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# A Brief Survey of Sanskrit Word-Formation Processes

サンスクリット語の語形成プロセスに関する一考察

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## Abstract

Sanskrit is the oldest member of the Indo-Aryan group within the Indo-Iranian branch of the Indo-European language family. The oldest form of Sanskrit known as Vedic, dates from the middle of the second millennium BC. Since the middle of the first millennium BC, the later form of Sanskrit, known as Classical Sanskrit, has been the language of thousands of books and treatises on a variety of literary, religious, scientific, philosophical, and artistic topics. As a result of the use of Sanskrit for more than three millennia on the one hand, and the wide variety of Sanskrit texts on the other, Sanskrit lexical treasure has become one of the richest in the world. What follows is a brief survey of Sanskrit word-formation processes.

Keywords: Indo-Aryan, Sanskrit, Vedic, Word-formation processes

## 1. Vowel gradation

Vowel gradation is not only important in Sanskrit word-formation, but also in Sanskrit inflection. In derivational vowel gradation, the quality of a vowel within a root or stem is changed in order to form new derivatives of the same root or stem. The vowel gradation system of Sanskrit involves three degrees.

weak	<i>a</i>	<i>ā</i>	<i>i</i>	<i>ī</i>	<i>u</i>	<i>ū</i>	<i>ṛ</i>	<i>ṝ</i>
Strong ( <i>guṇa</i> )	<i>a</i>	<i>ā</i>	<i>e</i>		<i>o</i>		<i>ar</i>	<i>al</i>
Stronger ( <i>vr̥ddhi</i> )		<i>ā</i>	<i>āi</i>		<i>āu</i>		<i>ār</i>	

Sanskrit vowel gradation system

Examples: *mṛti-/mṛtyu-/maraṇa-* “death”, *maraṇīya-* “mortal”, *māraṇa-* “murder” (from the root *mṛ-* “to die”); *nīti-* “leadership”, *netṛ-* “leader” (from the root *nī-* “to lead”), etc.

## 2. Consonant apophony

In derivational consonant apophony, a consonant is changed in order to form new derivatives of the same root or stem. The change from *k* to *c*, from *g* and *h* to *j*, and the change of aspirated

consonants to their non-aspirated counterparts in the first syllable of reduplicated stems are the most common types of consonant apophony in Sanskrit. Like vowel gradation, consonant apophony is an important phenomenon in Sanskrit inflection, too. As a matter of fact, one of the most important uses of both vowel gradation and consonant apophony has been the formation of allomorphs. For example, the root *kṛ-* “to do” has two variables, namely the consonant *k* and the vowel *ṛ*, which can appear in the forms of *k* or *c*, and *ṛ*, *ar* or *ār* (and even *ri*, *ṛ* or *ur*) in both inflection and derivation, e.g. *kṛta-* “done”, *karman-* “deed”, *kāruka-* “doer”.

### 3. Reduplication

Reduplication of the verbal root is one of the methods of producing verbal stems. Reduplication is a process in which the first syllable or part of the first syllable of a verbal root is repeated, exactly or with a slight change, in the beginning of the same root. In Sanskrit, reduplication can be seen in group III present stems, perfect stems, desiderative stems, intensive stems, and rarely aorist stems. Examples: *mā-* “to measure”, present stem: *mīmā-*, perfect stem: *mamā-*; *bhṛ-* “to carry”, present stem: *bibhṛ-*, intensive stem: *baribhṛ-*; *pac-* “to cook”, desiderative stem: *pīpaksa-*; *kṣip-* “to throw”, aorist stem: *cikṣip-*. Reduplicated verbal stems could then be used in word-formation, e.g. *kṛ-* “to do”, desiderative stem: *cikṛṣa-*, hence *cikṛṣā-* “desire to do”.

### 4. Accent shift

In a few cases, a new word category is formed by shifting the accent from one syllable to the other. For example, in adjectives of the type of *yaśás-* “splendid”, with the accent on the second syllable, if the accent is shifted to the first syllable, the resulting form will be a noun: *yáśas-* “splendour”. An interesting similar phenomenon in Vedic leads to a subtle semantic distinction in agent nouns: *dātár-* “(one-time) giver, donor”, but *dā́tar-* “(always) giver, donor”.

### 5. Affixation

Suffixation is much more productive than prefixation in Sanskrit. For example, from the root *nam-* “to bend, to bow” we can have *namata-* “bent, crooked”, *namana-* “bending, bowing”, *namanīya-* “venerable”, *namas-* “bow, adoration”, *namasya-* “to pay homage, to worship”, *namra-* “humble, submissive”, *nāmya-* “bendable, flexible”, etc.

Most of the Sanskrit prefixes came into existence through the grammaticalization of adverbs. These prefixes are attached to verbs or nominal derivatives of verbs and, in most cases, indicate spatial relations. For example, from the root *vad-* “to speak” we can have *atīvad-* “to speak loudly”, *anuvad-* “to repeat”, *pratīvad-* “to answer”, *abhivad-* “to salute”, *pratyabhivad-* “to return a salute,

to greet in return”, *vivad-* “to contradict, to oppose”, etc.

The Sanskrit infix *-n/-na-* can only be seen in group VII present stems, and thus it is not considered as a derivational infix, e.g. *yuj-* “to join”, present stem: *yuñj-/yuna-*.

## 6. Compounding

Sanskrit compounds can be classified in the following main types:

**A. Coordinative or *dvandva* compounds.** These compounds are made up of two or more nominal stems which have a coordinate relationship, e.g. *hasty.aśva-* “elephant and horse”, *deva.gandharva.manuṣyoraga.rākṣasa-* “gods, *gandharvas* (= heavenly spirits), men, snakes and *rākṣasas* (= demons)”.

