconds/[2], especially in the earlier language, where these compounds almost always occur as pairings expressed in the dual number. Determinative compounds, finally, involve the synthesis of a complete idea (although not a fully reified Argument) via the association of two simpler ideas, a process typical of the operation of Thirdness/[3], however vague in such non-propositional contexts. That such a transparent manifestation of the Peircean Triad is evident, however unwitting, to investigators like Whitney, who were presumably unfamiliar with Peirce's ontological taxonomy, is compelling evidence of the thoroughgoing and consistent presence of [+3] as the cardinal conditioning constraint of Vedic Sanskrit grammar.

5 Vowel gradation

Like all classical Indo-European languages, Sanskrit in all of its stages of development exhibits a three-place system of root-vowel gradation known as ablaut, which was also a characteristic of proto-Indo-European. In Sanskrit this system is manifest as a "zero-grade" default or base form alongside the so-called "guṇa" and "vṛddhi" grades. This system is not specific to any particular word class; it is manifest in all classes of Sanskrit words other than indeclinables like clitics and adpositions. Table 6 shows a few examples of word stems within the Vedic ablaut system:

Table 6: Sanskrit zero-grade, guṇa, and vṛddhi.

Zero-grade	Guṇa	Vṛddhi
div	*dev*	*daiv*
śuc	*śoc*	*śauc*
vid	*ved*	*vaid*
diś	*deś*	*daiś*
bhṛ	*bhar*	*bhār*

For the first example in Table 6, *div-*, the zero-grade form, in addition to denoting the abstract root of the verb 'be bright, shine,' is also characteristic of the root form in the present tense (*dīvyati*, third person singular present active, *dīvyate*, third person singular present middle) and is also found in the noun *diva-*, 'day, heaven, sky,' a diffuse entity denoting the very essence and source of brightness. By contrast, the guṇa grade stem is found in the noun *deva-*, 'god, divine being, ruler,' which denotes a concrete, tangible thing embodying brightness or brilliance. The guṇa grade is also characteristic of verbal noun forms like the infinitive (*devitum*) and the perfective (*devitvā*, 'having shone'), as well as tenses that may have past or completive senses, such as the aorist (*adevit*, third person singular). It also crops up in usages that require a primary and secondary agent, like the causative (*devayati*, third person singular). Finally, the guṇa grade is characteristic of the conditional (*adevishyat*, third person singular) and of the vowels in reduplicated syllables of the intensive (*dediv-*). The vṛddhi grade is typically not associated with verb forms, but instead is confined to attributives derived from guṇa-grade nouns and to abstract or otherwise conceptually complex nouns embodying such attributes. *Daiva-* as an adjective means 'sacred, heavenly, belonging to the gods,' and as a noun, its meanings include 'divine power,' 'religious offering,' and 'destiny.' Another vṛddhi-grade form, *daivya-*, means 'divine' in its adjectival sense, and signifies 'divine power; fortune, fate' as a noun.

Owing to the extreme complexity of Sanskrit verbs, the general distribution of uses of zero-grade and guṇa-grade stem forms is not always perfectly consistent with those shown for *div-*/*dev-*. The aorist, for example (which, as we have seen, is not strictly a "tense" in the familiar temporal sense proper to modern Indo-European languages), sometimes uses a zero-grade stem, sometimes a special modified form known as a "sigmatic," which incorporates a sibilant, and sometimes presents both zero-grade and guṇa-grade forms. For example, *śuc-*, 'suffer, grieve; shine; purify,' has alternate aorist forms *aśucat* (zero) and *aśocit* (guṇa), while *diś-*, 'point out, show, exhibit,' has the sigmatic form *adikṣat*. The present stem of *diś-*, meanwhile, may be

Table 7: Sanskrit stems in zero-grade, guṇa, and vṛddhi form.

