

Bernhard Hurch
(Editor)

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Reduplication in the Vedic verb: Indo-European inheritance, analogy and iconicity¹

Leonid Kulikov

1. Preliminary remarks

Vedic, the language of the oldest well-known Indian religious tradition and the oldest attested Indo-Aryan language (the earliest texts are dated to the second half of the second millennium B.C.), exhibits an extremely rich and quite intricate system of reduplicated verbal formations. Old Indo-Aryan seems to preserve the original Proto-Indo-European system of verbal reduplication better than any other ancient Indo-European language, developing further a few marginal and rare types.

There are at least five verbal formations which use reduplication:

- perfect (cf. *ṽṛdh* ‘grow’ – *vavárdha* ‘has grown’),
- reduplicated present (class III in traditional notation, cf.: *dā* ‘give’ – *dādāti* ‘gives’, *gā* ‘go’ – *jígāti* ‘goes’),
- reduplicated (causative) aorist (cf. *jan* ‘be born, generate’ – *ájjanat* ‘generated’),
- desiderative (cf. *dā* ‘give’ – *didāsati* ‘(s/he) wishes to give’) and
- two types of intensive (denoted as ‘intensive I’ and ‘intensive II’ in Lubotsky 1997a) – without the suffix *-yá-* and with this suffix (cf. *yam* ‘hold’ – *yamyamīti* ‘holds (repeatedly)’; *mṛj* ‘wipe, cleanse’ – *marmṛjyáte* ‘wipes, cleanses (repeatedly)’).

Some of these formations are inherited from Proto-Indo-European, as the evidence from other Indo-European branches clearly shows, whereas some others are likely to represent Indo-Iranian or Indo-Aryan innovations.

Four of the five formations have been the subject of monographic study: perfect in Kümmel 2000, reduplicated aorist in Bendahman 1993, intensive in Schaefer 1994, desiderative in the unpublished thesis Heenen 2002 (and see also the important paper Insler 1968). A monographic description of the reduplicated present (which is perhaps the most intriguing member of the

group) remains a desideratum, however,² and no systematic treatment of the Vedic verbal reduplication types in general has appeared so far either.³

It is of course impossible to give an exhaustive description of the Vedic verbal reduplication within a short article. Rather, I will present a survey of the reduplication types, attested, above all, in the oldest Vedic texts, *Ṛgveda* (RV) and *Atharvaveda* (AV), summarizing the main relevant facts and focusing on the most interesting formal and semantic oppositions.

2. Formal parameters of reduplication

In order to systematize the types attested in the Vedic verb, we first have to describe and catalogue the relevant formal parameters of reduplication (a good survey can be found, for instance, in Macdonell 1916: 123).

2.1. Reduplication consonant (C_R)

The rules for the reduplication of the root consonant are almost the same for the main reduplication types. They can be briefly summarized as follows:

- aspirates lose their aspiration (Grassman's law) and velars are (mostly) palatalized to *c* or *j* ($k(h) \rightarrow c$; $g(h), h \rightarrow j$), cf. *dhā* 'put' – *dādḥāti* 'puts', *gam* 'go' – *jagam-*, *khan* 'dig' – *cakhan-*, etc.;⁴
- only the first (anlaut) consonant of the root is reduplicated (cf. *prā* 'fill' – *paprāu* 'has filled'), except for roots beginning with a *sT*-cluster (*T* = an obstruent stop), where the stop is reduplicated (cf. *sthā* 'stand' – *tīṣṭhāti* 'stands').

2.2. Reduplication vowel

2.2.1. Root-dependent vs. root-independent reduplication vowel

There are two main techniques which determine the quality of the reduplication vowel: it either depends on the root vocalism⁵ or is root-independent.

In the case of the root-dependent reduplication vowel, the reduplication syllable copies the root vocalism

- either in its full grade ('intensive reduplication'), cf. *yam* 'hold' – *yaṃyamīti*, *mṛj* / *marj* 'wipe, cleanse' – *marmṛj-*;
- or in the weak (zero) grade, cf. *cyu* 'move, shake' – pf. *cucyuvé* 'has moved, has shaken', *diś* 'point (out)' – pres. *didiś-*, *dideś-*.

Some verbal formations exhibit a root-independent reduplication vowel. In fact, no reduplicated formation applies this technique across the board, since the *ū* and *ī* roots always copy the root vocalism in the reduplication syllable, which can be considered as an instance of vowel harmony, or vowel assimilation (see e.g. Meillet 1903: 215).⁶ The rules determining the choice of the reduplication vowel for the 'non-harmonizing' roots ($V \neq \bar{u}, \bar{i}$) can be briefly summarized as follows (for details, see Section 3):

- (i) for perfect: *a* or *ā*;
- (ii) for reduplicated aorist and desiderative: *i* or *ī*;
- (iii) for reduplicated present: same pattern as under (ii) (aorist and desiderative), except for some *ā*-roots, which reduplicate with *a* instead of *i* (cf. *dā* 'give' – *dādāti* 'gives').

2.2.2. Lengthening of the reduplication vowel

The reduplication vowel becomes long in aorists (cf. *budh* 'wake' – *abūbudh-*) and some perfects (cf. *vṛj* 'turn; prepare, lay' – *vāvṛje* 'has been laid'). In aorists this phenomenon is determined by the quantity of the root syllable: the reduplication vowel remains short before a long root syllable and becomes long before a short root syllable. By contrast, in perfects it is largely unpredictable, being caused by a phonetic law operating in the prehistoric period (lengthening before the root-initial laryngeal) and subsequent analogical developments; see Section 4.3.2 below.

2.3. Other morphological devices

Other morphological devices used in the reduplicated formations include a connecting vowel between the reduplication syllable and the root in some intensives, accompanying suffixes (*-sa-* in desideratives, *-yá-* in intensives), the thematic vowel *a* before the endings (accordingly, the formations can be thematic or athematic) and the type of inflexion. For reasons of space, I will not discuss in detail the relevant morphological techniques (morphemes), but only mention some of them in the table below.