**B. Dependent or *tatpuruṣa* compounds.** These compounds are made up of two or more members of which the last one is the head. There is a case relationship between the head and its dependent(s), e.g. *rāja.putra-* “son of a king”, *deva.senā-* “host of gods”, *jaya.kārin-* “gaining a victory”.

**C. Descriptive or *karmadhāraya* compounds.** A subtype of dependent compounds in which the first member modifies the second one. The relation of the first member to the second one is attributive, adverbial, or appositional, e.g. *priya.sakha-* “dear friend”, *ajñāta.yakṣma-* “unknown disease”, *jala.krīḍā-* “playing in water”, *ulūka.yātu-* “owl-demon, a demon in the shape of an owl”.

**D. Numerative or *dvigu* compounds.** A subtype of dependent compounds in which the first member is a number, e.g. *tri.loka-* “the three worlds”, *pañca.dhātu-* “the five elements”.

**E. Possessive or *bahuvrīhi* compounds.** The dependent, also descriptive and numerative, compounds are sometimes used adjectivally, agreeing in gender, case and number with the noun they modify. In this case, they are called possessive compounds. For example, the dependent compound *rāja.lakṣman-* “token of a king”, can also be taken as a possessive compound, meaning “having the token(s) of a king”. Other examples: *hiranya.ratha-* “chariot (made) of gold (dependent compound); having a chariot (made) of gold, having a golden chariot (possessive compound)”, *tri.kāla-* “the three epochs, the three tenses [i.e. past, present, future] (dependent compound); having three epochs (possessive compound)”.

**F. Adpositional compounds.** The first member of the compound is an adposition, e.g. *antar.hasta-* “in the hand (adjective)”, *adhas.pada-* “under foot, under the feet (adjective); the place under the feet (noun)”.

**G. Indeclinable or *avyayībhāva* compounds.** These compounds always have the same form and are never declined. Most of these compounds are the adpositional compounds frozen in a case

form, usually accusative singular neuter, e.g. *yathā.kāmam* “according to wish”, *abhi.pūrvam* “in regular order, successively”.

Compounding became so productive and widespread in Classical Sanskrit that sometimes very long compounds were made, consisting of multiple words put together in a string. In such cases, only the final member of the compound received case inflection. The equivalents of such long compounds in other languages are syntactic phrases, e.g.

*taj.jalāśaya.samnikṣṭa.nagara-*

“a city near that pond”

*tad.bhaya.samkṣubhita.hṛdaya-*

“with a heart violently shaken from the fear of that”

*ārūḍha.trāsa.druta.loka.datta.mārga-*

“a path obtained from the escape of fear-stricken people”

*dūrāvarūḍha.giri.nirjhara.skhalita.vāri.janita.kardama.magnāika.caraṇa.vāikalya-*

“the defect of a foot sunk in the mud caused by the water dropped from a mountain waterfall falling down from afar”

In a few cases, the meaning of a compound cannot be guessed from its constituent members: these are known as opaque compounds, e.g. *iti.hāsa-* “story, legend” (from *iti* “so”, *ha* “indeed”, and *āsa* “it was”), *kim.vadanti-* “rumour” (from *kim* “what”, *vadanti* “they say”).

The wide use of the above-mentioned word-formation processes for more than three millennia has contributed a large number of synonymous words to Sanskrit lexical treasure, each of which is suitable for a specific context. Here are some Sanskrit equivalents for *gaja-* “elephant” with their literal meanings: *an.eka.pa-* (not drinking once), *dantin-* (tusked), *dīrgha.vaktra-* (long-faced), *dvi.pa-/dvi.pāyin-* (drinking twice), *dvi.rada-* (two-tusked), *hastin-* (having a hand or trunk), *kareṇu-/karin-* (having a doer, i.e. a hand or trunk), *lamba.karṇa-* (having pendulous ears), *matam.ga-/mātam.ga-* (roaming at will), *radin-/radanin-* (tusked), *stambe.rama-* (delighting in shrubs).

I would like to finish this brief survey with a short list of some scientific concepts and modern technological products together with their Sanskrit equivalents. This will reveal the continuity of Sanskrit word-formation processes, esp. compounding, to the present time. The literal meanings of the Sanskrit words are given in parentheses:

Academy: *vidyā.laya-* (abode of knowledge)

Airplane: *ākāśa.yāna-* (sky mover)

- Aquarium: *jala.cara.prāṇi.saṁgraha-* (container for living water goes)  
Archaeology: *purāṇa.vastu.śāstra-* (science of ancient objects)  
Autobiography: *ātma.vṛtta.kathana-* (narration of one's life)  
Bomb: *agnyastra-* (fire weapon)  
Geology: *bhū.garbha.śāstra-* (science of the interior of the earth)  
Geometry: *rekhā.gaṇita-* (line counting)  
Glasses: *upa.netra-* (on eyes)  
Microscope: *sūkṣma.darśana.yantra-* (instrument for seeing tiny [things])  
Museum: *durlabha.vastu.saṁgraha-* (collection of rare things)  
Technology: *śilpa.kalā.vijñāna-* (knowledge of skill and art)  
Telephone: *dūra.bhāṣaṇa.yantra-* (far talking instrument)  
Telescope: *dūra.darśana.yantra-* (far seeing instrument)  
Thermometre: *uṣṇa.māpana.yantra-* (heat measuring instrument)

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