Root	Zero Grade	Guṇa	Vṛddhi
div-, 'be bright, shine'	*diva-*, 'day, heaven, sky'	*diva-*, 'god, divine being'	*daiva-*, 'sacred'
diś-, 'show, point out'	*diś-*, 'direction, cardinal point'	*deśa-*, 'spot, place, country, region'	*daiśika-*, 'local, national, native, provincial'
vid-, 'know, perceive, understand'	*vida-*, 'knowledge, discovery'	*veda-*'knowledge, lore, sacred knowledge'	*vaida-*, 'learned; wise man'
śuc-, 'grieve, shine, purify'	*śuc-*, 'flame, glow; brightness; pain; purity'; *śuci-*, 'honesty; purification; shining; pure; holy'	*śoci-*, 'flame, glow'; *śocana-*, 'grief, sorrow'; *śocis*, 'flame, glow, color, splendor, beauty'	*śauca-*, 'cleanness, purity, honesty'

either *dideṣṭi* (guṇa) or *diśati* (zero), while the present stem of *śuc-* is manifest either as *śocati* (guṇa) or *śucyati* (zero). In general, though, the zero-grade form is almost always available as an optional or preferred form for the present, while the guṇa grade is unfailingly used for verbal nouns like infinitives, and almost always for all verb forms that involve a contingent or secondary agent or action (the causative and the conditional).

The use of the zero, guṇa, and vṛddhi grades with nouns and adjectives, on the other hand, is very consistent. A few examples from the stems given in Table 6 are shown in Table 7.

From examples such as these, in combination with the general tendencies noted from verb paradigms, we may make the following generalizations: (1) the zero grade denotes incipiency, immediacy, "presentness" or the present, and quality; (2) the guṇa grade denotes concreteness, tangibility, and "pastness" or the past; (3) the vṛddhi grade denotes anything of a complex or abstract character associated with a guṇa-grade word. This last bears some further elaboration. In Bonta 2021, we noted:

> [M]ost vṛddhi nouns have the sense of "someone or something that has acquired the characteristic of the guṇa grade," while vṛddhi adjectives have the sense of "some complex, secondary trait that is characterized by the guṇa grade entry." Thus *daiva-*, as we have seen, means 'sacred, heavenly, belonging to or sacred to the gods' (adjectival) and 'divine power,' 'destiny,' and 'religious offering' (substantival). But notions like sacredness, belonging to the gods, religious offerings, etc., all carry such meanings purely by virtue of being assigned them by a speaker community, and by being activities created by cognitive acts. They are alike religious symbols, their sacred nature (as with most such phenomena) conferred by habit of association, and not necessarily as a consequence of any inherent sanctity. Again, *daiśika-*, the vṛddhi grade of *diś-*, invokes a set of properties (being local, or provincial, national, or native) that all arise from

> conscious deliberation. Mere 'places,' 'directions,' or 'locations' are all physical concepts that require no deliberation for their identity to be established as such. A mountain, a river, a lake, a field, etc., are purely natural phenomena, and a *deśa-* is a territory characterized by the same. But *daiśika-* refers to a person who bears the characteristics of belonging, in some sense, to a location or place, including especially polities devised by human thought. Here, too, the notions of habit, cognition, and deliberate human contrivance are paramount. So too with the vṛddhi grade *vaida-*, which endows human beings with the characteristics associated with *vid-*/*ved-*. In vrddhi grade *śauc-*, too, these general notions are evident, inasmuch as 'purity,' 'purification,' 'integrity,' and the like are all traits of human character, defined by moral values dictated by collective deliberation and long-established habits and norms of behavior. (Bonta 2021: 75–76)

It will be appreciated that, in general, the zero grade, guṇa grade, and vrddhi grade correspond, respectively, to Firstness/[1], Secondness/[2], and Thirdness/[3]. The vrddhi grade in particular is seen to encompass notions like habit, thought, and deliberation, all of which reside definitely within the compass of Thirdness.

As one interesting instance of the way in which various strategies for embodying the lens of Thirdness may work in combination, consider again the formation of the intensive/frequentative, which deploys both reduplication/[3] and guṇa/[2]. The meaning of such intensive forms as *de-diś-* (from *diś-*, 'point') and *no-nu-* (from *nu-*, 'praise') is usually of frequent repetition of the action denoted by the root, a notion of reactive or compulsive plurality subsumed by Secondness of Thirdness/[23]. The formation of the intensive requiring a reduplicated syllable that is also "gunated" appears to be an iconic representation of this circumstance. Such interplay of semiotic forms would doubtless be multiplied in a more detailed study of verb conjugation.