3. Reduplication paradigm

The morphological techniques described above are summarized in Table 1, which represents a kind of ‘reduplication paradigm’ and shows how the reduplication vowel depends on the root vowel:

Table 1. Reduplication paradigm

(*R* stands for *l, m, n*)

	root vowel				other morphological devices
	ǎ	r	ĩ	ũ	
<i>i</i> -present	<i>i</i>	<i>i (a)</i>	<i>i</i>	<i>u</i>	only thematic
<i>a</i> -present	<i>a</i>				thematic/athematic
perfect	ǎ		ĩ	ũ	perfect endings
aorist	ĩ				thematic/athematic
desiderative	<i>i (ĩ)</i>			<i>u</i>	suffix <i>-sa-</i>
intensive	ā, aR	ar	<i>e</i>	<i>o</i>	I: – II: suffix <i>-yá-</i>

There are also a few hybrid formations, such as the perfect with intensive reduplication, or ‘intensive perfect’⁷ (cf. *nu* ‘roar’ – *nonāva* ‘roars (repeatedly)’; see Schaefer 1994: 45; Kümmel 2000: 283), and perfect with present endings / present derived from perfect stems (cf. *jar* ‘become awake’ – *jāgár-ti* ‘watches’, *dī* ‘shine’ – 3pl.act. *dīdy-ati* ‘(they) shine’; see Kümmel 2000: 191–194, 227–230).

For the sake of convenience, I have made a distinction between two present types, differing in the reduplication vowel for *a*-roots (*i* or *a*). These two subtypes do not of course form two different ‘present tenses’. The choice of the reduplication vowel cannot be predicted by the shape of the root; for a diachronic explanation of this split of one single present formation see Section 4.3.1 below.

This paradigm represents a maximum set of reduplication types, which a root can theoretically form; in most cases only some of these types can be derived from a given root. The paradigm is illustrated in Table 2 by the reduplication formations made from a few sample roots (I quote 3sg.act. forms if attested, otherwise bare stems; late (i.e. post-Vedic) formations are given in square brackets):

Table 2. Reduplication paradigm for sample roots

	<i>han</i> ⁸ 'hit'	<i>hā</i> 'leave/go' ⁹	<i>bhī</i> 'fear'	<i>yu</i> 'separate'	<i>tī</i> 'cross'
<i>i</i> -pres.	<i>jīghn-</i>	<i>jīhī-</i> 'go'			
<i>a</i> -pres.	–	<i>jāhā-ti</i> 'leave'	<i>bibhī-</i>	<i>yuyo-ti</i>	<i>tītr-</i> RV
perfect	<i>jaghāna</i>	<i>jahau</i>	<i>bibhāya</i>	<i>yuyāva</i> JB	<i>tatār-a</i>
aorist	[<i>ajīghanat</i>]	–	<i>bīb-</i> <i>haya-</i>	<i>yūyo-</i>	<i>ātītara-</i> AV
desid.	<i>jīghāmsati</i>	<i>jīhāsa-</i> ŚB	–	<i>yūyūṣa-</i> RV	<i>tītīrṣa-</i>
intens.	<i>jañghanti,</i> <i>ghānighn-</i> ¹⁰	–	–	<i>yóyuv-</i>	<i>tartarīti,</i> <i>tārītr-</i>
	[<i>jañghanya-</i>]			–	–

Tables 1–2 clearly show how often different types share the same reduplication syllable (see already Delbrück 1874: 101). Thus, the reduplication vowels for *i*- and *u*-roots are *ī* and *ū* in all reduplicated formations except intensives; the reduplication syllable for *a*-roots has *ī* in the *i*-present and reduplicated aorist. Of course, in most such cases, the grammatical characteristics of the corresponding formations can be identified by other morphological devices, such as suffixes (cf. desiderative *-sa-*) or inflexion type (for instance, perfect endings normally can only be taken by perfect stems). Yet there are some overlaps between paradigms where grammatically ambiguous forms can be found.

For instance, the active injunctives 2sg. *tūtos* (RV 6.26.4) and 3sg. *tūtot* (RV 2.20.5, 2.20.7), both made from the root *tū* 'be strong', can belong either to the perfect or to the reduplicated aorist (see Macdonell 1910: 375, fn. 2; Lubotsky 1997a: I, 600; Kümmel 2000: 220–221). Forms built on the reduplicated stem *dadh-* (root *dhā* 'put') may be either perfects or presents (cf. middle participle *dādghāna-* 'putting' or 'having put'), unless the inflexion unambiguously identifies the type of formation. The non-indicative forms made from the stem *yuyo-* (*yu* 'separate, keep away') may belong either to the reduplicated present or to the perfect; see Bendahman 1993: 164–165; Kümmel 2000: 401–405.

The overlaps between the reduplication types explain why they often influence (and borrow from) each other. A full list of such ambiguous forms would be extremely useful both for better understanding the origins of Vedic verbal morphology and for an adequate philological analysis of several text passages.

4. Reduplication in a diachronic perspective

4.1. General remarks

Thus far I have only been concerned with a purely synchronic formal scheme. In what follows, I will briefly summarize the main ideas, hypotheses and problems relating to the origin and history of these synchronic types. Some of these ideas have been adopted by scholars and have been common knowledge already since the beginning of Indo-European and Vedic studies; others are still the subject of debate.

It is of course impossible to discuss (or even mention) all problems related to the origin of individual reduplicated types in a short survey. Thus, I will not enter into a discussion of the original accent placement and accent shifts in various reduplicated formations. Nor will I investigate the (largely neglected) issue of the rise and spread of vowel harmony in the reduplication syllable of the formations built on *i*- and *u*-roots (which I call 'harmonizing roots' here).¹¹ I will also abstain from discussing numerous suggestions on possible borrowings of reduplication types (vowels) from one formation by another (such as those mentioned in Section 4.3.1 below), most of which are very difficult to prove or to falsify.

Several details of the reconstruction can only be obtained on the basis of a comparison with other Indo-European branches, which I will skip for reasons of space; thus, I will not discuss at length evidence from Greek, Latin, Hittite, Slavic, and other Indo-European languages, only briefly mentioning them in a few cases; for details and bibliography, see, for instance, Szemerényi 1970: 248–250, 266–276 ≈ 1996: 268–270, 285–294; Sihler 1995: 487–490, 495–496, 507–508, 525, 573, 579–580.

4.2. Reconstructed reduplication types

The original reduplication types can be tentatively reconstructed as shown in Table 3 (C_R = reduplication consonant, C_1 = first root consonant, C_2 = the root consonant which follows the root vowel *e):

Table 3. Inherited reduplication types and innovations

<u>Indo-European inheritance</u>	
present	*C _R é- (3pl.act., act.part.) / *C _R i- (< *C _R ²- < *C _R -(C ₁ ...)) (other forms)
perfect	*C _R e-
intensive	*C _R eC ₂ -
desiderative	*C _R i- (*C _R u- for u-roots)
<u>Indo-Aryan innovation</u>	
aorist	C _R ī- (C _R ū̄- for u-roots)

4.3. Indo-European inheritance and innovations

4.3.1. *a-* vs. *i-* presents¹²

The problem of the original reduplication vowel (*a* or *i*?) in the class III presents derived from *ā*-roots has puzzled many Indo-Europeanists (see e.g. Delbrück 1874: 104–105; Meillet 1903: 215; Adrados 1963: 683–684; Tischler 1976: 16, with fn. 41–42; Sihler 1995: 487). On the basis of the evidence from Greek, where *i* (*t*) appears almost without exception, some scholars suggested that, as in Greek, all presents had *i*, and *a* was secondarily introduced, supposedly from the perfect stems (M. Leumann 1952: 27; Emeneau 1958: 410). The reason for such an innovation remains unclear, however. By contrast, Hirt (1928: 9) suggested that in many cases *i* was secondarily introduced under the influence of *i* roots – again, without offering any explanation.¹³

In my view, most attractive is Kortlandt's (1987: 222; 1999) solution of the problem (see also Rasmussen 1984: 124 ≈ 1987: 112; 1988: 125; 1997: 252–253). According to Kortlandt, the reduplication vowels *a* and *i* go back to the full and zero grade of the reduplication syllable, which are reconstructed for Proto-Indo-European as *C_Re- (thus the same as in the perfect) and C_R-, respectively. The full grade appeared in the 3pl. active form and active participles, the zero grade in the rest of the paradigm, for instance:

**dheH-* 'put': 3pl.act. **dhé-dhH-nti* – 3sg.act. **dh-dhéH-ti*

Apparently, zero yielded a difficult sequence of consonants (*C_RC₁...), usually a geminate (**pp*..., **tt*..., **mm*..., **ddh*..., etc.). A mere simplifica-

tion into one single consonant $*C_1...$ (which was not rare with such clusters) would deprive the reduplicated present of its morphological characterization; for that reason the cluster was resolved into $*C_{Ri}C_1...$, where i may represent the phonetic reflex of $*a$, 'shwa secundum' (F. Kortlandt, A. Lubotsky, p.c.),¹⁴ a non-phonemic vocalic sound, which appears as the zero grade of the PIE $*e$ in certain phonological contexts and yields i not only in Indo-Iranian (as ə ['shwa primum'] did), but (probably) already in Proto-Indo-European.¹⁵ In our case, it yielded i except in reduplication syllables for u -roots, where it was "colored" by the root vocalism (again, perhaps already in Proto-Indo-European; see Güntert 1916: 100–107).

Most reduplicated presents have generalized one or another grade of the reduplication syllable, i.e. a or i (see below). Thus, instead of the expected 3sg.act. $**di-dhā-ti$ (root $dhā-$ 'put'), we find 3sg.act. $dā-dhā-ti$, with the reduplication vowel a , taken from 3pl.act. $dā-dh-ati$.

Yet, the original distribution can still be seen in a few verbs, which thus represent conclusive evidence for Kortlandt's reconstruction (see Kortlandt 1999). One such instance is sac 'follow', which preserves the alternation of the reduplication vowel within the paradigm: 3pl.act. $sūśc-ati$ '(they) follow' ~ 3sg.act. $sśśak-ti$ '(s/he) follows' (with secondary accent retraction, probably triggered by the influence of the 3pl.act. form). Another piece of evidence is the verb $hā_{1/2}$, originally one single lexical unit (root), which has split into two verbs in Vedic: $hā_1$ 'leave', with the present derived from the a -stem (3sg.act. $jāhā-ti$ '(s/he) leaves', 3pl.act. $jah-ati$ '(they) leave' etc.), and $hā_2$ 'go (forth)', with the present derived from the i -stem (3sg.med. $jīhī-te$ '(s/he) goes (forth)'). The present $jīgāti$ ($gā$ 'go') has the reduplication vowel i throughout the paradigm, but a is preserved in the fossilized participle $jāgat-$ '(living) world' (lit. 'going; [everything] that moves'); see Thieme 1929: 54; Narten 1972.

There are two more reduplicated presents which preserve traces of both grades, but the original distribution of the forms has been blurred. The verb $rā_1$ 'give' has generalized a in the reduplicated present, which is attested almost exclusively in the middle diathesis (2sg.inj. $rārūthāh$, 3sg.subj. $rārāte$, 2pl.impv. $rārīdhvam$, part. $rārāṇa-$), except for one isolated active form, 2sg.impv. $rirīhi$, which may have preserved a different grade due to the fixed character of the sacral formulae where this form occurs ('give us [wealth, rain, cattle, etc.]'). The reduplicated present of $vaś$ 'desire' is attested only twice: 2sg.act. $vavākṣi$ (RV 8.45.6), 3sg.act. $vivaṣṭi$ (RV 7.16.11) (see Joachim 1978: 151).¹⁶

4.3.2. Reduplication vowel of the perfect

The original quality of the reduplication vowel of the perfect (PIE **e* > Indo-Iranian *a*) is richly supported by the evidence from many Indo-European branches, as well as by the palatalization of the gutturals (velars) in Indo-Iranian (*ca-* < **ce-* < **ke-* etc.).