6 Phonology

We have shown the semiotic constraint [+3] to be consistently operative paradigmatically and syntagmatically in both the morphosyntactic and lexical domains of Sanskrit grammar. We now consider briefly Sanskrit phonology, including phonotactics. It is often assumed that meaning is irrelevant at the level of phonology, where phonemes and their constituents, distinctive features, lie below the threshold of signification, deriving their force by mere contrastive "otherness." But, as we have already noted with vowel gradation, the demarcation between sound and meaning is by no means hard and fast. We have seen that there is a deep and consistent semiotic purport to vowel gradation in Sanskrit, as also must be the case, however inconsistently, with other languages, including English, wherever vowel gradation or ablaut is a feature of grammar.

Another instance where sounds per se are invested with general (non-lexeme-specific) meaning is the case of so-called "phonaesthemes," specific sequences of

phonemes that seem to be associated with general meanings or classes. In English, for example, many words beginning with the consonant cluster /*str*/ connote long, thin objects or similar notions, e.g., *string*, *strand*, *strip*, *stripe*, *strap*, *strop*, *stretch*, etc. This very peculiar phenomenon serves to illustrate an interesting feature of consonants in general, namely, that they tend to be the primary conveyers of meaning in many languages. This is easily shown to be the case for English; a text with vowels deleted is still readable, but a text with consonants deleted is gibberish. This characteristic of consonants was understood also by Sanskrit grammarians, whose term for 'consonant,' *vyañjana*, means 'manifesting, indicating; indication; allusion; mark, sign' (from *vy-añj-*, to cause to appear, manifest, display). Additionally, as Jakobson and Waugh observe:

> [T]he higher informativeness of consonants is a widespread phenomenon which finds expression in those alphabetic systems limited to signs for consonants only. In children's language the sense-discriminative role of consonants as a rule antedates that of vowels (i.e., oppositions within the consonantal system appear before those in the vocalic system). (Jakobson and Waugh 1979: 88)

However, these observations apply less perfectly to languages like Tamil, with very limited inventories of phonemic consonants, and Mandarin, with its extremely small number of allowable syllable types and very high number of simple CV-type syllables. For either of these or many other typologically similar languages whose consonant inventory is impoverished or whose phonotactic rules do not admit of a large number of possible syllables, a text rendered alphabetically and bereft of vowels would be well-nigh unreadable. In other words, while consonants seem to be, to a much greater extent than vowels, "carriers of meaning," they are so to greatly varying degrees from one language to another, suggesting that the semiotic "weighting" within phonological systems varies greatly. We propose that this, like other aspects of language typology, is conditioned by semiotic lensing.

In the case of Sanskrit (as with many Indo-European languages), a very large number of consonant configurations is permitted, including many consonant clusters like *-str-* and *-nd^{h}r-*. As a result, consonants in Sanskrit play a profound interpretive role, serving as the basis for both verbal and nominal roots whose meaning can be variously instantiated according to the nuance of vowel gradation, as already shown. Thus, for the triplet *div-*/*dev-*/*daiv-*, the root, purely consonantal, is *d-v*, with the general referent of 'light; energy,' or something similar. This fully-realized interpretive power vested in Sanskrit consonants is a Third/[3], in contrast to the qualitative Firsts/[1] that are vowels per se; in combination, they yield individual words, which in this context are Seconds/[2]. To perhaps an even greater degree than English, a Sanskrit passage is intelligible via consonants alone, a syntagmatic trait at the phonotactic level that is conditioned by [+3].

Table 8: Sanskrit stops and affricates.

		[+asp]	[+voice]	[+voice, + asp]
Labial	p	p^h	b	b^h
Dental	t	t^h	d	d^h
Retroflex	t	t^h	d	d^h
Palatal	c	c^h	j	j^h
Velar	k	k^h	g	g^h

As for the consonants themselves, stops and affricates from labial to velar are conditioned by a three-way set of featural oppositions, i.e., [+voice], [+aspiration], or [+voice, +aspiration], resulting in four possible phonemic values at each point of articulation, as shown in Table 8.