The secondary length has expanded from a few forms where it results from the regular phonetic development of the vowel before a laryngeal, such as *mṛj* 'wipe, cleanse' – 3sg.med. *māmṛjé* 'is wiped, is cleansed' < **Hme-Hmṛǵ-*, *vṛj* 'turn; prepare, lay' – 3sg.med. *vāvṛje* 'has been laid' < **Hṛe-Hṛǵ-*, *vṛdh* 'grow, increase': 3pl.act. *vāvṛdhūr* 'they have grown, increased' < **Hṛe-Hṛldh-* (see Krisch 1996: 24–29; Jamison 1999).

Already in the prehistoric period, the long reduplication was extended to some roots without an initial laryngeal, due to several heterogeneous factors. First of all, there is a general tendency to generalize the long vowel before a short root syllable, whereas before a long root syllable, i.e. in 'strong' forms (= most of the singular active forms of the paradigm¹⁷), the short vowel is preferred, cf. *vṛdh* 'grow': 3pl.act. *vāvṛdhūr* – 3sg.act. *vavārdha* (see Renou 1924; Kümmel 2000: 21–22, 469–473 et passim). As in the case of reduplicated aorists (see below), the reason may be of a phonetic and/or prosodic nature, representing the tendency to alternate between long and short vowels in metrical texts. Furthermore, the long reduplication seems to be preferred by roots of certain structures, particularly, in the perfects of *CarC* and *va(R)C* roots, such as *kṛp* 'fit, arrange' – *cā-kṛp-*, *vañc* 'move (waveringly)' – *vā-vak-*, *van* 'like' – *vā-van-* (see Kümmel 2000: 21–22). Finally, there was a tendency to use the long reduplication vowel for perfects which are mostly or exclusively employed with present resultative (stative) meaning, such as *jar* 'become awake' – *jāgāra* 'is awake' (← 'has awoken'), *dī* 'shine' – *dīdāya* 'shines'; see Delbrück 1888: 297; Kümmel 2000: 21–22, with fn. 10, 191–194, 227–230 et passim. Moreover, there are even a few perfects sporadically using the long reduplication in order to emphasize the present (stative) meaning as opposed to the preterital (PRET.) usages of the perfect of the same root, cf. *tan* 'stretch': *ta-tāna* 'has stretched (PRET.), stretches (PRES.)' (cf. (1)) ~ *tātāna* 'stretches (PRES.)' (cf. (2)), *vṛt* 'turn': *vavarta* 'has turned (PRET.), turns (PRES.)' ~ *vāvarta* 'turns (PRES.)' (Kümmel 2000: 21–22, 208–211, 462–469):¹⁸

(1) RV 10.178.3)

yáḥ śávasā páñca kṛṣṇāḥ ... tatāna ...
 who:NOM force:INS five peoples:ACC stretch:PF:3SG.ACT
 ‘... who has stretched with his force across five peoples.’

(2) (RV 1.105.12)

satyám tātāna sūryaḥ
 truthfully stretch:PF(-PRES).3SG.ACT sun:NOM
 ‘The sun truthfully stretches.’

4.3.3. Reduplicated aorist

The reduplicated (causative) aorist is an Indo-Aryan innovation, created as a formation corresponding to the present causatives with the suffix *-áya-*. Historically, it probably goes back to the imperfect of the reduplicated present, and the source of this formation could be just one single (but very frequent) reduplicated present, **(a)jjijanat* ‘generated’ (or athematic **(a)jjijan*, with secondary thematicization), made from the root *jan* ‘be born; generate’, as M. Leumann (1962) has argued; see also Bendahman 1993: 121–126; Hardarson 1997: 96–99; Rasmussen 1997: 257. All non-harmonizing roots show the reduplication vowel *ī*, with the exception of two non-causative aorists, *ápaptat* ‘flew’ (root *pat* ‘fly’, for which also the regular causative aorist with the *i*-reduplication is attested, *ápīpatat* ‘made fly’) and *ávocat* (< **He-ye-uk^h-et*, where the diphthong **eū* yields *o*) ‘said’ (root *vac* < **uek^h-* ‘say’); for a few other possible members of this non-causative group, see Bendahman 1993: 194–205. Probably, *i* has been generalized because 3pl.pres.act. (**jajanati* ‘(they) generate’ etc.) belongs to the lost part of the paradigm (present tense properly speaking). Once the reduplicated aorist was associated with causatives, the vocalic timbre *i* could be reinterpreted as a marker of the causative meaning, in order to differentiate this formation from the imperfects of the reduplicated presents. This may also explain why the non-causative aorists *ápaptat* and *ávocat* have generalized *a* instead of *i*.

As for the lengthening of the reduplication vowel, it could be analogically triggered by the lengthened grade root in the causative present, cf. *pat* ‘fly’: present causative *pātáyati* ‘makes fly’ – aorist causative *-pīpatat*, so that the stems of both formations follow the same metrical scheme: “long syllable + short syllable” (Jamison 1983: 217–218), probably supported by the tendency to alternate long and short vowels in metrical texts (for a general discussion, see Bendahman 1993: 119–120).

4.3.4. Intensive

The intensive can be traced back as far as Proto-Indo-European (see Schaefer 1994: 48–71). The reduplication syllable shows full grade ('guṇa') for sonant roots (i.e. *e*, *o*, *aR* < Indo-Iranian **ai*, **au*, **aR* in the intensive stems made from the roots of the structure *Ci(C)*, *Cu(C)*, *CaR(C)*, respectively) and lengthened grade for *CaC* roots: *tij* 'be sharp' – *té-tij-*, *nu* 'roar' – *nó-nu-*, *dhṛ* 'hold' – *dár-dhṛ-*, *nad* 'sound' – *ná-nad-*; for details, see Schaefer 1994: 22–35, 52–71; Lubotsky 1997b: 559–561.

4.3.5. Desiderative

The Indo-European origin of the Indo-Iranian desiderative is confirmed by the parallel formation in Celtic (Old Irish), even in spite of the lack of similar formations in other branches (see, for instance, Emeneau 1958: 410–415; Szemerényi 1970: 266–269 ≈ 1996: 285–288; Sihler 1995: 507–508; Rasmussen 1987: 113; 1997: 254–256). The reduplication vowel is *i* for non-harmonizing ($V \neq \check{u}, \check{i}$) roots, except for a few roots which have long reduplication (*yabh* 'copulate' – *yī-yapsa-*, *tṛ* 'cross' – *tū-tūrṣa-*), partly reflecting the initial laryngeal, partly due to some analogical developments; for details, see Emeneau 1958: 414; Heenen 2002: 43–44.

Alongside the large class of desideratives with the regular *i/u*-reduplication, there is a small group of desiderative stems of the type $(C)\check{i}Csa-$, made from $(C)\check{a}C$ roots (sometimes with an idiomatic semantic shift), cf. *āp* 'obtain' – *īpsa-*, *dabh* 'deceive' – *dīpsa-*, *bhaj* 'share' – *bhikṣa-* 'beg', etc. Historically, these stems go back to reduplicated formations (*dīpsa-* < **dī-dbh-sa-* etc.), but synchronically they are not considered reduplicated any longer; see Heenen 2002: 35–38.

5. Semantics and iconicity of the reduplicated formations

The semantics of verbal reduplication is particularly intriguing, as it is probably the only morphological device which can be treated as iconically motivated by the meaning. No wonder it has been subject of numerous speculations from the very beginning of Indo-European comparative grammar. However, the only verbal formation where the iconic character of the reduplication is unquestionable is the intensive (note also the type of the intensive reduplication, which copies the root in the most complete and

transparent fashion). Both the intensive and frequentative meanings (which are ascribed to this formation in Vedic)¹⁹ can be readily associated with the repetition (redoubling) of the root.

Much more questionable is the iconicity of the other reduplicated formations.

5.1. Present

The aspectual meaning of the reduplicated present has caused heated debate among Indo-Europeanists (for a survey, see Giannakis 1997: 11–20). Neogrammarians and their followers (Delbrück, Brugmann, Debrunner, M. Leumann) usually ascribed intensive, iterative, durative and similar meanings (actionalities, or Aktionsarten) to this formation. By contrast, another group of scholars, among whom French linguists prevailed (Vendryes, Meillet, Brunel, Specht), saw perfective, terminative or punctual meaning(s) here – which, in a sense, is nearly the opposite of the former. Holt (1943) determined the meaning in question as “aspect évolutif”, i.e. basically durative with no terminus of the process – which approximately corresponds to what might be called ‘atelic’ in modern terminology (see, for instance, Dahl 1981).²⁰

All these statements are extremely difficult to prove or refute. Although they all hold true at least for some part of the reduplicated presents, numerous counter-examples can easily be found, and thus neither of the hypotheses is supported by the bulk of the material.

Here I would like to draw attention to quite a different solution to the problem, which seems most attractive to me. It has appeared in an article by Ul'janov (1903), published about 100 years ago in Russian – and probably for that reason largely forgotten or neglected (one of the few exceptions is the Vedic grammar by Elizarenkova (1982); see also Elizarenkova 1961). The author claims that the common semantic denominator shared by many verbs which form reduplicated presents is the divisibility of the corresponding situation into (elementary) micro-situations. To use a physical metaphor, all these situations are quantized; in other words, the corresponding activities can be represented as series (chains) of elementary micro-activities: drinking (Ved. *pībati*) as a series of sips, smelling (Ved. *jīghrati*) as a series of sniffs, going (Ved. *jigāti*) as a series of steps.²¹ The same holds for many other verbs which form reduplicated presents, such as *drive* (*cattle*) (Ved. *ījate* < PIE **H₁-H_ǵ-e-*), *chew* (Ved. *bābhasti*), *laugh* (Ved. part. *jākṣat-*), *bellow* (Ved. *mimāti*), *sharpen* (Ved. *śiśāti*).

There remain a few reduplicated presents whose meanings cannot be taken as divisible, in particular, a few undoubtedly old formations, clearly inherited from Proto-Indo-European, cf. *dhā* 'put' – *dād̥hāti*, *dā* 'give' – *dādāti*. Nevertheless, Ul'janov's explanation seems to offer the best coverage of the bulk of the Indo-European reduplicated presents and prompts a possible scenario for the development of this morphological type. Perhaps, the expansion of reduplicated presents has begun from a few frequent verbs denoting divisible situations (such as, for instance, *pībati* or *jigāti*), with the subsequent attraction of verbs with similar semantics. (Note that the divisibility is an inherent feature of the verb (predicate), which does not make different aspectual usages impossible: iterative, durative, terminative, etc.) Later on, some other meanings could be (secondarily) associated with these presents, so that, from the semantic point of view, this formation has become less homogeneous.²² In particular, the above-mentioned atelic analysis (in other terms, "ziellose Aktivität", "aspect évolutif") and/or iterative interpretation seem very likely for a number of reduplicated presents, especially for those opposed to non-reduplicated presents. In such cases the latter formation usually either shows a telic (non-iterative etc.) meaning or is simply non-specified as far as this semantic opposition is concerned. Two particularly instructive examples are the verbs *bhṛ* 'carry, bring' and *nas* 'approach, reach, return (home)'.

In the case of *bhṛ*, the thematic full grade root present (class I in the traditional notation) with a telic (or non-specified) meaning, *bhāрати* 'brings' (cf. Germ. *bringen*, Rus. (*pri*)*nesti*), is opposed to the reduplicated present *bībharti* 'carries' (cf. Germ. *tragen*, Rus. *nosit*'), employed with an atelic (or iterative) meaning; see Delbrück 1897: 18 ("bībharti ... wird von der nicht auf ein Ziel gerichteten Thätigkeit des Tragens gebraucht"); Joachim 1978: 116–117; Gotō 1987: 225–227. Cf. an especially clear instance of the opposition 'telic/atelic' in (3):

(3) (RV 10.30.13)

<i>yád</i>	<i>ápo</i>	<i>ádṛśram ...</i>	<i>ghṛtám</i>
when	water:NOM.PL	see:AOR.PASS:3PL	ghee:ACC.SG
<i>páyāṃsi</i>	<i>bībhr-at-īr</i>		<i>mádhūni ...</i>
milk:ACC.PL	carry:RED.PRES-PART-NOM.PL.F		honey:ACC.PL
<i>indrāya</i>	<i>sómaṃ</i>	<i>sú-śutam</i>	
Indra:DAT.SG	soma:ACC.SG	well-pressed:ACC.SG	
<i>bhāra-nt-īh</i>			
carry:PRES.I-PART-NOM.PL.F			

‘When the waters, which carry [*bībhratīr*] ghee, milk and honey, which bring [*bhārantīḥ*] the well-pressed soma-sap to Indra, became visible ...’