As we observed in Bonta 2021:

> From a semiotic standpoint […] there are three features (one the "zero" or unmarked feature, and the other two the additive features [+voice] and [+aspiration]. It would be fatuous to claim that any of the Categories per se are embodied in each of these features, since a) the nature of such features is possibly too vague to admit of any such determination and b) Vedic Sanskrit being a "dead" language, a critical source of data, allophony, which we have made use of in our examination of other languages, is not available. It is sufficient to note that, even at this elemental level, Sanskrit establishes a triadic featural configuration, which triadic contours are suggestive of [3] […] and that this triadic configuration is likely a manifestation of the conditioning feature [+3] in the paradigmatic realm of Sanskrit phonology. (Bonta 2021: 77–78)

7 Conclusions

In Vedic Sanskrit, we see a language whose grammar, in the broadest sense, appears to be conditioned by the semiotic constraint [+3], whereby Thirds, and everything implied by them, including the fulness of Categorial arrays, pervade both paradigmatic and syntagmic configurations from the morphosytax to phonology. These configurations include, but are certainly not limited to:

Morphosyntax:

- Elaborate systems of subject-verb and noun-adjective agreement morphology (syntagmatic)
- Pervasive configuration of noun and verb paradigms according to trichotomies and according to full range of Peircean Categories, both genuine and degenerate, as encompassed by Thirdness (paradigmatic)

Lexicon:
- Triadic canonical structure of many nouns and finite verbs (root-thematic element-affix for vowel-stem nouns and verbs/syntagmatic; and tendency toward three root forms for consonant-stem nouns/paradigmatic)
- Ablaut trichotomy *base form–guṇa–vṛddhi* (paradigmatic)
- Three broad classes of compound formation corresponding to the Peircean Categories (syntagmatic)

Phonology:
- Very large variety of consonants and allowable consonant clusters (syntagmatic)
- Triadic featural configuration of obstruents (paradigmatic)

Rather than give an exhaustive interpretive account of Vedic grammar, this paper has aimed to expand on a methodology for interpretive grammar set forth in previous work. Like all other types of grammar, according to Sapir's famous dictum, interpretive grammars "leak," in that no schema, however well-motivated, can possibly furnish an exceptionless, completely unified account of every jot and tittle of something so complex and organic as the grammar of a human language. But the clear advantage of the interpretive or semiotic method of grammar as we have here proposed is that it provides a unifying description, both across different levels of grammar and among both syntagmatic and paradigmatic phenomena.

The notion that a grammar is configured according to a semiotic Categorial constraint synchronically does not exclude the possibility that such a constraint will not evolve over time; indeed, the evolutionary nature intrinsic to the Peircean symbol requires it. Vedic Sanskrit is clearly already in transition to a different conditioning constraint, away from pure [+3] to something more nuanced, as evidenced by the disappearance or de-emphasizing of many of the traits discussed in this paper (such as the perfect and aorist systems) by the time of the classical language. Already by the time of Vedic, many significant features of grammar of the earlier language – some, perhaps, suggestive of a more robustly consistent [+3], like evidence for three different aorist forms for every verb root[7] – remain only in fragmentary or fossilized forms, arguing for a

7 The three forms of the aorist, still evident in Vedic, are the sigmatic aorist, the root aorist, and the reduplicated aorist. By the time of Vedic, there were still many roots that formed the aorist using more than one of these strategies, but the semantic distinctions among them, as well as their consistent application, had been lost.

different constraint, antecedent perhaps to [+3], out of which the attested Vedic language arose.

One disadvantage with the study of a non-living language is the limited and necessarily artificial data available. With Vedic Sanskrit, as with all "classical" languages, we are seeing only a highly stylized literary form of the language, a form that not only excludes colloquialisms and authentic phonetic data, but also is limited to those words and usages that happen to fall in the context of the primarily liturgical and laudatory content of the Vedic hymns and other religious writings. Some of these excluded grammatical and lexical domains may have significant bearing on the semiotic structure of Vedic yet will remain forever inaccessible.

But the grammatical intricacy of Vedic, as well the vast repository of literature that has survived, make it an ideal test subject for developing further a methodology for the semiotic elucidation of classical languages, a methodology that may prove fruitful beyond ancient South Asia.

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