The class I present of *nas*, *nāsate*, is employed with the telic meaning (‘approach, reach, return (home)’), whilst the reduplicated present *nīṃs-* (3pl.med. *nīṃsate*, part.med. *nīṃsāna-*) renders repeated movements (‘touch (in)’); see Gotō 1987: 200–201. The repetitive or iterative character of the activity expressed by the reduplicated present is particularly clear from the contexts where it describes the motion of the sacrificial spoons pouring oblation into the flame, as in (4), or the licking movements of a flame, which touches the spoons, as in (5):

(4) (RV 1.144.1)

<i>srúcaḥ</i> ...	<i>yá</i>	<i>asya</i>	<i>dhāma</i> ...
sacrificial.spoon:NOM.PL	which:NOM.PL.F	his	abode:ACC.SG
<i>nīṃs-ate</i>			
reach:RED.PRES-3PL.MED			

‘... the sacrificial spoons ... which touch his (fire’s) abode ...’

(5) (RV 8.43.10)

<i>arcí</i>	<i>rocate</i> ...	<i>nīṃs-ānam</i>
flame:NOM.SG	shines	reach:RED.PRES-PART.MED:NOM.SG.N
<i>juhvo</i>	<i>múkhe</i>	
spoon:ACC.PL	mouth:LOC.SG	

‘The flame shines, ... touching the spoons at their mouths [= front part].’

A few other examples of a similar semantic opposition between the non-reduplicated and reduplicated presents are:

- *pad* ‘fall, move’: the *-ya*-present *pádyate* ‘falls, moves’ (unspecified motion) is opposed to the reduplicated present *píbda-* ‘trudge, plod’ (atelic; in Strunk/Gotō’s description, ‘stapfen, auf der Stelle treten’), attested in the middle participle *píbdamāna-* (see Strunk 1977: 977–980; Gotō 1987: 280, fn. 650);
- *tṛ* ‘cross (over)’: class I present *tárati* ‘crosses (over)’ (telic) is opposed to the iterative reduplicated present *títr-* ‘step, make step’ (attested in the participle *títrat-* RV 2.31.2); see Gotō 1987: 160–161 and 165;
- *aj* ‘drive (of cattle etc.)’: class I present *ájati* ‘drives’ is opposed to the reduplicated present *íjate* (< PIE **H₁-H₂-e-*).²³

It remains unclear what could be the ground for the distribution of the two reduplication types (*a* or *i*) in the presents derived from \tilde{a} -roots. The choice of the vowel may appear to be purely accidental. Yet a comparison of the lists of the *a*- and *i*-presents reveals a few features shared by most or many of the members of the latter group as opposed to the former, cf. Table 4 (forms in the columns to the right of the roots are 3rd person singular active, unless specified otherwise):

Table 4. *a*- and *i*-presents

a-presents	i-presents
<u>athematic presents</u>	
<i>gā</i> 'go': (part.act. <i>jāgat-</i>) / <i>jīgāti</i>	
<i>bhas</i> 'chew': <i>bābhasti</i> , 3pl. <i>bāpsati</i> / (<i>bibhas</i> - AVP, KpS, JB)	
<i>rā₁</i> 'give': med. <i>rar(ī)-</i> / 2sg.impv.act. <i>rirīhi</i>	
<i>vaś</i> 'desire': 2sg.act. <i>vavākṣi</i> / 3sg.act. <i>vivaṣṭi</i>	
<i>hā_{1/2}</i> : <i>jāhāti</i> 'leave' / 3sg.med. <i>jihīte</i> 'go'	
<i>dā</i> 'give': <i>dādāti</i>	<i>nas</i> 'approach': 3pl.med. <i>nīṃsate</i>
<i>dhā</i> 'put': <i>dādhāti</i>	<i>pā₂</i> 'move': 3sg.med. <i>pīpīte</i>
<i>yas</i> 'boil': 3sg.impv. <i>yayastu</i> (RV 7.104.2)	<i>mā₁</i> 'measure': <i>mīmāti</i>
<i>sas</i> 'sleep': <i>sāsasti</i> , <i>sasāsti</i> (YV)	<i>mā₂</i> 'bellow': <i>mīmāti</i>
<i>has</i> 'laugh': part.act. <i>jākṣat-</i>	<i>vac</i> 'speak': <i>vivakti</i>
	<i>śā</i> 'sharpen': <i>śīśāti</i>
<u>thematic presents</u>	
	<i>aj</i> 'drive': 3sg.med. <i>ījate</i> (< * <i>Hi-Hǵ-e-</i>)
	<i>ghrā</i> 'smell': <i>jīghrati</i>
	<i>pad</i> 'move': part.med. <i>pībdamāna-</i>
	<i>pā₁</i> 'drink': <i>pībati</i>
	<i>sad</i> 'sit (down)': <i>śīdati</i> (< * <i>si-sd-e-</i>)
	<i>sthā</i> 'stand': <i>tīṣṭhati</i>
	<i>han</i> 'hit': 3sg.med. <i>jīghnate</i>

(i) The majority of the *i*-presents are built to \tilde{a} -roots, going back to Proto-Indo-European roots in a laryngeal (*gā* 'go' < **g^heH₂-*, *pā* 'drink' < **peH₃-*, etc.). By contrast, although there are a few \tilde{a} -roots in the *a*-class,

the structure *Cas* seems to prevail. I suppose that the reduplication vowel *i* may have been reanalyzed as the weak grade of the laryngeal vocalized in interconsonantal position (i.e. *i* < **H*) and, accordingly, as a vowel copying the weak grade of the root – in analogy with the presents built on *i*- and *u*-roots, i.e.:

$$\begin{aligned} m\bar{a} (*maH-) / mi (*m\bar{H}-) : m\bar{i}-(m\bar{a}ti) &= ve\check{s} (*\check{u}a\check{s}-) / vi\check{s} : vi-(ve\check{s}ti) \\ &= yo (*\check{y}a\check{u}-) / yu : yu-(yoti) \end{aligned}$$

(ii) The fact that four of the five roots in *-s* (structure *Cas*) which form class III presents reduplicate with *a* may be not accidental. The *i*-reduplication of a *Cas* root yields the stem $C_RiC's$ - (where C' stands for the voiceless and non-aspirated pendant of C) in the forms with the zero grade of the root, e.g. in 1pl.act. (*bhas* – ***bips-mas(i)* etc.). The thematic variant of such a stem would be identical to the stem of the desiderative of the type $CiCsa$ -, made from $(C)\check{a}C$ roots (e.g. *dabh* ‘deceive’ – *dipsa*-; see Section 4.3.5). The tendency to avoid the possible (quasi-)homonymy with desideratives might be one of the reasons for generalizing the *a*-reduplication.

(iii) All reduplicated presents which have generalized the thematic stem throughout the paradigm are found in the *-i*-class (see e.g. Rasmussen 1988: 112–113; Niepokuj 1997: 192). Most likely, the presence of the thematic vowel (PIE **e*) prevented the appearance of yet another full grade (**e*) in the stem, according to the rules of Proto-Indo-European morphophonemics (A. Lubotsky, p.c.).

(iv) The fact that all *media tantum* presents belong to the *-i*-class is easily accounted for in terms of Kortlandt’s hypothesis, since all middle forms show the zero grade of the reduplication syllable.

(v) Finally, about half of the presents with the *i*-reduplication (including those made from *i*- and \check{r} -roots) belong to verbs of motion (*ijate* (< **Hi-Hg-e*) ‘drives’, *iyarti* ‘comes, rises’ [root \check{r}], *jigāti* ‘goes, steps’, *titr-* ‘(make) step’, *nir̥ms-* ‘touch (in)’, *pibda-* ‘trudge, plod’, *pīparti* ‘makes cross over’ [root $p\check{r}$], *bibharti* ‘carries’, etc.), which are (nearly) lacking in the *a*-class. At some stage the *i*-reduplication could have been considered as a feature of this semantic subgroup, as opposed to the verbs with a different semantics. Such a development could be triggered by just a few *i*-presents, but, again, the exact reasons for this process remain unclear. Perhaps the choice of the reduplication vowel was influenced by the perfect, according to the following scenario. The vowel in the full grade of the reduplication syllable of the present is the same as in the perfect (*a* < **e*). Verbs of motion can easily be

used in atelic/iterative usages, which, in a sense, represent nearly the opposite of the perfect-resultative meaning. For that reason, the presents of such verbs may tend to formal differentiation from the perfect reduplication and, accordingly, to the generalization of the reduplication vowel *i*.

5.2. Perfect

More problematic is the iconic character of the reduplication in the perfect. Theoretically, it is not impossible to figure out some aspects of the perfect meaning that could motivate this morphological process. For instance, the canonical meaning of the Indo-European perfect, an activity in the past, which results in a state in the present (e.g. 'X has grown' \approx 'X was growing and now X is big/grown'), can be considered as consisting of two overlapping meanings ('performing P' + 'result of P').²⁴ Whether this semantic fact could be considered as an instance of the reduplication of meaning and, accordingly, contribute to the development of the reduplication of form, remains of course pure guesswork.

6. Concluding remarks

As I mentioned before, the present survey does not claim to give an exhaustive description of the Vedic verbal reduplicated formations. Here I would like, above all, to draw attention to the fact that no general study of reduplication can disregard the Vedic evidence, since it furnishes valuable data for a general study of reduplication in a diachronic perspective, in particular for clarifying the role of iconicity in the rise of the reduplication and the role of analogical developments for its grammaticalization. Further research requires a detailed analysis of all Vedic reduplicated formations as members of one 'reduplication paradigm', in order to determine the main patterns of syncretisms and analogical developments.

Abbreviations

ACC	accusative	LOC	locative
act.	active	med.	middle
aor.	aorist	N	neuter
AV	Atharvaveda	NOM	nominative
C_1	first root consonant	part.	participle
C_2	the root consonant which follows the root vowel	pl.	plural
C_R	reduplication consonant	PIE	Proto-Indo-European
DAT	dative	pres.	present
du.	dual	red.	reduplicated
F	feminine	RV	Ṛgveda
impv.	imperative	sg.	singular
inj.	injunctive	subj.	subjunctive
JB	Jaiminīya-Brāhmaṇa	ŚB	Śatapatha-Brāhmaṇa
KpS	Kaṣiṣṭhala-Kaṭha-Saṃhitā	YV	Yajurveda

Notes

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2. For a monographic description of the Greek reduplicated presents, see Giannakis 1997; for reduplicated presents in other Indo-European languages, see also Giannakis 1992.
3. For a discussion of Indo-European reduplication in general, see Tischler 1976 and the recent monograph by Niepokuj (1997), which gives a sketchy overview of various Indo-European branches. Unfortunately, her discussion of the Vedic reduplicated formations (perfect, present, intensive) is very superficial and even reveals poor knowledge of the relevant literature; thus, several important works dealing with the Vedic verbal reduplication (such as Kortlandt

- 1987, M. Leumann 1952, 1962, Rasmussen 1987, 1988) are lacking in the bibliography. The book abounds in mistakes, misinterpretations, unconvincing explanations and *ad hoc* hypotheses, and most of the author's conclusions can hardly be taken seriously.
4. Deaspiration and palatalization fail to occur only in one subtype of intensives, which insert the connecting vowel *ī* between the reduplication syllable and the root (cf. *krand* 'roar' – *kan-i-krad-*, *bhr̥* 'carry' – *bhar-ī-bhr̥-*); see Schaefer 1994: 34–35, 55–71.
 5. By 'the root vocalism' I mean (i) 'pure' vowels *a* and *ā* and (ii) vowel *a* followed by a sonant or vocalic allophones of sonants: *i/e* (< Indo-Iranian **a*), *u/o* (< Indo-Iranian **a*), *ṛ/ar*, *l/al*, *an*, *am*.
 6. By contrast, the vocalic *ṛ* is never copied in the reduplication syllable, always being represented by *i* or *a*.
 7. See Lubotsky 1997b: 559; Kümmel 2000: 19–20.
 8. < PIE **g^{wh}en-*, whence the alternation *h/gh* in the root.
 9. For *hā* and its split into two synchronically distinct roots, see Section 4.3.1.
 10. For this type of intensive, see note 4.
 11. The locus of this process may be the reduplicated present, where the vocalic element *ə* ('shwa *secundum*'); see Section 4.3.1) could easily be colored by the root vowel.
 12. I have greatly benefited from discussing several aspects of the reduplicated presents with F. Kortlandt and A. Lubotsky. Of course all responsibility for possible mistakes and misinterpretations is mine.
 13. Niepokuj, after a lengthy discussion (1997: 191–195), fails to explain the reduplication vowel in the present.
 14. According to Kortlandt's (1987: 222) formulation, **i* (< **ə*) has arisen as a zero grade of **e* only pretonically before double consonants (i.e. in such forms as 1pl.act. **dhi-dhH-més*), whereas in other forms the zero grade of **e* was mere zero. Of course from forms like 1pl.act. *i* could easily expand to other zero grade forms, such as 3sg.act. (**d(h)-dhéH-ti* → **d(h)i-dhéH-ti*). A very similar description of the ablaut in the reduplication syllable (in terms of the "accent-conditioned distribution of the reduplicatory vowels") has been suggested by Rasmussen (1984: 124 ≈ 1987: 112; 1988: 125; 1997: 252–253).
 15. For shwa *secundum*, see, for instance, Güntert (1916: 19–31, 92–100 et passim); Vine (1999).
 16. Yet another root which may be added to this list is *bhas* 'chew'. It typically reduplicates with *a* (cf. 3sg. *bábhasti*, 3pl. *bápsati*), but in a mantra found with minor variants in several post-Ṛgvedic texts (Atharvaveda in two recensions, Śaunakīya [AVŚ] and Paippalāda [AVP], Kāthaka [KS], Kapiṣṭhala-Kāṭha-Saṃhitā [KpS], Jaiminīya-Brāhmaṇa [JB], Taittirīya-Āraṇyaka) we also find an occurrence of the 3sg.act. form *babhasti*, attested in some texts (manuscripts) with the non-standard *i*-reduplication: 3sg.impv.act. *bibhastu* (AVP 19.31.14) ~ 3sg.ind.act. *bibhasti* (KpS 48:13:304.9 = JB 2.223:3; edi-

- tors of the texts everywhere emend to ⁺*babhasti*) ~ *babhasti* (AVŚ 6.49.1 = KS 35.14:60.9); see Renou (1952: 263) on the variant attested in the Kapiṣṭhala-Kaṭha-Saṃhitā.
17. For a detailed description of the distribution of ‘strong’ and ‘weak’ forms within the paradigm, see Kümmel (2000: 23–42).
 18. In this latter case we are dealing, in fact, with the embryo of a separate tense category, which might be called ‘perfecto-present’ (glossed as PF(-PRES) in example (2)).
 19. For the meaning of the Vedic intensive, see Schaefer (1994: 75–93) and Praust (2000: 56), with fn. 112–113 (“[das Intensivum bezeichnet] eine mehrmalige Wiederholung [einer Aktivität], aufgefaßt als ein Vorgang”).
 20. Yet another “iconic” interpretation of the general meaning of the Indo-European reduplicated presents, which may be mentioned as a curiosum, has been suggested by O. Hoffmann (1899: 172–174). According to Hoffmann, a number of reduplicated presents denote activities typically performed by body parts which form natural pairs, cf. *dādā-* ‘give’, *dādhā-* ‘put’ (two hands), *jīgā-* ‘step’, *tīṣṭha-* ‘stand’ (two feet), and even *pība-* ‘drink’ (two lips!). Should we perhaps add the present *sīdati* (< **sī-sd-e-*) ‘sit (down)’ (two buttocks!) to this list?
 21. In fact, this definition more accurately renders the meaning of the verb: *jīgāti* means stepping, treading, making steps rather than some non-specified motion (see, for instance, Delbrück 1897: 16–17; K. Hoffmann 1967: 274–275), cf.:

(RV 10.73.3)

<i>ṛṣvā</i>	<i>te</i>	<i>pādā</i>	<i>prā</i>	<i>yāj</i>	<i>jīgā-si</i>
high	your	foot:NOM.DU	forward	when	tread:RED.PRES-2SG.ACT

 ‘Your feet are high, when you (= Indra) are treading.’
 22. Note, in particular, that we find in this class a few verbs which form natural semantic pairs and therefore could easily influence each other and induce each other’s morphological features, cf. *sad* ‘sit (down)’: *sīdati* (< **sī-sd-e-*) ~ *sthā* ‘stand’: *tīṣṭhati* (see Meillet 1909: 265).
 23. *aj* and *īj* became synchronically distinct roots already in the prehistoric period. Since most contexts allow of both iterative and non-iterative interpretations, the original alleged opposition (non-specified vs. iterative?) cannot be seen in the attested forms; see Strunk (1977); Joachim (1978: 36–37); Gotō (1987: 90).
 24. Cf. Rasmussen (1997: 258): “[the] reduplicated stem-formation [of **g^{wh}e-g^{wh}ón-h₂e* ‘I have killed’] may add a reference to [the] ... two-phase semantics which could perhaps be rendered as ‘I have killed and so now [the resulting situation prevails]’” and (ibid., fn. 8): “[a]nother possible justification of the reduplication could be the use of the perfect to express an action that was started in the past and is being continued into the present.”

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